Please cite as: Müller, P., Greifeneder, R., Stahlberg, D., Van den Bos, K., & Bless, H. (2010). Shaping Cooperation Behavior: The Role of Accessibility Experiences. *European Journal of Social Psychology, 40*, 178-187. doi: 10.1002/ejsp.632

Address correspondence to: rainer.greifeneder@unibas.ch or patrick.mueller@hft-stuttgart.de

Shaping Cooperation Behavior: The Role of Accessibility Experiences and Uncertainty

Patrick A. Müller[1], Rainer Greifeneder[2], Dagmar Stahlberg[2], Kees van den Bos[1], & Herbert Bless[2]

[1]Utrecht University, The Netherlands

[2]University of Mannheim, Germany

Abstract

The present research investigates the influence on cooperative behavior of accessibility experiences associated with the retrieval of fairness-relevant information from memory. We argue that the decision whether to cooperate in negotiations depends not only on information about the appropriateness of the negotiation procedure, but also on the experience of how difficult or easy it is to come up with this information. Supporting this hypothesis, it is shown that in the context of a bargaining experiment, participants' experiences of ease or difficulty in retrieving unfair aspects of the respective negotiation procedure strongly influence their cooperation behavior. In addition, we hypothesize and empirically substantiate that the influence of accessibility experiences on cooperation behavior occurs particularly in situations of certainty salience. Implications for future research on cooperation and on accessibility experiences are discussed.

130 words

Keywords: Cooperation, Fairness, Accessibility Experience, Uncertainty, Ease-of-Retrieval

Shaping Cooperation Behavior – The Role of Accessibility Experiences and Uncertainty

The ability to cooperate with other individuals is vital for socials beings, and it is especially strong in humans (e.g., Fehr & Fischbacher, 2003; Trivers, 1971). However, in many situations humans do not engage in cooperative behavior, but decide to compete with others for resources (e.g., Baden, 1998). The often-cited "tragedy of the commons" (Hardin, 1968) is just one illustration of the disastrous results to which such exclusively self-interested behavior can lead. Hence, given the crucial role of cooperation in our social systems, it is important to learn more about the underling mechanisms of why individuals engage or do not engage in cooperation (Posner, 2000; Schroeder, Steel, Woodell, & Bembenek, 2003; Tyler, Boeckmann, Smith, & Huo, 1997). The current research contributes to this endeavor by examining the role of *accessibility experiences* (or ease-of-retrieval experience, i.e. the experience of how easily relevant information comes to mind) on cooperative behavior.

Specifically, we investigate whether the ease or difficulty with which individuals retrieve fairness-relevant information about the procedure of a bargaining game from their memory influences behavior in a negotiation situation. Such an influence is expected because ease-of-retrieval experiences have been shown to influence perceptions of fairness (Müller, Greifender, Stahlberg, Van den Bos, & Bless, 2008), which in turn are of great importance in the process of deciding whether or not to cooperate (e.g., De Cremer & Tyler, 2007; Schroeder et al., 2003; Tyler & Blader, 2003). Indeed, higher perceived fairness of a procedure increases individuals' willingness to cooperate with others (e.g., De Cremer & Tyler, 2005; De Cremer & Van Vugt, 2002). The present research is thus intended to demonstrate that ease-of-retrieval experiences can influence a highly complex social behavior. Given the scarcity of behavioral effects in the literature on accessibility experiences (for an exception, see Keller & Bless, 2005), such a finding

is of interest to the literatures on accessibility experiences, in particular, and metacognitions, in general. Moreover, such a finding is of particular interest to the literature on cooperation behavior. Indeed, the notion that it is not only the fairness-relevant information itself that drives cooperation behavior, but also *experiences* of how easy or difficult it is to bring this information to mind is new to the literature on cooperation and constitutes an important extension of prior work.

Accessibility experiences and their influence on judgments and behaviors

The influence of accessibly experiences on judgments has been examined by many researches over the last decades (for reviews, see Schwarz, 1998, 2004). Already in 1973, Tversky and Kahneman suggested that accessibility experiences are at the heart of many frequency-based judgments. In the wake of this seminal finding, accessibly experiences have been shown to impact many different judgmental domains, including self-assessment (Schwarz et al., 1991), attitude formation (Haddock, 2000; Wänke, Bless, & Biller, 1996), stereotyping (Dijksterhuis, Macrae, & Haddock, 1999), frequency estimates (Aarts & Dijksterhuis, 1999; Wänke, Schwarz, & Bless, 1995), group perception (Rothman & Hardin, 1997), health-related behavior (Rothman & Schwarz, 1998), and advertising (Raghubir & Menon, 1998; Wänke, Bohner, & Jurkowitsch, 1997). Compared to this impressive evidence for the influences of accessibility experiences on judgments, evidence for influences on *behavior* is scarce. One exception is the finding of Keller and Bless (2005) that accessibility experiences have an influence on test-taking performance. The current research extends this finding by demonstrating that accessibility experiences can influence behavior also in complex social interactions with other persons. Moreover, the present experiment suggests that the influence of accessibility

experiences on human behavior is likely to generalize across domains and to be of generally high importance.

