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Positive–Negative Asymmetry in Social Discrimination: Meta-analytical Evidence

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The aim of this paper is to supply quantitative information that is useful for planning studies that investigate social discrimination on differently valued scales with newly created groups. Meta-analyses of the amount of in-group favoritism were conducted with the valence of the scale as moderator ($k = 52$). Additionally, the experimental effect of valence on the size of in-group bias was analyzed ($k = 26$). In-group favoritism in the minimal group paradigm is greater when participants are asked to make evaluations on positively valued attributes or to allocate positive resources than when they are asked to make evaluations on negatively valued attributes or to allocate negative resources. Nevertheless, there is also in-group favoritism in the negative domain. The analyses indicate that the difference between positive and negative valence conditions is especially striking when resources are allocated between in-group and out-group or when minority members are making decisions.

KEYWORDS meta-analysis, positive–negative asymmetry, social discrimination

SOCIAL discrimination is a common phenomenon in human societies: a white skin provides better occupational prospects than a colored skin and men get higher salaries than women. However, social discrimination is not only a question of unjust allocation of positive resources such as job opportunities or money. Social groups suffer, for example, from the inflammatory propaganda of racists or when they are despised because of their beliefs. Even aggressive treatment can happen because of national categorizations. Negative social evaluations of social groups and uneven distribution of burdens are at the very heart of what we mean when we talk of social discrimination.

Social Identity Theory and more cognitive accentuation models provide prominent accounts for basic processes that lead to social discrimination (Stroebe & Insko, 1989). Besides theoretical differences, the common idea is that mere existence of categorization leads to accentuation of differences on a valenced dimension.

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That is to say, categorization can be a sufficient condition for social discrimination. Existing models of in-group favoritism do not take into account whether the dimension of comparison is defined by an attractive or by an aversive resource or dimension of evaluation. (For other domains of research see, e.g., Brendl & Higgins, 1996; Peeters & Czapinski, 1990; Taylor, 1991). In accordance with the theoretical assumptions, an impressive amount of empirical evidence has shown that participants favor their in-group relative to the out-group even under minimal conditions (Brewer, 1979; Messick & Mackie, 1989, Mullen, Brown, & Smith, 1992). However, most laboratory studies on intergroup discrimination apparently used positive resources or positive and bipolar evaluative dimensions of decisions. In contrast Mummendey, Simon et al. (1992) showed that participants did not favor their in-group significantly when allocating aversive stimuli (i.e. duration of noise). Mummendey and her co-workers called this effect the *positive–negative asymmetry in social discrimination* (PNA). If the PNA is a reliable finding, this means that findings from the positive domain cannot be transferred to the negative domain. This has important implications. First, it means that there is a lack of empirical research on a relevant domain (i.e. direct social discrimination in the negative domain). Second, it means that basic theoretical explanations for social discrimination may not be tenable for the negative domain.

One aim of this article is to give a quantitative summary of the PNA evidence across published and unpublished data. In this way the magnitude and robustness of the effect will be documented and quantitative information that is useful for planning future studies will be supplied. Readers may form their own opinion of the relevance of the PNA with respect to particular theories of social discrimination (see Mummendey & Otten, in press, for detailed discussion of the theoretical considerations and empirical tests of models concerning the PNA effect).

An additional aim is to consider evidence that the PNA was a mere methodological artifact in the sense that the measurement of bias is less sensitive in the negative domain compared to the positive domain. If that was true, people would not discriminate differently in the positive and negative domain, the difference would simply be due only to the measuring instrument. It is important to rule out this possibility because otherwise there is no theoretically meaningful reason to distinguish between the positive and the negative domain.

A third aim of this article is to encourage researchers to take valence into account. Apart from Mummendey's research group's studies, it seems that no other research is available that investigates the impact of valence on social discrimination in the minimal group paradigm. This restricts the empirical basis of the meta-analysis and the research. We hope that other research teams will start to study the PNA.

Method and results

Overview

The studies included in the meta-analyses investigated the amount of in-group favoritism under different conditions. In each of the studies valence was one of the experimentally manipulated factors. We used a meta-analytical procedure as suggested by Rosenthal (1989) and Mullen (1989). Two meta-analyses were conducted. First, we analyzed whether the mean *effect size for in-group favoritism* depends on the valence of the experimental condition (k = 52). Then, using the same studies, we looked for moderating variables on the *effect size for valence* (k = 26). Within each meta-analysis, the studies were independent.

Studies

For this meta-analysis we only used studies that were conducted in the context of research on the PNA and which explicitly introduced valence as an experimental factor in the design. Studies of our research group that were carried out in the period from the beginning of the program in 1992 to 1996 are considered. Some of the data are already published.

