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Sensitivity to befallen injustice and reactions to unfair treatment in the laboratory

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ABSTRACT

The study investigates the construct validity of a self-report questionnaire for dispositional sensitivity to befallen injustice (SBI; Schmitt, Neumann, & Montada, 1995). The items are combinations of four indicators of SBI (frequency of perceived injustice, intensity of anger, intrusiveness/perseverance of thoughts about the unjust event, punitivity) with varying types of unfair situations (e.g., performing better than others without getting any appreciation or reward). At Occasion 1, 171 students were administered questionnaires for measuring SBI, trait anger, anger in, anger out, anger control, self-assertiveness, belief in a just world, and attitudes toward principles of distributive justice (equity, equality, need). Two months later (Occasion 2), 75 from these subjects were treated unfairly in a laboratory situation dealing with competition and achievement behavior. Two justice principles were violated: the equality of chances principle and the equity principle. Four weeks later (Occasion 3), 32 subjects evaluated the unfair treatment in retrospect. All three occasions were presented as independent studies with the subjects perceiving no connections between them. In line with our hypotheses, it was found that immediate and delayed reactions to the unjust treatments depended to a considerable degree on SBI. For example, the combined score of the SBI questionnaire predicted, with a beta-weight of .71, a combined rating of three experts who used various sources of objective information (e.g., tape-recorded interactions between subject and experimenter) to estimate the degree to which the subject displayed emotional, verbal, and behavioral resentment against the unfair treatment. At the same time, measures for other constructs (e.g., assertiveness, trait anger, anger expression, belief in a just world), which can also be linked theoretically to the criteria, explained either none or a much smaller proportion of variance in reactions to unjust treatment.

ZUSAMMENFASSUNG

Sensitivity to unjust personal advantages was found in several studies to vary consistently between individuals and to predict prosocial behavior toward the disadvantaged (Montada, Dalbert, Reichle, & Schmitt, 1986; Montada, Schmitt, & Dalbert, 1986; Montada & Schneider, 1989; Schmitt, Behner, Müller, & Montada, 1992). In these studies, the situation of disadvantaged groups was described to subjects who were objectively privileged compared to these reference groups. Through analysis of several cognitive, emotional, and behavioral reactions, the perceived injustice of the subject's privileges compared to the disadvantages of the reference groups was assessed. These justice judgments correlated significantly across resources and reference groups. Subjects who felt that their material well-being compared to the poverty in Third World countries was unjust also felt that they did not deserve their good health, their civil rights, having a job, and other privileges. Correspondingly, emotional reactions to the perception of injustice (moral outrage, guilt) were generalized across resources and reference groups. The validity of the justice judgments and emotion self-reports was tested successfully in peer rating studies (Schneider, Meissner, Montada, & Reichle, 1987) and via criterion group comparisons (Montada, Dalbert, Reichle, & Schmitt, 1986). Together, the pattern of results suggests that individuals differ consistently in their sensitivity to unjust personal advantages. Furthermore, this sensitivity has trait-like properties; longitudinal analyses have yielded stability coefficients as high as for personality traits (Montada, Dalbert, & Schneider, 1990).

Given this pattern of results, it seems useful to investigate justice sensitivity from the victim's perspective as well. Two studies, conducted independently by different research groups, have recently started investigating this conjecture.

Dar & Resh (1993) found that sense of deprivation is generalized across type of resource (instrumental rewards, symbolic rewards, relational rewards), across reaction modes (judgments, feelings) and across contexts of deprivation (school, society). Most interestingly, sense of deprivation was largely unrelated to objective deprivations due to gender, ethnicity, and socioeconomic status in their study. This result is important because it supports the notion that sense of deprivation is part of an individual's personality and not merely a reflection of the individual's objective environment.

Independent of Dar & Resh's (1993) work, Schmitt, Neuman, & Montada (1992, 1995) proposed Sensitivity to Befallen Injustice (SBI) as a new trait construct. They devised a self-report questionnaire for measuring SBI on the basis of four indicators: (1) the frequency of perceived unjust events (FRE), (2) the intensity of anger evoked by an unjust event (INA), (3) the intrusiveness of thoughts about the event (INT), and (4) the punitivity, i.e., the desire to punish the victimizer (PUN). Each of these indicators is based on theoretical assumptions and empirical evidence regarding psychological links between an unfair event and a specific reaction of the victim. Items were constructed by combining these indicators with 18 types of unjust situations such as "performing better than others without getting any appreciation or reward". The punitivity scale consists of 10 items only because only 10 situations could be combined meaningfully with retaliatory intentions. Examples of these items will be given later.

In an initial study (Schmitt, Neumann, & Montada, 1992; 1995), the convergent and discriminant validity of the four questionnaire scales was investigated successfully via measures for the following reference constructs: Trait anger, anger in, anger out, frustration tolerance, life satisfaction, centrality of justice, interpersonal trust, and need for control.

In a second study, Schmitt, & Mohiyeddini (1995) investigated the construct validity of the questionnaire by using reactions to a real life disadvantage as a validation criterion. Subjects' reactions to a disadvantageous event were observed and regressed on the SBI scales as well as on measures for
other constructs which may also cause reactions to such an event. This study will be described in more detail because of its conceptual similarity to the main study of this paper.

The real life disadvantage used in the Schmitt & Mohiyeddini (1995) study regularly occurs to advanced psychology students at Trier University due to a lottery which assigns students to one of two different types of applied clinical courses. Most students want to participate in a clinical course involving work with real clients because this course is considered a better preparation for clinical work after graduation. Due to limited resources, however, only 20% of the students can participate in this popular work with real clients each semester. In the other type of course, groups of 10 students develop training programs for hypothetical clients (e.g. an assertiveness training).