As mentioned above, the perception of procedural fairness plays an important role in the decision of whether or not to cooperate (e.g., De Cremer & Tyler, 2007; Schroeder et al., 2003; Tyler & Blader, 2003). One way to examine the influence of accessibility experiences on cooperative behavior is therefore to see how strongly accessibility experiences associated with the retrieval of fairness-relevant information influence behavior. Interestingly, the effects of accessibility experiences on procedural fairness perceptions were not examined until recently (Müller et al., 2008). Up to now, most conceptions of procedural fairness judgments have seen the aspects of the procedure (e.g., if and how a person is given a voice during the course of the procedure; Folger, 1977) as the main source of information (for lists of other content-based criteria of procedural fairness judgments see, e.g., Leventhal, 1980; Lind & Tyler, 1988; for an exception, see Van den Bos, 2003). However, in line with the above-mentioned literature on accessibility experiences, one can argue that this *content* information is not the only kind of information that is incorporated into fairness judgments. *Experiential* information, as, for example, accessibility experiences, might also be used as information in fairness judgments. This means that the easier it is to come up with unfair aspects of a procedure (e.g. that one was not given a voice), the less fair this procedure is perceived to be. To test this idea, Müller and colleagues (2008, Experiment 1) had participants recall either few or many *unfair* aspects about a university admission procedure (which was the same for every participant and well known to them). Recalling two unfair aspects was experienced as easy, whereas recalling four unfair aspects was experienced as difficult. Participants then judged the fairness of the procedure. Following the paradigm introduced by Schwarz and colleagues (1991), the experiment was set up

in such a way that opposing results were expected from a reliance on accessibility experiences versus a reliance on available content information. In particular, if individuals rely on the available content when forming judgments, the recall of many as compared to few unfair aspects should result in lower perceptions of procedural justice. Conversely, if individuals rely on their accessibility experiences, the retrieval of few unfair aspects (an easy task) as compared to many unfair aspects (a difficult task) should result in higher ratings of procedural justice. After all, if it is easy (difficult) to come up with unfair aspects of a procedure, chances are that it is (is not) an unjust procedure. Supporting this hypothesis, participants did in fact rate the university admission procedure as less just after retrieving two unfair aspects (easy) than after retrieving four unfair aspects (difficult).

Based on this finding that the ease or difficulty with which individuals can recall fairness-relevant information influences their perceptions of procedural fairness, and on the fact that high perceptions of procedural fairness lead to more cooperative behavior e.g., Cremer & Tyler, 2005; De Cremer & Van Vugt, 2002), we suggest that accessibility experiences about fairness-relevant information should also shape cooperative behavior.

Uncertainty moderates the influence of accessibility experiences on competitive behavior

While influences of accessibility experiences on cooperative behavior seem reasonable in the light of previous research, the question remains whether these influences always have the same strength. Tversky and Kahneman (1973) saw the use of accessibly experience as primarily a heuristic strategy. In line with prominent dual process models (e.g., Chen & Chaiken, 1999; Petty & Cacioppo, 1986), one could assume that accessibility experiences mostly influence judgments when motivation and capacity are low. Previous research has found considerable empirical

support for this notion (e.g., Aarts & Dijksterhuis, 1999; Florack & Zoabi, 2003; Grayson & Schwarz, 1999; Greifeneder, 2007; Rothman & Schwarz, 1998).[1] In general, the use of accessibility experiences should be lower, the higher the processing intensity (Greifeneder, 2007). In a bargaining situation, as in the present experiment, one factor that could trigger high processing intensity is uncertainty. Uncertainty is very salient in many decision-making and negotiation situations, especially when individuals have incomplete information about the situation or the behavior of others (e.g., Dawes, 1988). If we can assume that the uncertainty is reflected to some extend by a discrepancy between the actual and desired confidence about one's judgment, then the Heuristic-Systematic Model (HSM) would propose that individuals engage in more systematic processing (e.g., Chen & Chaiken, 1999). Indeed, it has been shown that chronic or situational uncertainty leads to less use of heuristic information, for example, stereotypes, in social judgments (e.g., Tiedens & Linton, 2001; Weary, Jacobson, Edwards, & Tobin, 2001). Further, it has been shown that individuals under uncertainty become even more sensitive to fairness-relevant information than they normally are (for reviews see, Lind & Van den Bos, 2002; Van den Bos & Lind, 2002).

Taken together, it appears safe to assume that the influence of accessibility experiences on cooperation behavior should be higher under certainty than under uncertainty. Such a moderating influence of uncertainty would not only be of interest to the research on fairness and cooperation, but could also constitute a very important and previously unexamined moderator for the use of accessibility experiences in general.

The Current Research

The goal of the present research was to examine whether cooperation could be increased merely by experimentally inducing the subjective experience of a difficult retrieval of unfair

aspects of a specific negotiation game. We tested whether accessibility experiences associated with the retrieval of fairness-relevant information could influence behavior in a complex bargaining situation, a multi-round principal-agent-game (cf. Fehr, Kirchsteiger, & Riedl, 1993). In this game, participants were told that they would negotiate earnings and wages over three rounds with another participant (who was in fact simulated by the computer). Before the actual negotiation started, participants were asked to generate either two or four unfair aspects of the negotiation procedure that was explained to them beforehand. Generating two or four aspects was experienced as an easy or difficult task, respectively. Afterwards, uncertainty versus certainty was made salient.

