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Distributive justice research from an interactionist perspective

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INHALT

ABSTRACT

Seven interactionist studies on distribution behavior and distributive justice judgments are described, three of which were conducted in the present research. The general assumption of all studies was that individual preferences for distribution principles are functionally equivalent to situation factors which are known to influence preferences for distribution principles, such as the relative achievement of the recipients or the social relation between them. Individual preferences are conceptualized as traits on which individuals differ. The general interactionist hypothesis was that individual differences in preferences for distribution principles interact with functionally equivalent situation factors, such that individual differences and situational differences affect distribution behavior and justice judgments synergetically. This means that the variation of situational characteristics such as needs of recipients makes a larger difference for individuals who score high on the preference for the corresponding distribution principle than for subjects with a low preference for the principle (the need principle in this case). Equivalently, individual differences in the preference for a certain distribution principle should make a larger difference in cases where a functionally equivalent characteristic of the situation is pronounced or salient than in cases where the situational characteristic is less pronounced or salient. The results from the reported empirical studies accord only partially to this interactionist reasoning. Substantive and formal arguments are presented which may explain the differences in results between studies. It is concluded that it may be useful or even necessary to consider higher order interactions and that the assumption of linear interactions may be to simple.

ZUSAMMENFASSUNG

Sieben interaktionistische Untersuchungen (vier bereits publizierte von anderen Autoren, drei neue eigene) zur Verteilungsgerechtigkeit werden vorgestellt und vergleichend diskutiert. In allen Untersuchungen wird von der Annahme ausgegangen, daß individuelle Präferenzen für Verteilungsprinzipien, theoretisch konzipiert als Eigenschaften der Person, bestimmten Situationsmerkmalen, die Verteilungsentscheidungen beeinflussen, funktional äquivalent sind. Die interaktionistische Hypothese lautet, daß funktional äquivalente Person- und Situationsmerkmale sich interaktiv auf Verteilungsentscheidungen und Gerechtigkeitsurteile auswirken, also synergetisch wirken. Dies bedeutet, daß die Variation eines bestimmten Situationsmerkmals, z.B. das Ausmaß der Bedürftigkeit eines der Rezipienten, bei Personen mit einer starken Präferenz für das entsprechende Verteilungsprinzip (hier das Bedürftigkeitsprinzip) einen größeren Unterschied im Verteilungsverhalten oder im Gerechtigkeitsurteil macht als bei Personen mit geringer Präferenz für das Prinzip. Entsprechend sollten individuelle Unterschiede in der Präferenz für ein Verteilungsprinzip sich in Situationen, in denen das entsprechende Verteilungskriterium als Situationsmerkmal stark ausgeprägt ist, stärker auf das Verteilungsverhalten oder das Gerechtigkeitsurteil auswirken als in Situationen, in denen das Situationsmerkmal schwach ausgeprägt ist. Die Befunde der berichteten Untersuchungen stimmen mit dieser allgemeinen Vorhersage nur teilweise überein. Es werden theoretische und methodisch-formale Überlegungen zur Erklärung der Ergebnisunterschiede zwischen den Untersuchungen angestellt. Dabei werden Interaktionen höherer Ordnung erwogen, und es wird argumentiert, daß die Annahme linearer Interaktionen möglicherweise zu einfach ist und zugunsten nichtlinearer Moderatoreffekte aufgegeben werden muß.

PARADIGMS IN SOCIAL JUSTICE RESEARCH

In his distinguished presidential address to the 65th Annual Convention of the American Psychological Association, Cronbach (1957) described psychology as a science consisting of two disciplines, general psychology and differential psychology. Both aim at the explanation and prediction of behavior, but start from different theoretical assumptions and rely on different research paradigms in pursuing this goal. General psychology presupposes that human behavior is guided primarily by the situation in which individuals are. The corresponding research strategy is to manipulate situational characteristics in systematic ways such that covariations between these characteristics and behaviors can be identified. Individual differences in behavior within situations or experimental conditions are of little interest and treated technically as error variance. By contrast, such individual differences are of primary interest in differential psychology. The underlying presumption is that large proportions of behavioral variations are due to personality differences between individuals. It is assumed that psychological principles can be understood better if these differences are taken into theoretical consideration and investigated systematically in empirical research. The corresponding research strategy is to measure individual differences and treat them as variables in multivariate correlational studies and as organismic factors (covariates or moderators) in experimental studies.

Both paradigms have been employed in social justice research. The first empirical studies designed for testing the Just World Hypothesis (Lerner, 1970, 1977, 1980) were experiments in which the justice motive was aroused by confronting subjects with unjust situations or with situations that were ambiguous regarding the justice of possible outcomes (Lerner, 1965a, b; Lerner & Matthews, 1967; Lerner & Simmons, 1966). Assuming that the need for justice may vary significantly between individuals, Rubin and Peplau (1973, 1975) developed a self-report questionnaire for measuring belief in a just world. This Just World Scale and similar scales (e.g., Dalbert, Montada, & Schmitt, 1987) were correlated in numerous studies with measures for other individual difference constructs and behavioral reactions to injustice such as blaming victims (cf., Furnham & Procter, 1989; Lerner, 1980).

Similarly, the general and the differential paradigm have been applied to normative constructs of distributive justice. Empirical research related to equity theory, which was formulated as a general theory (Adams, 1965; Blau, 1964; Homans, 1961), began as experimental research and remained restricted to the experimental paradigm for about two decades (Berkowitz & Walster, 1976; Walster, Berscheid, & Walster, 1973). Acknowledging the possibility that the equity criterion may be less universally accepted by individuals than originally postulated, Huseman, Hatfield, and Miles (1985, 1987) proposed the construct of Equity Sensitivity and presented a questionnaire for measuring this construct. This questionnaire is used for discriminating three types of individuals, benevolents (inputs exceed outcomes), entitleds (outcomes exceed inputs), and equity sensitives (inputs are proportional to outcomes).

One of several criticisms raised against equity theory (cf. Mikula, 1980; Törnblom, 1992) was that equity may not be the sole principle of distributive justice but only one of several principles (Sampson, 1975; Leventhal, 1980). While some authors have identified more than a dozen additional principles (Reis, 1984), most scholars agree on the "big three", the equity or contribution principle, the equality or parity principle, and the need principle (Schwinger, 1980). Again, theoretical work within this multi-principle framework started out from a general psychological perspective, assuming that general preferences for distribution principles and rules depend on the social context of transactions (Deutsch, 1975), the social relations among recipients or between allocator and recipients (Lerner, 1977), and the type of resource to be allocated (Foa & Foa, 1980). Correspondingly, the first empirical studies on these hypotheses were experiments (for reviews see Mikula, 1981; Schwinger, 1980; Törnblom, 1992; Törnblom & Foa, 1983). In some of these studies, however, demographic variables (e.g., age, social class, gender, nationality) and genuine personality variables (e.g., need for approval, protestant ethic, social orientation, value orientation, achievement motivation) were included as covariates and found to correlate with allocation behavior and justice judgments (for reviews see Adams & Freedman, 1976; Major & Deaux, 1982; Mikula, 1980, 1981; Montada, 1981; Törnblom, 1992). These findings and the large proportions of variance which have remained unexplained in experimental research on distributive justice suggest that it may be useful to conceptualize preferences for or attitudes towards distribution principles as characteristics of the person, to measure them as directly as possible, and to employ them in addition to situational variables as predictors for allocation behavior and justice judgments. More or less independently, several authors have come to this conclusion and developed questionnaires for measuring the constructs at issue.[1]

Based on a sample of 733 adolescents (aged 11 - 15), Winterhoff and Herrmann (1979a) developed two Rasch scales for measuring attitudes towards equity (16 Items) and parity (22 Items). These scales were adopted for adults and refined by Schwinger and Winterhoff-Spurk (1984). Eleven equity and twelve parity items were selected from a larger pool of items according to Rasch homogeneity. The authors report a slight negative correlation (-.35) between equity and parity.

Based on an experimental questionnaire (Schmitt & Montada, 1982), Montada, Schmitt, and Dalbert (1983) developed scales for measuring attitudes towards equity (9 items), need (6 items), factual equality (4 items), and equality of chances (6 items). These scales and short versions of theses scales (with four items per principle) have been used in several correlational studies with over 1500 subjects. The scales appear as orthogonal factors in factor analyses. Correspondingly, scales scores correlate only slightly among each other (< .30). Internal consistencies Alpha are satisfactory for most long versions (equity » .75; need » .80; factual equality » .65; equality of chances » .90) and moderate for most short versions (equity » .65; need » .65; factual equality » .65; equality of chances » .85).

Sabbagh, Dar, and Resh (1994) developed a questionnaire consisting of 16 items for measuring attitudes towards equity, equality, and need. Similar to Montada et al.'s (1983) scales, the construction of

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[1] A systematic and general approach to measuring individuals' preferred principle of distributive justice has been proposed by Jasso (1983, 1993). The Just Reward Matrix constitutes the core of her formal model. This matrix contains the rewards that a group of judges (rows) considers to be just for a group of rewardees (columns). From this matrix, various Just Reward Distributions can be derived. The column vectors represent the allocations that the observers consider just for each of the rewardees. The row vectors reflect the distribution across the rewardees that each observer considers to be just. The marginal row distribution represents the mean just rewards for the rewardees, averaged across all observers. The marginal column distribution contains the mean reward that the observers consider appropriate, averaged across the rewardees (this is sort of an individual standard, e.g., the mean income an observer considers appropriate for a group of employees). Finally, in the case where the observers and the rewardees are identical, the main diagonal of the Just Reward Matrix contains the rewards that each observer considers just for herself. A second matrix in Jassos model is the Matrix of Reward-Relevant Characteristics. This observer-specific matrix contains measures for all characteristics (rows) of the rewardees (columns) which a specific observer considers to be relevant for allocating rewards. These characteristics may be achievements or causes for achievements (ability, effort), needs and causes for needs, etc. The Just Reward Matrix and the observer-specific Matrices of Reward-Relevant Characteristics can be combined into a formal regression framework for establishing observer-specific Just Reward Functions. This framework makes possible to give a formal answer to the question who should get what and why. For each observer, the rewards that he allocates to the rewardees are regressed on the reward-relevant characteristics that he attributes to the rewardees. The parameters of the regression equations reveal, i.e., make explicit, how much weight an observer gives implicitely to the reward-relevant characteristics. These weights may be considered as measures of an individual's distributive justice preference (termed microjustice by Jasso), and they may be used as covariates in experimental and correlational research. For example, individuals may differ greatly in how much weight they give to needs, causes of needs, contributions and achievements, and causes for contributions and achievements. Jassos approach appeals to us because it is more systematic, general, and flexible than the traditional questionnaire methods. It was not used in the present research because it could not be adapted to the present research context. Empirical studies should be designed in which traditional questionnaire measures, as the ones described below, are combined with measures derived from Jasso's model. Such studies would make possible to investigate the validities of the various instruments via multitrait-multimethod analyses (Campell & Fiske, 1959).

items was based on a systematic variation of type of resource (money, prestige, power, learning opportunities). Furthermore, these authors subdivide the equity principle into three different rules (contribution, effort, ability) and the equality principle into four different rules (arithmetic equality, equality of results, equality of opportunities, equality of basic liberties). However, not all of these rules were operationalized as items and they were not crossed systematically with type of resource. The questionnaire was administered to a representative Israeli sample of 6 880 eighth and ninth graders. In addition, a German version of the questionnaire was used in a large survey with 2671 ninth to thirteenth graders from East Germany (Sabbagh, Dar, Hurrelmann, & Resh, 1993). Smallest Space Analysis (Guttman, 1968, Borg & Lingoes, 1987) was used to reduce the multidimensional space and to compare the pattern of correlations among the items with apriori hypotheses. A cylindrical structure was accepted with distribution rules ordered along the axis and types of resources forming the base of the cylindrical space. Factor analyses and internal consistency analyses were conducted by the present first author with data from the East German sample. Two common factors were identified with equity items loading on the first factor and equality plus need items loading on the second factor. Extracting more factors in a stepwise manner led first to a differentiation of equity according to resources and then to a differentiation of equality and need. Internal consistencies for apriori scales amount to .80 (equity), .58 (equality), and .59 (need) in the East German sample.

Another self-report measure for attitudes towards equity and equality was devised by Bossong (1983a). This instrument differs from the ones mentioned so far in two regards. First, equity and equality are not treated as independent constructs but as poles of one dimension. Second and unlike the questionnaires introduced above, items are not statements which can be accepted or rejected. Rather, ten scenarios are presented describing unequal contributions of two individuals towards a common achievement. Subjects are asked to choose one out of five possible distributions for the common monetary reward. These five distributions differ systematically in how closely they correspond to an equitable versus an equal distribution. Bossong (1983a) reports item-total correlations ranging from .48 to .62 (median = .62) for the ten items of his instrument. These values ascertain a high homogeneity of the items and a high internal consistency of the scale.

Together, the results reported so far regarding the internal correlational structure of the various questionnaires suggest the following conclusions: (1) Substantial and reliable individual differences exist in self-reported attitudes towards different principles of distributive justice. (2) These attitudes seem to be generalized to a considerable extent across different situational contexts as contained implicitly in the formulation of items. This conclusion is warranted by results from factor analyses showing that principles operate as strong sources of common variance. (3) At the same time, however, this generalization is limited. Individual preferences for a particular distribution principle depend to some extent on variables of the situational context such as type of resource. For example, several equity factors, related to different types of resources, emerged in stepwise factor analyses of Sabbagh et al.'s instrument. Additional support for the domain specificity of attitudes to distribution principles is provided by other research, in which distribution principles were crossed systematically with situational variables such as social context (Schmitt & Montada, 1982), allocation vs. withdrawal of resource (Schmitt & Montada, 1982), or type of resource (Schmitt & Montada, 1982; Törnblom & Foa, 1983). (4) Individual preferences for distribution principles are not mutually exclusive. If individuals are not forced to choose one of several principles or to compromise between them, as in Bossong's (1983a) instrument, attitudes towards different principles appear as fairly independent dispositions in factor analyses and correlations among corresponding scales scores. This means that individuals may hold positive or negative attitudes towards several principles at the same time. For example, a positive attitude towards equity may coincide with a positive or with a negative attitude towards the need or the parity principle. This is an interesting result which deserves further theoretical and empirical explorations.

Given reliable individual differences in self-reported attitudes towards different distribution principles, the question arises whether and how well these measures can predict individual differences in overt behavior such as actual distributions conducted by the person, emotional reactions to existing distributions such as anger or guilt, and behavioral reactions to existing distributions such as protest. On a more general level, this question has been one of the most crucial and also one of the most controversial issues in psychology. Several authors have challenged the consistency assumption on which the trait model in personality and attitude research is based (e.g., Mischel, 1968; Wicker, 1969). Reviewing the available research evidence, these critics claim that individual differences in behavior are not consistent enough across different situations to warrant trait constructs. In addition, the validity of self-report measures and thus their usefulness for predicting behavior has been doubted (e.g., Deutscher, 1966). In reaction to this criticism, many theoretical and methodological counterarguments were raised and data were presented in defense of the trait model (Kenrick & Funder, 1988; Schmitt, 1990; Schmitt & Borkenau, 1992). One of the main counterarguments, articulated most emphatically by Epstein (1979, 1980, 1984), was that the concept of traits refers by definition to broad classes of behavior and that a single behavior in a specific situation can hardly represent such a class. Therefore, the construct validity of trait measures can be tested fairly only against aggregated criteria. Aggregation should include the entire range of manifestations which corresponds as closely as possible to the range covered conceptually by the trait construct at issue. More specific derivations of this general argument will be discussed in the context of empirical research later.

The person-situation debate was productive for scientific psychology in several regards (cf. Kenrick & Funder, 1988). Protagonists of competing theoretical approaches were forced to spell out their presumptions more precisely--which helped to correct misconceptions of these approaches (e.g., Conley, 1984; Herrmann, 1980). Methodological pitfalls were identified (e.g., Alwin, 1973; Golding, 1975; Olweus, 1976), and solutions for some of them were offered (e.g., Paunonen, 1984; Steyer & Schmitt, 1990). Existing data sets were reanalysed demonstrating that results depend considerably on the method of analysis chosen and that very different conclusions can be drawn from the same data depending on the theoretical perspective from which they are looked at (Epstein & O'Brien, 1985). New research programs were initiated to investigate more directly some of the ideas that were brought up during the debate or to test explicitly competing interpretations of the same data. Finally and most importantly for the present context, interactionism broke through as a comprehensive scientific paradigm which includes, combines, and extends the general and the differential approach in systematic ways (cf. Ekehammar, 1974; Endler, 1976; 1982; Magnusson & Endler, 1977).

In his description and critique of the schismatic gap between general and differential psychology, Cronbach (1957) had anticipated and prepared interactionism by stating that "A united discipline [of psychology] will study both of these [situations and individuals as sources of variation], but it will also be concerned with the otherwise neglected interactions between organismic and treatment variables." (p. 681). He predicted that such interactions would explain considerable proportions of variance over and above those explained already by differences between individuals and differences between situations. This prediction was based on theoretical arguments (cf. Cronbach, 1975; Cronbach & Snow, 1977) and proved to be right soon afterwards in empirical research. In fact, several studies found that the interaction between persons and situations oftentimes explained more variance in behavior than both main effects (Bowers, 1973; Endler & Hunt, 1966; Sarason, Smith, & Diener, 1975).

The basic idea of interactionism is that situational differences and individual differences do not guide behavior independently from each other but in a synergetic combination. This combination can take many forms and stem from various psychological mechanisms (cf. Magnusson & Endler, 1977). For example, individuals may react differentially to the same situational difference because they construe the situations or modify it actively depending on their personality. In a statistical sense, individual differences act as moderators of situational differences and vice versa. To give a specific example for the substantive domain of justice, subjects with a positive attitude towards the need principle should be more sensitive than subjects with a negative attitude to the variation of needs. That is, the variation of needs is not expected to have (only) a general effect on the distribution of outcomes or on justice judgments regarding a particular distribution. Rather, the effect of situational need variations should be conditional upon the person factor, i.e., the subject's attitude towards the need principle. The situational variation of needs should make a larger difference for subjects with a favorable attitude than for subjects with an unfavorable attitude. In other words, a positive attitude towards the need principle amplifies the effect of a situational need variation. Since factors which interact statistically are formally equivalent, the same interaction can also be phrased in terms of differential effects of the person factor. More specifically, the effect of attitude towards the need principle should increase with the magnitude or salience of needs in a particular situation. In cases where needs are irrelevant, unknown, and not imputable, individual differences towards the need principle should make no difference at all. Note that if such an interaction is fully ordinal, it implies the additional presence of main effects of both, the situation and the person factors.

The interactionist framework has been applied to justice research in several previous studies. Rubin and Peplau (1973), Zuckerman, Gerbasi, Kravitz, and Wheeler (1975), Dion and Dion (1987), Hafer and Olson (1989), Schmitt et al. (1991), Schmitt (1991), and Schmitt and Herbst (1993) conducted studies to see whether the well-known general effects of the justice motive such as blaming victims (e.g., Lerner & Simmons, 1966) would depend on individual differences in Belief in a Just World (Dalbert et al., 1987; Rubin & Peplau, 1973). More relevant for the present research are studies by Bossong (1983a, b) and Herrmann and Winterhoff (1980) in which the person-situation-interaction framework was applied to the sphere of distributive justice. Bossong's (1983a, b) research dealt with hypothetical distributions and will be described later.