The study consisted of three parts which occurred on different occasions. On the first occasion, 110 questionnaires were mailed to those students who were eligible for the clinical courses. Subjects were asked to participate in a large scale survey on justice and related issues. The questionnaire included scales for measuring the following constructs:

- **Sensitivity to Befallen Injustice (SBI)**: Extended versions of three of the four SBI scales were used: frequency (FRE), intensity of anger (INT), and intrusiveness of thoughts (INT)
- **Attitudes toward Principles of Distributive Justice** (equality of chances, factual equality, equity, and need). In order to explore whether attitudes toward different distribution principles contribute differentially to a subject's sense of injustice regarding the outcome of the lottery, these constructs were considered.
- **Belief in a Just World**. This construct was included to explore whether belief in just world makes individuals more vulnerable for or protects them against disadvantageous events.
- **Anger Proneness and Anger Expression**. Measures for trait anger, anger in, anger out, and anger control were included because these dispositions can be expected to modify an individual's emotional reactions to frustrating events.
- **Self-Assertiveness** was considered because rebelling against a disadvantage may also depend on this disposition.

On the second occasion, the lottery was conducted. Before the lottery, each student had to indicate the preferred type of course and the preferred teacher. Usually, this information is collected for administrative purposes. In the Schmitt & Mohiyeddini (1995) study, the match or mismatch between the preferred type of course and the type of course assigned by lottery determined whether the student had an advantage or a disadvantage, respectively. This variable was named **Objective Disadvantage (OD)**.

At Occasion 3, about 10 weeks after the lottery, an activity was started by the psychology students' parliament and was aimed at evaluating and possibly changing the current distribution procedure regarding clinical courses. A second intention of the activity was to assess the students' reaction to their distributed lot. In fact, this was the main purpose regarding the Schmitt & Mohiyeddini (1995) research. The student parliament mailed a questionnaire to all students who had participated in the lottery at Occasion 2. The questionnaire contained items dealing with opinions on the current procedure and suggesting alternative solutions of the distribution problem. In addition, the questionnaire contained items for measuring the following variables which served as dependent variables in the study (a more detailed description of the scales will be given later):

- **Retrospective Justice Evaluation (RJ)**. This measure consisted of two items pertaining to (1) how
fair the distribution was, and (2) whether or not the lottery should be replaced by a fairer procedure in the future. The correlation between both items was .48.

**Retrospective Anger (RA).** In a single item, subjects were asked to indicate how angry they felt at present when thinking about the distribution.

**Demotivating Distribution (DD).** In a single item, subjects were asked to indicate how strongly they felt that the lottery was demotivating for students.

**Agreement with Activity of Student Parliament (AA).** In a single item, subjects had to indicate how useful they considered their fellow students' activity toward changing the distribution procedure.

Due to lack of space, not all hypotheses formulated and tested by Schmitt & Mohiyeddini (1995) can be stated in detail here. It was expected, most importantly, that for disadvantaged subjects the SBI scales would predict the dependent variables just described, and that they would do so better than the remaining dispositions measured at Occasion 1. Statistically, these hypotheses imply interaction effects between OD (objective disadvantage) and the dispositions. Contrary to this expectation, multiple regression analyses revealed only main effects of the dispositions. Possible reasons for the lack of interaction effects are discussed by Schmitt & Mohiyeddini (1995). The unique main effects are summarized graphically as a path model in Figure 1.

![Path Model for Significant Main Effects in the Schmitt & Mohiyeddini (1995) Study](image)

The standardized path coefficients in Figure 1 show that the retrospective evaluation of the distribution as unfair (RJ) could be predicted significantly only by the combined SBI scale. Furthermore, SBI was the only significant predictor of a student's agreement with the activity of the student parliament (AA). Both effects were independent from Objective Disadvantage, i.e., independent of whether or not the student had received the type of practicum he wanted.

Together with Anger Control (ANC), one of the three indicator specific SBI scales, Intrusiveness of Thoughts (INT) predicted the extent to which a student felt that the lottery had demotivating effects on students (DD). This result may mean that students who ruminated a lot about the distribution and did not or could not control their anger tended to perceive a greater demotivating effect of the
distribution than students who were not preoccupied by the event and controlled their anger.

Retrospective anger (RA) was only predicted by whether or not the student had received what was desired.

Despite several shortcomings of the Schmitt & Mohiyeddini (1995) study which are discussed in detail by these authors and by Schmitt (1996), the results from this research may be accepted as evidence for the usefulness of the SBI construct and the construct validity of the SBI scales. This conclusion seems warranted since the criterion variable with the closest conceptual relation to SBI, namely Retrospective Justice Evaluation (RJ), could be predicted best from a broad measure for SBI.

The present study was conducted to provide further evidence for the construct validity of the SBI scales. Subjects were treated unfairly in the laboratory and their immediate and delayed reactions to this treatment were observed and regressed on the SBI scales as well as on measures for theoretically competing constructs. As in the previous study by Schmitt & Mohiyeddini (1995), SBI and the other personality constructs were measured several weeks prior to the unjust event. As in the Schmitt & Mohiyeddini (1995) study, two general hypotheses were tested: First, it was claimed that the SBI scales would predict reactions to unfair treatment. Second, it was assumed that the SBI scales would outperform theoretically competing predictors, i.e., measures for constructs which can also be expected to have an effect on a person's reaction to an unjust event.