Based on the reasoning outlined above, we hypothesized that participants in conditions of certainty salience would offer more money (stronger cooperation) to the other participants after retrieving many as compared to few unfair aspects about the procedure from memory. This is because recalling many unfair aspects is difficult and therefore implies fairness, which is likely to bolster cooperation. In contrast, participants in conditions of uncertainty salience were expected to offer more money to their counterpart after recalling few as compared to many unfair aspects of the procedure. This is because the recalled content information, and not associated subjective experiences, was expected to influence cooperation in conditions such as these (see Müller et al., 2008).

Method

Participants

Participants were 104 students of the University of Mannheim. Thirty-nine percent of participants were female and the mean age was 22.5 years (SD = 2.5). Two participants did not list any unfair aspects of the negotiation procedure and were excluded from further analyses.

Design, Procedures, and Materials

The design of the study was a 2 (number of aspects: few vs. many) x 2 (salience: uncertainty salient vs. certainty salient) factorial design. The experimental procedure was a modified version of a principal-agent-game that is used in experimental economics to examine market pricing and cooperation behavior (cf. Fehr et al., 1993). First, participants were told that they would interact with another person in a negotiation situation via the internet. Either they themselves or the interaction partner would be the employer or the employee, respectively. Participants were told that they would be randomly assigned to their role and that the credit points they earned in the negotiation would be converted into Euros and given to them at the end of the study. Each credit point in the game was worth 0.05 Euro, and negative earnings were treated as zero earnings. Participants were told that the other player was located in another room in a different building and that the game was played anonymously. In fact, however, the second player was not real, but simulated by the computer. Participants were informed that they would always negotiate with the same person in all three rounds. All participants received the feedback that they were randomly chosen for the role of the *employer*.

The procedure was described as a salary negotiation with a total of three negotiation rounds. At the beginning of each round, the employer (the participant) made an offer to the employee (presumably another participant, in fact the computer). The offer consisted of a demanded amount of work (1 to 10 work points) and an offered wage (1 to 100 credit points). Participants could calculate their earnings as employers by multiplying the demanded work points by ten and subtracting the offered wage. For example, if a participant decided to demand 7 work points and offered 40 credit points as wage that would have left him or her with 7 * 10 – 40 = 30 credit points as own earnings. Participants were also able to calculate the earnings of the

employee for a specific offer by subtracting the costs of the work points from the offered wage. The costs of work points for the employee ranged from 0 credit points for 1 work point to 18 credit points for 10 work points and were given to participants in a table. For instance, in the above mentioned example, the demanded seven work points would cost the employee 10 credit points while the salary was 40 credit points Therefore, this offer would have left the employee (simulated by the computer) with 40 – 10 = 30 credit points. To do these calculations, participants had pocket calculators and a sheet of paper with all the necessary information on their tables.

After the employer had proposed an offer, the employee could accept the offer or reject it. In case of rejection, both players would earn nothing in this round. In case of acceptance, the employee could decide to contribute either exactly the demanded work points or more. The computer was programmed in such a way that every offer that left the employee with positive earnings of no more than 10 points below the earnings of the employer was accepted. The computer always contributed exactly the demanded work points. In our example this would mean that the computer would have accepted the offer and would have contributed 7 work points. Earnings were immediately transferred to the employer's and employee's accounts after the (computer-simulated) employee had 'made' his or her decision. At the end of each round, participants received a summary of their offer, the employee's decision, and the current balance of their own and the employee's account. Then the next round started.[2]

After these rules were explained to participants, participants completed three trial rounds in which they could choose an offer and then calculate their own earnings, the work costs for the employee (which they could find in a table given to them), and the earnings of the employee. The computer gave instant feedback on the calculations and, in case of a wrong answer, participants

had to correct their calculations. Note that, up to this point, all participants had the same instructions and followed the same procedure, so that everybody got to know the bargaining situation in the same way. Only at this stage did we manipulate ease-of-retrieval via the number of unfair aspects of the negotiation procedure in order to test if cooperation can be enhanced even when the procedure is not changed. In particular, participants had to name either two or four unfair aspects of the negotiation procedure from the employer's perspective. Independent pre-testing had revealed that recalling two unfair aspects of the negotiation procedure from the perspective of the employer was easy, while recalling four unfair aspects was difficult. Participants were randomly assigned to one of the number-of-aspects conditions. To check for the success of this manipulation, the ease or difficulty with which the respective aspects could be named was assessed by means of four questions on 9-point Likert-scaled items. For instance, two of the items read "How easy or difficult was it for you to list unfair aspects of the negotiation procedure?," and " How easy or difficult would it have been for you to list more unfair aspects?"– with answers ranging from 1 (*very difficult*) to 9 (*very easy*).