HERRMANN AND WINTERHOFF'S RESEARCH

Herrmann and Winterhoff (1980) conducted two experiments to investigate the effect of attitudes towards the equity and equality (parity) principles on distributive behavior. Individual scale scores on their equity and parity scales (see above) were used for defining two types of individuals with a specific pattern of distributional preferences: E-typed individuals have a favorable attitude towards equity (scale score above median) and an unfavorable attitude towards parity (scale score below median), while P-typed individuals are defined by the reverse pattern of preferences (pro parity and contra equity).

Experiment I (cf. Winterhoff & Herrmann, 1979b) was conducted with 44 E-typed and 44 P-typed subjects, who were selected from a sample of 256 grade school students (mean age: 12 years). Subjects were told that they would compete with a partner in a computer game. Their achievement would be rewarded with tokens and these could be converted later into preferred items like toys, books, and pens. In addition to the organismic factor Type, two experimental factors were manipulated. *Factor A* was Relative Achievement and had two levels. In the first condition, subjects were told that they had been about twice as good as their partner, while the reverse relation was realized in the second condition. *Factor B* was Commitment, meaning that subjects were either informed or not informed regarding their typicality. It was assumed that informed subjects would be committed more than uninformed subjects to behave consistently with their type. Subjects had to distribute 30 tokens between themselves and their partner. The amount of tokens a subject kept for himself served as the dependent variable. A three way analysis of variance yielded a significant main effect for Relative Achievement [$F(1,80) = 89.31$; $p < .01$], which explained 49% of the variance of the dependent variable, and a significant interaction between Type and

Relative Achievement [$F(1,80) = 7.59$; $p < .01$], which explained 4% of the variance. The corresponding cell means are displayed in Figure 1.

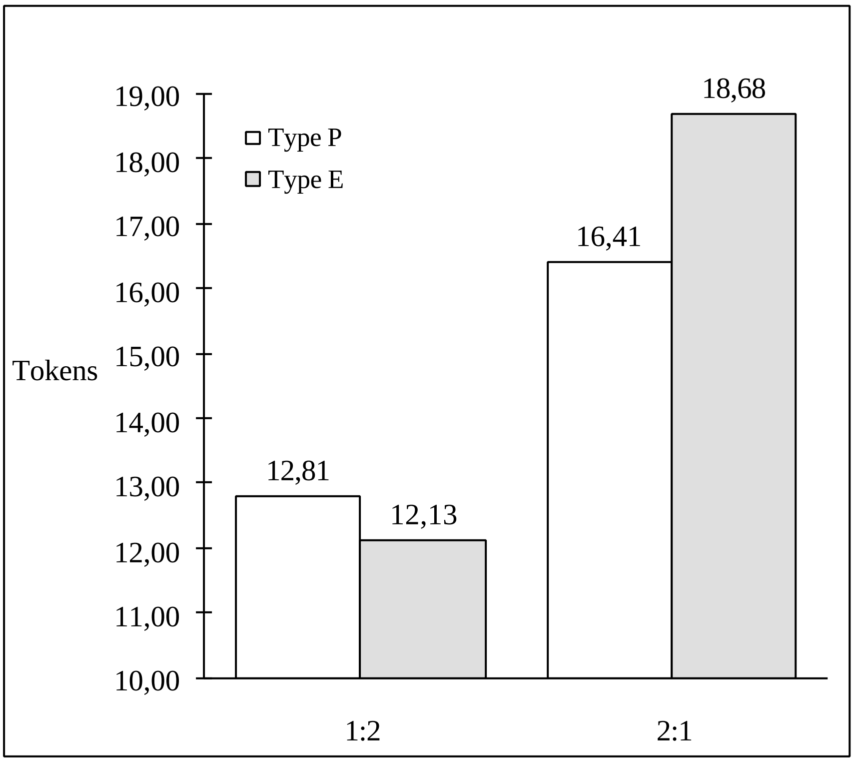

Figure 1

Mean amount of tokens kept by E-typed and P-typed subjects under conditions of low (1:2) versus high (2:1) relative achievement (adopted from Winterhoff & Herrmann, 1979b, Experiment I)

Experiment II (cf. Winterhoff & Herrmann, 1979b) differed from Experiment I in the variation of *Factor B* (Commitment). While one group of subjects was told their true typicality, the second group was made believe that they belonged to the opposite type, i.e., E-typed subjects were told that they preferred parity and P-typed subjects were told that they preferred equity. From a sample of 188 high school students (mean age: 13 years), 48 E-typed and 48 P-typed subjects were selected according to the same criteria as in Experiment I. The pattern of results was remarkably similar to the one from Experiment I. Again, a significant main effect, explaining 49% of the variance of the dependent variable, was found for Relative Achievement. And like in Experiment I, the only other significant effect was the interaction between Type and Relative Achievement, explaining 5% of the variance of the dependent variable. The means corresponding to these effects are displayed in Figure 2.

The means in Figure 1 and Figure 2 are noteworthy in several regards. First, they show that the <u>average</u> distribution accords neither to the parity principle (15 tokens for both achievement levels) nor to the equity principle (10 tokens for low, 20 tokens for high achievement) but to a mixture of both principles. Second and in line with expectations, E-typed subjects tended more than P-typed subjects to take the relative achievements into account when distributing rewards. In other words, E-typed subjects tended more than P-typed subjects to equitable distributions, while P-typed subjects leaned more than E-typed subjects to an equal distribution. However, both types were far from following the preferred principle fully; they deviated only slightly from the general trend. This is reflected by the fact that Relative Achievement explained about ten times more variance of the dependent variable than the interaction between Relative Achievement and Type did. Possible explanations for this result will be discussed later.

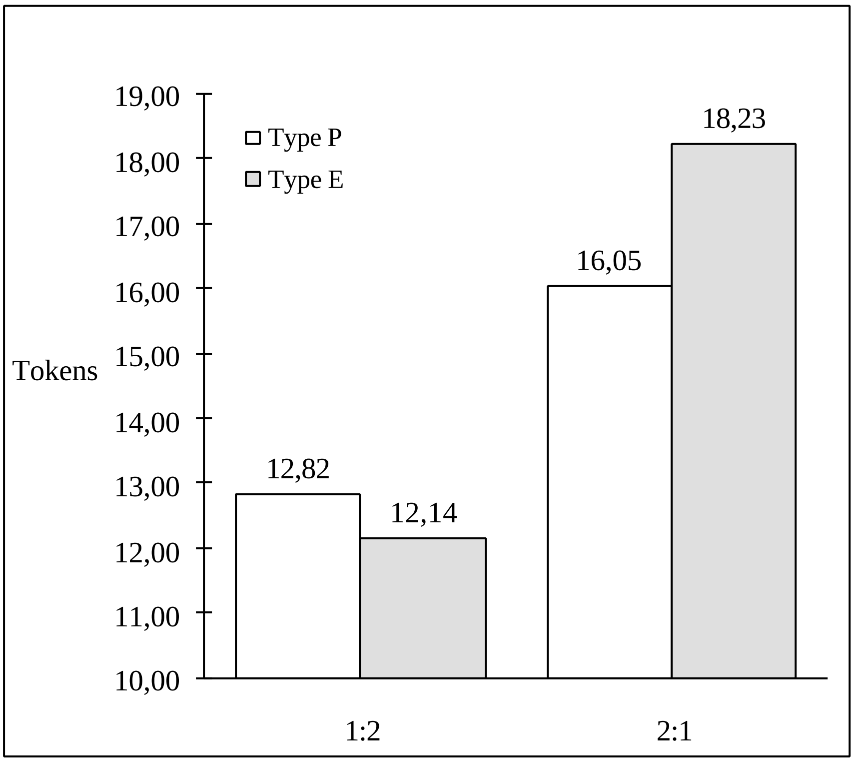

Figure 2

Mean amount of tokens kept by E-typed and P-typed subjects under conditions of low (1:2) versus high (2:1) relative achievement (adopted from Winterhoff & Herrmann, 1979b, Experiment II)

STUDY 1: DISTRIBUTION OF FINANCIAL REWARDS

Herrmann and Winterhoff's (1980) research served as a model for the first of three studies which were conducted as part of the present research program. Herrmann and Winterhoff's research was replicated and extended in three regards. *First*, need was considered besides equity and equality as a distribution principle. *Second*, individual attitudes towards these principles were measured with several questionnaires. *Third*, situational counterparts of personal attitudes were included for all three principles and varied experimentally.

Experimental treatments were designed to correspond as closely as possible to the individual difference constructs at issue. The design thus includes a set of situational and organismic factors which are considered to be functionally equivalent. Specific main effects of the situational and the organismic factors and specific interactions between experimental and organismic factors are to be expected if the construal of the situations and the measures for the organismic factors are construct valid.

Theoretical considerations (e.g., Deutsch, 1975, 1985; Lerner, 1977; Mikula, 1980; Schwinger, 1980) and findings from previous research in the domain of distributive justice (Mikula, 1981; Törnblom, 1992) served as guidelines for selecting experimental factors. The goal was to create and vary situations which can be expected on theoretical grounds or which are known from previous experimental research to affect individuals' preference for a particular principle of distributive justice in a similar way as individual attitudes towards these principles. Based on the interactionist reasoning outlined above, the general expectation was that the magnitude of experimental effects would depend on individual differences in the corresponding attitude.

Although the empirical evidence is not totally consistent (cf. Schmitt, 1994), several studies (e.g., Bossong, 1983a) have confirmed theoretical considerations by Deutsch (1975) and Lerner (1977) stating that the equity principle is considered most appropriate and fair in competitive social contexts. In fact, one could argue that competition implies conceptually the pursuit of unequal distributions. The most typical case may be sports.

While competition may be characterized by the mutual exclusiveness of individual goals (cf. Lerner, 1977), cooperative social relations are usually characterized by one or several common goals which all members of the team pursue. Several authors have hypothesized that in cooperative social relations (Lerner, 1977: unit relations), equality is generally preferred to equity (Deutsch, 1975, 1985; Lerner, 1977). The available research evidence is consistent with this prediction (e.g., Bierhoff, 1981; Bossong, 1983a; Schmitt & Montada, 1982; Schwinger, 1980), at least as long as team members cannot be made responsible for unequal contributions. The equality principle may be disregarded in cases where unequal contributions are obviously due to controllable factors such as effort (Lamm & Kayser, 1978).

Based on this reasoning, the *type of social relation* was considered as a first experimental factor in the present research. In one condition, subjects and their partner competed against each other, each trying to maximize his outcome at the cost of the other. This condition corresponds to the general situation in Herrmann and Winterhoff's (1980) research. In the other condition, the subject and her partner team-worked towards maximizing common benefits.

Since preferences for either the equity or the equality principle can only be detected in cases of unequal contributions, *relative achievement* was considered as a second factor in this study. The levels of this factor were adopted from Herrmann and Winterhoff (1980).

According to Deutsch (1975) and Lerner (1977), the need for particular resources prevails as a criterion for their distribution in social contexts which are aimed at fostering the welfare of protégé such as children, students, or handicapped individuals who cannot provide the essential resource for themselves and thus are dependent on the benevolence of others. It can be argued, further, that need as a distribution criterion is considered more in cooperative social relations than in competitive situations. Team members are usually expected to show solidarity among each other; and solidarity includes conceptually to be sensitive towards each other's needs. Previous empirical studies have found that needs are generally taken into consideration when they are obvious (Bossong, 1983a, b; Lamm & Schwinger, 1980). The presence or absence of needs was therefore varied as a third experimental factor in the present study.

The specific empirical hypotheses which can be derived from the theoretical reasoning outlined above will be presented later because they can be formulated more precisely in relation to the specific design of the study and the operationalization of the independent and dependent variables.

Method

Experimental design and operationalization of experimental factors

Factor A was Relative Achievement. Bogus feedback was used to manipulate this experimental factor. In the first condition *(1:2)*, subjects were told that they had needed roughly twice as much time to solve the puzzle than their partner. In the second condition *(2:1)*, subjects were told that they had been twice as fast as their partner. *Factor B* was the Social Relation between subject and partner. In the first condition (*team*), the subject was told that she and her partner were a team. Each would work on a separate puzzle, but their common goal was to solve both puzzles as fast as possible. Their pay would depend on the total time, i.e., on their common achievement. In the second condition (*competition*), subjects were told that they had to compete with their partner and try hard to be faster than him. *Factor C* was need of partner. In the first condition (*need*), the partner was presented as someone in need for money. In the second condition (*no need*), no financial needs were mentioned. All experimental factors were varied between subjects. The complete 2 x 2 x 2 factorial design is displayed in Figure 3.

Factor A	1:2				2:1			
Factor B	team		competition		team		competition	
Factor C	need	no need	need	no need	need	no need	need	no need

Figure 3

Experimental design of Study 1

Subjects, procedure, and dependent variable

A total of 128 student subjects (half male, half female) from various majors (no advanced psychology students) of the University of Trier were recruited individually by Experimenter I (female) on campus. Subjects were assigned randomly to one of the eight experimental conditions. The number of male and female subjects was equal in all conditions. Subjects were told by Experimenter I that the experiment had been designed to investigate whether the quality of computer work depended on the social setting and, more specifically, whether the presence of another person working on the same task would make it easier or more difficult to solve a problem. To make the situation as realistic as possible, the subject and her partner would be paid money for their achievements.

Subjects were led by Experimenter I to a room in which a second person was waiting already. Experimenter I introduced this person to the subject as his or her partner for the experiment. Actually, this person was a (female) confederate. Experimenter I asked both, the subject and the confederate, to wait for a moment. Another Experimenter would come soon and give them further instructions. She would have to leave now in order to recruit more subjects for the experiment. As soon as Experimenter I had left the room, the confederate started an informal conversation with the subject. This conversation served to manipulate *Factor C*. In the need condition, the confederate mentioned that she had volunteered for the experiment because she really needed the money one could earn. In the no need condition, the confederate said that she didn’t care for the money one could earn, but had volunteered because she was curious about the experiment. As soon as the confederate had finished this statement, she coughed. This was the signal for Experimenter II, who was waiting in an adjacent room, to come. Experimenter II (female) entered the waiting room, introduced herself, and explained the task to the subject and his partner (the confederate) in detail. The task was to solve a puzzle on the computer. The puzzle program worked such that a picture was cut into several rectangular pieces which were mixed randomly. The subject’s task was to reconstruct the picture by using the mouse in a particular manner. After having ascertained that the subject knew what to do, Experimenter II said that the present experimental condition was to work in separate rooms. She asked the subject to follow her into an adjacent room, to sit in front of another computer, and to read further instructions. These were used to manipulate *Factor B* (see above). After the subject had read the instructions, Experimenter II made sure that the subject had perceived the crucial content, i.e., knew that she worked either with (team) or against (competition) her partner.

Then, Experimenter II started the puzzle and a stop watch. It took most subjects in between two and five minutes to solve the puzzle. Experimenter II announced the time the subject had needed, waited a few minutes, and then left the room, presumably to check the time of the subject’s partner. She came back and reported the partner’s time, which was either about half or twice the time the subject had needed (levels of *Factor A*). To make sure that the subject knew her relative achievement, Experimenter II mentioned in passing that the subject had needed roughly half or twice as much time than his partner. Experimenter II added both times and pretended to determine from a list the amount of money the subject and her partner deserved for their common achievement. Actually, this amount was always 18 Deutsch Marks.

Experimenter II then said that she and her colleague (Experimenter I) had decided to leave it to their subjects how to divide the money. They knew from experience that it was good for avoiding long discussions or even conflicts to have only one subject make the decision. Therefore, she would now determine by lot whether the subject or her partner had to divide the money. She offered two lots to the subject and asked her to draw one. The lots were faced such that the subject always "won", i.e., had to distribute the money. No subject was suspicious or critical of this procedure. Then, Experimenter II gave 18 DM coins to the subject and said: "Keep your share, I’ll give the rest to your partner later on." The amount of money the subject kept for himself served as the dependent variable.

Justice inventory

All questionnaires described earlier for measuring attitudes towards different principles of distributive justice (Bossong, 1983a; Montada et al., 1983; Sabbagh et al., 1994; Schwinger & Winterhoff-Spurk, 1984) were used in the present study. This was done to investigate their convergent and discriminant validity vis à vis each other as well as their common and distinct effects on the dependent variable. In order to analyze the discriminant validity of these measures vis à vis measures for other justice constructs, the Belief in a Just World Scale and the Centrality of Justice Scale (Dalbert et al., 1987) were also included. The entire justice inventory is given in the Appendix.

The original item and response formats vary between the questionnaires that were included in the present justice inventory. Schwinger and Winterhoff-Spurk (1984) use conventional statements as items ("Those who achieve more than others should get more") and a binary response scale (agree, disagree). Dalbert et al. (1987) and Montada et al. (1983) also use conventional statements as items but six-point rating scales (1/totally agree ... 6/totally disagree). Sabbagh et al. (1994) use a five-point rating scale representing the range of consideration a particular rule should be given (1/it should not be considered et al. ... 5/it should be considered very much) for the distribution of various resources (money, prestige, power, learning opportunities). Items are grouped according to resource and represent the basic criterion or argument of a distribution rule ("Those who try harder and invest more"). Finally, Bossong’s (1983a) questionnaire does not contain conventional items (statements) but short descriptions of distribution conflicts. The subject has to decide which distribution out of five she would consider most fair (cf. Appendix). Adopting the six-point rating scale from Dalbert et al. (1987) and Montada et al. (1983), the response formats for all questionnaires except Bossong’s were uninformed. It was necessary to translate the items of Sabbagh et al’s (1994) questionnaire and change the wording slightly to fit the new response format. These changes as well as the German translation were discussed with and approved by Clara Sabbagh (personal communication, September 1993).

The items from the questionnaires to measure attitudes towards principles of distributive justice (Montada et al., 1983; Sabbagh et al., 1994; Schwinger & Winterhoff-Spurk, 1984) and the items from the Belief in a Just World and Centrality of Justice Scales (Dalbert et al., 1987) were mixed. These 66 items make up the first part of the justice inventory (see Appendix).

The second part of the justice inventory (see Appendix) was adopted from Bossong (1983a). The original version of this instrument was changed slightly in three regards. First, the wording of some stories was changed slightly for style. Second, the amount of money at issue for distribution in the stories was raised to compensate for inflation and pay raises during the last decade. Third, the five possible distributions offered as alternatives to the subjects were changed slightly for some stories on intuitive grounds - making some alternatives less and others more unequal than in the original version.

Administration of justice inventory

To avoid artificial consistencies between the subjects' behavior in the experiment and their answers to the justice inventory, it was necessary to administer the justice inventory such that no connection to the experiment was likely to be perceived by the subjects. The following procedure was devised to serve this purpose.

