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to Study Justice Perceptions:  
Five Methodological Problems  
of Attitudinal Justice Research**

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## **DFG Research Center (SFB) “From Heterogeneities to Inequalities”**

Whether fat or thin, male or female, young or old – people are different. Alongside their physical features, they also differ in terms of nationality and ethnicity; in their cultural preferences, lifestyles, attitudes, orientations, and philosophies; in their competencies, qualifications, and traits; and in their professions. But how do such heterogeneities lead to social inequalities? What are the social mechanisms that underlie this process? These are the questions pursued by the DFG Research Center (Sonderforschungsbereich (SFB)) “From Heterogeneities to Inequalities” at Bielefeld University, which was approved by the German Research Foundation (DFG) as “SFB 882” on May 25, 2011.

In the social sciences, research on inequality is dispersed across different research fields such as education, the labor market, equality, migration, health, or gender. One goal of the SFB is to integrate these fields, searching for common mechanisms in the emergence of inequality that can be compiled into a typology. More than fifty senior and junior researchers and the Bielefeld University Library are involved in the SFB. Along with sociologists, it brings together scholars from the Bielefeld University faculties of Business Administration and Economics, Educational Science, Health Science, and Law, as well as from the German Institute for Economic Research (DIW) in Berlin and the University of Erlangen-Nuremberg. In addition to carrying out research, the SFB is concerned to nurture new academic talent, and therefore provides doctoral training in its own integrated Research Training Group. A data infrastructure project has also been launched to archive, prepare, and disseminate the data gathered.

## **Research Project A6 “The Legitimation of Inequalities – Structural Conditions of Justice Attitudes over the Life-span”**

This project investigates (a) the conditions under which inequalities are perceived as problems of justice and (b) how embedment in different social contexts influences the formation of attitudes to justice across the life course.

We assume that individuals evaluate inequalities in terms of whether they consider them just, and that they hold particular attitudes toward justice because, and as long as, these help them to attain their fundamental goals and to solve, especially, the problems that arise through cooperation with other people (cooperative relations). As a result, attitudes on justice are not viewed either as rigidly stable orientations across the life span or as “Sunday best beliefs” i.e. short-lived opinions that are adjusted continuously to fit situational interests. Instead, they are regarded as being shaped by the opportunities for learning and making comparisons in different phases of the life course and different social contexts.

The goal of the project is to use longitudinal survey data to explain why individuals have particular notions of justice. The key aspect is taken to be changes in the social context – particularly households, social networks, or workplaces – in which individuals are embedded across their life course. This is because social contexts offer opportunities to make social comparisons and engage in social learning, processes that are decisive in the formation of particular attitudes to justice. The project will test this empirically by setting up a special longitudinal panel in which the same individuals will be interviewed three times over an 11-year period.

The results of the project will permit conclusions to be drawn on the consequences of changes in a society's social and economic structure for its members' ideas about justice. The project therefore supplements the analysis of the mechanisms that produce inequality, which is the focus of SFB 882 as a whole, by looking at subjective evaluations, and it complements that focus by addressing the mechanisms of attitude formation.

### Research goals

- (1) Analysis of the conditions in which justice is used as a criterion for evaluating inequalities.
- (2) Explanation of attitudes toward justice as the outcome of comparison and learning processes mediated by the social context.
- (3) Longitudinal observation of the individual development of attitudes to justice over the life course.

### Research design

- (1) Continuation and expansion of the longitudinal survey of evaluations of justice conducted by the German Socio-Economic Panel Study (SOEP).
- (2) Commencement of an independent longitudinal panel with ties to the process-generated individual data of the German Institute for Employment Research (IAB) and information on companies and households (the plan is to carry out three survey waves over an 11-year period).

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# Using Factorial Surveys to Study Justice Perceptions: Five Methodological Problems of Attitudinal Justice Research

Stefan Liebig, Carsten Sauer, and Stefan Friedhoff<sup>1</sup>

**Summary:** This article provides an overview of how factorial surveys have been used in justice research in the past. It addresses the question of why this method is particularly useful to survey attitudes toward justice. This question is discussed with reference to five problems of empirical justice research. For each of these problems, findings are presented from recent justice research that has used the factorial survey method, with a focus on assessing the allocation and distribution of goods (earnings/income, transfer payments, pensions) and burdens (taxes). The paper concludes with a discussion of future developments and possible applications in this research field.

## Introduction

For a long time, the question of what is just and what is not was regarded as a purely normative problem and, thus, as a subject of philosophy, legal theory, or theology. The aim of this *normative* justice research is to provide answers to Kant's question "What ought I to do?", and to do so has to identify principles or rules of justice that ensure that, from a moral point of view, the allocation and distribution of goods and burdens can be regarded as just (e.g., Rawls, 1975). Starting around the middle of the last century, a *descriptive*, or *empirical*, line of research on justice began to establish itself, first in psychology, and later in the social sciences and in economics (Adams, 1965; Deutsch, 1985; Jasso, 1978; Runciman, 1966; Törnblom, 1992). This steadily growing line of research examines what individuals and societies consider to be a just distribution of goods and burdens; why a state of justice is regarded as something worth achieving; and what consequences can be observed in a society when something is perceived as just or unjust. Most of this empirical research has focused on the study of attitudes toward procedural and distributive justice (cf. Liebig & Sauer, 2013, 2015). While questions of procedural justice involve an evaluation of decision-making processes regarding the allocation and distribution of goods or burdens (Deutsch, 1985; Jasso, 1980; Törnblom, 1992; Wegener, 1987), questions of distributive justice involve an evaluation of the outcomes of such processes. The main finding of this research is that attitudes toward or beliefs about justice, as well as evaluations of concrete outcomes, not only depend on individual characteristics—and thus do not have the status of personal traits—but are affected by the social situation in which an individual is embedded and the type of resource that is allocated. A specific allocation amount can therefore only be assessed on the basis of contextual information (Hegtvedt, 2006). This is why judgments concerning distributive justice are always complex, context-dependent, and context-related attitudes.