Next, the manipulation of (un)certainty salience followed. Certainty versus uncertainty was made salient to participants by means of a procedure adapted from Van den Bos (2001). Participants were randomly assigned to conditions in which either certainty or uncertainty was experimentally made salient. Participants in the (un)certainty condition were asked to imagine being someone who feels (un)certain. Subsequently, they answered the following two questions in written form: (1) "What emotions does the thought of your being (un)certain about yourself arouse in you?," and (2) "What will happen physically to you as you feel (un)certain about yourself?" After this, participants completed the short version (Mackinnon et al., 1999) of the Positive and Negative Affect Schedule (PANAS; Watson, Clark, & Tellegen, 1988). In line with

previous uncertainty salience studies (e.g., Van den Bos, 2001), the PANAS was included to determine whether the salience manipulation influences positive and negative affect. The short version of the PANAS consists of two five-item subsets, one measuring positive affect (PA), the other measuring negative affect (NA).

Next, participants received a sheet of paper with a summary of the game's rules, which could be used as a basis for calculation in the upcoming negotiation rounds. This was to prevent potential retrieval-based differences in participants' knowledge of the rules. Subsequently, the three negotiation rounds started. To make the situation realistic, the employee's acceptance/rejection decision was presented after a varying delay of about 90 seconds. To avoid capacity and time constraints, participants were instructed to take as much time as they needed to propose their offers. At the end of the experiment, participants were paid, debriefed, and thanked for their participation.

Measure of cooperative behavior. As dependent variable, we calculated a score reflecting cooperative behavior per negotiation round and participant. In particular, each score assessed the difference (in Euros) between the earnings of the employee and the participant's own earnings that would have resulted from the *participant's proposal* in a given round. This means that the dependent variable purely reflects the participants' cooperative or competitive behavioral intentions and is independent of the acceptance/rejection decision of the computer. The scores were averaged over the three negotiation rounds. A negative value indicates that the participant demanded, on average, more for himself or herself each round than he or she offered the employee. This reflects a competitive behavior. A zero value indicates a proposed equal split of the earnings and a positive value indicates that the participant offered, on average, more to the employee than he or she claimed. Values of zero or higher therefore reflect cooperative behavior.

Results

Manipulation checks

Ease of retrieval. The four items assessing accessibility experiences were averaged to form a single index (Cronbach's $\alpha = .79$).This ease-of-retrieval index was entered into a 2 (number of aspects: few vs. many) x 2 (salience: uncertainty salient vs. certainty salient) ANOVA. As expected, generating two as compared to four unfair aspects was experienced as easier ($M = 4.44$, $SD = 1.55$; $M = 3.75$, $SD = 1.51$; $F(1, 98) = 5.11$, $p < .05$, $\eta^2 = .05$). No other effects reached significance.

PANAS. Both, the 5 items assessing PA (Cronbach's $\alpha = .80$) and the 5 items assessing NA (Cronbach's $\alpha = .77$) were averaged to form two scales. The PA ($M = 5.13$, $SD = 1.46$) and NA ($M = 2.41$, $SD = 1.26$) indices were entered into a 2 (number of aspects: few vs. many) x 2 (salience: uncertainty salient vs. certainty salient) multivariate analysis of variance (MANOVA). No significant main or interaction effects were found on either the multivariate or the univariate level (all Fs < 1.1). As in previous research (e.g., Van den Bos, 2001; Van den Bos, Poortvliet, Maas, Miedema, & Van den Ham, 2005), this suggests that the (un)certainty salience manipulation did not influence participants' affective state. Consequently, it appears unlikely that results reported below are mediated by changes in mood state (cf. Ruder & Bless, 2003).

Negotiation behavior

The measure for cooperation behavior was entered into a 2 (number of aspects: few vs. many) x 2 (salience: uncertainty salient vs. certainty salient) ANOVA. There was no significant main effect either for number of aspects or for (un)certainty salience, both Fs < 1. The interaction between number of aspects and (un)certainty salience, however, was highly significant, $F(1, 98) = 10.14$, $p < .01$, $\eta^2 = .09$. A planned contrast analysis was conducted to further examine the

exact pattern of this interaction. As reflected in Figure 1, participants in the condition of *certainty* salience exhibited less cooperation after retrieving few (M = -0.29, SD = 0.95) as compared to many unfair aspects (M = 0.41, SD = 1.14), $F(1, 98) = 5.24$, $p < .05$. Presumably, this pattern of results reflects that accessibility experiences influenced cooperation behavior, even though the procedure itself remained unchanged.[3] Underscoring this interpretation, ease-of-retrieval experiences and cooperation behavior were strongly correlated (r = -.38, $p < .01$). In contrast, the opposite pattern of results was obtained for participants in the condition of *uncertainty* salience. Specifically, participants in this condition exhibited more willingness to cooperate after retrieving few as compared to many unfair aspects (M = 0.32, SD = 1.38; M = -0.41, SD = 1.14), $F(1, 98) = 4.95$, $p < .05$. For participants in the condition of uncertainty salience, experiences of ease-of-retrieval and cooperation behavior were not meaningfully related (r = .15, *ns*), suggesting that participants in this condition did not rely on their accessibility experiences, but rather on the recalled content information.