After the subjects had taken their money and left the room, they were followed inconspicuously by Experimenter III (female). Experimenter III waited for a suitable occasion to address the subject and asked him if he had time to fill out a questionnaire. Experimenter III introduced herself as a psychology student and pretended that she had to standardize questionnaires for a methodology class. Most subjects either consented immediately to participate, or they agreed after Experimenter III explained that is was very important for her to administer her questionnaire to a large number of subjects. Subjects who still refused the request were excluded from the sample and replaced by new subjects.

Subjects who consented were led to a room, given the justice inventory, and asked to answer all items conscientiously. Experimenter III told each subject where to put his questionnaire after he was done, and that he could leave afterwards. She thanked the subject for his cooperation and left the room. The first author of this paper, whose office was next door, intercepted the first 20 subjects and an additional sample of ten when they left the room. He introduced himself as the supervisor of the two studies and asked the subjects if they had noticed a connection between the two studies. Four subjects recognized a similarity between the content of Bossong's items and the distribution of money in the experiment. It appeared, however, that three of these subjects realized the connection only during the interview. The fourth subject (who happened to be a first year psychology student) suspected that the two studies might not be independent but belong to the same research. Since he also acknowledged the possibility that his behavior in the experiment might have influenced his answers to Bossong's items, he was excluded from the study and replaced.

Although response biases due to the participation in the experiment cannot be excluded positively, pronounced biases seem unlikely. Furthermore, the risk of artificial relations between the justice inventory and subjects' behavior in the experiment seems to be confined to the second part of the justice inventory, since only Bossong's items were similar enough to the experimental task to make a connection between both parts of the study detectable for the subjects.

Hypotheses

The following concrete hypotheses can be derived from the general theoretical reasoning outlined earlier in combination with the specific design of the present study and the operationalization of the variables:

Main effects of experimental factors

Hypothesis 1: Main effect of Relative Achievement: Subjects in the 2:1 condition keep more money for themselves than subjects in the 1:2 condition.

Hypothesis 2: Main effect of Need: In the need condition, subjects keep less money for themselves than in the no need condition.

Interaction effects of experimental factors

Hypothesis 3: Interaction effect of Relative Achievement and Social Relation: The effect of Relative Achievement (cf. Hypothesis 1) is larger in the competition condition than in the team condition.

Hypothesis 4: Interaction effect of Need and Social Relation: The effect of Need (cf. Hypothesis 1) is larger in the team condition than in the competition condition.

Interaction effects of experimental and organismic factors

Hypothesis 5: Interaction effect of Relative Achievement and Attitude Towards Equity: The effect of Relative Achievement (cf. Hypothesis 1) is larger for subjects with a favorable attitude towards equity than for subjects with a less favorable attitude towards equity.

Hypothesis 6: Interaction effect of Need and Attitude Towards Need: The effect of Need (cf. Hypothesis 2) is larger for subjects with a favorable attitude towards need than for subjects with a less favorable attitude towards need.

Hypothesis 7: Interaction effect of Relative Achievement and Attitude Towards Equality: The effect of Relative Achievement (cf. Hypothesis 1) is smaller for subjects with a favorable attitude towards equality than for subjects with a less favorable attitude towards equality.

Hypothesis 8: Interaction effect of Need and Attitude Towards Equality: The effect of Need (cf. Hypothesis 2) is smaller for subjects with a favorable attitude towards equality than for subjects with a less favorable attitude towards equality.

The last two interaction effects were expected because subjects with a favorable attitude towards equality/parity should tend to disregard or put less weight on information which may justify differential distributions according to the equity or the need principle.

Results

Effects of gender and experimental factors

A four way analysis of variance including the three experimental factors and gender of subject as a control factor was computed first. Including gender as a control factor seemed necessary since some authors have argued on theoretical grounds and shown empirically that females tend to prefer the equality principle more than males, while males tend more than females to choose the equity principle (e.g., Kahn, O'Leary, Krulewitz, & Lamm, 1980). This pattern seems to be confined to situations in which the subject is, as in the present study, a co-recipient (cf. Major & Deaux, 1982; Törnblom, 1992). In the present study, however, no significant main effect of gender [$F(1,112) = .223$; $p = .64$] and no significant simple or higher order interaction between gender and the remaining factors [$.002 < F(1,112) < 1.71$; $.97 > p > .19$) were found. This result replicates several earlier studies conducted in Austria by Mikula and his colleagues (summarized by Mikula, 1981) and supports Mikula's conclusion that the effect of gender on allocation behavior and corresponding justice judgments may vary across cultures and perhaps be confined to North Americans or at least be more pronounced among North Americans than among Europeans.

Given the lack of gender effects in the present research, male and female subjects were pooled, and a three way analysis of variance was conducted to test the Hypotheses 1 through 4, i.e., to determine the effects of the three experimental factors and their interactions on the amount of money a subject kept for himself. The results of this analysis are given in Table 1, and the means of the eight experimental conditions are presented in Figure 4.

Three significant effects appear in Table 1, a main effect of *Factor A*, a main effect of *Factor B* and an interaction of these two factors. The strongest effect, explaining 27% of the variance of the dependent variable, was the main effect of *Factor A*, Relative Achievement. Subjects who solved the puzzle twice as fast as their partner kept significantly more money for themselves than subjects who were two times slower than their partner (cf. Figure 4). This effect supports Hypothesis 1 and agrees well with Herrmann and Winterhoff's (1980) results (cf. Figures 1 and 2, above). However, two differences between the present result and the results from Herrmann and Winterhoff's (1980) research seem noteworthy. First, the proportion of variance explained in Herrmann and Winterhoff's (1980) study was about twice as large as in the present study. Second, subjects with high relative achievement did not keep more than half of the money in the present study (two thirds would have corresponded to their relative achievement). In Herrmann and Winterhoff's (1980) research, winners tended to keep more than half of the tokens for themselves, yet less than two thirds. Both studies are consistent in that subjects with low relative achievement kept considerably less than half of the money for themselves, but again, more than what they would have deserved according to the equity principle (one third). Subjects in the high achievement condition thus applied the equality principle in the present study, while subjects in the low achievement condition tended more but not totally towards a proportional distribution, i.e., the application of the equity principle. The pattern of results of this study has been found in previous research (cf. Mikula, 1980; Schwinger, 1980) and has been interpreted as a politeness ritual by these authors.

Table 1

Three way analysis of variance for Study 1

Source of Variance	SS	DF	MS	F	p	h^2
Factor A (Achievement Level)	72.00	1	72.00	48.34	<.01	.27
Factor B (Social Relation)	9.03	1	9.03	6.06	.02	.03
Factor C (Need)	1.53	1	1.53	1.03	.31	
A x B	7.03	1	7.03	4.72	.03	.03
A x C	.28	1	.28	.19	.67	
B x C	.13	1	.13	.08	.77	
A x B x C	.13	1	.13	.08	.77	
Explained	90.13	7	12.88	8.64	<.01	.34
Residual	178.75	127	1.49			

The main effect of Relative Achievement holds for all levels of the two remaining factors. This is not true for the significant main effect of *Factor B*, Social Relation, which was not predicted. This effect, which explains 3% of the variance of the dependent variable, is qualified by a significant interaction with *Factor A*. It can be seen from the means in Figure 4 that the social relation between the subject and her partner did not make a difference when the subject had a superior achievement. When subjects had performed less well than their partner, however, they tended to keep less money for themselves under the competition condition than under the team condition. This pattern is well in line with theoretical considerations and empirical results mentioned earlier, and it supports Hypothesis 3: Subjects in the competition condition gave more weight to their and their partner's relative achievement than subjects in the team condition.

The main effect of *Factor C*, Need, was not significant, although in accordance with Hypothesis 2, means are consistently lower in the need conditions than in the corresponding no need conditions (cf. Figure 4). Given the significant and partly substantial effect of needs in the research mentioned earlier, the nonsignificant effect in the present study seems puzzling. Three quite different post hoc explanations may be considered. (1) Perhaps the subtle mention of needs in the context of other themes did not make a salient and lasting impression on the subjects. (2) It could also have been, however, that the subjects did realize the financial needs of her partner but considered the amount of money to be distributed as irrelevant vis à vis the existential situation of her partner. In other words, the subject may have supposed, quite realistically, that a few marks would not make a difference to someone who finds herself in a difficult financial situation. (3) Finally, since more or less all students are in difficult financial situations, subjects may not have perceived their partner as distinct from themselves in this regard. Thus the need of the other person did not justify an unequal distribution in this particular context, although in general, subjects may well consider needs to be relevant criteria for the distribution of resources.

The same reasons may explain why the interaction between Need and Social Relation (Hypothesis 4) was not significant.

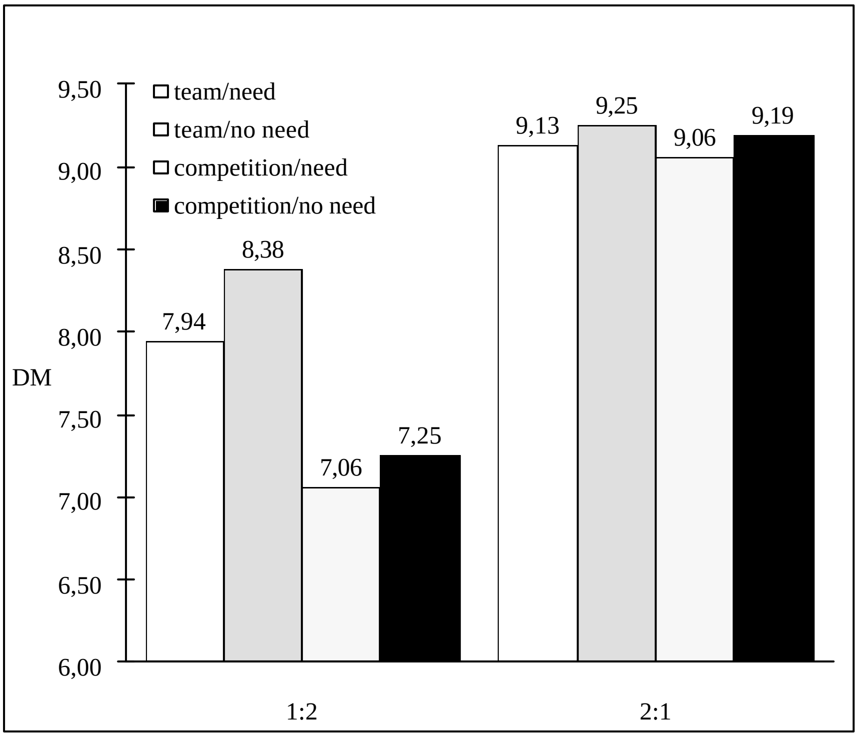

Figure 4

Mean amount of money (DM) kept by subject in the eight experimental conditions of Study 1

<u>Factorial structure of the justice inventory and correlations among the scales</u>

In order to increase the statistical robustness and reliability, the psychometric analyses of the justice inventory were based on the samples from all three studies (N = 328).

In a first step of analyses, the correlation matrix of the 76 items of the justice inventory were submitted to exploratory common factor analyses. The number of factors was determined both on theoretical (number of apriori constructs) and on empirical grounds (size of eigenvalues). Several sets of common factors, differing in the number of factors, were rotated (varimax and oblimin). None of the various solutions was totally satisfactory -- either because a poor simple structure resulted and/or because at least some factors did not correspond to the constructs to be measured. In the six factor solution, for example, which corresponds most closely to the theoretical differentiation (equity; equality/parity/factual equality; equality of chances; need; belief in a just world; centrality of justice), the following pattern of loadings appeared: The first factor loaded mostly equity items. The second factor had high loadings on equality/parity and need items. The third factor was a mixture of equality/parity, need, and centrality of justice. The fourth and fifth factors were the only factors to have an unambiguous pattern of loadings. Factor 4 comprised solely equality of chance items. The six highest loadings of Factor 5 belonged to the six belief in a just world items. Finally, the sixth factor had its highest loadings on seven of the ten Bossong items plus on four equity items from other authors.

Table 2

Internal consistency coefficients, number of items, and correlations among the apriori scales of the justice inventory

	EYM	EYS	EYW	EYB	FEM	ECM	PAS	PAW	NEM	NES	CJM	a	n
EYM												.66	4
EYS	**.41**											.83	9
EYW	**.66**	**.66**										.75	11
EYB	**.39**	**.29**	**.47**									.71	10
FEM	-.03	**.21**	.09	-.14								.65	4
ECM	-.02	-.05	-.05	**-.16**	**.20**							.88	4
PAS	**-.24**	**-.29**	**-.40**	**-.32**	**.29**	**.24**						.56	4
PAW	**-.29**	**-.26**	**-.46**	**-.43**	**.30**	**.38**	**.67**					.77	12
NEM	.03	-.02	**-.19**	**-.19**	**.20**	**.28**	**.36**	**.52**				.66	4
NES	-.09	.14	-.13	**-.25**	**.33**	**.25**	**.37**	**.46**	**.44**			.57	3
CJM	.00	.13	.02	-.11	**.22**	.07	**.25**	**.32**	**.23**	**.30**		.68	5
JWM	**.29**	**.18**	**.35**	.10	-.07	.03	-.05	**-.17**	-.09	**-.15**	.03	.75	6

Notes:

(1) Significance levels: bold numbers: $p < .01$; underlined numbers: $p < .05$

(2) Scale labels:

EYM: **E**quit**y** -- **M**ontada, Schmitt, & Dalbert (1983)
EYS: **E**quit**y** -- **S**abbagh, Dar, & Resh (1994)
EYW: **E**quit**y** -- Schwinger & **W**interhoff-Spurk (1984)
EYB: **E**quit**y** vs. Equality -- **B**ossong (1983a)
FEM: **F**actual **E**quality -- **M**ontada et al.
ECM: **E**quality of **C**hances -- **M**ontada et al.
PAS: **Pa**rity -- **S**abbagh et al.
PAW: **Pa**rity -- Schwinger & **W**interhoff-Spurk
NEM: **Ne**ed -- **M**ontada et al.
NES: **Ne**ed -- **S**abbagh et al.
CJM: **C**entrality of **J**ustice -- Dalbert, **M**ontada, & Schmitt (1987)
JWM: **B**elief in a Just **W**orld -- Dalbert, **M**ontada, & Schmitt (1987)

Given this inconclusive pattern of results on the level of items, a second series of analyses was conducted on the level of the apriori scales. The internal consistency coefficients Alpha for these scales and their correlations among each other are presented in Table 2. The last column contains the number of items of the scales.

The internal consistencies of the scales vary substantially. Short scales tend to have lower internal consistencies than longer scales, although the highest value was obtained for the four items which measure equality of chances (ECM). The pattern of correlations among the scales does not correspond to the ideal of a multi-trait multi-method matrix. For example, the correlations among the four equity scales (EYM, EYS, EYW, EYB) and among the four equality/parity scales (FEM, ECM, PAS, PAW) are moderate at most and in some cases (EYM/EYB; EYS/EYB) even lower than the negative correlations between some equity scales and some equality/parity scales (EYW/PAW; EYB/PAW). Similarly, the correlation between the two need scales (NEM/NES) is lower than the correlations of both scales with Schwinger and Winterhoff-Spurk's parity scale (NEM/PAW; NES/PAW).

Next, the correlations among the scales were factor analyzed. According to the eigenvalues, the twelve scales have only two factors in common which explain about half of the total variance. However, a satisfactory simple structure could neither be obtained via an orthogonal (varimax) nor via an oblique (oblimin) rotation. The loadings for the varimax solution are given in Table 3 (Appendix). The three equity scales have the highest positive loadings on Factor 1. Bossong's bipolar equity/parity scale loads considerably on this factor as well. However, two parity scales also have substantial negative loadings on this factor. Factor 2 comprises all equality/parity and need scales plus, with a loading of .41, the centrality of justice scale.

In the next series of analyses, the measurement instruments were factor analyzed again on the level of items, but separately for authors. These analyses yielded somewhat clearer results.

Six common factors, with a good simple structure after varimax rotation, were found for the items of the scales from Montada and his colleagues. Together, these six factors explain 54% of the total item variance. As can be seen from Table 4 (Appendix), the pattern of empirical loadings is perfectly consistent with the definition of the constructs. The scales thus have a very high factorial validity.

Regarding the Sabbagh et al. (1994) scales, only the eigenvalues for the first two common factors were greater than one. 41% of the total item variance can be explained by these two factors. The loading matrix of the varimax solution is given in Table 5 (see Appendix). The first factor loads only equity items highly, while the second factor comprises equality and need items. This latter finding is consistent with the substantial correlation of .37 between the parity and need scales (cf. Table 2). In the varimax rotated three factor solution, need and equality do not separate as distinct factors; rather, the equity factor splits into two factors.[2] Thus, the empirical loading pattern does not quite correspond to the distinction of the constructs.

The eigenvalue diagram for the Schwinger and Winterhoff-Spurk (1984) scales suggests two common factors. However, they explain only 32% of the total item variance. Furthermore, the pattern of loadings is not very clear and not in good agreement with simple structure. The first factor loads highly some equity items; yet some parity items have also fairly high (negative) loadings on this factor. This finding is consistent with the substantial correlation of -.46 between the equity and the parity scales (cf. Table 2). The second factor contains only parity items (cf. Table 6, Appendix).

Finally, the eigenvalue diagram for the ten Bossong items shows that, consistent with the definition of the bipolar construct, they have only one factor in common. This factor explains 29% of the total item variance.

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[2] This result corresponds to a result which was obtained from a large sample of East German students (see above).

In terms of explained item variance, approximation of simple structure, and consistency of the empirical loading patterns with the definition of the constructs (factorial validity), the scales developed by Montada et al. (1983) and Dalbert et al. (1987) perform better than the scales devised by Sabbagh et al. (1994) and Schwinger and Winterhoff-Spurk (1984). However due to their shortness, most Montada scales have only moderate internal consistencies. Latent state trait analyses with method factors show, however, that the reliabilities of the scales are considerably higher than their internal consistencies (Schmitt, Reichle, Schneider, & Steyer, 1993).

Regarding the convergent and discriminant validity of the scales vis à vis each other, no satisfactory results were obtained in the present study. Within construct correlations among the scales were rather low in some cases and sometimes even lower than cross construct correlations. Since no firm external criterion for the construct validity of the scales exists, it seems reasonable to rely on the face validity of the items from the perspective of their authors and to assume that the scales tap different facets of the same construct. This reasoning suggests to combine the scales which were developed for measuring the "same" constructs. Such a "comprehensive" scale may cover a larger range of manifestations of the constructs than each single scale.

Therefore, in a final step of analyses, the internal consistencies of three "comprehensive" scales for measuring attitudes towards the "big three" (equity, equality, need) were established. The comprehensive equity scale (EY) consists of 34 items (Montada, Sabbagh, Winterhoff-Spurk, Bossong) and has an internal consistency of Alpha = .88. All items have positive item-total correlations ranging from .18 to (EYB4) to .54 (EYS4). The comprehensive equality scale (EQ) consists of the Sabbagh et al. and the Schwinger and Winterhoff parity scales (PAS, PAW) and of the Montada et al. factual equality and equality of chances scale (FEM, ECM). The internal consistency of the scale amounts to .85 and the item-total correlations of the 24 items are all positive, ranging from .16 (FEM1) to .70 (ECM4). The comprehensive need scale (NE) has seven items (Montada, Sabbagh) and an internal consistency of .71 only. The item-total correlations are lower than for the other two comprehensive scales; they range from .15 (NES1) to .34 (NEM2).