At least five methodological problems result from this complexity which are partially known from other areas of attitude research but are particularly important in justice research. First, the high degree of context dependency of judgments implies that a lack of contextualization can lead to systematically biased measurements of attitudes toward justice, particularly in survey-based justice research, but also in experimental behavioral economics, where researchers deduce individual attitudes toward justice from behavior in very abstract and artificial distribution situations. Second, since attitudes toward justice appear to be determined by a variety of very different factors, the actual importance and, especially, the relative importance of these factors must be determined (for example, to draw conclusions about their role in the generation of distributive injustices). This leads

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us to a third problem: in order to investigate the causes and influencing factors of individual perceptions of justice, in some fields of justice research, experimental studies are conducted in the laboratory, with only a certain group of individuals—usually students—participating (Henrich et al., 2010). As a result, the findings are often based on the study of convenience samples which include students and in which the external validity is usually not sufficiently clarified. This is particularly problematic in justice research because there is evidence that individual attitudes toward justice are influenced by sociostructural position and previous individual experiences, among other things. The fourth problem, the problem of social-desirability bias in response behavior (Paulhus, 1984), is particularly important when measuring attitudes toward justice because attitudes are sometimes not measured appropriately, so that the findings obtained lead to erroneous conclusions. The fifth problem is the problem of measuring and identifying causal relationships; this problem is particularly relevant when conducting research on the causes of certain attitudes, whether toward justice or other factors.

In this article, we will show how factorial surveys can be used, if not to overcome, then at least to reduce, the risk and impact of these five problems in empirical research on justice. We will review studies that analyze attitudes toward distributive justice and report problems in relation to the illustrated key results.<sup>2</sup> The article concludes with a discussion of future developments and possible applications.

## **Factorial Surveys in Empirical Justice Research**

Factorial surveys have been used in empirical justice research for over 30 years to determine what ideas exist about the fair allocation of goods or burdens (e.g., Beck & Opp, 2001; Jasso, 2006; Rossi & Anderson, 1982; Wallander, 2009). Generally speaking, respondents in these studies are asked to evaluate short descriptions (“vignettes”) of recipients (e.g., employees, households), in which the individual or situational characteristics (“dimensions”) used to describe the case are varied systematically in their levels. Since these levels are simultaneously changed among vignettes, the procedure is also referred to as “multifactorial.” Figure 1 shows a vignette that is used to measure attitudes toward the distributive justice of income. The description consists of five dimensions, four of which are characteristics describing the individual (age, gender, vocational training, occupation), with the fifth dimension indicating the individual’s gross earnings. The specific values of these characteristics are varied from vignette to vignette. Respondents are then asked to rate the justice of the gross earnings presented on an 11-point scale. In the analysis, these ratings are treated as dependent variables, and the five dimensions are treated as independent variables. By systematically varying these dimensions, their importance for justice evaluations can be estimated through statistical analysis and conclusions about justice can be drawn, with questions that can be addressed in this way including: Should earnings increase with age? Should women receive the same income as men? Should individuals with vocational training earn more than individuals without training?

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<sup>2</sup> The following illustration is based on a literature review that involved two steps. The first step was to search for articles in Google Scholar and the Social Science Citation Index which use any combination of the German and English keywords “justice” or “fairness” [“*Gerechtigkeit*”] and “factorial survey” [“*faktorieller Survey*”] or “vignette(s)” [“*Vignette(n)*”]. Following the procedure described by Wallander (2009), the results were then complemented by publications citing the article “Who Should Get What? Fairness Judgments of the Distribution of Earnings” by Alves and Rossi (1978), because it is one of the first and most frequently cited articles in justice research that use factorial surveys. 19 articles in German and English were identified in this way. An overview of the studies used here can be found in the Appendix.



$C$  and  $\theta$  are unknown and must be estimated. To calculate the just reward  $C$ , it is necessary to transform Jasso's equation ( $C_{iv} = A_v \times \exp(-J_{iv} / \theta_i)$ ) and estimate  $\theta$  as the slope coefficient of individual regression equations.<sup>3</sup> The estimation is done by regressing individual-specific bivariate regressions of all judgments of an individual ( $J$ ) on the actual earnings given in the vignettes. The estimated slope coefficient then provides the individual constant  $\theta$ , which is used to calculate the just earnings for each vignette. This procedure makes it possible to express the attitudes toward justice in the reward units (see Figure 2). It is obvious that in this procedure at least an interval scale level of the justice judgment  $J$  is needed. For this reason in particular, open scales or magnitude scales are used (Jasso & Meyerson Milgrom, 2008; Jasso & Webster, 1999; Liebig & Mau, 2002, 2005) in addition to conventional 9- or 11-point rating scales (Alves & Rossi, 1978; Jasso, 1994; Jasso & Rossi, 1977; Jasso & Webster, 1997; Schrenker, 2009).<sup>4</sup> The rationale for using these indirect measures of attitudes toward justice is that certain groups of respondents might find it too difficult to state specific rewards or burdens. More important, respondents do not express their own perceptions when asked about just rewards, because they are too heavily influenced by the given rewards (Jasso, 2006; for arguments to the contrary, see Markovsky & Eriksson, 2012). However, this method has been critically discussed (Auspurg & Hinz 2015), and the use of open or magnitude scales has been considered to be particularly problematic (Sauer et al., 2009, 2014).

But how might factorial surveys be used to reduce the methodological problems of empirical research on justice? In the following, we will provide a detailed description of the five problems mentioned and explain how factorial surveys might be used to reduce these problems in justice research.

## Issues of Empirical Justice Research and Findings from Studies Involving Factorial Surveys

### *Contextual Information: Complexity of Distribution Processes*

The first problem of analytical justice attitude research is rooted in the very subject itself. In most cases, the question of whether or not the allocation of certain rewards or burdens is just can be answered only on the basis of contextual information (Hegtvedt, 2006). This is because the actual allocation of rewards and burdens itself depends on a combination of individual and structural characteristics. The amount of actual earnings is determined by various factors, including individual performance, human capital, age, gender, occupation, industrial sector, and company size. The questions that arise when the justice of earnings is assessed are which of these factors the respondents think determine the amount of fair earnings and what relative importance each dimension has.