METHOD

Subjects and Occasions

The study consisted of three parts, each occurring on a different occasion. Students from various majors at Trier University served as subjects. The sample sizes for Occasions 1, 2, and 3 were 171, 75, and 32, respectively. At Occasion 1, the SBI scales and other personality questionnaires were administered. At Occasion 2, about eight weeks after Occasion 1, subjects were treated unfairly in the laboratory. Their immediate reactions to the unfair treatment were observed. Another four weeks later (Occasion 3), subjects were given an opportunity to evaluate the laboratory situation retrospectively. All three parts of the study were conducted by different experimenters and introduced to the subjects as independent studies. No subject suspected a connection between the parts of the study.

Independent Variables Measured at Occasion 1

Subjects were recruited in class and told that the purpose of the study was to standardize a large battery of questionnaires. Subjects were asked to show their student IDs. The experimenter pretended that ID numbers were needed for a lottery in which six subjects could win 50 German Mark each. The true reason, however, for having the ID numbers was to combine the data from all three occasions. The questionnaire included scales for measuring the same independent variables that were used in the Schmitt & Mohiyeddini (1995) study. These scales will now be described in more detail.

SBI Scales

Three of the four SBI scales developed by Schmitt, Neumann, & Montada (1992, 1995) were adopted: the frequency scale (FRE), the intensity of anger scale (INT), and the intrusiveness of thoughts scale (INT). The punitivity scale was not used because it cannot be related to as many situations as the other indicators. In the original scales, the indicators relate to the same 18 types of situations, such as "performing better than others without getting any appreciation or reward. In the
following, some examples are given to illustrate how the items for the situation were phrased.

**Frequency (FRE):** I perform better than others without getting any appreciation or reward (Response scale: 1/rarely ... 6/often).

**Intensity of Anger (INA):** If I perform better than others without getting any appreciation or reward, I get angry (Response scale: 1/not at all ... 6/extremely).

**Intrusiveness of Thoughts (INT):** If I perform better than others without getting any appreciation or reward, I cannot forget about it for a long time (Response scale: 1/completely false ... 6/exactly true).

In the Schmitt & Mohiyeddini (1995) study and in the present study, 14 types of situations were added to the original 18 types of situations. The additional situations pertain to specific agents of unfair treatment such as authorities in public agencies, to additional contexts such as work, to additional forms of unfair treatment such as lack of respect, and to situations from childhood and adolescence such as unfair treatment in school. The purpose of adding these situations was to explore the generalizability of the justice sensitivity disposition across a larger variety of situations and across a larger segment of the person's biography. Each scale of the present version consists of 32 items (cf. Mohiyeddini, 1995). The response scales used by Schmitt, Neumann, & Montada (1995) were adopted.

**Attitudes Toward Principles of Distributive Justice**

Attitudes toward principles of distributive justice were measured to explore the possibility that a person's sense of injustice in a particular situation may be a joint function of two factors: (1) The person's justice sensitivity and (2) the person's attitude toward the justice principle which was violated in the situation.

**Equality of Chances (EC):** Four items from the equality of chances scale developed by Montada, Schmitt, & Dalbert (1983) were used. All items suggest the lottery principle as a fair way for deciding to whom out of several applicants a job or position should be given. Although equality of chances in a broader sense was violated in this study (see below), this construct is most relevant here.

**Factual Equality (FE):** Four items from the factual equality scale developed by Montada, Schmitt, & Dalbert (1983) were used. These items state that distributions are fair if all recipients are given exactly the same share of the resource. The construct is less relevant than the equality of chances construct, because the principle of factual equality makes little sense in a competition for a limited resource. The construct was included to test for differential effects of attitudes toward different distribution principles.

**Equity (EY):** Four items from a scale developed by Montada, Schmitt, & Dalbert (1983) for measuring attitudes toward the equity, contribution, or achievement principle were used. Seven additional items were suggested by the first author of this paper (cf. Mohiyeddini, 1995). The items of this scale state that distributions of outcomes are fair if they are conditional upon or proportional to inputs. The subjects' attitude toward equity is most relevant in the present study, because the equity principle was violated to create an instance of injustice (see below).

**Need (NE):** Four items from the need scale developed by Montada, Schmitt, & Dalbert (1983) were used. Four additional items were suggested by the first author of this paper (cf. Mohiyeddini, 1995). The items of this scale suggest that a fair distribution has to take the needs of the recipients into consideration. Attitude toward need as a distribution criterion is not of major interest in the pre-
sent study. It was measured for the same reasons as the attitude toward factual equality (testing for differential effects).

Belief in a Just World (BJW)

Belief in a just world was measured for similar reasons as in the Schmitt & Mohiyeddini (1995) study. Subjects who score differently on BJW may also differ in how they perceive and react to unfair treatment. For measuring belief in a just world, the Dalbert, Montada, & Schmitt (1987) scale was used. The scale had been developed because Dalbert (1982) had found poor psychometric properties for a German version of the Rubin & Peplau (1973) scale. The Dalbert, Montada, & Schmitt (1987) scale consists of six items. These items were embedded in those for measuring attitudes toward principles of distributive justice.

Anger Proneness and Anger Expression

Trait anger and anger expression styles were measured as constructs which could also explain certain reactions to a disadvantageous event. A crucial assumption derived from our central construct states that sensitivity to befallen injustice predicts reactions to unfair treatment better than other constructs such as trait anger or self-assertiveness. A German version of Spielberger's Anger Inventory (1988; Schwenkmezger & Hodapp, 1989) was used for measuring trait anger (TRA), anger in (ANI), anger out (ANO), and anger control (ANC).

Self-Assertiveness

Besides the anger dispositions, self-assertiveness was selected as a second type of construct which 'competes' theoretically with SBI for explaining reactions to unfair treatment. Ullrich de Muynck & Ullrich (1976) developed an inventory for measuring six components of self-assertiveness. One of the scales measures the capability to make demands. This scale was selected for the present study because this component of self-assertiveness is most closely conceptually related to the kinds of reactions to unfairness that were observed in the present study (see below).