Interaction effects of experimental and organismic factors

Multiple regression analyses with product variables (cf., Aiken & West, 1991) were run for testing Hypotheses 5, 6, 7, and 8 and for exploring additional interactions between experimental and organismic factors. For this purpose, experimental factors were dummy coded. Product variables were created by multiplying these dummy variables with each other and with measures for the corresponding organismic factors. Analyses were always performed with several measures for each organismic factor, namely, all author-specific apriori scales and the comprehensive scales. For example, Hypothesis 4 (interaction between Relative Achievement and Attitude Towards Equity) was tested separately with the Montada et al. equity scale, the Sabbagh et al. equity scale, the Schwinger and Winterhoff-Spurk equity scale, Bossong's equity vs. parity scale, and the comprehensive equity scale, which is the combination of the four author specific scales mentioned before.

Technically, the regression analyses were conducted in a stepwise fashion. In the first step, all dummy variables (representing the main effects of the experimental factors) and their products (representing first and second order interactions among the experimental factors) were entered. This step of the regression analysis is identical with the three way analysis of variance reported earlier (cf. Table 1). In the second step, the organismic variable at issue was entered into the regression equation. Although no main effect of any such variable was predicted theoretically, their inclusion was necessary to control for the confounding of product variables with their constituents (cf. Cohen, 1978). In the third step, the products between corresponding dummy variables and organismic variables were entered into the regression equation to test the effect of the partialed product which represents the pure interaction effect at issue.

The results of all these analyses can be summarized very briefly: None of the interaction effects which had been predicted (Hypotheses 5, 6, 7, 8) was significant for any of the measures of the organismic factors. In a series of additional exploratory regression analyses, only two significant interaction effects were detected. The first effect was an interaction between Equality of Chances (EQM) and Social Relation: The effect of the Social Relation factor was less pronounced for subjects with a positive attitude towards equality of chances than for subjects with a negative attitude. The second effect was an interaction between Relative Achievement and Centrality of Justice (CJM). Relative Achievement had a lower impact for subjects with high centrality than for subjects with low centrality.

In order to replicate Herrmann and Winterhoff's (1980) studies as closely as possible and to exclude the possibility that differences in methodology may be responsible for differences in results between their study and the present study, the following additional analyses were conducted: E-typed and P-typed subjects were defined, using Herrmann and Winterhoff's criteria, and an analysis of variance with Type as an organismic factor was conducted. All available equity and equality/parity scales were used in all possible combinations for defining types. Furthermore, groups were not only defined on the basis of median splits but also on the basis of more restrictive criteria. More precisely, E-typed and P-typed subjects were also defined by selecting subjects who scored below or above the 33rd and the 25th percentiles of those scales that were used for defining types. But again, no significant interaction between Type and Relative Achievement could be found in any of these analyses.

Given the large sample size of the present study, the likelihood of type II errors is low and the lack of significant effects of the organismic factors can thus not be attributed to lack of statistical power.

It seems safe, therefore, to conclude that in the present study, subjects did not distribute the money according to the attitudes they hold towards various distribution principles. Rather, their behavior seems to have been guided solely by the kind of situation they were in.

Before we discuss this result and its implications, we will present four additional studies on distributive justice from an interactionist perspective. Two of these studies were conducted by Bossong (1983a, b) and two by the present authors. All four studies differ from the studies described so far (Herrmann & Winterhoff, 1980; Study 1) in that no overt distribution behaviors or other behavioral indicators of justice preferences were observed. Rather, these studies were vignette studies in which subjects were asked to suggest what they considered a fair distribution in hypothetical situations or to judge the fairness of a hypothetical decision.

BOSSONG'S RESEARCH

Bossong's first study was on fair income (Bossong, 1983a; Experiment 3). Fifty six female university students served as subjects. Three independent variables were considered. *Factor A* was gender of protagonist. *Factor B* was difficulty of training and had two levels (low difficulty, high difficulty). Difficulty was varied by describing the protagonist's major professional training [e.g., Nuclear Physics (high difficulty); Business Administration (low difficulty)] and the topic of his diploma thesis. *Factor C* was dispositional preference for equity vs. equality. This organismic factor was measured with Bossong's questionnaire described earlier (cf. Appendix). *Factor C* had three levels: Subjects were split into three groups of approximately equal size based on their scale scores (equitarians, egalitarians, ambivalents).

Subjects were described the curriculum vitae of eight individuals (two protagonists for each gender and for each of the two difficulty levels) who had just graduated from university and who were applying for jobs. Subjects were asked to give the monthly net income they would consider appropriate for the protagonist's first job. The average value across the two protagonists within each cell (gender of protagonist x difficulty of education) served as the dependent variable. A two (gender) by two (difficulty of training) by three (justice preference) analysis of variance revealed a significant main effect for gender of protagonist [$F(1,52) = 5.6$; $p < .05$], a significant main effect for difficulty of education [$F(1,52) = 39.9$; $p < .01$], and a significant first order interaction effect for difficulty x justice preference [$F(1,52) = 7.3$; $p < .01$]. The corresponding means are given in Figure 5.

The means in Figure 5 show that men were considered (by female subjects!) to deserve higher salaries than women. Furthermore and according to the contribution principle, graduates with a more difficult professional education were granted a higher first salary than graduates with a less difficult education. Most interesting for the present context is the interaction between justice preference and difficulty of education: Subjects with a strong preference for equity put more weight on differential contributions (difficulty of training) than subjects with an ambivalent attitude or with a strong preference for equality. This finding is in line with interactionist expectations and supports the construct validity of Bossong's questionnaire.

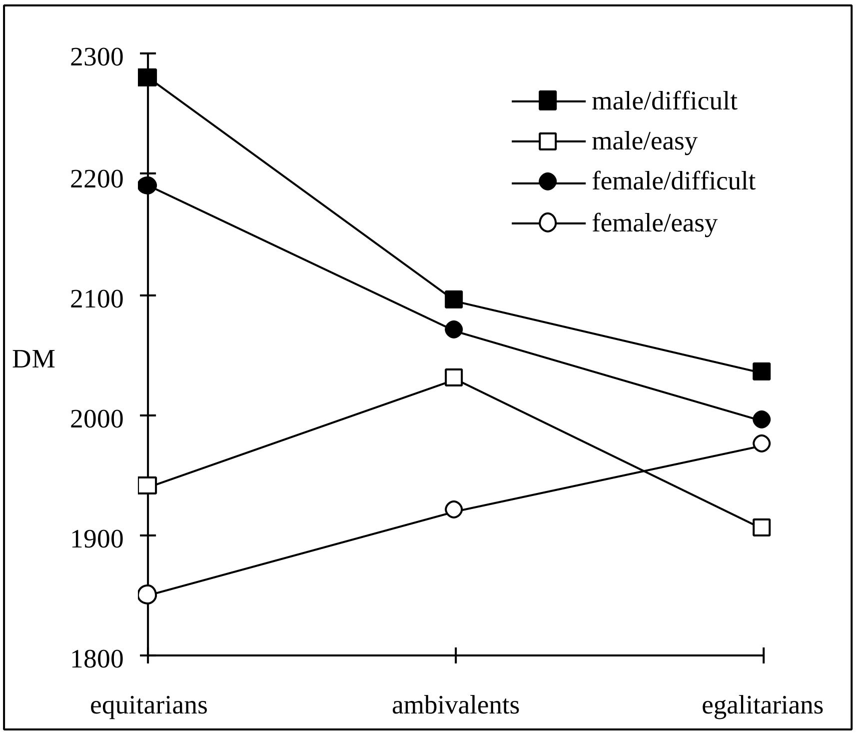

Figure 5

Fair income for men and women with easy and difficult professional education as suggested by subjects with different preferences for equity vs. equality (adopted from Bossong, 1983a, p. 42)

Bossong's (1983b) second study was also a vignette study in which the social relation between two recipients (*Factor A*; friendly vs. economic) and the presence versus absence of needs of one recipient (*Factor B*) were varied within subjects. Each cell of the two by two repeated measurement design was represented by two scenarios. Like in the first study, *Factor C* was dispositional preference for equity vs. equality. In this study, however, subjects were median split into two groups (equitarians, egalitarians). Twenty-six female high school students, aged 16 to 17, served as subjects. The scenarios were similar to the situations of Bossong's questionnaire for measuring dispositional preference for equity vs. equality. More specifically, two protagonists were described in the scenarios, who were either friends or strangers (levels of *Factor A*), and who had come together for the sake of making some money. Both persons performed the work together, e.g., roofing a house. One of the protagonists had a superior training for the job or had contributed more to the work. Need (*Factor B*) was varied as follows: In one condition, the person who was trained less well for the job or who had performed less well was described as being in need for the money; in the other condition, no needs were mentioned. Subjects had to state how much money they would pay each person for the job. The values for both recipients were transformed into percentages and averaged across the two scenarios within each cell. The average value for the person with the better training or higher performance served as the dependent variable. The more this value deviates from 50%, the more equitable the distribution is.

Bossong (1983b) did not predict explicitly an interaction between the person factor and the situation factors. However, the way he phrases the research questions suggests that he expected equitarian subjects to put more weight on differential contributions in professional relations than in friendly relations. This would correspond to an interaction of *Factor A* and *Factor C*.

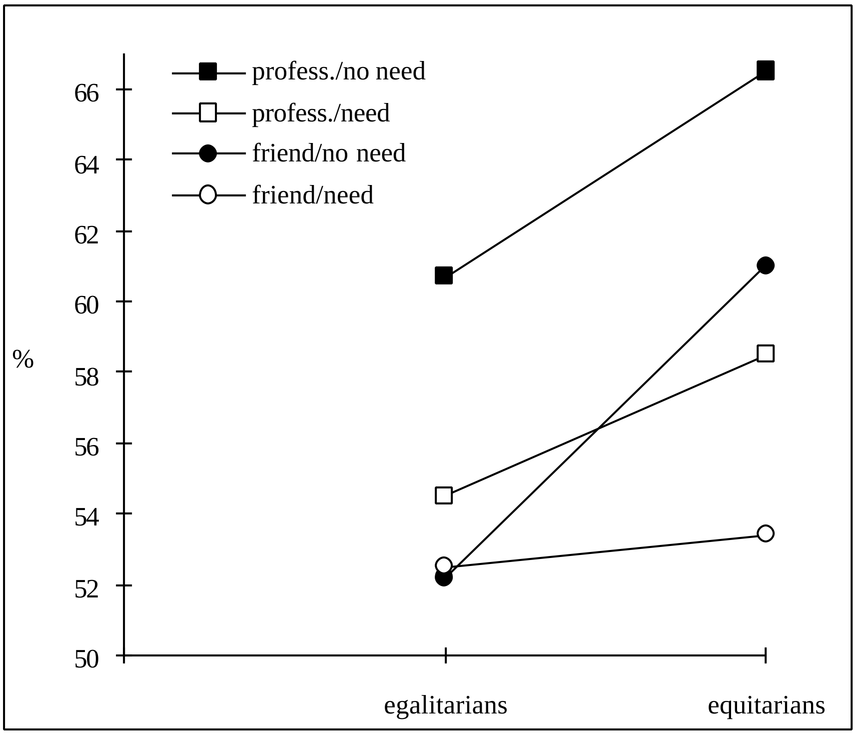

Figure 6

Percentage of fair pay (for recipients with superior achievement) in friendly vs. economic relationships and for presence vs. absence of needs (of recipients with inferior achievement) as suggested by subjects with different preferences for equity vs. equality(adopted from Bossong, 1983b, p. 569)

A two by two by two analysis of variance with repeated measurement on *Factor A* and *Factor B* revealed significant main effects for all three factor. The direction and size of the effects can be seen from the means in Figure 6. First, subjects suggested a less unequal distribution if the recipient with lower contributions was in need for money. If no such need was mentioned, subjects put more weight on unequal contributions and tended more towards an unequal distribution of rewards. Second and in line with theoretical predictions by Deutsch (1975) and Lerner (1977), subjects also tended more towards equal distributions if the recipients were friends. Equitable distributions were considered more appropriate for protagonists who worked together on a purely economic basis. Third, subjects who generally prefer equitable distributions according to Bossong’s questionnaire also voted for unequal distributions in the present scenarios. This is not surprising given the large similarity between these scenarios and the scenarios in Bossong’s questionnaire.

Contrary to the general interactionist reasoning and Bossong’s implicit expectation, however, no interaction between situational factors and dispositional factors was found. More specifically, subjects with a general preference for equity did not put more weight on unequal contributions than subjects with a general preference for equality.

STUDY 2: OWN CONTRIBUTIONS OF INSURANCE CLIENTS

Risk insurances are prototypical applications of the need principle. A group of individuals pay money into a common fund to protect individual members against financial risks with low expectancy but high value. In order to keep the system efficient and prevent misuse, the need principle is often combined with special versions of the equity principle: Insurants who do not claim money for a certain amount of time are often rewarded by bonuses. In addition, insurance rates are usually risk dependent, i.e., clients with higher risks pay more than clients with lower risks. Furthermore, some insurance companies pay for a certain amount of the damage only, leaving a certain percentage of the burden to the insurant. For some insurances, e.g., property insurances, these principles seem to be established to prevent misuse. For other types of insurances, such as health and liability insurances, the idea seems to be that these principles work as safeguards against "unnecessary" neediness. The underlying assumption is that clients have at least some control regarding the insured good, for example their health, and that own contributions prevent carelessness. Obviously, this assumption is more correct in some cases than in others. It is therefore not surprising, that the principle of own contributions itself, the types of damages it is applied to, and the percentage of the costs which are burdened on clients are matters of controversial public debate.[3]

The issue of own contributions of clients was employed for the present vignette study. Subjects were described various insurance cases and asked to indicate the percentage of costs they would consider fair to be paid for by the client himself. The general assumption was that this percentage would depend on both, characteristics of the case (situation) to be judged and characteristics of the judging individual. From the latter group of variables, attitudes towards different principles of distributive justice were of primary interest in the present research context. In order to investigate the influence of dispositional justice preferences from an interactionist perspective, it was necessary to design and vary situational factors that are functionally equivalent to the individual difference constructs at issue (cf. Study 1). The responsibility of the client for his damage was chosen as the situational counterpart to dispositional equity preference, while the clients social and economic situation was considered the best functional equivalent to need preference.

Method

Factor A was Responsibility for Damage. In the first condition (high responsibility), the client was described as a person who had self-inflicted his damage by careless behavior. In the second condition (low

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[3] At least in Germany, this has become a big issue recently. The cost of health care has increased dramatically during the last decade, and one of the various solutions discussed for this problem is an increase in clients´ own contributions. As a matter of fact, a federal law was passed recently which requires certain amounts of own contributions by patients for various treatments and medications. Furthermore, the possibility is being discussed to raise insurance rates for clients who consciously engage in risky behaviors such a smoking or playing dangerous sports. A similar development occurs regarding comprehensive car insurances. The rate of car theft in Germany has gone up by several hundred percent since the borders to former communist countries in Eastern Europe were opened. By no, most insurance companies have designed risk dependent insurance rates and offer special benefits to clients who code protect their cars.

responsibility), the damage seemed unavoidable because it occurred to the client despite conscientious and careful behavior. *Factor B* was Social and Economic Situation of Client. In the first condition, the client was described as a rather poor person, in the second condition, the insurant was wealthy. *Factor A* and *B* were varied between subjects. *Factor C* was Type of Insurance Case and was varied within subjects. Six insurance cases were described (cf. Figure 7). The complete 2 x 2 x 6 factorial design is displayed in Figure 7.

Factor A	high responsibility		low responsibility	
Factor B	client poor	client wealthy	client poor	client wealthy
Factor C	Health insurance: client needs expensive dental treatment			
	Health insurance: client needs expensive treatment of lung cancer			
	House insurance: client's apartment was on fire			
	House insurance: water pipe breaks and apartment gets flooded			
	Car liability insurance: with his car, client hits another car			
	Car comprehensive insurance: client's car gets stolen			

Figure 7

Experimental design of Study 2

Some examples may illustrate how the situational conditions were operationalized. To vary *Factor A* for the first insurance case, a student was described who either had always brushed his teeth very carefully (low responsibility) or who had not cared about his teeth, brushing them only rarely (high responsibility). To vary *Factor B*, this student either had to work to make a living or came from a rich family who paid for all his expenses. Regarding the second insurance case, a woman was described who either was a heavy smoker (high responsibility) or had to work in a high pollution area (low responsibility), and who either was a worker (poor) or a manager (wealthy).

The six scenarios were presented consecutively on a single page. For each story, subjects had to write down the percentage of the total costs that they would consider a fair contribution by the client, the possible values ranging from 0% to 100%. This was the dependent variable.

To measure subjects' attitudes towards different principles of distributive justice, the same justice inventory as in Study 1 was used (see above). The justice inventory was attached to the scenarios. Subjects were instructed to answer the scenarios first and then the justice inventory. The simultaneous administration of both instruments seemed justifiable because the content of the vignette questionnaire and the justice inventory do not seem similar enough to facilitate response biases towards artificial consistencies between both instruments.

Eighty students from various majors (no advanced psychology students) of the University of Trier were recruited individually on campus and assigned randomly to one of the four experimental conditions. The proportion of males and females was 7:13 in all experimental conditions. Subjects were told that the investigation was on attitudes towards various issues of current public interest.

Hypotheses

The following hypotheses are specific applications of the general theoretical considerations presented earlier to the specific design and operationalizations of this study.

Main effects of experimental factors

Hypothesis 1: Main effect of Responsibility: A higher own contribution is considered fair for clients who self-inflicted their damage than for clients who could not prevent their damage.

Hypothesis 2: Main effect of Social and Economic Situation: A higher own contribution is considered fair for wealthy clients than for poor clients who are more in need for support by the insurance company.

Interaction effects of experimental and organismic factors

Hypothesis 3: Interaction effect of Responsibility and Attitude Towards Equity: The effect of Responsibility (cf. Hypothesis 1) is larger for subjects with a favorable attitude towards equity than for subjects with a less favorable attitude towards equity.

Hypothesis 4: Interaction effect of Social and Economic Situation and Attitude Towards Need: The effect of Social and Economic Situation (cf. Hypothesis 2) is larger for subjects with a favorable attitude towards need than for subjects with a less favorable attitude towards need.

Hypothesis 5: Interaction effect of Responsibility and Attitude Towards Equality/Parity: The effect of Responsibility (cf. Hypothesis 1) is smaller for subjects with a favorable attitude towards equality/parity than for subjects with an unfavorable attitude.

Hypothesis 6: Interaction effect of Social and Economic Situation and Attitude Towards Equality/ Parity: The effect of Social and Economic Situation (cf. Hypothesis 2) is smaller for subjects with a favorable attitude towards equality/parity than for subjects with an unfavorable attitude.

Like in Study 1, the last two interaction effects were expected because subjects with a favorable attitude towards equality/parity should tend to disregard or put less weight on information which may justify differential distributions according to other principles or rules.