Discussion

Although the literature on the influence exerted by accessibility experiences on judgments is extensive (Schwarz, 1998, 2004), behavioral effects of the ease or difficulty with which information comes to mind are scarce. One exception is the finding of Keller and Bless (2005) that accessibility experiences have an influence on test-taking performance. The current research adds to this by demonstrating that accessibility experiences can also influence dynamic social behaviors such as competitive or cooperative behavior in a multiple-round negotiation setting. In line with our hypotheses, it was found that the manipulations of ease-of-retrieval and (un)certainty salience strongly influenced participants' negotiation behavior. In particular, participants in conditions of certainty salience showed less cooperation after generating unfair

aspects of the negotiation procedure with greater ease, whereas participants in conditions of uncertainty salience did the reverse. Correlation analyses bolstered the conclusion that experiences of ease or difficulty influenced the behavior for participants in conditions of certainty salience, and that the recalled content information influenced the behavior of participants in conditions of uncertainty salience. This pattern of results thus presents evidence for the idea that cooperation is influenced in meaningful ways merely by the ease or difficulty of retrieving unfair aspects of the procedure from memory. We believe that this strong impact exerted by accessibility experiences on participants' behavior (under certainty) in the present experiment suggests that cognitive subjective experiences, in general, and accessibility experiences, in particular, may play an even more important role in daily life than is generally assumed.

The identification of uncertainty as a moderator of the usage of accessibility experiences may also be of particular interest to the literature on cognitive subjective experiences. Despite the fact that uncertainty occurs in many situations and is known to be an important factor in decision making and negotiations (e.g., Dawes, 1988), its impact on the reliance on accessibility experiences has never been studied (for an overview over factors that moderate reliance on accessibility experiences, see Greifeneder, 2007). The present research fills this gap and future research may wish to examine whether uncertainty might also reveal similar effects in other judgments domains. Given the known influence of accessibility experiences on a broad array of judgments (e.g., Schwarz, 1998, 2004), such research seems highly warranted.

In addition to contributing to the literature on accessibility experiences, the present findings also extend our knowledge about cooperation among negotiation partners. Prior research has convincingly demonstrated that cooperative behavior can be increased when (negotiation)

procedures are perceived as fair (e.g., De Cremer & Tyler, 2007; Schroeder et al., 2003; Tyler & Blader, 2003). Extending this research, we argue that it is not always the fairness-relevant information about the procedure itself that drives this cooperation behavior but often experiences, of how easy or difficult it is to bring this information to mind. Therefore, we expect that sometimes a mere change in the feeling that it is easy or difficult for individuals to come up with fairness-relevant aspects of a procedure will shape their cooperation behavior. The current results support this notion and suggest that future research should pay closer attention to experiences that accompany the retrieval and processing of the aspects of a procedure.

The present experiment showed for the first time that cooperation behavior can be shaped by subjective experiences that accompany the retrieval of information about the negotiation procedure. For future research, however, it would also be interesting to include groups for whom neither uncertainty nor certainty are made salient, to see whether the content- or experience-based processing is stronger. Based on the fact that the negotiation elicited a lot of initial uncertainty (the behavior of the other person is not fully predictable), one could assume that individuals rely more on the content of the procedure than on the experiences associated with its retrieval from memory. However, given the strength and magnitude of the effects of accessibility experiences on judgments, one could also assume that experience-based processing will be stronger (e.g., Schwarz, 1998, 2004). Hence, further experimental research is needed to answer this question.

The present experiment relied on the methodological paradigm introduced by Schwarz and colleagues (1991). The seminal contribution of this work lies in disentangling recalled content from associated accessibility experiences. Although the paradigm has become the standard procedure in the literature on ease-of-retrieval, it has not remained without criticism. Most

notably, it has been suggested that the reasons recalled later are less convincing than the reasons recalled earlier, such that, on average, the quality of the arguments in the many- as compared to few-condition would be lower. To address this concern, two approaches have been adopted. First, additional participants were asked to rate the quality of the generated arguments (Schwarz et al., 1991; for similar approach see, e.g., Haddock et al., 1996; Ruder & Bless, 2003). Second, additional participants were yoked to the original participants and presented with the arguments the original participants had generated. These yoked participants had access to the content but lacked the accessibility experiences associated with the retrieval process (Wänke et al., 1996; for a related approach, see Müller et al., 2008; Ruder & Bless, 2003), thus allowing for a test of whether the quality of arguments as such differed as a function of experimental conditions. The findings from both approaches suggest that in those studies argument quality was not a function of whether few or many arguments were generated – and therefore they indirectly support the conclusion that accessibility experiences and not different argument quality affected participants' cooperation behavior. Nevertheless, we readily agree that further research needs to address this potentially problematic aspect.

Apart from theoretical consequences, there is at least one methodological implication of the current findings worthy of mention. The manipulation that was used in this experiment might not only be valuable in lab experiments, but also prove useful in field settings. There, the paradigm could help to examine influences of procedure-related judgments on other constructs in experimental designs, without having to change the procedure itself. Such a paradigm seems highly attractive for this purpose, since procedures in the field are often set owing to legal, ethical, and practical considerations and often cannot be changed. Therefore, the current paradigm might help to create field experiments that make it possible to causally test the

influence of certain aspects of a procedure on other constructs even when changes in the procedure are impossible or unwanted. Additionally, the fact that the procedure does not need to be changed in order to manipulate its perception also helps to reduce alternative influences.