Gender

Gender (SEX) was recorded as a control variable because various gender differences have been assumed (e.g., Rubin & Peplau, 1975) and reported (Ambrosio & Sheehan, 1990; Major & Deaux, 1982; Whatley, 1993) in justice literature. More specifically, one might argue that women are deprived more often than men from societal resources (Dar & Resh, 1993) which could either make them more sensitive for unjust experiences or, on the contrary, raise perceptual defenses or inoculate them against such experiences.

Unfair Treatments and Procedure at Occasion 2

Eight weeks after Occasion 1, subjects were approached by another experimenter who pretended to be conducting experiments on attention, achievement, and memory in social settings. From the original sample of 171 students, 75 volunteered to participate in these experiments. Six different unfair treatments were realized: four violating the equality of chances principle and two violating the equity principle. The type of justice principle violated served as an additional independent variable (TUT: Type of Unjust Treatment). Different treatments were used to investigate the generalizability of effects and to keep chances low that subjects would uncover the true purpose of the experiment when talking to each other about the experiment. Subjects were randomly assigned to types of unjust treatment. All treatments were set up as competitive tasks in which the subject was motivated by financial incentives to outperform an opponent. The same person, a male confederate, served as
opponent for all subjects. Subjects were asked to sign receipts for the money they received. They were also asked to record their student ID number on the receipt for the purpose of administrative control of whether the money used in the experiment had been spent appropriately. The true reason, however, for having the ID numbers was to combine the data from Occasion 2 with the data from Occasions 1 and 3.

Condition 1: Violation of the Equality of Chances Principle: Solving a Known versus an Unknown Puzzle (n=14)

The subject's and the opponent's task was to solve a puzzle on a personal computer. A color picture was chopped into pieces and these were mixed randomly by the program. The subject and the opponent had to reconstruct the picture by moving the pieces via the mouse into the right positions. The experimenter presented seven different puzzles on the screen and asked the subject and the opponent to choose one of them. The opponent (confederate) quickly suggested one of the pictures. All subjects agreed to his proposal. The experimenter explained the task and the achievement criterion. The criterion would be the number of pieces placed correctly within a certain time limit. If one of the two opponents would finish before the time was over, the second would have to stop immediately. The number of pieces correctly placed at this point would be counted. A total of 40 German Marks would be distributed in direct proportion to the number of correctly placed puzzle pieces. The confederate, who was trained to solve the puzzle fast, always finished before the time limit was reached. As soon as the confederate had solved the puzzle, the experimenter stopped the subject, counted the number of correctly placed puzzle pieces, and determined the appropriate distribution of money. While this procedure took place, the confederate mentioned that he had the same puzzle program on his PC at home. He said that he was very familiar with the puzzles and that he could solve this particular puzzle almost blindly. If the subject protested at this point, the experimenter said that the experiment was over and that the decision was not going to be changed because the competition was "almost fair". If subjects continued to protest, the experimenter referred them to her advisor. The experimenter gave the money to the confederate and to the subject and asked them to sign receipts. The confederate received four to seven times more money than the subject (e.g., 35 German Marks versus 5 German Marks). If the subject had not yet protested at this point, the confederate repeated that he had known the puzzle for a long time. This was done to ascertain that the subject had grasped the relevant information and realized the opponent's unfair advantage.

Condition 2: Violation of the Equality of Chances Principle: Solving a Puzzle with a Color versus a Monochrome Monitor (n=12)

This condition was similar to the first one, except that the subject and the opponent were not allowed to choose a puzzle. The unjust treatment consisted of the subject always having a monochrome monitor whereas the confederate had a color monitor. A second color monitor was sitting next to the subject on the floor with a sign "defect" attached to it. It was obvious that the puzzle could be solved much faster with the color monitor. In cases where the subject protested at this point, the experimenter excused herself but insisted that the experiment had to go on despite this "little problem". The experimenter started the puzzles on both computers simultaneously. The confederate completed it much faster than the subject. As soon as the confederate had solved the puzzle, the experimenter stopped the subject, counted the number of correctly placed puzzle pieces, and determined the appropriate distribution of money. While she did this, the confederate mentioned to the subject that he would probably also have lost if he had used the monochrome monitor. The procedure continued as in Condition 1. The money was distributed unevenly as in Condition 1 with the confederate reiterating the fact of his unfair advantage over the subject.
Condition 3: Violation of the Equality of Chances Principle: Solving Arithmetic Problems with a Large versus a Small Calculator (n=12)

In this condition, the participants had to solve long lists of arithmetic problems by using an electronic calculator. Subjects were told that the number of problems correctly solved in a certain amount of time would serve as the achievement criterion. If one of the two opponents would finish before the time was over, the second would have to stop immediately. A total of 40 German Marks would be distributed in direct proportion to the number of problems solved correctly. After the experimenter had explained the task, identical calculators were distributed to the subject and the confederate. When the experimenter started the competition, it turned out that the subject's calculator was defective. The experimenter, pretending to be totally surprised, stopped the competition. She left the room in order to find a new calculator. After a few minutes, she returned with a very small calculator which had tiny keys that were difficult to manipulate. The experimenter gave this calculator to the subject and restarted the competition. In cases where the subject protested at this point, the experimenter excused herself but insisted that the experiment had to go on despite this "little problem". The confederate finished his problems before the time limit was reached. The experimenter stopped the subject, took both sheets, checked the results, counted the number of correct solutions, and determined the appropriate distribution of money. While this procedure took place, the confederate suggested to the subject that it must have been difficult to work with such a small calculator. The procedure continued as in Condition 1. The money was distributed unevenly as in Condition 1 with the confederate reiterating the fact of his unfair advantage over the subject.