Results

Factorial structure of repeated measures for the dependent variable

Before the effects of the experimental between subject factors and the organismic factors were determined, the correlational structure of the repeated measures for the dependent variable (levels of *Factor C*) was analyzed. Such an analysis is necessary to find out whether and to what extent individual differences in the suggested percentages of the client's contribution are consistent across the six insurance cases. A common exploratory principle axes factor analysis yielded a straightforward result: The first common factor explains 63% of the total variance. Furthermore, the internal consistency Alpha of the six items, each representing a different insurance case, amounts to .87. These figures evidence a high homogeneity among the six insurance cases, i.e., a substantial consistency of the subjects' suggestions regarding a fair own contribution of the client. Consequently, it is not necessary to include *Factor C* in the analyses; rather, an aggregated and thus more reliable measure for the dependent variable was created by averaging the six repeated measurements.

Effects of gender and experimental factors

A three way analysis of variance including the two experimental between subject factors and gender of subject as a control factor was computed first. Gender was included as a control factor for the same reasons as in Study 1. Unlike in Study 1, a significant (second order interaction) effect of gender was found in the present study. The results of the analysis of variance are given in Table 7, and the means for men and women in the four experimental conditions are displayed in Figure 8.

Table 7

Three way analysis of variance for Study 2

Source of Variance	SS	DF	MS	F	p	h^2
Factor A (Responsibility)	6295	1	6295	31.27	<.01	.33
Factor B (Economic Situation)	1605	1	1605	7.97	<.01	.06
Gender of Subject	13	1	13	.07	.80	
A x B	1	1	1	.01	.62	
A x Gender	31	1	31	.16	.69	
B x Gender	331	1	331	1.64	.20	
A x B x Gender	1470	1	1470	7.30	<.01	.06
Explained	9747	7	1392	6.9	<.01	.40
Residual	14470	79	201			

The two main effects of the experimental factors are significant and the means differ in the direction that was predicted in Hypotheses 1 and 2 (cf. Figure 8). *Factor A*, Responsibility, has the strongest effect, explaining 33% of the total variance of the dependent variable. For clients who had self-inflicted their damage, an average of 27% of the costs was considered a fair own contribution, while the corresponding value for nonresponsible clients was 10%. *Factor B*, Social and Economic Situation of Client, also had a significant effect. For wealthy clients, a higher own contribution was considered just than for poor clients (23% versus 14%). Explaining 6% of the variance of the dependent variable, this effect was much less strong, however, than the effect of Responsibility. The effects of Responsibility and Economic Situation were strictly additive.

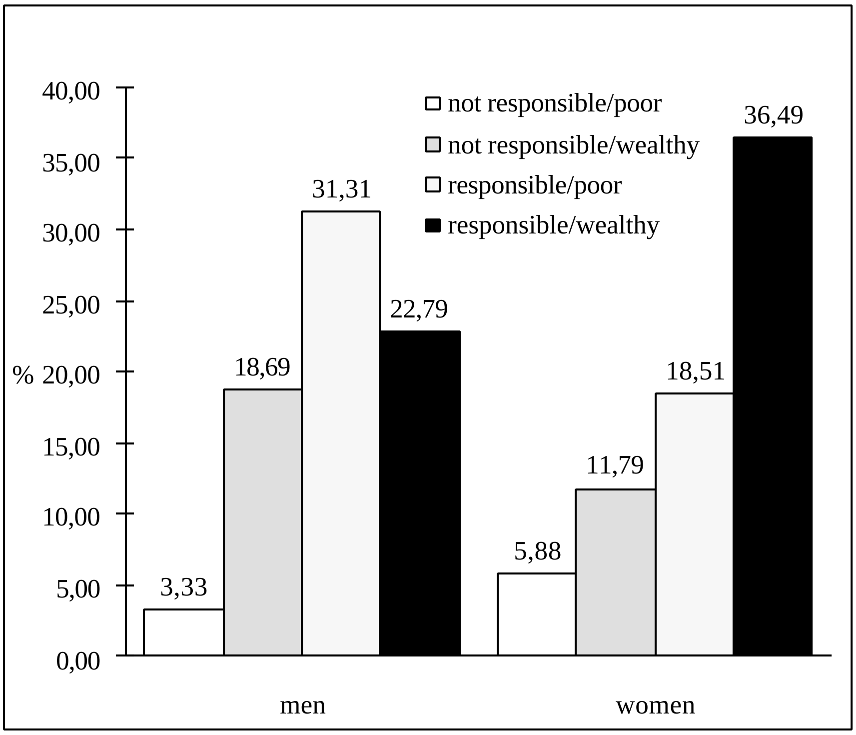

Figure 8

Mean percentage of own contribution assigned by men and women for poor versus wealthy insurance clients with high versus low responsibility for their damage

The third significant effect is exerted by a two way interaction of Responsibility x Social Situation x Gender. As can be seen from Figure 8, only women behaved in the way just described. Men assigned a lower percentage of own contribution for responsible clients who were wealthy than for responsible clients who were poor. No attempt will be made to conceive speculative post hoc interpretations for this unexpected result.

Interaction effects of experimental and organismic factors

Hypotheses 3, 4, 5, and 6 were tested in the same way as the corresponding hypotheses from Study 1. The experimental factors were dummy coded and product variables were computed for testing interaction effects via multiple regression analyses. Only the interaction effect predicted in Hypothesis 5 was significant: Significant interactions between Responsibility and Attitude Towards Equality were found for four of the five attitude measures used (Montada et al.'s factual equality and equality of chances scale; Schwinger & Winterhoff-Spurk's parity scale; comprehensive equality/ parity scale). The effects were consistent in direction and similar in size for these scales. It seems sufficient, therefore, to present the results for only one of these scales. The comprehensive equality/ parity scale is selected because it comprises the equality/parity operationalizations of several authors (see above).

The interaction effect at issue is very significant ($F_{1, 74} = 12.21$) and accounts uniquely for 5% of the variance of the dependent variable. It can be seen from the means in Figure 9, that in line with Hypothesis 5, subjects with a more favorable attitude towards equality tended to disregard the responsibility of the client for his damage, while subjects with a less favorable attitude towards equality put more weight on the responsibility information. Note that the means in Figure 9 are averaged across the levels of *Factor B*, Social and Economic Situation of Client. Since *Factor B* does neither interact with *Factor A* nor with Attitude Towards Equality, the pattern or profile of means displayed in Figure 12 is identical for each level of *Factor B*.

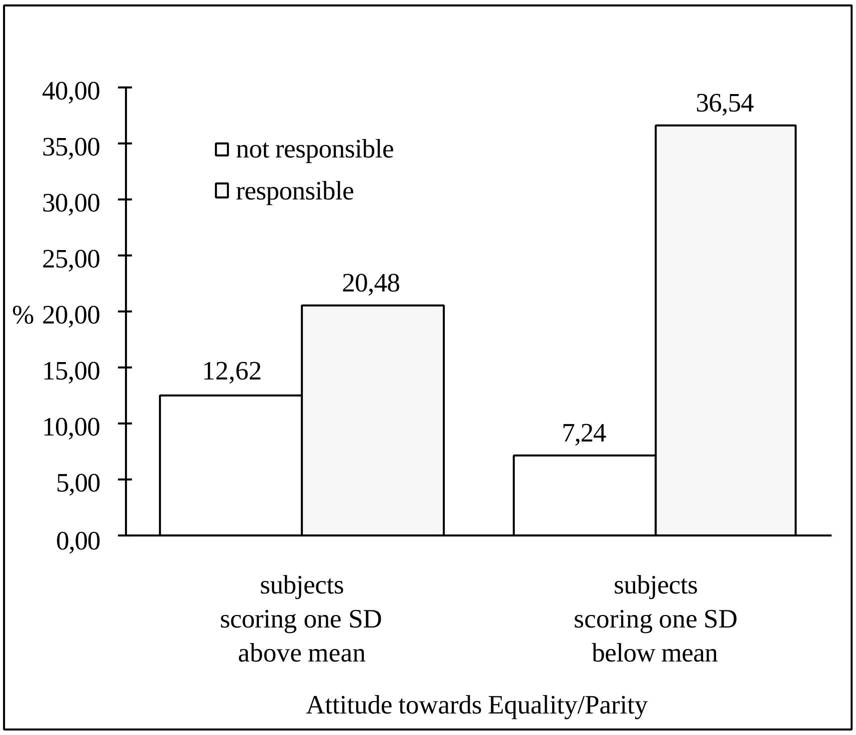

Figure 9

Mean percentage of own contribution assigned by men and women for poor versus wealthy insurance clients with high versus low responsibility for their damage

STUDY 3: POSTPONEMENT OF FINAL EXAM

Education is a valuable resource in a society. Developed countries provide basic education to all citizens. However, every society can afford the costs of higher education only for a limited number of individuals. Thus higher education is a scarce resource and a privilege. The major criterion for distributing this privilege is efficiency, i.e., the best possible cost benefit ratio for society. One of several means towards the best cost benefit ratio is to offer higher education to those who have the highest chances to succeed and profit from it, i.e., who are talented, motivated and possess the necessary prerequisites in terms of knowledge and skills. The distribution conflict regarding higher education is not restricted to binary alternatives (admission versus rejection of applicants), however, but concerns quantitative parameters as well -- such as the quality of the institution, its prestige, the teacher student ratio, the availability of facilities such as library and computers, or the time students are allowed to participate in a program.

The last of these quantitative parameters was chosen for the present study because it relates to an issue which was quite significant for most students in Germany at the time of the research. In order to make the university system more efficient and to shorten the time students need to accomplish their university degree, a bill was prepared which contains, among other regulations, time limits for coursework, exams, theses, and other requirements for a degree. The bill was very controversial, perhaps the most important issue relating to the reasons why students need as much time to finish as they do. While the bill seemed to start out from the assumption that students could accomplish their studies faster if they only worked harder, many students feel that this assumption is pure cynicism and that the bill creates injustice. They argue that students who lack sufficient financial support need to work for a living and that this reason, but not laziness or inefficient work, leads to prolonged study times. Given that other students have enough resources and can spend more time on studying, the bill is perceived to create unfair privileges to some students and unfair disadvantages to others. In terms of distributive justice, this perception results from an application of either the equality of chances principle and/or the need principle.

Employing the vignette methodology, subjects were described a student who was not able for different reasons to accomplish his degree in time and who asked the departmental exam committee do defer the date of his final exam. Subjects were asked to indicate how fair or unfair it would be from their opinion if the committee would accept or reject the request. Six different reasons for the student's delay and his request for a postponement were offered to make salient different justice considerations. Based on the interactionist reasoning outlined earlier, it was expected that the variation of reasons would affect subjects' fairness judgments differentially depending on their individual attitudes towards various justice principles.

Method

The six reasons were created by crossing two experimental factors. These factors were varied between subjects. *Factor A* was Reason (for delay), *Factor B* was Urgency of Request (for a postponement). *Factor A* had three conditions. In the first condition, a student was described who worked ten hours a week for a "Peace Committee Yugoslavia". In the second condition, a student had to work ten hours a week to make a living. In the third condition, a student worked ten hours a week to earn money for a fancy hobby and expensive vacations. *Factor B* had two conditions. In the first condition, the student requested the postponement because he would otherwise risk to be expelled from the university. In the second condition, the student wanted to avoid a stressful preparation for his final exam and increase his chances to receive a good final grade. The complete 3 x 2 factorial design is displayed in Figure 10.

Factor A	peace committee Yugoslavia		living		hobby and vacations	
Factor B	facing outplacement	no stress and good grades	facing outplacement	no stress and good grades	facing outplacement	no stress and good grades

Figure 10

Experimental design of Study 3

Regarding the variation of *Factor A*, it was assumed that the legitimacy of the reason would be lowest in the third condition, because the need for a postponement was clearly self-inflicted and avoidable. The legitimacy of the first type of reason was expected to be higher because the need for a postponement, although avoidable, resulted from a prosocial activity which deserved some sort of compensation. The highest legitimacy was expected for the second reason because the corresponding need to make a living was presented as existential and unavoidable. Regarding the variation of *Factor B*, it was assumed that a stronger need was perceived under the first than under the second condition, because outplacement from the university is a greater threat than having to work under time pressure and risking poor grades.

One hundred and twenty students from various majors (no advanced psychology students) of the University of Trier were recruited before or after classes. Subjects were assigned randomly to one of the eight experimental conditions. Two experimenters introduced themselves as politically active students who wanted to conduct an opinion survey on the university reform. They handed out to the subjects questionnaires which contained one of the eight scenarios, each representing a different experimental condition. After the scenario, the subject had to judge on a seven point rating scale (0/just ... 6/unjust) how just it would be if the exam committee would accept the student’s request to have deferred his final exam for two semesters.

About three weeks later, a third experimenter came into the same classes to administer the justice inventory used in Study 1 and 2. The experimenter introduced herself as an advanced psychology student who was collecting data for her diploma thesis on justice. She claimed to need a large sample of students for standardizing her measurement instrument.

Subjects were said at both occasions that in order to increase their motivation, a lottery would be conducted among the participants. Three prizes worth 50, 30, and 25 DM could be won. In order to make possible such a lottery but still keep the surveys anonymous, subjects were asked to write a code on their questionnaires. Actually, this code was necessary to identify the two questionnaires from the same person. No subject expressed suspicion of this procedure.

Hypotheses

Main effects of experimental factors

Hypothesis 1: Main effect of Reason: The mean justice judgment regarding the acceptance of the student’s request increases across the reasons "living", "peace committee Yugoslavia", "hobby and vacations", in that order.

Hypothesis 2: Main effect of Urgency of Request: The mean justice judgment regarding the acceptance of the student’s request is higher if the student faces outplacement than if he wants to finish with good grades and without stress.

Main effects of organismic factors

Hypothesis 3: Main effect of Attitudes towards Equity: Attitude Towards Equity correlates negatively with the dependent variable. Getting behind with studying for a final exam can be considered as harm to the efficiency of the educational system. Subjects with a favorable attitude towards equity are expected to see the issue from such a point of view. They would consider it unfair if the student's lack of dedication would be rewarded with extra study time.

Hypothesis 4: Main effect of Attitude Towards Equality/Parity: Attitude Towards Equality correlates positively with the dependent variable. Subjects with a positive attitude towards equality tend to disregard information which can justify, from the perspective of other principles, differential distributions of values such as, in the present case, the likelihood to pass a final exam and receive an academic degree.

Hypothesis 5: Main effect of Attitude Towards Need: Attitude Towards Need correlates positively with the dependent variable. The mere description of the need for a postponement will make the request more acceptable for subjects with a positive attitude towards the need principle than for subjects with an unfavorable attitude.

Interaction effects of experimental and organismic factors

Hypothesis 6: Interaction effect of Reason and Attitude Towards Equity: The difference in mean justice between the reason "living" and the two reasons "Yugoslavia" and "hobby and vacations" (cf. Hypothesis 1) is larger for subjects with a favorable attitude towards equity than for subjects with a less favorable attitude towards equity. This hypothesis rests on the assumption that the equity principle is considered more appropriate if inputs are controllable than if inputs are uncontrollable. Applied to the present study, this reasoning implies that from the perspective of subjects with a favorable attitude towards equity, students who (choose to) work for a hobby and expensive vacations deserve a postponement of their final exam less than students who (had to) work for a living.

Hypothesis 7: Interaction effect of Urgency of Request and Attitude Towards Need: The effect of Urgency of Request (cf. Hypothesis 2) is larger for subjects with a favorable attitude towards need than for subjects with a less favorable attitude.

Hypothesis 8: Interaction effect of Reason and Attitude Towards Equality: The effect of Reason (cf. Hypothesis 1) is smaller for subjects with a favorable attitude towards equality than for subjects with a less favorable attitude.

Hypothesis 9: Interaction effect of Urgency of Request and Attitude Towards Equality: The effect of Urgency of Request (cf. Hypothesis 2) is smaller for subjects with a favorable attitude towards equality than for subjects with a less favorable attitude.

Like in Study 1 and 2, the last two interaction effects were expected because subjects with a favorable attitude towards equality/parity should tend to disregard or put less weight on any information which may justify differential distributions from the perspective of other principles.

Results

Effects of gender and experimental factors

Two subjects had to be excluded due to missing data. Thus 118 subjects remained for data analyses. A three way analysis of variance including the two experimental between subject factors and gender of subject as a control factor was computed first. Gender was included as a control factor for the same reasons as in Study 1 and 2. No significant main or interaction effects for gender were found. Therefore, male and female subjects were pooled, and a two way analysis of variance was conducted to determine the effects of the experimental factors on the dependent variable. The results of this analysis are given in Table 8, and the means of the six experimental conditions are displayed in Figure 11.

Table 8

Three way analysis of variance for Study 3

Source of Variance	SS	DF	MS	F	p	h^2
Factor A (Reason)	81.46	2	40.73	19.92	<.01	.26
Factor B (Urgency of Request)	5.30	1	5.30	2.59	.11	
A x B	1.75	2	.88	.43	.65	
Explained	88.14	5	17.63	8.62	<.01	.28
Residual	229.06	112	2.05			

Only *Factor A* has a significant effect on subjects' justice judgment. In line with Hypothesis 1, subjects consider it less legitimate to request a delay if the student had worked to make money for a fancy hobby and expensive vacations. The difference between the other two reasons (living, peace committee Yugoslavia) is not significant, but accords to the predicted order. *Factor B* has no significant effect on the dependent variable, although the corresponding means differ consistently in the predicted direction (cf. Hypothesis 2).

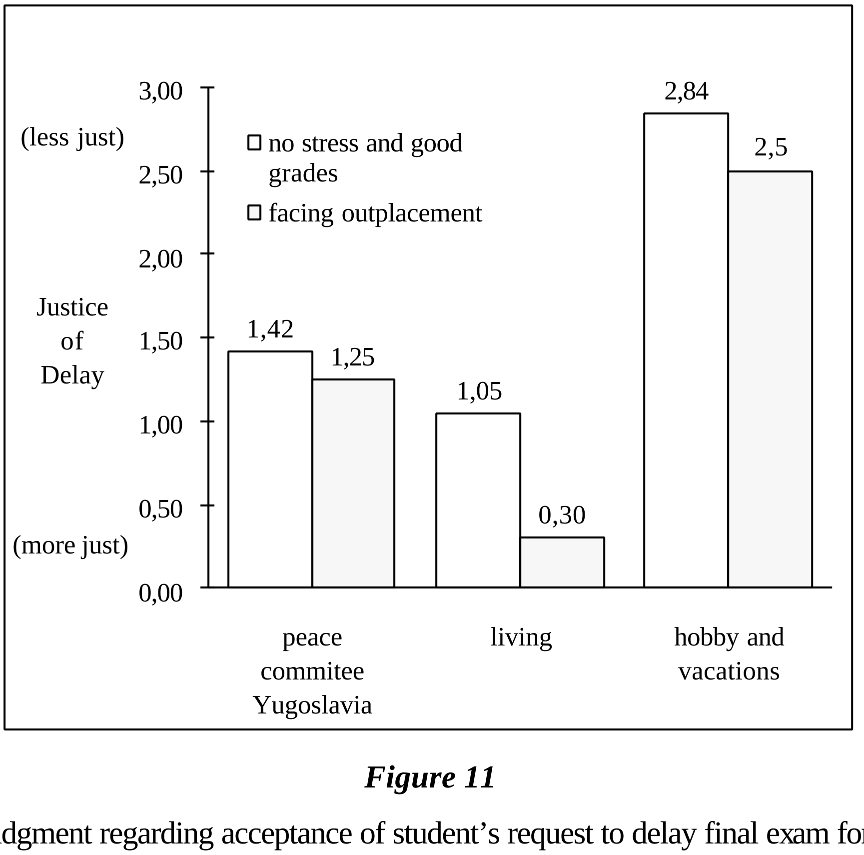

Figure 11

Mean justice judgment regarding acceptance of student's request to delay final exam for three different reasons and two levels of urgency of request

<u>Main effects of organismic factors</u>

Multiple regression analyses were conducted to test Hypotheses 3, 4, and 5. To control for the effects of the experimental factors, their main effects and interactions were dummy coded and entered first into the regression models. Two dummy variables were needed to code *Factor A*, because it has three levels. For each of the available measures (cf. Study 1) for the Attitude Towards Equity, the Attitude Towards Equity/Parity, and the Attitude Towards Need, a separate multiple regression analysis was computed.