Previous research shows that individuals judge allocation and distribution results on the basis of very general rules or principles of distribution, which also specify which dimensions the respondents will consider to what extent. The most important principles besides the *principle of equality* are the *proportionality* or *equity principle* (rewards should be proportional to an individual's current expenses and efforts), the *principle of need* (individual requirements in terms of minimum social standards and non-self-inflicted disadvantages should be considered in the allocation), and the *principle of entitlement* (an individual's position and status in the hierarchical structure of a society or a group should be taken into consideration) (Liebig & Sauer, 2013, 2015). The respondents' decision as to which of these principles should guide the allocation or distribution process depends on the situation and on the type of goods or burdens to be distributed (e.g., income,

<sup>3</sup> The equation is solved using the following conversion and Slutsky's theorem:  $J = \theta \times \ln A - \theta \times \ln C = a + \theta \times \ln A$  (cf. Jasso, 2007; Jasso & Wegener, 1997).

<sup>4</sup> When the magnitude scale is used, respondents are asked to express the degree of their feeling of injustice by giving a random number or by drawing a line. To ensure the comparability of judgments, the respondents are first presented with a vignette (anchor vignette), which is similar for all respondents.

medical assistance). In making such decisions, respondents might also use a combination of any of these principles. It is important to note that there is no way any of these principles could be “simply” applied, because it is impossible to make generalized statements about what “individual performance” actually is, which of the criteria required are legitimate, or which status characteristics of an individual should be rewarded and with what amounts. This more precise determination of the conditions and their links to specific reward amounts in turn depends on the context, and is the result, of social-comparison processes. Only by comparing themselves with other individuals or groups (individual reference individuals or “generalized others”) can respondents develop concrete ideas about what might constitute a just reward or burden. Thus, information on the recipients and the situational conditions is needed to decide which principles of justice should apply in a given case and what reward or burden is just or unjust.

Survey-based justice research in particular relies primarily on item-based measurement instruments, which provide respondents with little contextual information and measure attitudes toward justice on a very general and abstract level.<sup>5</sup> The aim of these measurements is to identify cross-context preferences or general normative orientations.<sup>6</sup> Item-based measurements are useful, generally speaking, but can also lead to a systematic distortion of response behavior. Since item-based instruments are designed to evoke a response behavior that favors equal distributions of goods and burdens, their exclusive use could lead to an overestimation of equality preferences. Studies on empirical justice research show that respondents always rely on “equality heuristics” if there is too little information about distributive decisions. A similar behavior is observed when the respondents want to or can invest only little cognitive capacity in processing the instruments used because the instruments are too abstract, too difficult to comprehend, or not concise enough (Keller et al., 2013; Messick, 1993; Roch et al., 2000). The use of the equality principle can be understood as a “rule of thumb or an intuitive rule of sharing” (Keller et al., 2013, p. 172) and as what might be called the “default” attitude in resolving allocation and distribution conflicts in “ambiguous, novel, or complex social situations” (Messick, 1993, p. 28). The advantage is that when using the equality principle, no information is needed about the recipients of the allocation or distribution or about any other situational parameters. Nor are there any complex cognitive processes required of the respondents to be able to make a more differentiated allocation and distribution (Messick, 1993). By exclusively using item-based questions it is possible to favor this use of a simple equality-oriented heuristic.

Factorial surveys allow researchers to avoid this problem. The first reason is that it requires respondents to make greater cognitive efforts than do item-based attitude measurements (Sauer et al., 2009, 2011). The vignettes presented have a more complex structure (several dimensions), and in most cases respondents are asked to evaluate several vignettes. Second, in a factorial survey respondents are provided with more information. The contexts of the evaluation can be compared in a way that is more appropriate to the subject; for example, when asked to evaluate the justice of earnings, individual factors such as performance and job experience may be complemented with contextual dimensions such as the economic situation of the company or the situation of the family (Sauer et al., 2009, 2011). In addition, it is likely that the use of realistic vignettes helps the respondents to imagine the situation better and thus enables them to make appropriate decisions that go beyond simple heuristics. For the measurement of income inequality this means that measurements that use factorial surveys should show significantly lower “inequality aversion” compared with classic item-based questions. This is suggested by the results of a population survey conducted in Germany in 2009 (Sauer et al., 2011). Of the 1,600 respondents recruited for an item-

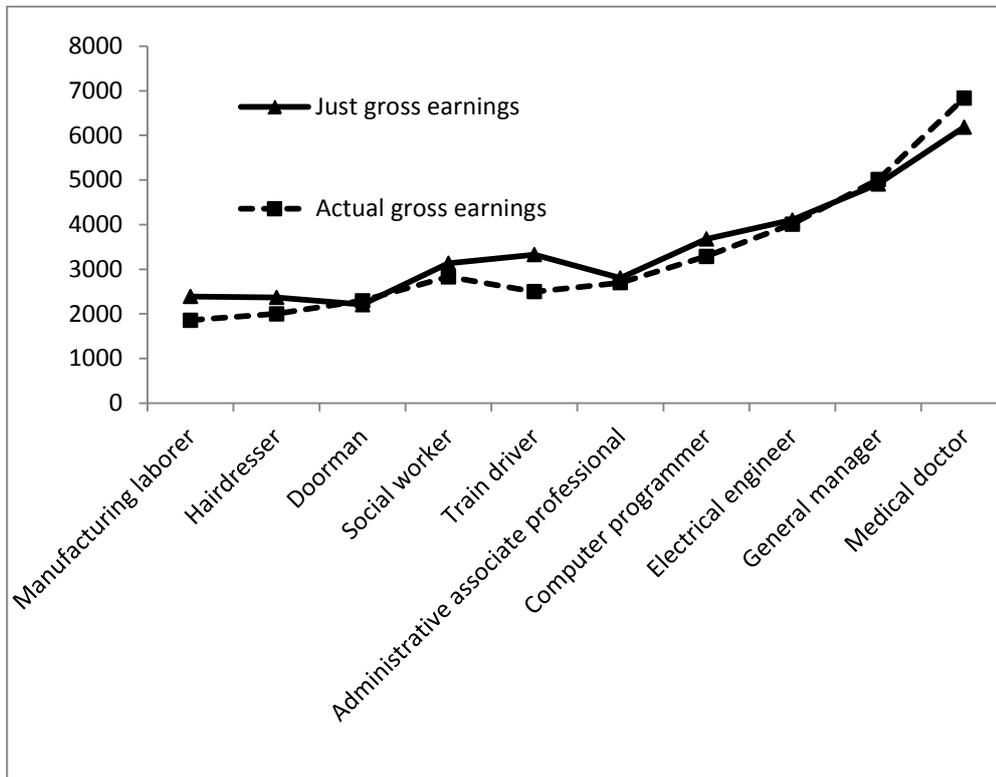
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<sup>5</sup> Experimental behavioral economics operates in a similar way when distribution behavior in highly artificial game situations is used to draw conclusions about the justice preferences of participants, most of whom are students (cf. Fehr & Schmidt, 2006).