Condition 4: Violation of the Equality of Chances Principle: Proof Reading a Known versus an Unknown Text (n=11)

The task in this condition was to proofread and correct a three page text on a personal computer. The experimenter explained the task and the achievement criterion. The criterion would be the number of errors detected and corrected in a certain time limit. If one of the two opponents would finish before the time was over, the second would have to stop immediately. A total of 40 German Marks would be distributed in proportion to the number of errors found and corrected. As soon as the text appeared on the screen, the confederate said that he knew the text and the errors from an earlier experiment. The experimenter ignored this comment. In cases where the subject protested at this point, the experimenter insisted that the experiment had to go on despite this "little problem". The confederate was done with the text before the time limit was reached. As soon as he had finished proofreading the text, the experimenter stopped the subject, saved both texts on diskettes, removed them from the drives and left the room in order to count the number of corrections on a different computer. While she was away, the confederate mentioned again that the text was familiar and that he had known the errors. The experimenter returned and announced the number of corrections. The procedure continued as in Condition 1. The money was distributed unevenly as in Condition 1 with the confederate reiterating the fact of his unfair advantage over the subject.

Condition 5: Violation of the Equity Principle: Proof Reading a Text (n=13)

The task in this condition was to proofread and correct a three page printed text for spelling, punctuation, and style. The experimenter explained the task and the achievement criterion. The criterion would be the number of errors detected and corrected in 30 minutes. A total of 30 German Marks would be distributed in proportion to the number of errors found and corrected. After the task had been explained, the experimenter left the room together with the confederate. The reason given for separating the subject and the opponent was the certainty that both worked independently.
After about 10 minutes, the experimenter and the confederate returned. The experimenter took the sheets from the subject and the confederate and analyzed them. After a while, it was announced that the subject had performed considerably better than the confederate with the conclusion that the subject deserved five times more money than the confederate (5 German Marks versus 25 German Marks). As soon as this was said, the confederate started to protest. He admitted that although he had not put much effort into the task he felt that he had sacrificed the same amount of time as the subject. It would only be fair, therefore, to split the money evenly. After some, but not fierce reluctance, the experimenter gave in. She gave the subject and the confederate half of the money each and asked them to sign receipts. In cases where the subject protested, the experimenter responded that the confederate's point of view was indeed convincing. If subjects continued to protest, the experimenter referred them to her advisor.

**Condition 6: Violation of the Equity Principle: Memory Task (n=11)**

The task in this condition was to remember words. 15 rows with 20 words would be read to the subject and the opponent. After each list of 20 words, both had two minutes time to write down the words they remembered. The total sum of correct words would serve as the achievement criterion. A total of 30 German Marks would be distributed in proportion to the number of correct words. After the experimenter had read all 15 lists of words, the sheets were scored with the conclusion that the subject deserved the larger share of the money. As in Condition 5, the confederate protested and the money was therefore divided equally.

**Dependent Variables Measured at Occasion 2**

After the subjects had signed for the money, they were asked to give their opinion about the experiment and the way they felt by completing a brief questionnaire. The items of this questionnaire had been designed for measuring the following dependent variables:

**Justice Evaluation (JE)**

The subject was asked in two items to indicate on six-point rating scales: (1) how fair the competition was, and (2) how fair the distribution of money was.

**Anger State (AS)**

The State Anger Scale from Spielberger's Anger Inventory was used to measure the subjects' state anger after the experiment. The item "outraged" was added to the list of items. Items were answered on four-point rating scales.

**Positive Emotions (PE)**

Positive mood state was measured with five items (relaxed, calm, happy, glad, satisfied) using the same four-point rating scales as for anger state.

**Expert Rating (ER)**

In addition to these self-report measures, the experimenter and her confederate wrote a short description of the subject's reaction to the unjust treatment as they had perceived it. Furthermore, the entire session was audiotaped and transcribed. Three experts were given: (1) the transcribed tapes, (2) the free comments provided by the subject on the experiment, (3) the subjects' responses on the anger state and positive emotions measures and (4) the experimenter's and the confederate's descriptions of the subject's behavior. Based on this material, the experts rated on six-point rating scales: (1) how unjustly treated the subject felt, (2) how strongly he or she reacted emotionally and
(3) how strongly he or she protested against the procedure or against the result.

**Procedure and Dependent Variables Measured at Occasion 3**

About four weeks after the experiment, a third experimenter went into classes and presented himself as a student member of an ethics committee (which he actually was). He explained that the ethics committee had been established in order to observe the ethical correctness of psychological experiments conducted at Trier University. He said it was planned to develop a catalogue of criteria for ethical guidelines to be used in future projects. He then referred to the present study stating that several subjects who had participated in the experiments had raised ethical concerns and protested against the way they were treated; some of them had even not received the pay they had been promised. It was stated that if someone had participated in these experiments it would be very helpful for the committee to have their opinion about the experiments and assurance was given that the survey would not have negative consequences for the experimenter. To make opinions as comparable as possible, a questionnaire had been developed by the student members of the committee. Subjects were asked to write their student ID number on the questionnaire because that would ease documentation. Again, the true reason for having the ID numbers was to combine the data from Occasion 3 with the data from Occasions 1 and 2. 32 students indicated that they had participated in one of the conditions of the present study and that they were willing to give their opinion. These subjects were given the questionnaire which contained, among various other questions, items for measuring the following dependent variables.

**Retrospective Justice Evaluation (RJ)**

Six items pertained to the justice of the procedure and the result of the competition (e.g.: "The monetary reward I received for my achievement was fair"). Items had to be answered on four-point rating scales indicating how adequate the statement was for the subject.