Finally, the current findings demonstrate that the information about a procedure is not the only source of information that determines cooperation. Rather, the present results highlight the importance of also taking other sources of information, as for example, accessibility experiences into consideration when trying to understand under which circumstances people act cooperatively, and under which they do not. Hence, the current research may provide some understanding of the processes underlying cooperation behavior, thus helping us promote such behavior in the future.

References

Aarts H., & Dijksterhuis, A. (1999). How often did I do it? Experienced ease of retrieval and frequency estimates of past behavior. *Acta Psychological*, *103*, 77-89.

Baden, J. A. (1998). A new primer for the management of common resources and public goods. In J. A. Baden & D. S. Noonan (Eds.), *Managing the common* (2nd ed., pp. 51-62). Bloomington: Indiana University Press.

Chen, C., & Chaiken, S. (1999). The heuristic-systematic model in its broader context. In S. Chaiken & Y. Trope (Eds.), *Dual-process theories in social psychology* (pp. 73-96). New York: Guilford Press.

Dawes, R. M. (1988). *Rational choice in an uncertain world*. New York: Harcourt Brace Jovanovich.

De Cremer, D., & Tyler, T. R. (2005). Managing group behavior: The interplay between procedural fairness, sense of self and cooperation. In M. Zanna (Ed.). *Advances in experimental social psychology* (Vol. 37, pp. 151–218). New York: Elsevier.

De Cremer, D., & Tyler, T.R. (2007). The effects of trust in authority and procedural fairness on cooperation. *Journal of Applied Psychology*, *92*, 639-649.

De Cremer, D., & Van Vugt, M. (2002). Intra and intergroup dynamics of leadership in social dilemmas: A relational model of cooperation. *Journal of Experimental Social Psychology, 38,* 126-136.

Dijksterhuis, A., Macrae, C. N., & Haddock, G. (1999). When recollective experiences matter: Subjective ease of retrieval and stereotyping. *Personality and Social Psychology Bulletin*, *25*(6), 760-768.

Fehr, E., & Fischbacher, U. (2003). The nature of human altruism. *Nature*, *425*, 785-791.

Fehr, E., Kirchsteiger, G., & Riedl, A. (1993). Does fairness prevent market clearing? An experimental investigation. *The Quarterly Journal of Economics*, *108*, 437-459.

Florack, A., & Zoabi, H. (2003). Risk behavior in share transactions: When investors think about reasons. *Zeitschrift für Sozialpsychologie*, *34*, 65-78.

Folger, R. (1977). Distributive and procedural justice: Combined impact of "voice" and improvement on experienced inequity. *Journal of Personality and Social Psychology*, *35*, 108-119.

Grayson, C.E., & Schwarz, N. (1999). Beliefs influence information processing strategies: Declarative and experiential information in risk assessment. *Social Cognition*, *17*, 1-18.

Greifeneder, R. (2007). *Reliance on accessibility experiences in judgment and decision making*. Lengerich: Pabst Science Publishers.

Greifeneder, R., & Bless, H. (2007). Relying on accessible content versus accessibility experiences: The case of processing capacity. *Social Cognition*, *25*, 853-881.

Hardin, G. (1968). The Tragedy of the Commons. *Science*, 162, 1243-1248.

Haddock, G. (2000). Subjective ease of retrieval and attitude-relevant judgments. In H. Bless & J. P. Forgas (Eds.), *The message within: The role of subjective experience in social cognition and behavior* (pp. 125-142). Philadelphia, PA: Psychology Press

Keller, J., & Bless, H. (2005). When negative expectancies turn into negative performance: The role of ease of retrieval. *Journal of Experimental Social Psychology*, *41*, 535-541.

Leventhal, G. S. (1980). What should be done with equity theory?: New approaches to the fairness in social relationships. In K. Gergen, M. Greenberg, & R. Willis (Eds.), *Social exchange: Advances in theory and research* (pp. 27–55). New York: Plenum.

Lind, E. A., & Tyler, T. (1988). *The social psychology of procedural justice*. New York: Plenum Press.

Lind, E. A., & Van den Bos, K. (2002). When fairness works: Toward a general theory uncertainty management. In B. M. Staw & R. M. Kramer (Eds.), *Research in organizational behavior* (Vol. 24, pp. 181-223).Greenwich, CT: JAI Press.

Mackinnon, A., Jorm, A. F., Christensen, H., Korten, A. E., Jacomb, P. A., & Rodger, B. (1999). A short form of the Positive and Negative Affect Schedule evaluation of factorial validity and invariance across demographic variables in a community sample. *Personality and Individual Differences*, *27*, 405-416.

Müller, P. A., Greifeneder, R., Stahlberg, D., Van den Bos, K., & Bless, H. (2008). *Beyond procedure's content: Cognitive subjective experiences in procedural justice judgments.* Manuscript submitted for publication.