<sup>6</sup> One example is an item respondents in the German General Social Survey (ALLBUS) are asked about on a regular basis to determine whether they agree with the statement “Income inequality in Germany is too high” (ALLBUS 2010, Item 6a), in order to draw conclusions about preferences of income inequalities in society.

based measurement, 91 percent stated that income inequality in Germany was “too high” or “far too high.” From these responses a clear equality preference can be derived. The same questionnaire also asked respondents to evaluate the justice of earnings of vignette persons. As Figure 2 shows, respondents clearly differentiated between just earnings depending on the occupation of the vignette individuals (Sauer et al., 2009), thus creating inequality with their judgments.

**Figure 2.** Earnings rated as just and actual earnings by occupation of vignette individuals in Germany in 2009



Source: Attitudes toward justice from Sauer et al. (2009), actual earnings by occupation (mean of full-time-employed in a given occupation), calculated on the basis of SOEP 2009

The triangles connected by the continuous line in Figure 2 show the just earnings for each of the ten occupations (mean values), which were estimated on the basis of the respondents’ judgments, while the squares connected by the dashed line show the actual earnings of each of the occupations as given in the data set of the German Socio-Economic Panel 2009 (averages of full-time employees in each occupation [ISCO four-digit code]). The two lines run fairly parallel, which suggests that the respondents’ judgments were not arbitrary and that the estimations of just earnings based on the justice judgments provide meaningful values. On the whole, the respondents would slightly increase the earnings of individuals in lower-status occupations (manufacturing laborers, hairdressers) and lower the earnings of high-status occupations (medical doctors). However, the existing variation of earnings across occupations is still considered to be just. A uniform distribution of earnings—as could be derived as favored based on the item-based measurement—is not considered to be just. In addition, there is no statistically significant correlation between the inequality preference expressed in the vignette judgments and the preference for smaller inequalities in the item-based measurement. This means that if more detailed information about the potential recipients and their situation is available, the assessment of what constitutes just earnings is more differentiated, and that if this and other contextual information is not available, respondents use the “rule of thumb”

appropriate to the given situation and regard greater equality as just. This pattern is consistent with the findings on the use of the “equality heuristics” (see Messick, 1993; Roch et al., 2000).

The potential of this method to allow for differentiated judgments of justice by using appropriate “contextualizations” has also been shown by two studies that do not focus explicitly on earnings. The first of these studies, Schaffer (1990), examined what criteria respondents used to determine what they thought would be fair child support payments the parent not living in the same household as their child should make. The results clearly showed a tendency toward justice judgments based on actual needs, with respondents stating that child support payments should be proportional to the income of the persons liable for child support. In other words, the higher the income of the parent liable for child support, the higher the child support payment should be to be considered just. The second study, Liebig and Mau (2002), focused on minimum social security and examined the attitudes toward a minimum income provided by the state. Their finding was that the respondents were generally in favor of a minimum level of social security that would ensure the recipients’ existence, which is consistent with the results of item-based measurements. However, their results also show that respondents think that the actual amount of welfare benefits should depend on whether the individuals described in the vignettes had put themselves in a state of welfare dependency. The general consensus was that those who are in financial distress through their own fault should receive less welfare state support than those who were in financial distress through no fault of their own. Thus, the preference for a uniform distribution is lower if additional information is provided on the potential recipients of an allocation. The above discussion suggests that factorial surveys are more useful in measuring attitudes toward justice that are not the result of routinized behavior in the form of applying an equality heuristic.

### *Relative Importance: The Different Relevance of Individual Allocation Criteria*

The allocation criteria that underlie factual distribution processes often have different and, more important, competing normative implications. Normative conflicts therefore arise only as a result of the relative weighting of individual criteria, such as when considering the question of whether individuals’ formal education should be given more weight in determining their income than their seniority, their experience, or their actual job performance. Traditional item-based survey methods cannot clearly distinguish between individual determinants.

Factorial surveys can make this distinction because the multifactorial design requires respondents to make “trade-offs” among various different dimensions and thus to weigh up individual characteristics against one another. This makes it possible to determine the influence of each named and varied attribute on the respondents’ response or judgment, as well as the relative importance of individual vignette dimensions. This may be done by considering standardized coefficients (Shepelak & Alwin, 1986) or by decomposing into the respective semi-partial explanation of variance (cf. Auspurg et al., 2013; Auspurg & Jäckle, 2012; Gatskova, 2013).

Most of the existing research has investigated the relative importance of individual allocation criteria for individual incomes and household incomes, with a focus on two central questions. The first question is: Which of the individual characteristics of the income earners described in the vignettes and which of the situational factors are relevant for the justice evaluation? Here, the individual and situational characteristics are regarded as indicators of the general principles of justice described. The other central question is: Is it possible to identify differences among societies or among social groups? Generally speaking, the results of this research show that respondents actually weigh up several individual and situational factors against one another, and that they give the greatest relative weight to vignette dimensions that are directly related to employment (e.g.,

Auspurg et al., 2013).<sup>7</sup> Key factors in the decision making include occupation, human capital (education and experience), and individual performance: respondents believe that it would be just if the vignette individuals in more prestigious occupations who have more experience, a higher level of education, and above-average performance in the workplace earned more than others (Sauer et al., 2009). Thus, two distribution principles dominate in justice evaluations of earnings: first, the principle of proportionality as described in equity theory (Adams, 1965), because individual performance is seen as a central reward principle. Justice of earnings is constituted not by absolute equality but by proportional equality, that is, by the principle of equal pay for equal performance and unequal pay for unequal performance. Thus, contrary to the findings obtained by using the theoretical models advocated in behavioral economics (Fehr & Schmidt, 2006), individuals do not show “*inequality aversion*” when it comes to earnings; rather, it would be more accurate to say that they show “*inequity aversion*,” meaning that injustice is experienced, and is to be avoided, when individuals who have equal expenses achieve unequal outcomes or when individuals achieve equal outcomes with unequal expenses.<sup>8</sup>