**Retrospective Anger (RA)**

In order to disguise the true measurement intention, only seven items were used for measuring subjects' retrospective anger about the experiment. For the same reason, the items were mixed with neutral filler items. Five anger items were taken from the Spielberger State Anger Scale. Two items were added, "outraged" and "I don't care what happened". Subjects were asked to indicate on four-point rating scales the intensity of their feelings when thinking about the experiment.

**Inclination to Protest (IP)**

Two items were used as indicators of the subjects inclination to protest: "Since the experiment, I have thought several times about how to protest against the experiment." The wording of the second item was: "Such experiments should be forbidden." Items had to be answered on four-point rating scales indicating the extent of agreement with the statement.

**Retrospective Resentment (RR)**

This is a combined measure containing all of the aforementioned items which loaded on one common factor in a parsimonious factor solution (see below).

**HYPOTHESES**

(1) **Main Effects of SBI**

The general hypothesis was that sensitivity to befallen injustice would predict the intensity of the
subject's immediate and delayed cognitive (justice evaluations), emotional (anger), and behavioral (protest) reactions to the unjust treatments. Further, it was assumed that the SBI scales were better predictors than measures for "competing" personality constructs, i.e., traits that can also be expected to influence a person's reaction to unfair treatment (trait anger, anger in, anger out, anger control, self-assertiveness, belief in a just world).

(2) Main Effects of Belief in a Just World

In the Schmitt & Mohiyeddini (1995) study, the relation between BJW and reactions to the lottery depended on whether the subject was advantaged or disadvantaged objectively. For subjects who profited from the lottery, BJW had a negative effect on retrospective anger as well as on approval of the student parliament's activity. For disadvantaged subjects, the effect was opposite, i.e., these subjects felt more angry and approved the student parliament's activity more if they had a strong belief in a just world. Given these findings, a positive effect of BJW on reactions to unfair treatment in the present study can be expected. The opposite effect would follow from the protective function which has been attributed to the belief in a just world (Lerner, 1980). Although this protective function has been investigated mostly in cases where the subject observed an injustice, two experiments by Hafer & Olson (1989) found that subjects with a high belief in a just world who were deprived from desirable outcomes reacted with less resentment than subjects with a low belief.

(3) Two-Way Interactions of Type of Unjust Treatment x Attitudes toward Principles of Distributive Justice

It was predicted that subjects would react with stronger resentment if they had a positive attitude toward the justice principle that was violated. More specifically, it was expected that attitude toward equity would have a stronger effect on the dependent variables in the two conditions in which the equity principle was violated (Condition 5 and 6) than in the remaining four conditions in which the equality of chances principle was violated (Conditions 1 through 4). Correspondingly, it was expected that attitude toward equality of chances would have a stronger effect on the dependent variables in the four conditions in which this principle was violated than in the conditions in which the equity principle was violated.

(4) Three-Way Interactions of Type of Unjust Treatment x Attitudes toward Principles of Distributive Justice x SBI

Finally, it was expected that the two-way interaction effect described in the last section would depend in size on the person's sensitivity to befallen injustice. The effect was expected to be stronger for sensitive subjects than for insensitive subjects. Note that this formulation is equivalent to saying that the effect of Sensitivity to Befallen Injustice on the dependent variables will be stronger for subjects who favour the justice principle that has been violated in their condition.

RESULTS

Factor and Reliability Analyses of the Measures for the Independent Variables

The sample of the present study and the sample of the Schmitt & Mohiyeddini (1995) study were pooled to obtain a sufficiently large sample for analyzing the statistical properties of the questionnaires administered at Occasion 1 of the present study for measuring the independent variables. Data from 281 subjects were available for the factor and reliability analyses.

SBI Scales

The 96 items of the three SBI scales used here were submitted simultaneously to a principle axes
analysis. The eigenvalue plot suggested three common factors. After varimax rotation of the first three principle axes to simple structure, a loading pattern appeared which corresponded perfectly to the a priori structure. All FRE items loaded on a common factor, all INA items loaded on a common factor, and all INT items loaded on a common factor. Together, the three factors explained 38.8% of the total variance of the items. The corresponding result reported by Schmitt, Neumann, & Montada (1995) were thus replicated. In a second step of analyses, the 32 items of each scale were submitted separately to principle axes analyses. The eigenvalue plots indicated clearly that the items of each scale had only one factor in common. Consequently, each scale measures a one-dimensional construct. The reliability turned out to be very high for each scale. The internal consistency coefficients alpha amounted to .95, .93, and .94 for the FRE, INA, and INT scales, respectively. These results show that the three indicators for an individual's sensitivity to befallen injustice are not only generalized across broad classes of situations, as Schmitt, Neumann, & Montada (1995) have shown, but also across more specific situations in the person's present life and across situations which the person remembers from childhood and adolescence.

Attitudes Toward Principles of Distributive Justice and Belief in a Just World

The items for measuring attitudes toward principles of distributive justice and belief in a just world were submitted simultaneously to a principle axes analysis. The eigenvalue plot did not display a distinct scree (Cattell, 1966). Moderate screes appeared at the third and at the seventh factor. Several solutions were explored, none of which had a satisfactory simple structure after varimax rotation and none had a loading pattern which corresponded satisfactory with the a priori scales (for details see Mohiyeddini, 1995). More specifically, the old (Montada, Schmitt, & Dalbert, 1983) and the new (Mohiyeddini, 1995) items for measuring attitude toward equity tended to load on different factors. The same was true for the old (Montada, Schmitt, & Dalbert, 1983) and the new (Mohiyeddini, 1995) need items. In a second step of analysis, the new equity and need items were removed, and the reduced set of original items (Montada, Schmitt, & Dalbert, 1983; Dalbert, Montada, & Schmitt, 1987) was submitted once again to a principle axes analysis. As in several previous studies (e.g., Schmitt et al., 1994), five common factors appeared whose loadings corresponded, after varimax rotation, almost perfectly to the a priori scales. Only one equity item had a substantial loading on the "wrong" factor, namely the belief in a just world factor. All other items had their highest loadings on the a priori factor. Based on these and additional analyses (for details see Mohiyeddini, 1995), the following scales were formed.