Petty, R. E., & Cacioppo, J. T. (1986). *Communication and persuasion: Central and peripheral routes to attitude change.* New York, NY: Springer.

Raghubir, P., & Menon, G. (1998). AIDS and me, never the twain shall meet: The effects of information accessibility on judgments of risk and advertising effectiveness. *Journal of Consumer Research*, *25*, 52-63.

Posner, E. A. (2000). *Law and social norms*. Cambridge, MA: Harvard University Press.

Rothman, A. J., & Hardin, C. D. (1997). Differential use of the availability heuristic in social judgment. *Personality and Social Psychology Bulletin*, *23*, 123-138.

Rothman, A. J., & Schwarz, N. (1998). Constructing perceptions of vulnerability: Personal relevance and the use of experiential information in health judgments. *Personality and Social Psychology Bulletin*, *24*, 1053-1064.

Ruder, M., & Bless, H. (2003). Mood and the reliance on the ease of retrieval heuristic. *Journal of Personality and Social Psychology*, *85*, 20-32.

Schroeder, D. A., Steel, J. E., Woodell, A. J., & Bembenek, A. F. (2003). Justice within social dilemmas. *Personality and Social Psychology Review*, *7*, 374-387.

Schwarz, N. (1998). Accessible content and accessibility experiences: The interplay of declarative and experiential information in judgment. *Personality and Social Psychology Review*, *2*, 87-99.

Schwarz, N. (2004). Metacognitive experiences in consumer judgment and decision making. *Journal of Consumer Psychology*, *14*, 332-348.

Schwarz, N., Bless, H., Strack, F., Klumpp, G., Rittenauer-Schatka, H., & Simons, A. (1991). Ease of retrieval as information: Another look at the availability heuristic. *Journal of Personality and Social Psychology*, *61*, 195-202.

Tiedens, L. Z. & Linton, S. (2001). Judgment under emotional certainty and uncertainty: The effects of specific emotions on information processing. *Journal of Personality and Social Psychology*, *81*, 973-988.

Tormala, Z. L., Petty, R. E., & Briñol, P. (2002). Ease of retrieval effects in persuasion: A self-validation analysis. *Personality and Social Psychology Bulletin*, *28*, 1700-1712.

Trivers, R. L. (1971). Evolution of reciprocal altruism. *The Quarterly Review of Biology*, *46*, 35-57.

Tversky, A., & Kahneman, D. (1973). Availability: A heuristic for judging frequency and probability. *Cognitive Psychology*, *5*, 207-232.

Tyler, T. R., & Blader, S. (2003). Procedural justice, social identity, and cooperative behavior. *Personality and Social Psychology Review*, *7*, 349–361.

Tyler, T. R., Boeckmann, R. J., Smith, H. J., & Huo, Y. J. (1997). *Social justice in a diverse society*. Boulder, CO: Westview Press.

Van den Bos, K. (2001). Uncertainty management: The influence of uncertainty salience on reactions to perceived procedural fairness. *Journal of Personality and Social Psychology*, *80*, 931-941.

Van den Bos, K. (2003). On the subjective quality of social justice: The role of affect as information in the psychology of justice judgments. *Journal of Personality and Social Psychology*, *85*, 482-498.

Van den Bos, K., & Lind, E. A. (2002). Uncertainty management by means of fairness judgments. In M. P. Zanna (Ed.), *Advances in experimental social psychology* (Vol. 34, pp. 1-60). San Diego, CA: Academic Press.

Van den Bos, K., Poortvliet, P. M., Maas, M., Miedema, J., & Van den Ham, E.-J. (2005). An enquiry concerning the principles of cultural norms and values: The impact of uncertainty and mortality salience on reactions to violations and bolstering of cultural worldviews. *Journal of Experimental Social Psychology, 41*, 91-113.

Wänke, M., & Bless, H. (2000). The effects of subjective ease of retrieval on attitudinal judgments: The moderating role of processing motivation. In H. Bless & J. P. Forgas (Eds.), *The message within: The role of subjective experience in social cognition and behavior* (pp. 143-161). Philadelphia, PA, US: Psychology Press.

Wänke, M., Bless, H., & Biller, B. (1996). Subjective experience versus content of information in the construction of attitude judgments. *Personality and Social Psychology Bulletin*, *22*, 1105-1113.

Wänke, M., Bohner, G., & Jurkowitsch, A. (1997). There are many reasons to drive a BMW: Does imagined ease of argument generation influence attitudes? *Journal of Consumer Research*, *24*, 170-177.

Wänke, M., Schwarz, N., & Bless, H. (1995). The availability heuristic revisited: Experienced ease of retrieval in mundane frequency estimates. *Acta Psychologica*, *89*, 83-90.

Watson, D., Clark, L. A., & Tellegen, A. (1988). Development and validation of brief measures of positive and negative affect: The PANAS scales. *Journal of Personality and Social Psychology*, *54*, 1063-1070.