However, because similar weight is given to the allocation category “occupation,” or prestige of the occupation, it is expected that for earnings to be considered just, they must also reflect differences in status. The results for Germany are shown in Figure 2; respondents make a clear differentiation of earnings by occupation (with factors such as level of education, performance, and experience used as control variables). A key observation in this respect is that respondents clearly expect that individuals in occupations with a higher social status and greater prestige should be entitled to a higher income, regardless of their current expenses and benefits.<sup>9</sup> Thus, respondents believe that the allocation of income should be based on the principle of entitlement as well as on the proportionality principle. This finding is consistent with the results of a study Hermkens and Boerman (1989) conducted in the Netherlands which found that occupational prestige is the most important determinant for the level of just household income.

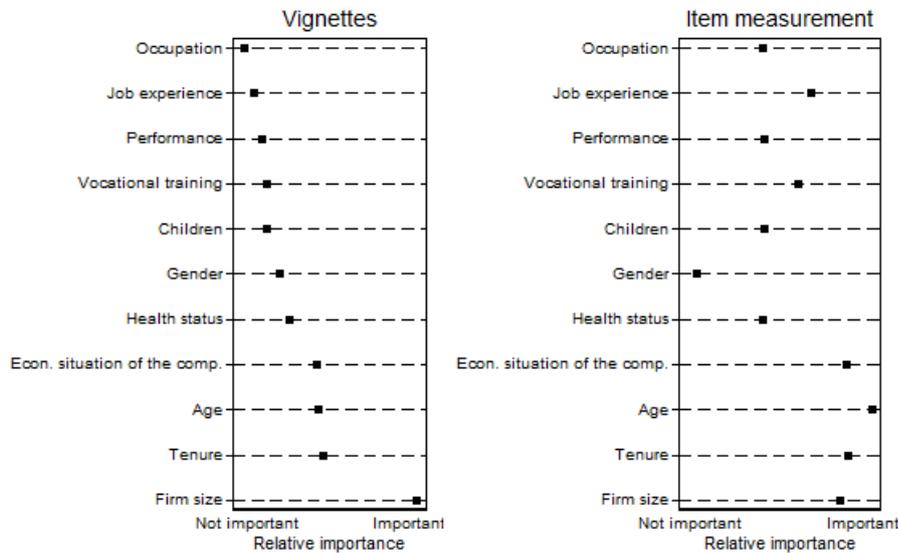
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<sup>7</sup> To compare the weight of individual dimensions in order to determine their relative weight, beta-coefficients (Alves & Rossi, 1978; Hermkens & Boerman, 1989), semi-partial explained variance (Auspurg et al., 2013; Gatskova, 2013), and *t*-values are considered (Liebig et al., 2010).

<sup>8</sup> Incidentally, this inequity aversion has also been observed in non-human primates (see Brosnan, 2006).

<sup>9</sup> The term “education” does not allow for a clear distinction because it can be understood not only as an indicator of individual productivity (proportionality principle) but also as a status characteristic (principle of entitlement).

**Figure 3.** A comparison of the relative importance of dimensions in vignette-based and item-based measurements



Source: Liebig et al. (2010). The relative weight of the dimensions was measured using  $t$ -values.

The fact that the studies considered here found that “status criteria” play an equally important role in the just allocation of income as “performance criteria” certainly also has to do with the differentiated form of the attitude measurement used in factorial surveys. If we compare the ranking of the different income criteria obtained directly using item-based survey with the ranking obtained indirectly using a factorial survey, the survey conducted in Germany in 2009 reveals significant differences. While the item-based survey leads to the conclusion that the proportionality principle is the most important criterion, factorial surveys show that the principle of entitlement (occupation) is the most important principle.

The results also indicate that individual need is another important allocation criterion besides the two central principles of proportionality and entitlement: the number of children to be supported or marital status also constitute legitimate claims. Respondents think that individuals should be allocated a higher income if they have more family responsibilities, if they are the sole breadwinner, or if they have to support children.

The above clearly shows that the evaluation of earnings is based on a combination and weighting of different principles of justice. This was the key assumption of the model proposed by Leventhal (1980): the justice of the earnings is evaluated on the basis of a combination of actual expenses (equity principle), position in the status and/or prestige structure of a society (principle of entitlement), and individual need (needs principle), with the last-mentioned principle given the least weight of all.

The relative importance of the principles varies among different societies and among different social groups. This is not necessarily true of the role of the proportionality principle in the allocation of earnings (Auspurg et al., 2013; Cohn et al., 2000; Hysom & Fişek, 2011; Jasso & Meyersson Milgrom, 2008). A comparative study of Eastern European countries (Bulgaria, Hungary, Poland, Russia) and Western countries (France, Spain, United States) conducted by Cohn and colleagues (2000) found a clear preference for the equity principle in all of the countries under study. This finding is consistent with the results of a study of American and Turkish students

conducted by Hysom and Fişek (2011) and with those of a comparative study conducted by Jasso and Meyersson Milgrom (2008) in the United States and Sweden. Both of these studies showed that the preference for the equity principle was more pronounced among American respondents, whereas the Swedish respondents gave more weight to operational context conditions (industry, capital, location) in the allocation of earnings. Auspurg et al.'s (2013) comparative study of perceptions of income equity in Western Germany, Eastern Germany, and Ukraine found that age had a significant effect on performance orientation. Older respondents in Germany gave more weight to status criteria (principle of entitlement), whereas in Ukraine, older respondents gave more weight to the needs principle and younger respondents gave more weight to the performance principle. This serves to illustrate the third problem of attitudinal justice research, namely that different attitudes toward justice may be the result of different conditions of socialization (e.g., East vs. West) and different experiences with the processing of distributional conflicts. This will be the focus of the following section.