The belief in a just world scale (BJW) consists of the six a priori items (Dalbert, Montada, & Schmitt, 1987) and has an alpha of .76.

Two equity scales were formed, one consisting of the four original items (EY1; Montada, Schmitt, & Dalbert, 1983; alpha = .46), and the other consisting of the seven new items (EY2; Mohiyeddini, 1995; alpha = .65).

The factual equality scale (FE) consists of the four a priori items (Montada, Schmitt, & Dalbert, 1983) and has an internal consistency of alpha = .54.

The equality of chances scale (EC) consists of the four a priori items (Montada, Schmitt, & Dalbert, 1983) and has an internal consistency of alpha = .88.

Two need scales were formed, one consisting of the four original items (NE1; Montada, Schmitt, & Dalbert, 1983; alpha = .71), and the other consisting of the four new items (NE2; Mohiyeddini, 1995; alpha = .44).
Anger Scales

The 34 items of the German anger inventory for measuring trait anger (TRA), anger in (ANI), anger out (ANO), and anger control (ANC) were submitted simultaneously to a principle axes analysis. The first four principle axes were varimax rotated to the best possible simple structure. However, no satisfactory simple structure could be obtained. Furthermore, the empirical loading pattern deviated substantially from the theoretical loading pattern. The TRA items had their highest loadings on three different factors, and the expression styles did not appear as distinct factors either. Several additional analyses were conducted with subsets of the items. None of the solutions that were explored came close to the theoretical structure (for details see Mohiyeddini, 1995). In order to make the present research comparable to other research with Spielberger's anger inventory, the a priori scales were taken for testing hypotheses. The internal consistency coefficients alpha for the scales amount to .79 (TRA), .90 (ANI), .84 (ANO), and .85 (ANC).

Self-Assertiveness

The eigenvalue plot for the self-assertiveness scale ascertains that the items measure a single common factor. Item total correlations for two of the 15 items were low. These items were removed. The remaining 13 items had in internal consistency of alpha = .80.

Reliability Estimates for the Dependent Variables Measured at Occasion 2

Justice Evaluation (JE)

The two items mentioned above were selected from five a priori justice items based on a common factor analysis. The correlation between the items was .40.

Anger State (AS)

The eigenvalue plot for the State Anger Scale ascertains that the items measure a single common latent variable. One of the 11 items (disappointed) was removed because it had a low item total correlation. The alpha coefficient for the remaining items was .93.

Positive Emotions (PE)

The eigenvalue plot for the five positive emotion items clearly indicates that they have only one factor in common (alpha = .85).

Expert Rating (ER)

Inter-rater reliabilities within scales exceeded .70. The mean correlation between items within raters was even higher. Therefore, a scale consisting of all nine items was formed. This scale had an internal consistency as high as .98.

Reliability Estimates for the Dependent Variables Measured at Occasion 3

Retrospective Justice Evaluation (RJ)

According to the eigenvalue plot, the six items measure only one common factor. The internal consistency of the scale amounted to .85.

Retrospective Anger (RA)

The eigenvalues suggest that the seven items for measuring RA have only one factor in common. However, one of the items (I don't care what happened) had a low item total correlation and was dropped. The remaining six items were extremely homogeneous (alpha = .97).
Inclination to Protest (IP)

The correlation between the two items was .46.

Retrospective Resentment (RR)

The items from the three aforementioned scales (RJ, RA, IP) were submitted to a simultaneous principle axes analysis. All items had high loadings on the first, nonrotated principle axis which explained 64.5% of the total variance of the items. The 14 items had an internal consistency of alpha = .95.

Results from Testing the Hypotheses

All hypotheses stated above were tested separately and simultaneously using the multiple regression framework. Product variables were included as predictor terms to test the expected interaction effects (Aiken & West, 1991; Cohen, 1978; Dalbert & Schmitt, 1986). Separate multiple regression analyses were computed for each dependent variable. In addition to the predictors mentioned in the hypotheses, the remaining personality variables (trait anger, anger in, anger out, anger control, self-assertiveness, belief in a just world) were added in a stepwise manner to obtain estimates of the unique effects of the justice variables and to test the general hypothesis that these variables would predict the reactions to the event better than the competing constructs.

Three-Way Interactions of Type of Unjust Treatment x Attitudes toward Principles of Distributive Justice x SBI

In a first step of analysis, the expected three-way interactions were tested for each dependent variable and for each SBI-scale (including the sum of all SBI scales) separately without including any additional independent variables. None of the predicted effects was significant.

Two-Way Interactions of Type of Unjust Treatment x Attitudes toward Principles of Distributive Justice

In a second step of analysis, the expected two-way interactions were tested for each dependent variable and the two equity scales separately. This was done at first without including additional independent variables. Two interaction effects were significant, both including the new equity scale (Mohiyeddini, 1995). The first interaction effect was found for the dependent variable Positive Emotions (PE), the second for the dependent variable Justice Evaluation (JE). The conditional means are given in Figures 2 and 3, respectively. Note that the values in both figures are z-standardized scores.
Both effects accord to expectations. More specifically, a person's attitude toward equity as measured with the Mohiyeddini (1995) scale had a stronger effect on the person's positive emotion and on the person's justice judgments after the treatment when the equity principle was violated than when the equality of chances principle was violated. Both effects, however, should be interpreted with caution for two reasons. First, the risk of type I errors is higher than 5% for both effects because the general interaction hypothesis was tested 18 times (eight dependent variables x two attitudes with one attitude measured twice). It cannot be safely excluded that one or both of the effects are chance effects. Second, both effects disappeared as soon as other powerful predictors were added to the regression equation.
Main Effects of Belief in a Just World

No correlation between Belief in a Just World and the dependent variables was significant. Consequently, no evidence could be found for either one of the competing hypotheses formulated above.