In line with Hypothesis 3, each of the five measures for Attitude Towards Equity (Montada et al.; Sabbagh et al.; Schwinger & Winterhoff-Spurk; Bossong; comprehensive scale) has a significant effect over and above the experimental factors on the dependent variable. The more subjects favor equity as a distribution principle, the less they would consider it just if a student's request for a delay of the time limit for his final exam was accepted. The percentage of variance explained uniquely by the equity measure ranged from 4% (Sabbagh et al.) to 9% (comprehensive equity scale).

Furthermore and in line with Hypothesis 4, three of the four measures for Attitude Towards Equality/Parity (factual equality/ Montada et al.; equality of chances/Montada et al.; parity/Schwinger & Winterhoff-Spurk), had significant main effects on the dependent variable. The unique percentages of variance ranged from 3% (equality of chances/Montada et al.) to 6% (comprehensive equality/parity scale). The direction of these effects is consistent with Hypothesis 4: Compared to subjects who reject equality/parity, subjects with a favorable attitude towards this principle would consider it more just if the student's request for a delay were approved.

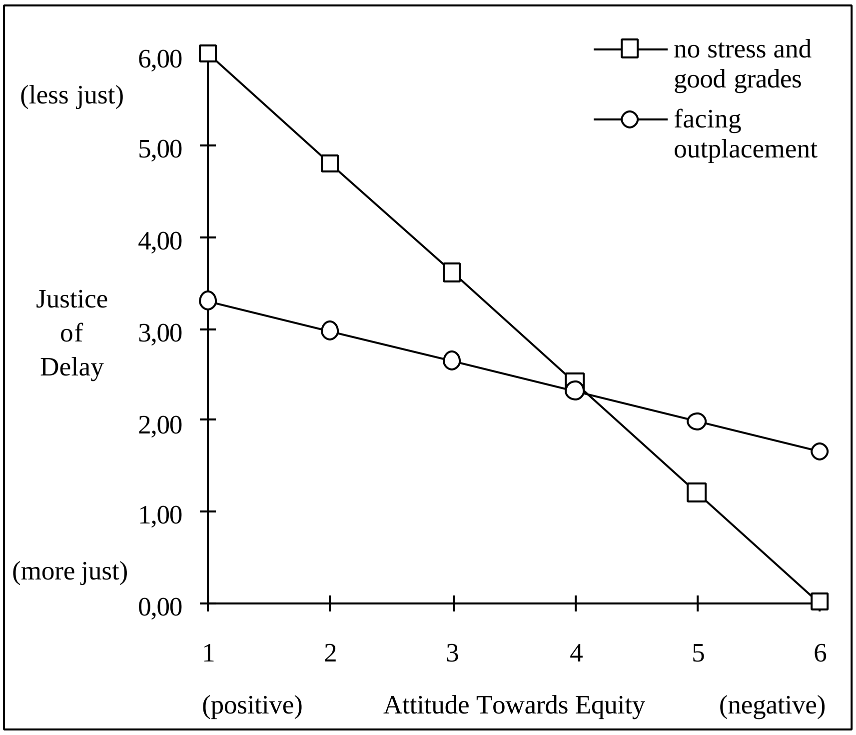

Figure 12

Mean justice judgment regarding acceptance of student's request to delay final exam depending on two levels of urgency of request and subject's attitude towards equity

<u>Interaction effects of experimental and organismic factors</u>

Hypotheses 6 through 9 were tested via multiple regression analyses in the same fashion as for Study 1 and 2.[4] None of these analyses yielded significant interactions effects. In additional exploratory analyses, significant interaction effects were detected between *Factor B*, Urgency of Request, and two of the five measures for Attitude Towards Equity (Schwinger & Winterhoff-Spurk; comprehensive scale). These effects explain a unique proportion of 3% of the variance of the dependent variable. The corresponding interaction effects of the remaining three equity measures were consistent in direction but statistically not reliable. Figure 12 contains the conditional means for the comprehensive scale. For reasons of simplicity, only the conditional means for one of the levels of *Factor A*, hobby and vacation, are given (this level was coded as zero on both dummy variables). Since *Factor A* does not interact with any other factor but only has a main effect, the pattern or profile of means displayed in Figure 12 is identical for the other two levels of *Factor A*.

Interpreting the interaction effect displayed in Figure 12 as a conditional effect of the organismic factor means that this factor, Attitude Towards Equity, has a relatively strong effect when needs are weak and a relatively weak effect when needs are strong. This pattern fits with the concept of weak vs. strong situations (Mischel, 1973; Price & Buffard, 1974). From this perspective, strong needs imply a social norm prescribing help, whereas weak situations leave more room for dispositional differences, in this case attitudes towards equity.

The interaction effect displayed in Figure 12 can also be looked at in terms of conditional effects of the situation factor. Choosing this perspective reveals that Urgency of Request has a positive effect on the justice judgment for subjects with a positive attitude towards equity and a negative effect for subjects with a negative attitude. No attempt will be made to conceive speculative post hoc interpretations for this counterintuitive result.

SUMMARY AND DISCUSSION

Seven studies were reported in which the effects of situation and person factors on individuals' distributive justice behavior or judgment were investigated from an interactionist perspective. Three of theses studies used as dependent variables real distribution behavior, while the remaining four studies were vignette studies in which suggested distributions in hypothetical situations or justice judgments regarding a hypothetical decision served as dependent variables. The results from these studies will now be summarized and compared to theoretical expectations.

Herrmann and Winterhoff-Spurk (1980)

In two experiments, subjects had to compete against another person in a computer game. Subjects received bogus feed-back regarding their own and their partner's achievement. In one condition, subjects were told that they had been twice as good as the other person; in another condition, they were told that the other person had achieved twice as well as them. Half of the subjects were equitarians, half were egalitarians. Subjects were asked to distribute 30 tokens between themselves and their partner.

The general interactionist hypothesis was supported in both experiments, i.e., equitarian subjects distributed rewards more depending on relative achievements than egalitarian subjects. However, this interaction effect was roughly ten times weaker than the main effect of relative achievement. The situation thus had a much stronger impact on the way subjects distributed the rewards than their general attitudes towards equity and parity. At least four interpretations may be considered for this result.

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[4] Testing the interactions predicted in Hypotheses 6 and 8 required the simultaneous inclusion of two product terms because the experimental factor (Legitimacy of Reason) has three levels.

(1) The unequal explanatory power of the two effects at issue may mean, first, that personal justice norms have a much lower impact on the distribution of rewards than social norms. Apparently, a dominant consensus existed among Herrmann and Winterhoff's subjects regarding a fair distribution of rewards under the conditions of the experiments. This interpretation is supported by the remarkably low proportion of unexplained variance which reflects individual deviations from the general trend within experimental conditions and Type. Note that this normative consensus did not correspond to either the equity or the parity principle but to a mixture of both. This is interesting given that the situation was clearly competitive.

(2) Herrmann and Winterhoff-Spurk defined discrete justice types on the basis of continuous variables. This implies a loss of information and thereby attenuates the correlation between the original variable and another continuous variable, in this case the dependent variable (cf. Carroll, 1961; Cohen, 1983). In other words, the types formed by median splits may still have been rather heterogeneous regarding their justice norms. And this heterogeneity may have been related systematically with the dependent variable. The corresponding correlation could not be detected, however, because the underlying individual differences (in the independent variable) were removed by grouping subjects.

(3) The relatively weak interaction between Type and Relative Achievement may also mean, of course, that the questionnaires which were used to define types have poor psychometric qualities. Since the reliability of the two scales was sufficient (Winterhoff & Herrmann, 1979a), this interpretation implies that the construct validity of the scales is low. More precisely, the proportion of variance explained by the interaction between Type and Relative Achievement may be converted into a (semi-partial) correlation, amounting to a validity coefficient of .20.

(4) One could argue, however, that this value of .20 does not fall short of the typical correlation between self-report trait measures and single behavioral instances (Mischel, 1968). Such a low correlation must not necessarily stem from a low validity of the trait measure. Traits are usually conceived as behavioral dispositions, i.e., the tendency to perform a wide range of similar (but not identical) behaviors in a wide range of similar (but not identical) situations (Epstein & O'Brien, 1985). Hence, traits are abstractions from specific behaviors in specific situations. Since every abstraction implies a loss of information, a perfect correlation between a trait measure and a single behavior cannot be expected (Schmitt & Borkenau, 1992). Furthermore, virtually all behaviors are multidetermined and indicative of several traits (Ahadi & Diener, 1989; Borkenau, 1986). Regarding the present substantive context, a specific distribution performed in a specific situation may not only reflect the person's general attitude towards different distribution principles but other dispositions as well, e.g., his need for approval (Mikula & Schwinger, 1973), prosocial orientation (Lane & Messé, 1971), or politeness (Mikula, 1980; Schwinger, 1980). In addition, the specific experimental situation did certainly not represent the full range of situations and behaviors which are included in Winterhoff and Herrmann's (1979a) questionnaires for measuring generalized attitudes towards equity and equality.

Study 1 of the present research

was a conceptual replication and extension of Herrmann and Winterhoff-Spurk's (1980) experiments. Instead of tokens, subjects had to distribute money between themselves and a partner, with whom or against whom they solved a computer puzzle. Like in Herrmann and Winterhoff-Spurk's studies, bogus feedback was used to vary the subject's relative achievement. In addition two Relative Achievement, the Social Relation between subject and partner (team vs. competition), and the partner's Need were varied. The following interaction effects between these situation factors and presumably equivalent attitudes towards Equity, Equality, and Need were expected:

1. Attitude Towards Equity x Relative Achievement
2. Attitude Towards Need x Need

3. Attitude Towards Equality x Relative Achievement
4. Attitude Towards Equality x Need

None of these interactions was significant.

The question arises why the results from Herrmann and Winterhoff-Spurk's (1980) experiments could not be replicated in the present research. Lack of statistical power can be excluded as an explanation. Differences in statistical methodology can also not explain the differences in results. First, treating the organismic factors as continuous variables in multiple regression analyses (Study 1 of present research) increases statistical precision compared to the procedure used by Herrmann and Winterhoff-Spurk (analysis of variance with groups formed by median splits). Second, Herrmann and Winterhoff-Spurk's method of analysis was adopted in addition to multiple regression analyses, but again, no interaction effect was found.

What other differences between Herrmann and Winterhoff-Spurk's experiments and Study 1 could possibly explain the differences in results?

A first difference which may be important is subjects' age. Herrmann and Winterhoff-Spurk's subjects were adolescents (12 and 13 year old high school students), while the subjects of Study 1 were adults (university students in their twenties). Herrmann and Winterhoff-Spurk's subjects perhaps regarded the experiment more as a game than as a serious competition. If so, social norms regarding an appropriate distribution may not have been salient and this may have left room for individual differences in attitudes to come into play. By contrast, the adult subjects of the present research may have taken the experimental situation more serious and may thus have been more concerned with the social adequacy of their behavior.

A second difference is the kind of rewards. In Herrmann and Winterhoff-Spurk's experiments, these rewards were tokens. Although the student subjects could convert them later into items with material value (toys, books, pens, etc.), tokens may have less economic appeal than money -- which is the most obvious economic value in our society. Consequently, the distribution of tokens may have led Herrmann and Winterhoff-Spurk's subjects to conceive the experiment more as a game, while the subjects of the present Study 1, who had to distribute money, may have taken the experiment more as a serious economic transaction. The implication of this reasoning is similar to the implication of the age difference: The subjects of the present Study 1 may have been more concerned with the social adequacy of their behavior.

There is a third reason why the subjects of the present Study 1 may have been more concerned with the social adequacy of their distribution decision. While the subjects in Herrmann and Winterhoff-Spurk's experiments did not meet the person against whom they competed, the subjects of the present research were introduced to their partner before the experiment and even involved in a brief conversation with her. These circumstances may have raised the subjects' awareness of the social norms which are relevant for the specific situation, or it may have increased their compliance with these norms vis à vis the possibility of social disapproval.

Although these post hoc hypotheses cannot be tested with the available data, they are consistent with some interesting aspects of the results. In both studies, the average amount of tokens or Deutsch Marks kept by subjects with higher performance was less than what they deserved according to the equity principle. Instead of 20 tokens, Herrmann and Winterhoff-Spurk's subjects kept an average of 17.34 tokens (averaged across both experiments and all other conditions). Interestingly, the corresponding value for the subjects of Study 1 is considerably lower. Instead of two thirds (12 DM), these subjects kept almost exactly half of the money (9.16 DM). In addition, more than 80% of the subjects with superior achievement kept exactly 9 DM (cf. Figure 13). Apparently, the subjects would have considered it inappropriate to take more than half of the money although their achievement was twice as high as their partner's achievement. At the same time, they did not take less than half of the money for themselves (only two subjects kept 8 DM). The extent of consensus among the subjects regarding the appropriate amount of money is striking. This consensus is exactly what Mischel (1973) and others have called a strong situation.

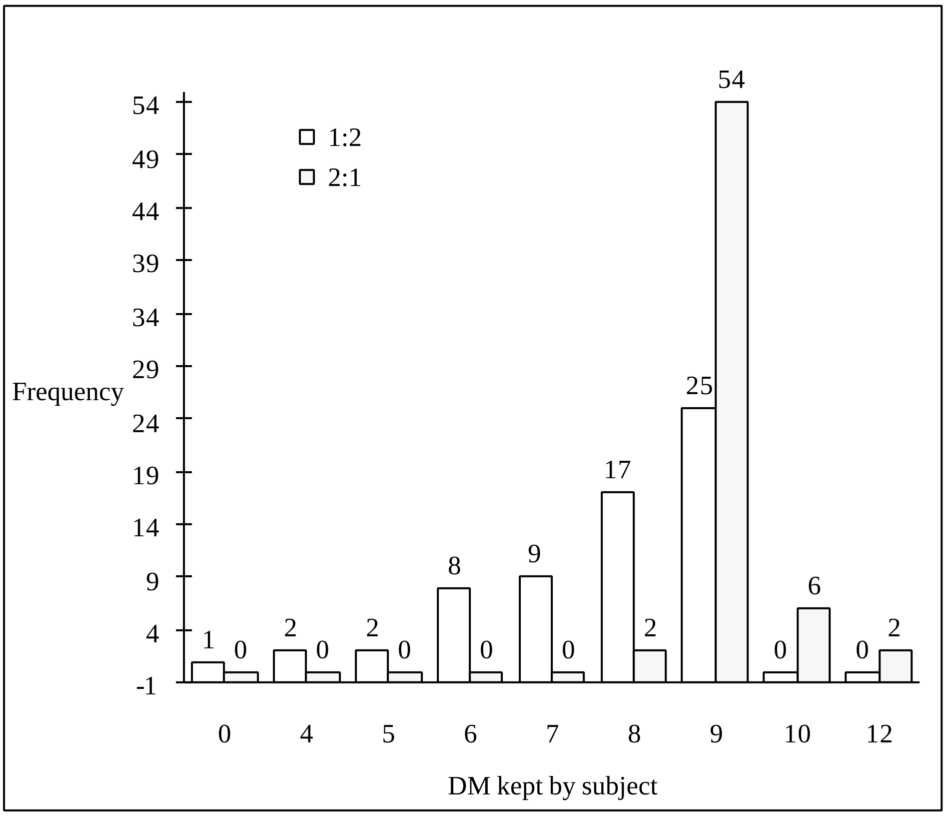

Figure 13

Number of subjects who kept certain amounts of DM in Study 1, depending on their relative achievement

Having performed less well than one's partner seems to be a somewhat weaker situation in this sense. Although most subjects kept 9 DM under this condition also, there was more variation. The lack of a significant interaction between Relative Achievement and the attitude measures indicates, however, that this variation cannot be explained by subjects' justice preferences.

In order to test the post hoc hypothesis of normative constraints more directly, these constraints have to be reduced or varied systematically in future studies. The following experimental strategies may be considered.

1. Adopting the general social setting of Herrmann and Winterhoff-Spurk's (1980) experiments, subjects could either be required to compete or cooperate with an anonymous partner. If all remaining conditions from Study 1 would be kept, the data from such a study could be pooled with the data from Study 1, and personal contact would then be an additional experimental factor in this pooled design. An alternative would be to vary personal contact (present vs. absent) as an experimental factor in a new study which may then differ in other regards from Study 1 as well.
2. It may also be possible to reduce the normative power of the situation by choosing a less direct distribution of money. Instead of absolute amounts of money, chances to receive money might be used as a resource. This could be realized, for example, by having subjects distribute tokens who serve as

lots in a lottery. Although the likelihood to win is a mathematical function of the number of tokens a person (subject/partner) has in the total pool of tokens (lots), the subject serves as an indirect causal agent in the distribution of money only because chance operates an uncontrollable intervening variable.

3. A third possibility to reduce normative restrictions would be to disentangle the roles of recipient and judge. A judge who cannot serve own interests by the distribution he or she suggests may be less restricted in his behavior than the subjects in Study 1 who may have experienced a role conflict. On the one hand, these subjects were allowed to maximize their (common or individual) profit, on the other hand, they were expected to be fair. Perhaps the subjects with high achievement took less money than they deserved according to equity because they wanted to rule out any doubts that being fair was the only motivation for the distribution they proposed. Paradoxically, such an impression management, if it occurred, decreases the construct validity of the behavioral justice criterion. Compared to a corecipient, a mere judge without personal interests in a particular decision is less suspect regarding the motivations of his behavior. Consequently, defensive impression management is less likely and the judgment is probably more indicative of justice considerations.

In the remaining studies which were described in this paper, subjects did serve as judges. The last of the three suggestions just presented for reducing normative constraints of the situation was thus fulfilled. However, all studies were vignette studies in which hypothetical situations were described to subjects. Subjects either had to suggest a fair distribution or they were asked to judge the fairness of a decision.

<u>In Bossong's (1983a) first study,</u>

subjects had to suggest a fair income for a male versus female employee with an easy versus difficult education. In line with expectations and supporting the general theoretical rationale of interactionism, difficulty of training interacted with subjects' attitude towards equity vs. equality. For equitarian subjects, difficulty of training had a larger effect on suggested income than for ambivalents and egalitarians.