### *Experience-Based Attitudes: Attitudes toward Justice and the Problem of Selective Sampling*

Many studies in the area of empirical justice research are based on laboratory experiments that use small and very homogeneous samples. These experiments involve surveys among students of psychology, economics, or the social sciences (e.g., Greenberg, 1993; Markovsky, 1988), which means that the results of these experiments are not necessarily generalizable. The same criticism leveled against all experimental studies—namely the problem of the external validity of results (Henrich et al., 2010; Jones, 2010)—can also be leveled against these experiments. However, in the field of justice attitude research, such criticism is much more problematic. There are theoretical reasons to believe (Liebig & Sauer, 2013; Vanberg, 2007), and there is empirical evidence that indicates (Almås et al., 2010; Keller et al., 2013; Meulemann & Birkelbach, 2001), that attitudes toward justice are not personality traits that remain stable and persistent through an individual's life course. Thus, attitudes toward justice, and judgments of what is just, are “position effects” (Boudon, 1990) in that they reflect not only the specific interests but also the experiences individuals “accumulate” in different occupational and social positions over the life course (Liebig & Sauer, 2013, 2015). The *local justice* approach developed by Jon Elster in the 1990s (Elster, 1991a, 1991b, 1992) is explicitly based on this assumption. Owing to their experience in solving distribution problems, certain population groups have attitudes toward justice that are different from those of individuals who cannot draw on such experiences (Keller et al., 2013). This is particularly true of students because they are at a specific stage of their life course, have very similar sociostructural characteristics and social backgrounds, and little experience with social distribution conflicts and possible ways to resolve such conflicts. Experimental studies involving surveys among students thus capture only a small range of the spectrum of possible attitudes toward justice, namely the range of attitudes that are not based on working life experience and experience with the resolution of distribution conflicts. Thus, more than many other areas of research, justice research is faced with the challenge of finding ways to benefit from the advantages of experimental methods outside the laboratory and to examine heterogeneous populations.

This is another problem factorial surveys can help overcome. Since they can be used to combine experimental methods and standardized surveys, factorial surveys can be embedded in traditional survey methods such as interviewer-based, online, or mail-based surveys (Sauer et al., 2009, 2011, 2014). One possible application is the determination of the weight of individual dimensions by individual groups of respondents. Such “cross-level interactions” have been observed by Schrenker (2009), who found that respondents with a high income gave significantly more weight to the income that vignette individuals had before reaching pension entitlement age when deciding what constitutes a just pension than did respondents with a low income. Auspurg et al. (2013) found that

respondents with a higher level of education gave more weight to occupational prestige when allocating earnings than did respondents with a lower level of education. Both of these examples show that justice judgments also reflect respondents' personal interests and that experience with the resolution of distributional conflicts (or lack of it) plays a crucial role. This is supported by Buzea et al. (2013) and Gatskova (2013). Buzea et al. (2013) found significant differences between students and the rest of the population, with the former leaning more toward the equal-distribution principle. On the whole, the results reported here show that when larger segments of a population are to be surveyed, factorial surveys can help to overcome the problems that result from selective sampling and small sample size.

### *Social Desirability: Justice as a Normative Concept*

Justice as a normative concept is always a part of normative discourses and of social conflicts that are covered by the media, especially when it comes to social problems of distribution (Brettschneider, 2007; Leisering, 2004; Volkmann, 2004). Attitudes toward justice that are related to such discourses are faced with the problem of socially desirable response behavior (Paulhus, 1984), meaning that respondents do not express what they really think or believe but instead respond in accordance with what they anticipate as the majority opinion or existing norms. Researchers find that this problem is particularly pronounced when conducting item-based surveys (King & Bruner, 2000) or relying on self-reports by individuals (Fisher & Katz, 2000). It is also one of the main problems in justice research. One example is the question of the pay gap between men and women. The general observation is that in item-based surveys, an individual's gender should not be of any importance. Thus the general consensus is that gender-based wage discrimination—the so-called gender wage gap—is to be regarded as unjust. However, studies that use factorial surveys indicate that respondents do allocate different earnings to male and female workers and that they believe that men should earn more than women with otherwise identical characteristics. This finding was reported in one of the first studies to have used a factorial survey (i.e., Jasso & Rossi, 1977) and has been confirmed several times since (Auspurg et al., 2013; Jann, 2008; Jasso, 1994; Jasso & Webster, 1997, 1999; Sauer, 2014). The conclusion that can be drawn is that if several judgment-relevant dimensions are presented simultaneously, the tendency to give socially desirable responses—in this case, gender should not matter—is suppressed in the vignettes (Alexander & Becker, 1978; Mutz, 2011).

Another example of the suppression of social-desirability effects by using factorial surveys is provided by a study on just taxation conducted by Liebig and Mau (2005), who used a regional sample in Germany to examine attitudes toward criteria of what respondents believed constituted a just tax system. They concluded that “most of the applicable principles of the current tax system are regarded as legitimate” (Liebig & Mau, 2005, p. 468, transl. from the German), that the principle of progressive taxation is generally regarded as just, but that “flat-tax” models were not consistent with the German respondents' attitudes toward justice at the time the study was conducted. However, in the context of our own study, the difference between item-based and vignette-based surveys is more relevant. Respondents in an item-based survey were asked which of the dimensions presented should be relevant for taxation. “Marital status: Married” was one of the dimensions. The majority of respondents did not think that marital status should be considered as a dimension of taxation. The respondents were then asked to evaluate the rates of taxation of the fictitious taxpayers presented. “Married” was a level of the dimension “Marital status”—besides “cohabiting.” The results showed that the respondents thought it would be just to allocate a lower tax burden to the married fictitious taxpayers. Unlike in the item-based survey, which disregarded traditional ideas of marriage and family, in the vignette-based survey, the respondents lowered the tax burden on married vignette individuals. As before, there is good reason to believe that item-

based surveys tend to reflect a more socially desirable opinion. This is more evidence that factorial surveys are likely to help to avoid socially desirable response behavior (Auspurg et al., 2015).