Weary, G., Jacobson, J. A., Edwards, J. A., & Tobin, S. J. (2001). Chronic and temporarily activated causal uncertainty beliefs and stereotype usage. *Journal of Personality and Social Psychology*, *81*, 206-219.

Author Note

The first author is now at the University of Mannheim, Germany. This research was supported by the German Federal Ministry of Education and Research (BMBF) within the framework of the German-Israeli Project Cooperation (DIP), and by a grant from the Deutsche Forschungsgemeinschaft within the Sonderforschungsbereich 504 at the University of Mannheim. We thank Benjamin Thomas for his help with the design and data collection, and Jana Janssen for her comments on an earlier version of this manuscript. Correspondence concerning this article should be addressed to P. A. Müller, Social Psychology, University of Mannheim, 68131 Mannheim, Germany (e-mail: pmueller@sowi.uni-mannheim.de)

Footnote

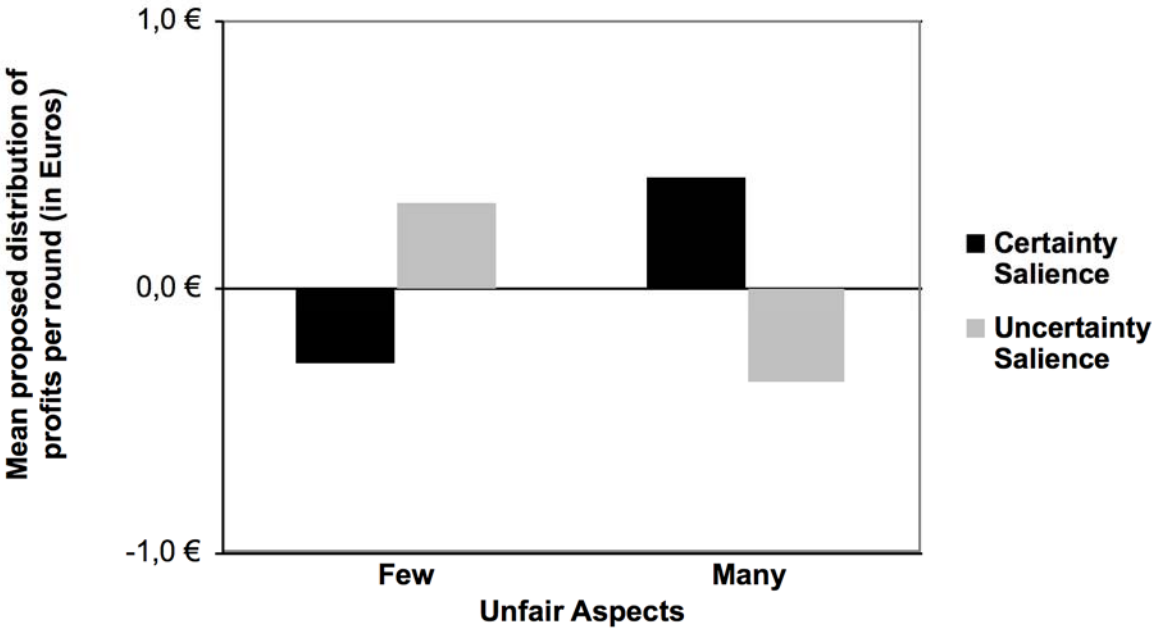
[1] There is also evidence directly opposing the outlined pattern, suggesting that reliance on accessibility experiences is particularly likely in situations of high motivation (Tormala, Petty, & Briñol, 2002; Wänke & Bless, 2000). Evidence reconciling the two opposing sets of results is lacking. In line with Greifeneder and Bless (2007), we assume that the differential pattern is in part related to the question of whether or not the moderating variable (here uncertainty) is affecting the retrieval *and* the judgment formation or only the judgment formation. To eliminate the possibility that uncertainty influences the quality of the generated arguments, unfair aspects were generated *before* the uncertainty manipulation.

[2] At the end of the three rounds, participants (as employers) had the chance to voluntarily give a bonus or to punish the employee. In order to give a bonus to the employee, they had to sacrifice points from their account, which were doubled and transferred to the employee's account. To punish the employee they also had to sacrifice points from their account. Every two sacrificed points destroyed one point on the employee's account. However, no effects of the manipulations on bonus and punishment behavior were found in this study, therefore, these measures were left out of the analysis.

[3] In order to see if the results differed for the different negotiation rounds, an additional repeated measures 3 (negotiation round: 1 vs. 2 vs. 3) x 2 (number of aspects: few vs. many) x 2 (salience: uncertainty salient vs. certainty salient) ANOVA was conducted. This analysis did not find a significant interaction of negotiation rounds with (un)certainty salience and number of aspects, $F(2, 194) = 1.72$, *ns*. Therefore, it seems safe to assume that the overall interaction effect of (un)certainty salience and number of aspects is not due to different outcome patterns for the three negotiation rounds.

Figure Captions

Figure 1. Mean ratio of the proposed distribution of profits (in Euros) of the participants per round as a function of salience and number of aspects.


1,0 €
0,0 €
-1,0 €
Mean proposed distribution of profits per round (in Euros)
Few
Many
Unfair Aspects
Certainty Salience
Uncertainty Salience