<u>In Bossong's (1983b) second study,</u>

subjects had to suggest a fair distribution of financial rewards which two protagonists had received for a common job. One of the two persons had contributed more than the other. The persons were either friends or had come together only for economic interests. Finally, the person who had contributed less was either in need for money or not in need for money. It was expected (implicitly) that equitarian subjects would consider relative contributions more in economic relations than in friendly relations. This interaction was not significant, however. Relative Contribution was not varied in this study, there it is therefore not possible to test the interaction between Relative Contribution and Type. Yet given a significant and substantial main effect of Type (cf. Figure 6), it seems rather plausible to assume that an interaction between Relative Contribution and Type would have emerged if Relative Contribution had been varied.

<u>In Study 2 of the present research,</u>

subjects were asked to suggest a fair percentage of own contributions for insurance clients, depending on the client's responsibility for the damage and his economic situation. Four interactions between these situation factors and the subject's attitudes towards distribution principles were expected:

1. Attitude Towards Equity x Responsibility
2. Attitude Towards Need x Economic Situation
3. Attitude Towards Equality x Responsibility
4. Attitude Towards Equality x Economic Situation

Only the third of these hypotheses was supported by the data. Subjects with a favorable attitude towards equality put less weight on the client's responsibility for his or her damage than subjects with a less favorable attitude.

In Study 3 of the present research,

subjects had to rate the justice of a committee's decision on a student's request to defer his final exam. Three different reason for the students delay in the preparation for his exam were given and the urgency of the request was varied in two levels. Four interaction effects between the two situation factors and the subject's attitudes towards three distribution principles were expected:

1. Attitude Towards Equity x Reason for Delay
2. Attitude Towards Need x Urgency of Request
3. Attitude Towards Equality x Reason for Delay
4. Attitude Towards Equality x Urgency of Request

None of these interactions was significant.

Exploratory analyses yielded an unexpected interaction between Urgency of Request and Attitude Towards Equity (cf. Figure 12). If the student faced outplacement from university and thus had an urgent need for the delay in time limit, Attitude Towards Equity was less predictive of the dependent justice judgment than if the student's request was motivated by his desire to prepare himself without stress and receive good grades. This interaction effect can again be interpreted in terms of strong vs. weak situations in the sense outlined for explaining the differences between Herrmann and Winterhoff-Spurk's results and the results from the present Study 1.

Regarding the vignette studies, the pattern of results is again inconsistent and inconclusive. Only one study (Bossong, 1983a) yielded results in clear support of the general interactionist hypothesis which states that functionally equivalent situation and person factors interact in a synergetic fashion, each amplifying the impact of the other. The remaining studies provided either no, weak, or partial support for this hypothesis.

Whatever the causes for the inconsistent pattern of results might have been, it seems that the presence or absence of interactions between functionally equivalent person and situation factor depends on additional factors or conditions. As the following quotations show, Cronbach (1975) drew a similar conclusion when summarizing results from research on aptitude treatment interactions (ATI):

> "Let me turn next to some synoptic statements about ATI findings. It is not possible to qualify these statements adequately, nor to describe the strength of the evidence. Quite a lot of work shows student personality interaction with teacher press [...]. But results were strangely inconsistent from year to year and from course to course. [...] In attempting to generalize from the literature, Snow and I have been thwarted by the inconsistent findings coming from roughly similar inquiries. Successive studies employing the same treatment variable find different outcome-on-aptitude slopes. Some fraction of this inconsistency arises from statistical sampling error, but the remainder is evidence of unidentified interactions [...]. An ATI result can be taken as a general conclusion only if it is not in turn moderated by further variables. [...] Once we attend to interactions, we enter a hall of mirrors that extends to infinity. However far we carry our analysis -- to third order or fifth order or any other -- untested interactions of a still higher order can be envisioned." (p. 118-119)

Cronbach's conclusions suggest to search for those unidentified higher order interactions which hide or qualify expected and tested lower order interactions. Candidates for such higher order interactions are any differences between studies which may provide psychological explanations for the differences in results. Presence versus absence of personal contact is such a variable which was considered here as one of several explanations for the difference in results between Herrmann and Winterhoff-Spurk's (1980) experiments and Study 1 of the present research.

A second (and partly related) approach for resolving inconsistencies in results such as they were identified here or in ATI-research is to consider theoretically different forms of interactions between person and situation factors and to test them empirically in appropriate designs. To illustrate this approach, it may be helpful to consider again the concept of strong situations (Mischel, 1973; Price & Buffard, 1974) or strong situational press (Murray, 1938) which was offered as an explanation for the lack of an interaction in Study 1 and the unexpected interaction between Urgency of Request and Attitude Towards Equity in Study 3.

Strong situations can be defined formally as situations in which little interindividual differences in behavior exist. In psychometric terms, this means that a situation (an item) is either difficult or easy (cf. Schmitt, 1990). If we apply the psychometric concept of item difficulty to interactionism, the difficulty of the situation is a moderator for the person factor. The important point is that the function of the interaction is not linear but curvilinear (cf. Figure 14). Just like easy and difficult items tend to have low item total correlations, the person factor has a weak effect on behavior in easy or difficult situations and the strongest possible effect in situations with a difficulty of .5 (for binary response alternatives).

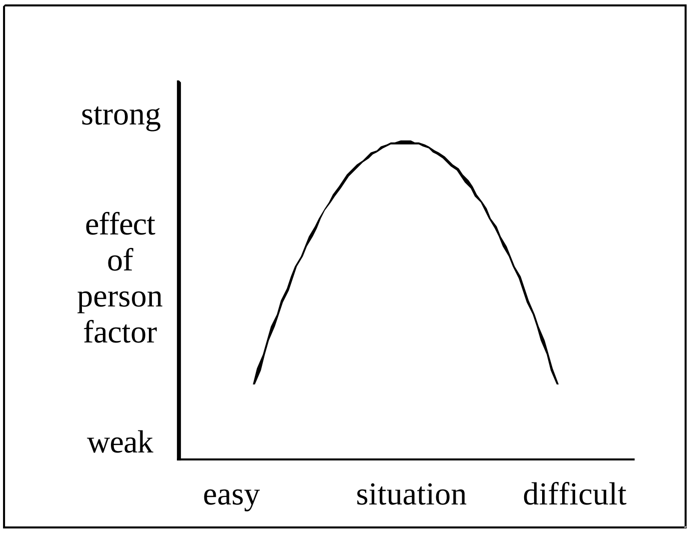

Figure 14

Difficulty of situation as a moderator for the effect of the person factor (hypothetical function)

Of course, the same general reasoning can be applied to the conditional effect of the situation factor given the person factor. Now the score on the person factor (termed trait level in item response theory; cf., e.g., Reise, Widaman, & Pugh, 1993) moderates the situation effect. If we adopt the concept of strong situations to individuals and define strong individuals formally as individuals who display little intersituational differences in behavior, the moderator function is again not linear but curvilinear (cf. Figure 15). The situation factor has a weak effect on behavior for individuals with high or low scores on the trait and the highest possible effect for subjects with mean trait levels.

Note that the moderator functions displayed in Figure 14 and Figure 15 are not formally equivalent. If we assume that the moderator functions in Figure 14 and 15 are quadratic functions, they have to be represented in regression equations as the product between the squared situation factor with the organismic factor (Figure 14) or as the product between the squared organismic factor (trait) with the situation factor

(Figure 15). Unlike linear moderator functions, the curvilinear moderator functions in Figure 14 and 15 represent distinct effects.

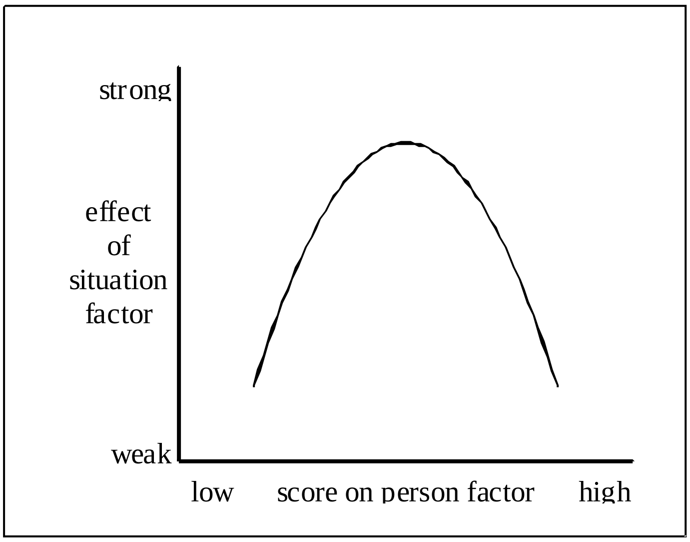

Figure 15

Trait level as a moderator for the effect of the situation factor (hypothetical function)

Detecting and estimating the moderator functions displayed in Figure 14 and Figure 15 requires that more than two levels of the moderator variables (difficulty of situation; trait level) are realized. This requirement is fulfilled for person factors or traits if they are measured as continuous variables. [5] Regarding the variation of situational difficulty, however, this prerequisite for identifying nonlinear moderator effects is usually not fulfilled because in most experiments, the corresponding factors are varied in two levels only. Since it cannot be known where the two experimental treatments are located on the latent difficulty continuum, no prediction can be made regarding the slope of the moderator function. Consider Figure 14. Given the curvilinear moderator function, any slope for a linear moderator function could be obtained in a two level-design. If the two situations (levels of the situation factor) were located towards the difficult end of the continuum, a negative linear moderator effect would result. If the two situations are located towards the easy end of the continuum, this would lead to a positive linear moderator effect. Finally, no linear moderator effect would emerge empirically if two situations were compared that are equally distant from the mean difficulty level.

The implications of this reasoning for (any) past and future interactionist research are straightforward. Regarding past research, the inconsistency in results may have been due, at least partly, to different difficulty levels of the situation factors. It is not sufficient to include multiple trait levels in a design; it is necessary to vary more than two difficulty levels of the situation as well.

[5] Note, however, that a curvelinear moderator effect of the trait cannot be detected if the trait scores are dichotomized as was done by Herrmann and Winterhoff-Spurk (1980) and by Bossong (1983b).

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APPENDIX

First part of justice inventory

No.	German wording of item	English wording of item	Label[1]
1.	Wer mehr leistet als andere, muß auch mehr bekommen.	Those who achieve more than others should get more.	EYW1
2.	Bei allen Unterschieden sollte trotzdem jeder die gleichen Chancen im Leben haben.	Despite all differences should everybody have the same chances in life.	PAW1
3.	Gibt es in einer Lehrwerkstatt zu viele Bewerber um die vorhandenen Ausbildungsplätze, finde ich es gerecht, wenn die Plätze verlost werden.	If there are too many applicants for traineeships, I would find it just to decide by lot.	ECM1
4.	Diejenigen, die sich anstrengen und viel arbeiten, sollten auch mehr Geld bekommen.	Those who try harder and invest more should receive more money.	EYS1
5.	Geld und Einkommen sollten so gleichmäßig wie möglich verteilt werden.	The distribution of money and income should be as equal as possible.	PAS1
6.	Bedürftige Menschen sollten mehr Geld bekommen.	People in greater need should receive more money.	NES1
7.	Ein Spitzensportler muß auch mehr verdienen als ein Ersatzmann.	Front runners in sports should earn more money than the reserve.	EYW2
8.	Begabte Studenten sollten den weniger Begabten bei den Prüfungsvorbereitungen helfen, damit alle einen etwa gleichen Abschluß erreichen können.	Talented students should help less talented students to prepare for exams such that all get about the same grades.	PAW2
9.	Ich finde, daß es auf der Welt im allgemeinen gerecht zugeht.	Basically the world is a just place.	JWM1
10.	Menschen, die wichtige Arbeit leisten und viel zur Gesellschaft beitragen, sollten mehr Geld bekommen.	People whose work is more important and who contribute more to society should receive more money.	EYS2
11.	Unabhängig von den Leistungen sollte jeder Schüler das gleiche Recht auf Weiterbildung haben.	No matter how well they achieve, all students should have the same right to continue their studies.	PAW3
12.	Es gibt kaum etwas, das mich so erzürnt, wie die Beobachtung von Ungerechtigkeit.	Hardly anything infuriates me as much as the observation of injustice.	CJM1
13.	Wer eine bessere Ausbildung hat, soll auch mehr verdienen.	Those who have a better education should earn more money.	EYW3
14.	In einer Ehe müssen Mann und Frau absolut gleiche Rechte und Pflichten haben.	Spouses should have absolutely the same rights and duties.	PAW4
15.	Ich finde es gerecht, wenn Freunde gemeinsam erwirtschafteten Gewinn so unter sich aufteilen, daß der mehr bekommt, der mehr braucht, weil er eine größere Familie ernähren muß.	I find it just if friends distribute their common earnings such that the one who needs more for his family gets more.	NEM1

16.	Ehrlichen, aufrichtigen und fleißigen Menschen sollte mehr Ehre und Respekt entgegengebracht werden.	Honest, devoted and industrious people should be given more honor and respect.	EYS3
17.	Ich finde es gerecht, wenn in einem Betrieb, der wegen Absatzschwierigkeiten Kurzarbeit beschließt, die Arbeitnehmer abwechselnd zu Kurzarbeit eingeteilt werden.	I find it just if a company who suffers from a sales crisis has their employees take turns in working short-time.	FEM1
18.	Ich glaube, daß die Leute im großen und ganzen das bekommen, was ihnen gerechterweise zusteht.	By and large, people get what they deserve.	JWM2
19.	Wer mehr Verantwortung trägt als andere, muß dafür besser bezahlt werden.	People with more responsibility should earn more money in turn.	EYW4
20.	Auf den Abgangszeugnissen der Universitäten sollte statt Noten nur der Vermerk 'Bestanden' stehen.	Students who leave the university before finishing a degree should be given reports stating ´passed´ instead of grades.	PAW5
21.	Bewerben sich mehrere Behinderte auf eine für Behinderte geschaffene Arbeitsstelle, finde ich es gerecht, wenn das Los darüber entscheidet, wer eingestellt wird.	If several handicapped employees apply for a job, I find it just to decide by lot.	ECM2
22.	Begabten Menschen, deren Arbeit zur gesellschaftlichen Entwicklung beiträgt, sollte mehr Ehre und Respekt entgegengebracht werden.	Talented people whose activities contribute to society should be given more honor and respect.	EYS4
23.	Allen Menschen sollte in gleichem Maße Ehre und Respekt entgegengebracht werden.	Every person should be given equal honor and respect.	PAS2
24.	Menschen aus benachteiligten Gruppen sollten mehr Möglichkeiten haben, Einfluß zu nehmen.	People from weaker groups, who did not have a chance to be influential in the past, should be given more of an opportunity to speak out.	NES2
25.	Gewinnen zwei Freunde in einem Tennisturnier das Doppel, finde ich es fair, wenn der den Pokal bekommt, dem der Erfolg in erster Linie zu verdanken ist.	If friends win doubles in tennis, I find it just if the one who contributed more to the common success receives the trophy.	EYM1
26.	Gewinnt eine Gruppe befreundeter Filmemacher gemeinsam einen Preis, finde ich es gerecht, wenn jeder einen gleich großen Anteil des Geldes erhält.	If a group of friends win a price for a film they produced together, it would be just to distribute the money equally.	FEM2
27.	Ich bin sicher, daß immer wieder die Gerechtigkeit in der Welt die Oberhand gewinnt.	Justice always prevails over injustice.	JWM3
28.	BAFÖG sollte jemand, der immer schlechte Noten hat, nicht bekommen.	Stipends should not be given to students with bad grades only.	EYW5

29.	In einer idealen Gesellschaft müßten alle Menschen das Gleiche verdienen.	In an ideal society, everybody would have the same income.	PAW6
30.	Ich könnte mit niemandem eng befreundet sein, der kein ausgeprägtes Gefühl für Gerechtigkeit hat.	I could not be friends with someone who wasn't sensitive to justice issues.	CJM2
31.	Ehrliche und aufrichtige Menschen sollten mehr Einfluß haben.	People who are known to be honest and moral should have more influence.	EYS5
32.	Im Zweifel zwischen Leistungsprinzip und Gleichheitsprinzip sollte man sich für die Gleichheit entscheiden.	In case of doubt, the achievement principle should be given preference to the equality principle.	PAW7
33.	Gewinnen zwei gute Freunde gemeinsam in einem Preisausschreiben Geld, finde ich es gerecht, wenn der mehr bekommt, der das Geld dringender benötigt.	If two friends win together a prize in a competition, I would find it just to give more money to the one who needs more.	NEM2
34.	Wenn ich mit einem Freund zusammen ein Klassenlos kaufe und ich zahle 2/3 des Lospreises, dann stehen mir auch 2/3 des Gewinns zu.	If I by a lottery ticket together with a friend and pay 2/3 of it, I should also receive 2/3 of the prize.	EYW6
35.	Der Grundsatz "Wer nicht arbeitet, soll auch nicht essen" ist unmenschlich und brutal.	The saying "who doesn't work shouldn't eat" is degrading and brutal.	PAW8
36.	Ich bin überzeugt, daß irgendwann jeder für erlittene Ungerechtigkeit entschädigt wird.	In the long run people will be compensated for injustices.	JWM4
37.	Menschen mit Sachverstand und Begabung sollten mehr Einfluß haben.	People with expertise and talent should have more influence.	EYS6
38.	Jeder Mensch sollte die gleiche Möglichkeit haben, einflußreich zu sein.	Every person should be given an equal chance to be influential.	PAS3
39.	Bewerben sich mehrere Abiturienten um einen Studienplatz, finde ich es gerecht, wenn der Platz verlost wird.	If the number of applicants exceeds the capacity of a college, admission should be determined by lot.	ECM3
40.	Arbeiten zwei Freunde zusammen, finde ich es gerecht, wenn der tüchtigere mehr vom gemeinsam erarbeiteten Gewinn erhält.	If two friends work together on a job, I would find it fair if the one who works harder gets paid more.	EYM2
41.	Jeder sollte die Möglichkeit zum Hochschulstudium haben - letztlich ist jedes Auswahlverfahren undemokratisch.	Everybody should have a chance to get a college degree - eventually, every selection is undemocratic.	PAW9
42.	Ich finde, Gewinnbeteiligung in einem Betrieb ist dann gerecht geregelt, wenn Bedienstete mit niedrigem Einkommen eine höhere Prämie bekommen als Bedienstete mit hohem Einkommen.	I would consider profit-sharing in a company just if employees with small salaries receive a larger bonus than employees with large salaries.	NEM3
43.	Ein Sieger mit 10 Metern Vorsprung ist besser als einer mit 10 Zentimetern Vorsprung.	Being 10 meters ahead makes a better winner than being 10 centimetres ahead.	EYW7