### *Causality: Scientific Explanation and Empirical Testing*

Empirical justice research that intends to provide not only mere descriptions of collective opinions and attitudes but also explanations on the basis of theoretically derived statements on causal connections is confronted with the same problem that all empirical social research has, namely that of modeling causal relationships and of sufficiently testing these relationships using empirical methods (Gangl, 2010; Opp, 2010). Traditional survey-based research, which uses cross-sectional data, is practically incapable of reliably identifying possible causal relationships, since correlations between two variables might just as well be caused by other variables that have not been measured. Due to the simultaneous measurement of theoretically assumed causes and effects, and due to the problem of unobserved heterogeneity, complex methods are needed to identify causal relationships post hoc (Gangl, 2010). Although longitudinal studies can be used to measure causes and effects separately in time, and appropriate methods (fixed-effects models) can be used to exclude the time-constant unobserved heterogeneity (Allison, 2009; Brüderl, 2010),<sup>10</sup> the best way to test causal relationships is to use experimental methods (Falk & Heckman, 2009). The first reason is that the researcher can control the central independent variables (with causal effect) and that the experimental manipulations are randomly distributed among the participants (“randomization”). The second reason is that the laboratory allows for most confounding factors to be ruled out and thus for the isolated measurement of causal effects (Webster & Sell, 2007). However, it should be noted that the problems described above occur when specific populations are surveyed.

Once again, factorial surveys can provide a way out of this dilemma. *Ceteris paribus* modeling of hypotheses enables direct testing of theoretical relationships, and the randomized assignment of vignettes to respondents ensures independence of vignette and respondent characteristics. This rules out third-variable effects. In the specific case of justice research this means that the survey instrument takes the context dependence of attitudes toward justice into consideration, given that the respondents are provided with an appropriate description of the allocation and distribution situation. In addition, random assignment makes it possible to test models that explain causal relationships (Liebig & Sauer, 2013, 2015).

As this article has shown, factorial surveys can be used, if not to overcome the five key conceptual and methodological problems of attitude-based empirical research on justice entirely, then at least to reduce these problems to a certain extent.

## **Conclusion**

In this paper, we discussed the reasons why factorial surveys are used in justice research, the specific methodological features of studies that use these surveys, and the key results such studies have provided in the past. Our findings confirm that an individual’s decision whether goods and burdens are allocated justly does indeed depend on certain characteristics of the recipients of such goods and burdens, as well as on situational conditions. Factorial surveys can help to reveal how respondents differentiate when judging whether something is just or not. Factorial survey studies also reveal consensus structures that relate to the application of the norms and principles that

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<sup>10</sup> There are some longitudinal studies in the area of justice research which use fixed-effect models, among others (cf. Liebig et al., 2012; Sauer & Valet, 2013; Schunck et al., 2013).

underlie them and in which not only specific cultural features but also specific sociopositional features play a role. A particular advantage of using factorial surveys is that they enable the determination of the exact amounts of specific rewards and burdens recipients would allocate. The studies on just earnings or household income, socially just welfare benefits, or fair taxation allow researchers to derive conclusions as to what a given society believes are equitable rewards and burdens. Factorial surveys thus have benefits that far exceed those of item-based surveys.

Recent years have seen an increasing use of factorial surveys in empirical social research, as well as a growing number of studies that focus on the methodological issues of and the questions that arise in connection with this method. To the extent that the experiences and insights derived in this way will inform the practice of conducting factorial surveys, the conceptual and methodological approaches can be expected to be optimized further in the future. As regards justice research, the use of factorial surveys in international comparative studies appears to be particularly promising (e.g., Auspurg et al., 2013; Hysom & Fişek, 2011; Jasso & Meyersson Milgrom, 2008) because most of the research in this area has been descriptive in nature (cf. Liebig & Sauer, 2013, 2015) and for precisely this reason is incapable of identifying the causal mechanisms that underlie judgments in different societies and thus cannot clearly differentiate between cultural and positional influences. We also think that it would be worthwhile to continue to explore the potential of interactive survey methods. One question in justice research that has yet to be answered is what influence the distribution of earnings in a given society has on respondents' assessments of their own earnings. Does the actual degree of income inequality have any influence at all, or do individuals usually evaluate their earnings without regard to societal distribution parameters? Factorial surveys may help to answer these questions because they offer the opportunity to vary distribution contexts and to test the causal effects of "structural" parameters on individual justice judgments. However, a question that remains largely unresolved is whether factorial surveys enable more reliable behavior predictions in the context of justice research (cf. Eifler, 2010). This is where we see the greatest potential for development in this research field.

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## 1 Appendix

**Table 1.** Distributive justice: An overview of factorial surveys

Note: Publications have been selected on the basis of the procedure described in Footnote 3. Jasso and Rossi (1977), Jasso (1994), and Jasso & Webster (1997) are based on the same sample.  $N_V$  = Number of vignettes used;  $N_B$  = Number of respondents;  $N_V/N_B$  = Number of vignettes per respondent; ? = Exact number not reported. The column “Dimensions” is read as follows: e.g.,  $5 (2 \times 3^4)$  means 5 dimensions with  $1 \times 2$  levels and  $4 \times 3$  levels. Sorted by topic and year. Characteristics that were used as dependent variables, had no influence, or were not examined in the article are given in brackets.

Reference	Object of investigation	Relevant characteristics	Dimensions (levels)	$N_B$	$N_V$	$N_V/N_B$	Answering scale	Vignette sampling	Respondent population	Analysis	Countries
Alves & Rossi (1978)	Earned income (individual)	Earned Income, Occupational Status, Marital Status, Number of Children, Education, Taxation; [Gender], [Ethnicity]	$8 (52 \times 2 \times 4 \times 7 \times ? \times ? \times ? \times ?)$	522	?	50	9-point scale	Random	General population	OLS regression	USA
Jasso (1994)	Earned income (individual)	Gender; [Relational Status], [Earned Income], [Education], [Number of Children], [Occupational Status]	$6 (2^2 \times 7 \times 10 \times 99 \times 15)$	200	600	60	9-point scale	Random	General population	Two-stage estimation procedure	USA
Jasso & Webster (1997)	Earned income (individual)	Gender; [Relational Status], [Earned Income], [Education], [Number of Children], [Occupational Status]	$6 (2^2 \times 7 \times 10 \times 99 \times 15)$	200	100	60	9-point scale	Random	General population	OLS regression	USA
Jasso & Webster (1999)	Earned income (individual)	Age, Education, Gender, Earned Income; [Occupational Status]	$5 (2 \times 10^2 \times 4 \times 15)$	377	30	10	Magnitude scale	Random	Students	Robust regression, respondent-specific regression, and vignette-specific regression	USA
Cohn et al. (2000)	Earned income (individual)	Effort (Certificate of Employment, Willingness to Accept Occupational Changes/Salary Cuts), Need (Labor Market Situation, Marital Status); [Voice], [Impartiality of the Company]	$4 (4^2); 5 (5^2)$	831; 786; 824; 765; 762; 775; 810	32; 1000	2	10-point scale	Complete design; random	General population	OLS regression	Bulgaria, Hungary, Poland, Russia, France, Spain, USA