Main Effects of SBI

Regarding the primary purpose of this study, i.e., providing additional support for the construct validity of the SBI scales, the main effects of these scales as well as of the combined scale (SBI: mean of FRE, INA, INT) on the dependent variables was most interesting here. In order to estimate the unique effects of the SBI scales, all independent variables measured at Occasion 1 were included in stepwise multiple regression analyses for each dependent variable measured at Occasion 2. In addition, the dependent variables measured at Occasion 3 were regressed on all variables from Occasions 1 and 2. This path analysis was conducted to determine the extent to which effects from Occasion 1 variables on Occasion 3 variables were mediated by Occasion 2 variables. All significant effects are summarized as a path model in Figure 4.

The standardized path coefficients in Figure 4 show that, in line with expectations, SBI has significant direct effects on all four dependent variables measured immediately after the unfair treatment, and a substantial indirect effect on Retrospective Resentment measured several weeks later. Note that SBI is the mean of the three SBI scales FRE, INA and INT. These scales do not explain variance in any of the dependent variables over and above the combined scale. SBI was the strongest predictor for three of the four dependent variables measured after the unjust treatment, the justice evaluation (JE), the experts’ ratings (ER) and the positive emotions (PE). The sizes of these validity coefficients are quite substantial. This is especially true for ER. The experts could use a broad data base for their judgments and their judgments seem to have been reliable and valid measures for the extent to which a subject was upset by and protested against being treated unfairly. Given a bivariate correlation of .77 between SBI and ER, the possibility can be excluded that the corresponding beta coefficient of .71 reflects a suppressor effect.

Figure 4. Path Model for all Variables from all three Occasions (Significant Effects only)
Although the remaining path coefficients in Fig. 5 are not directly relevant for the construct validity of the SBI scales, these coefficients are interesting in themselves and shall be described briefly. A first interesting result is that the expert rating (ER) did not only depend on SBI but also on Anger Out. Probably, subjects with high scores on ANO were more expressive regarding their anger and this was perceived by the raters as more intense anger. Secondly, ANO was the strongest predictor of Anger State (AS). If one considers writing down one's anger in a questionnaire as a form of turning one's anger out, this effect makes sense. In addition to ANO, SBI was the second most powerful predictor of AS. This finding reflects that SBI as a manifest variable contains anger as one of several indicators. Consistent with the positive effect on Anger State, SBI has a strong negative effect on Positive Emotions (PE). The effect of Type of Unjust Treatment (TUT) on Justice Evaluation (JE) means that the violation of equity was perceived as more unjust than the violation of chance equality. The positive effect of SEX on JE means that male subjects evaluated the experiment as less unfair than female subjects. In line with this effect, female subjects reported less positive emotions. Finally, Retrospective Resentment regarding the experiment (RR), which was measured several weeks after the experiment, depended only on Anger State after the experiment (AS). However due to the small sample size at Occasion 3, type II errors cannot be excluded safely.

**DISCUSSION**

Taken together, the results of the present study attest to the usefulness of the SBI construct and the construct validity of the SBI scales. These scales have, by far, the strongest explanatory power regarding immediate and delayed cognitive, emotional and behavioral reactions to unjust treatments in the laboratory.

Furthermore, and like the Schmitt & Mohiyeddini (1995) study, the present study provides evidence that SBI is a trait. While the Schmitt, Neumann, & Montada (1995) study was cross-sectional and therefore unable to provide information on the temporal stability of the SBI scales, the Schmitt & Mohiyeddini (1995) study and present study were short-term longitudinal studies. Given that in the present study, the immediate reactions to the unfair treatments were observed eight weeks after measuring SBI, the high correlations between the SBI scales and the dependent variables (Occasion 2) imply stability coefficients for the SBI scales of at least the same size. More specifically, the correlation of .77 between SBI and ER implies an eight week stability of the total SBI scale of at least .77.

A clear weakness of the present study is its low statistical power. From 171 students who answered the SBI scales and other questionnaires at Occasion 1, only 75 volunteered for the "experiments" at Occasion 2. Only 32 of those who could be traced at Occasion 3 agreed to participate in the ethics survey.

Despite this weakness, the study provides -- in combination with the results obtained in the two previous studies -- empirical support for the usefulness of the SBI construct and the validity of the SBI scales. Of course, additional studies are needed to investigate more thoroughly the psychological functioning of SBI and the properties of the SBI scales. Longitudinal studies are needed to investigate the stability of individual differences in SBI. Such work is currently in progress (Schmitt, Maes, & Neumann, 1994; Mohiyeddini, in preparation a). Peer rating studies could provide additional evidence on the validity of the scales. Again, such a study is currently being conducted (Mohiyeddini, in preparation b). Studies including established personality questionnaires and tests would help to locate SBI in the multidimensional personality space. Corresponding research has began (Schmitt, Maes, & Neumann, 1994). Finally, it would be interesting to reveal the relations between SBI and justice sensitivity from both the victimizer's and the observer's perspectives. Again, several studies are in pro-
gress in which measurement instruments for justice sensitivities from two (Mohiyeddini, in preparation c; Montada & Mohiyeddini, in preparation a) and three (Schmitt, Maes, & Schmal, 1995; Montada & Mohiyeddini, in preparation b) perspectives are included.
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