44.	Ich finde es gerecht, wenn zwei berufstätige Ehepartner ihr gemeinsames Auto abwechselnd für die Fahrt zum Arbeitsplatz benutzen.	I find it just if spouses take turns in using their car for commuting to work.	FEM3
45.	Ungerechtigkeiten sind nach meiner Auffassung in allen Lebensbereichen (z.B. Beruf, Familie, Politik) eher die Ausnahme als die Regel.	Injustices in all areas of life (e.g., professional, family, politics) are the exception rather than the rule.	JWM5
46.	Diejenigen, die bereit sind, sich anzustrengen und viel zu arbeiten, sollten besondere Lern- und Entfaltungsmöglichkeiten bekommen.	Those who are willing to make an effort should be given preference [regarding learning opportunities].	EYS7
47.	Wenn ich mit einem Freund zusammenarbeite, dann ist das Endprodukt eine gemeinsame Sache, an der beide gleichen Anteil haben.	If I work with a friend, I consider the product to be a common achievement which is due to both of us equally.	PAW10
48.	Ich glaube, daß es mich stärker betroffen macht als die meisten anderen Leute, wenn ich Ungerechtigkeiten beobachte.	The observation of injustice makes me more upset than most other people.	CJM3
49.	In einer idealen Gesellschaft sollte jeder nur soviel an Einkommen, Rechten und Einfluß haben, wie ihm aufgrund seiner Tätigkeit für die Gesellschaft zusteht.	In an ideal society, everybody should have only as much income, rights, and power as he deserves on the basis of his contributions to society.	EYW8
50.	Eine Ungerechtigkeit, die ich begangen habe oder die ich nicht verhindert habe, quält mich noch lange.	I feel guilty for a long time when I did something unjust or when I have not prevented some injustice.	CJM4
51.	Die Noten auf der Hochschule sind einfach notwendig, damit die besten Leute auf die besten Arbeitsplätze kommen.	Grades at the university are needed to ensure that the best individuals are given the best jobs.	EYW9
52.	Eine Arbeitsgruppe ist am produktivsten, wenn alle genau gleichviel verdienen.	A team is most productive if everybody makes exactly the same salary.	PAW11
53.	Bewerben sich mehrere LKW-Fahrer bei einer Spedition um eine Stelle, finde ich es gerecht, wenn die Stelle verlost wird.	If several truck drivers apply for the same job, I would find it just to determine by lot who gets it.	ECM4
54.	Diejenigen, die etwas zur Gesellschaft beitragen, sollten besondere Lern- und Entfaltungsmöglichkeiten bekommen.	Those who can contribute to society should be given preference [regarding learning opportunities].	EYS8
55.	Diejenigen, die bisher benachteiligt waren, sollten besondere Lern- und Entfaltungsmöglichkeiten bekommen.	Those who were not given enough [learning] opportunities in the past should be given preference.	NES3
56.	Ich finde es gerecht, daß knappe Studienplätze an die Bewerber mit den besseren Abiturnoten vergeben werden.	It think it is only fair to regulate college admission on the basis of the applicants grade point average.	EYM3
57.	Jeder sollte die gleichen Lern- und Entfaltungsmöglichkeiten haben.	Everyone should have an equal opportunity to learn, develop and do interesting things.	PAS4

58.	Ich denke, daß sich bei wichtigen Entscheidungen alle Beteiligten um Gerechtigkeit bemühen.	People try to be fair when making important decisions.	JWM6
59.	Schüler von Eliteschulen oder Spitzenkräfte innerhalb einer Belegschaft durch Abzeichen kenntlich zu machen, ist eigentlich eine gute Idee.	It would be a good idea to mark students from elite schools and distinguished professionals.	EYW10
60.	Ich würde gern in einem Betrieb arbeiten, in dem der Gewinn unter allen Mitarbeitern - vom Direktor bis zur Putzfrau - gleich verteilt wird.	I would like to work in company were all are paid equal salaries - from first manager to charwoman.	PAW12
61.	Begabte sollten besondere Lern- und Entfaltungsmöglichkeiten bekommen.	Those with special talents and abilities should be given preference [regarding learning opportunities].	EYS9
62.	Wenn zwei Schüler beim Schmüc??ken eines Klassenzimmers geholfen haben, finde ich ihre Lehrerin dann gerecht, wenn sie beide grundsätzlich gleich viel lobt.	If two students help decorating their classroom, I would find it just if their teacher would give them equal appreciation.	FEM4
63.	Ich finde es gerecht, wenn Arbeitnehmer mit dem geringsten Einkommen am längsten von Kurzarbeit verschont bleiben.	I find it just if employees with small salaries are exempted as long as possible from short-time work.	NEM4
64.	Ich würde lieber einen Job annehmen, wo sich das Gehalt danach richtet, was ich schaffe, als einen, wo ich ein Fixum bekomme.	I would rather take a job where my salary depends on my achievement than a job with a fixed pay.	EYW11
65.	Wenn ich jemandem begegne, der gleichgültig gegenüber Ungerechtigkeiten ist, bringt mich das auf.	People who don't care for justice make me angry.	CJM5
66.	Ich finde es fair, wenn der Urlaubspartner, der für den gemeinsamen Urlaub mehr Geld beisteuert, auch das Urlaubsziel bestimmen darf.	If partners go on a vacation together, it is fair to let the one who pays more for the costs decide where to go.	EYM4

Notes:

1 The first two letters of the item labels refer to the construct, the third letter to the author of the scale. The numbers indicate the number of the item in the original scale.

EYM: **E**quit**y** -- **M**ontada, Schmitt, & Dalbert (1983)
EYS: **E**quit**y** -- **S**abbagh, Dar, & Resh (1994)
EYW: **E**quit**y** -- Schwinger & **W**interhoff-Spurk (1984)
EYB: **E**quit**y** vs. Equality -- **B**ossong (1983a)
FEM: **F**actual **E**quality -- **M**ontada et al.
ECM: **E**quality of **C**hances -- **M**ontada et al.
PAS: **Pa**rity -- **S**abbagh et al.
PAW: **Pa**rity -- Schwinger & **W**interhoff-Spurk
NEM: **Ne**ed -- **M**ontada et al.
NES: **Ne**ed -- **S**abbagh et al.
CJM: **C**entrality of **J**ustice -- Dalbert, **M**ontada, & Schmitt (1987)
JWM: **B**elief in a Just **W**orld -- Dalbert, **M**ontada, & Schmitt (1987)

Second part of justice inventory (adopted from Bossong, 1983a)

1.	Für die Zubereitung der Mahlzeiten anläßlich einer großen Hochzeit engagiert eine Familie eine Köchin und eine Küchenhilfe. Die Köchin stellt die Menüs zusammen und bereitet diese zu. Die Küchenhilfe verrichtet einfache Arbeiten wie Kartoffeln schälen oder Salat putzen. Die Familie zahlt den beiden Frauen für ihre Arbeit zusammen 400,- DM. Was wäre nach Ihrer Meinung eine faire Aufteilung des Lohns?	A family hires a cook and an aid for preparing food for a large wedding party. The cook selects the food and prepares the meals. The aid does simple work such as peeling potatoes and washing the salad. The family pays both women 400,- DM together. What would you consider a fair distribution of the money?
	Köchin/cook	Küchenhilfe/aid
1	260,- DM	140,- DM
2	245,- DM	155,- DM
3	230,- DM	170,- DM
4	215,- DM	185,- DM
5	200,- DM	200,- DM

2.	Zwei Brüder spaten zusammen für die kranke Tante den Garten um. Sie gibt den beiden 200,- DM. Der Ältere hat knapp drei Viertel, der Jüngere gut ein Viertel der Arbeit geleistet. Was wäre nach Ihrer Meinung eine faire Aufteilung des Lohns?	Two brothers spade the garden of their aunt who is sick. She gives the two 200,- DM. The older brother did a little less than three fourth of the work, the younger brother a little more than one fourth. What would you consider a fair distribution of the reward?
	der ältere Bruder/the older brother	der jüngere Bruder/the younger brother
1	140,- DM	60,- DM
2	130,- DM	70,- DM
3	120,- DM	80,- DM
4	110,- DM	90,- DM
5	100,- DM	100,- DM

3.	Eine Abteilung der Firma X besteht aus zwei Arbeitsgruppen A und B. Gruppe A liegt in ihrer Leistung aufgrund größerer Erfahrung und Routine um etwa 25% über Gruppe B. Die gute Arbeit der Abteilung wird von der Geschäftsführung mit einer Prämie von 8 000,- DM honoriert. Was wäre nach Ihrer Meinung eine faire Aufteilung der Prämie?	A department of company X consists of two teams A and B. Due to their greater experience and routine, team A achieves about 25% more than team B. The manager awards 8 000, - DM to the entire department for their good work. What would you consider a fair distribution of the award?
	Gruppe A/team A	Gruppe B/team B
1	5 200,- DM	2 800,- DM
2	4 900,- DM	3 100,- DM
3	4 600,- DM	3 400,- DM
4	4 300,- DM	3 700,- DM
5	4 000,- DM	4 000,- DM

4.	Herr Müller spielt ausnahmsweise beim Pferdelotto mit. Da er praktisch keine Erfahrung hat, bittet er einen Freund, ihn beim Ausfüllen des Lottoscheins zu beraten. Herr Müller tippt gut und gewinnt 8 000,- DM. Was wäre nach Ihrer Meinung eine faire Aufteilung des Gewinns?		Mr. Miller for one bets in a horse lottery. Since he has practically no experience, he asks his friend to advise him. Mr. Miller bets well and wins 8 000,- DM. What would you consider a fair distribution of the prize?
		Herr Müller/Mr. Müller	Freund/friend
	1	8 000,- DM	-
	2	7 000,- DM	1 000,- DM
	3	6 000,- DM	2 000,- DM
	4	5 000,- DM	3 000,- DM
	5	4 000,- DM	4 000,- DM
5.	Zwei Maler, ein Geselle und ein Auszubildender, tapezieren nach Feierabend die Wohnung eines Bekannten, der 600,- DM dafür zahlt. Der Geselle mit der größeren Erfahrung verrichtet alle schwierigen Arbeiten und trägt die Gesamtverantwortung; der Auszubildende übernimmt alle Handlangerdienste und kleistert die Tapete ein. Was wäre nach Ihrer Meinung eine faire Aufteilung des Lohns?		Two painters, a fellow and a hodman, paper the apartment of an acquaintance who pays them 600,- DM. The fellow, who is more experienced, does all the difficult work and is responsible for the job. The hodman does all the simple work such as putting paste on the paper. What would you consider a fair distribution of the reward?
		Geselle/fellow	Auszubildender/hodman
	1	380,- DM	220,- DM
	2	360,- DM	240,- DM
	3	340,- DM	260,- DM
	4	320,- DM	280,- DM
	5	300,- DM	300,- DM
6.	Ein KFZ-Mechaniker und ein Bürokaufmann eröffnen zusammen einen Autoreparaturbetrieb. Für den KFZ-Mechaniker fällt mit der Reparatur der Autos viel Arbeit an. Der Bürokaufmann hat in dem kleinen Betrieb vergleichsweise wenig zu tun. Im ersten Monat wird ein Gewinn von 6 000,- DM erwirtschaftet. Was wäre nach Ihrer Meinung eine faire Aufteilung des Gewinns?		A car mechanic and a salesman start a car repair shop. The mechanic has a lot of repair work to do. In comparison, there is little to do for the salesman in their little garage. In the first month, they make 6 000,- DM. What would you consider a fair distribution of the profit?
		KFZ-Mechaniker/mechanic	Bürokaufmann/salesman
	1	3 600,- DM	2 400,- DM
	2	3 450,- DM	2 550,- DM
	3	3 300,- DM	2 700,- DM
	4	3 150,- DM	2 850,- DM
	5	3 000,- DM	3 000,- DM

7.	Einer fünfköpfigen Bergsteigergruppe gelingt im Himalaja eine schwierige Erstbesteigung. Das Unternehmen wurde vom Leiter der Gruppe geplant und vorbereitet. Eine Werbeagentur hatte die Exklusivrechte zur Vermarktung der Aktion erworben und der Gruppe hierfür 100 000,- DM gezahlt. Was wäre nach Ihrer Meinung eine faire Aufteilung dieser Summe?	A group of five mountaineers are the first to climb a very difficult peak in the Himalaja. The leader had planned and prepared the tour. An advertising company had bought the right to market the enterprise exclusively and paid the group 100 000,- DM What would you consider a fair distribution of the money?

	Leiter/leader	die vier anderen zusammen/the remaining four together
1	40 000,- DM	60 000,- DM
2	35 000,- DM	65 000,- DM
3	30 000,- DM	70 000,- DM
4	25 000,- DM	75 000,- DM
5	20 000,- DM	80 000,- DM

8.	Zwei befreundete Jungen, Eckhard und Rudi, waschen das Auto der Nachbarin. Diese gibt ihnen 15,- DM dafür. Eckhard ist 11 Jahre alt. Er wäscht das Auto innen und außen. Rudi, der erst 8 Jahre alt ist, verrichtet die kleineren Arbeiten wie Aschenbecher ausleeren, Wasser an- und abdrehen usw. Was wäre nach Ihrer Meinung eine faire Aufteilung des Lohns?	Two friends, Eckhard and Rudi, wash their neighbour's car. She pays them 15,- DM. Eckhard is 11 years old. He washes the outside of the car and cleans the inside. Rudi, who is only 8 years old, does little work such as clean the ashtray and turn the water on and off. What would you consider a fair distribution of the profit?

	Eckhard	Rudi
1	9,50 DM	5,50 DM
2	9,00 DM	6,00 DM
3	8,50 DM	6,50 DM
4	8,00 DM	7,00 DM
5	7,50 DM	7,50 DM

9.	Der Kapitän eines Fischkutters und seine siebenköpfige Mannschaft machen in der Nordsee einen beträchtlichen Tagesfang, der 8 000,- DM einbringt. Was wäre nach Ihrer Meinung eine faire Aufteilung des Gewinns?	The captain of a trawler and his crew of seven fish very successfully in the North Sea one day and make a profit of 8 000,- DM . What would you consider a fair distribution of the money?

	Kapitän/captain	Mannschaft/crew
1	2 200,- DM	5 800,- DM
2	1 900,- DM	6 100,- DM
3	1 600,- DM	6 400,- DM
4	1 300,- DM	6 700,- DM
5	1 000,- DM	7 000,- DM

<table>
<tr><td rowspan="7">10.</td><td colspan="2">Ein Hobbygärtner und ein Berufsgärtner bepflanzen samstags in nebenberuflicher Tätigkeit ein Grundstück. Als Lohn wurden pauschal 600,- DM ausgehandelt. Beide investieren die gleiche Zeit und Mühe, aber natürlich arbeitet der Berufsgärtner wesentlich effizienter und trägt damit deutlich mehr zur Gesamtleistung bei.
Was wäre nach Ihrer Meinung eine faire Aufteilung des Lohns?</td><td>To make some extra money, a professional gardener and a hobby gardener plant a piece of land on a Saturday. They were paid 600,- DM. Both spend the same amount of time and energy, but of course the professional gardener works more efficiently and thus contributes more to the total achievement.
What would you consider a fair distribution of the reward?</td></tr>
<tr><td></td><td>Berufsgärtner/professional gardener</td><td>Hobbygärtner/hobby gardener</td></tr>
<tr><td>1</td><td>400,- DM</td><td>200,- DM</td></tr>
<tr><td>2</td><td>375,- DM</td><td>225,- DM</td></tr>
<tr><td>3</td><td>350,- DM</td><td>250,- DM</td></tr>
<tr><td>4</td><td>325,- DM</td><td>275,- DM</td></tr>
<tr><td>5</td><td>300,- DM</td><td>300,- DM</td></tr>
</table>

Tabelle 3

Factor loadings matrix for the apriori scales from the justice inventory (varimax solution)

	Factor 1	Factor 2
EYW	.94	-.03
EYS	.72	.17
EYM	.67	.00
EYB	.47	-.30
JWM	.30	-.05
PAW	-.49	.74
NES	-.02	.64
NEM	-.07	.58
PAS	-.43	.55
FEM	.08	.51
CJM	.05	.41
ECM	-.06	.40

Note: For scale labels see Table 2

Table 4

Factor loading matrix for the items from the Montada scales (varimax solution)

	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6
ECM4	**.86**	-.01	.07	.11	.16	.01
ECM2	**.80**	-.01	.05	.11	.08	.03
ECM1	**.78**	.03	.02	.00	.05	.02
ECM3	**.74**	.05	-.04	.14	.15	.00
JWM3	-.03	**.76**	.06	.00	-.04	.02
JWM2	.00	**.58**	-.06	-.01	-.08	.20
JWM1	-.01	**.58**	-.16	.08	-.05	.12
JWM4	.04	**.57**	.21	-.12	.09	.03
JWM6	.04	**.51**	.11	.06	-.02	.18
JWM5	.02	**.47**	-.04	-.17	-.04	.04
CJM5	.01	-.08	**.59**	.15	.04	-.01
CJM4	.06	-.04	**.57**	.06	.15	-.08
CJM3	-.01	.03	**.56**	-.01	.11	.031
CJM1	.08	.07	**.55**	.05	.09	-.00
CJM2	-.05	.07	**.43**	.17	-.02	.06
FEM2	.10	-.01	.19	**.63**	-.04	-.19
FEM3	.13	-.06	.02	**.62**	.14	.17
FEM4	-.01	.02	.21	**.58**	.03	-.07
FEM1	.08	-.05	.02	**.43**	.07	.03
NEM2	.01	-.13	.14	.08	**.74**	.14
NEM1	.07	.03	.05	.07	**.65**	-.01
NEM3	.17	-.01	.14	-.03	**.42**	-.01
NEM4	.20	-.09	.08	.22	**.38**	.08
EYM1	.08	.09	.03	-.13	.09	**.63**
EYM2	.05	.05	.01	.08	.08	**.59**
EYM4	.00	.22	-.04	-.02	.03	**.56**
EYM3	-.17	.28	.01	.05	-.11	**.45**

Note: For scale labels see Table 2

Table 5

Factor loading matrix for the items from the Sabbagh et al. scales (varimax solution)

	Factor 1	Factor 2
EYS8	**.72**	-.02
EYS4	**.68**	.08
EYS3	**.63**	.07
EYS2	**.60**	-.06
EYS6	**.59**	.03
EYS9	**.55**	-.31
EYS7	**.54**	-.19
EYS5	**.53**	.25
EYS1	**.42**	-.17
NES3	.26	**.57**
NES2	.09	**.54**
PAS4	-.20	**.49**
PAS1	-.12	**.48**
NES1	.11	**.42**
PAS3	-.14	**.40**
PAS2	-.31	**.34**

Note: For scale labels see Table 2

Table 6

Factor loading matrix for the items from the Schwinger & Winterhoff-Spurk scales (varimax solution)

	Factor 1	Factor 2
EYW9	**.63**	-.14
EYW4	**.63**	.02
EYW3	**.61**	.05
EYW1	**.60**	-.19
EYW2	**.48**	-.16
EYW11	**.45**	-.13
EYW5	**.43**	-.21
PAW9	-.41	.38
EYW8	.41	-.10
PAW5	-.40	.32
EYW6	.39	.10
PAW3	-.38	.37
PAW8	-.26	.13
EYW10	.24	-.07
EYW7	.16	.10
PAW7	-.35	**.62**
PAW6	-.32	**.58**
PAW12	-.40	**.52**
PAW2	-.05	**.51**
PAW11	.05	**.45**
PAW10	.04	**.39**
PAW4	.02	**.35**
PAW1	-.13	**.33**

Note: For scale labels see Table 2

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