Jann (2008)	Earned income (individual)	Gender, Need (Single Parent, Narrow Finances), Effort (Engagement, Complies with Performance Requirements)	3 (3 <sup>3</sup> )	531	8	1	11-point scale	Complete design	General population	OLS regression	Switzerland
Jasso & Meyersson Milgrom (2008)	Earned income (individual)	Age, Gender, Job Experience, Company Site, Industrial Sector, Education, Financial Assets of the Company; [Earned Income]	8 (11 × 2 × 15 × 16 × 3 × 4 × 27 <sup>2</sup> )	47; 36	80	40	Magnitude scale	Random	Students	Multilevel models and respondent-specific regression	USA, Sweden
Sauer et al. (2009)	Earned income (individual)	Earned Income, Occupational Status, Education, Effort, Marital Status, Number of Children, Gender, Situation of the Company, Company Size; [Age]	10 (2 × 3 <sup>5</sup> × 4 × 5 × 10 <sup>2</sup> )	1066	240	24	Magnitude scale	Fractionalized design	General population	Robust regression	Germany
Hysom & Fişek (2011)	Earned income (individual)	Kind of Task, Co-Worker Relations, Kind of Occupation; [Gender], [Occupational Status], [Age], [Education], [Occupational Experience], [Group Size]	9 (2 <sup>4</sup> × 3 <sup>5</sup> )	295; 314	8	8	Allocation of relative proportion of the reward	Selective choice of vignette dimensions on the basis of pretests	Students	OLS regression	USA, Turkey
Auspurg et al. (2013)	Earned income (individual)	Germany (West): Occupational Status, Effort, Education, Marital Status, Gender, Age, Number of Children; [Situation of the Company], [Form of Company], [Earned Income]  Germany (East): Occupational Status, Effort, Education, Marital Status, Number of Children, Age, Gender; [Situation of the Company], [Form of Company], [Earned Income]  Ukraine: Number of Children, Effort, Occupational Status, Marital Status, Gender, Education, Age; [Situation of the Company], [Form of the Company], [Earned Income]	10 (Germany: 4 × 2 × 3 <sup>5</sup> × 10 <sup>2</sup> × 5; Ukraine: 4 × 2 <sup>2</sup> × 3 <sup>4</sup> × 10 <sup>2</sup> × 5)	944; 1797	240	24	100-point scale	Fractionalized design	General population	Robust regression	Germany, Ukraine
Buzea et al. (2013)	Earned income (individual)	Contribution, Occupational Experience, Familiarity with the task, Need (Number of Children), Future Interactions, Age; [Gender]	7 (2 × 8 × 3 <sup>5</sup> )	200	8000	40	Percentage pay increase	Random	Students	Multilevel models	Romania

Gatskova (2013)	Earned income (individual)	Older Generation: Number of Children, Effort, Occupational Status, Relational Status, Gender, Form of the Company, Age; [Education], [Earned Income], [Financial Situation of the Company]  Younger Generation: Number of Children, Effort, Occupational Status, Gender, Relational Status, Form of the Company, Age; [Education], [Earned Income], [Financial Situation of the Company]	$10 (2 \times 3^6 \times 6 \times 10^2)$			12	11-point scale	Fractionalized design	General population	Robust regression	Ukraine
Jasso & Rossi (1977)	Earned income (household)	Multiple Person Households: Education (Husband), Occupational Status (Husband & Wife), Marital Status, Family Income; [Education (Wife)], [Number of Children]  Multiple Person Households: Gender, Relational Status, Earned Income, Education, Number of Children, Occupational Status	$6 (2^2 \times 7 \times 10 \times 99 \times 15)$	200	600	60	9-point scale	Random	General population	OLS regression	USA
Shepelak & Alwin (1986)	Earned income (household)	Single Households: Ethnicity, Education, Size of Family, Vocational Training, Gender, Occupational Prestige  Family Household: Education (Husband & Wife), Vocational Training, Gender, Occupational Status of Husband & Wife; [Family Size]	6	328	135	15	Monetary units	Selective choice	General population	OLS regression	USA
Hermkens & Boerman (1989)	Earned income (household)	Occupational Status, Number of Employed Persons in Household, Number of Children, Occupational Effort; [Gender], [Age]	$6 (2^2 \times 27 \times 50 \times ? \times ?)$	795	4200; 8400	5; 10	Monetary units	Random	General population	OLS regression	Netherlands
Schaeffer (1990)	Child support	Earned Income Father, Earned Income Mother, Marital Status Father, Marital Status Mother,	$6 (2^3 \times 3^2 \times 5)$	1003		3	Monetary units	Random	General population	Tobit regression	USA

		Number of Children [Occupational Status Father]									
Liebig & Mau (2002)	Minimum collateral	Number of Children, Occupational Status, Age, Occupational Position, Amount of State Transfers; [Reason for Lay-Off], [Amount of Income Supplement], [Gender]	$8 (2^2 \times 3^2 \times 1 \times 4 \times 6 \times 5)$	121	48	24	Magnitude scale	Random	General population	Robust regression	Germany
Liebig & Mau (2005)	Taxes	Earned Income, Number of Children, Amount of Inheritance, Marital Status; [Social Engagement], [Age], [Gender], [Occupational Status]	$8 (2^2 \times 3 \times 4^2 \times 5 \times 19 \times 33)$	586	20	20	Magnitude scale	Random	General population	Robust regression	Germany
Schrenker (2009)	Pensions	Amount of last Income, Years of Professional Experience, Number of Children, Combined Supply of Partner, Gender; [Amount of Monthly Pension]	$6 (2^2 \times 11 \times 5 \times 6 \times 10)$	2690	250	25	Monetary units and 11-point scale	Random	General population	Random coefficient models and OLS models (including beta-values and $t$ -values)	Germany

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