Typically we used the minimal group paradigm (Rabbie & Horwitz, 1969; Tajfel, Billig, Bundy & Flament, 1971) which has been used extensively for intergroup relations research,

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particularly within the social identity approach (see Abrams & Hogg, 1990; Hogg & Abrams, 1988; Tajfel & Turner, 1979). Participants were divided into social groups on the basis of a more or less arbitrary or meaningless criterion (see Table 1). In some experiments the cover story manipulated the status of the groups and the numerical relation between them. Both are variables discussed within the framework of Social Identity Theory. They are included in the meta-analyses because they are expected to influence social discrimination in general (and theoretically there is no reason why this should differ for the positive and the negative domain).

Participants then evaluated their own group and the out-group or they allocated resources to both groups. These evaluations or resource allocations manipulated the valence condition: the participants were asked to treat both groups either positively or negatively. At the same time the relative treatment of in-group and out-group measured the amount of social discrimination as the dependent variable. The type of scale is included as a moderator variable as it gives some insight into the question of measurement sensitivity.

For *evaluations* of groups or targets that were assigned to the groups, we used rating scales. For example, participants evaluated texts that were allegedly written by an in-group member or by an out-group member. In positive conditions, participants rated the quality of the texts in positive terms, while in the negative condition they rated the quality of the texts in negative terms.

Additionally, there were four studies in which *resources* were allocated. In the positive conditions, participants distributed money on Tajfel matrices (Tajfel et al., 1971). In the negative conditions, participants decided how many meaningless syllables anonymous in-group members and out-group members would have to memorize. We made use of the Favoritism on Maximum Joint Profit (FAV-on-MJP) scores for our analysis. Note that the positive as well as the negative stimuli were allocated to the groups and not withdrawn as in the study of Hewstone, Fincham, and Jaspars (1981).

In most of the studies, (non-psychology) university students were participants, but, as indicated in Table 1, seven studies were conducted in state schools.

Altogether there were 26 different experiments and experimental conditions in which we measured the amount of in-group favoritism on positively valued scales and correspondingly 26 conditions for negative scales. Table 1 indicates the experimental conditions (status, numerical relation, type of scale, sample) under which the specific tests were made. For more details, the relevant research reports can be downloaded from the Internet address http://thulb03.biblio.uni-jena.de/uv/verz.htm/. Where effect sizes are reported below, these are for one-sided hypothesis tests. Therefore positive effect sizes indicate effects that are consistent with the hypothesis, and negative effect sizes indicate effects that are contrary to the hypothesis.

In-group favoritism

The *effect size of in-group bias* for each positive and for each negative experimental condition was calculated. Positive values indicate that participants evaluated the in-group as better (positive condition) or less bad (negative condition) than the out-group or that they allocated more positive stimuli or less negative stimuli to the in-group than to the out-group.

The mean effect sizes of in-group favoritism for positive and for negative valence conditions are significantly different ($z = 2.18$; $p < .05$). The mean effect sizes weighted by study size are $\bar{r}_{\text{negative}} = .14$ and $\bar{r}_{\text{positive}} = .30$. That is, participants discriminated significantly less on negative scales than on positive scales.

Does this mean that participants always discriminate less in the negative domain than in the positive one? Further analyses show that this is not the case. Participants did not completely refrain from discriminating in the negative domain, nor did they differ to a constant degree in discrimination relative to those discriminating in the positive domain: in the positive domain effect sizes encompass a range from out-group favoritism $r = -.72$ to in-group favoritism $r = .73$. In the negative domain this range is smaller but also includes both out-

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Table 1. Studies included in the meta-analyses and their experimental conditions

Study	Status	Num. rel.	Scale	Sample	*r*	*N*	*r* ig-fav pos.	*N* pos.	*r* ig-fav neg.	*N* neg.	MGP?
Mummendey, Blanz, & Otten (1992)	9.00	9.00	1.00	2.00	.18	97.85	.22	50.00	−.14	54.00	–
Blanz, Otten, & Mummendey (1993)	1.00	1.00	1.00	2.00	.02	38.00	.55	19.00	.52	20.00	2
Blanz, Otten, & Mummendey (1993)	−1.00	1.00	1.00	2.00	.31	40.00	.34	22.00	−.29	19.00	2
Blanz, Otten, & Mummendey (1993)	1.00	−1.00	1.00	2.00	.22	47.00	.73	27.00	.21	21.00	2
Blanz, Otten, & Mummendey (1993)	−1.00	−1.00	1.00	2.00	.17	47.00	.29	24.00	.00	24.00	2
Mummendey, Blanz, & Otten (1993)	−1.00	−1.00	2.00	1.00	.15	41.45	.46	24.00	.36	19.00	–
Mummendey, Blanz, & Otten (1993)	−1.00	−1.00	2.00	1.00	.33	42.77	.39	28.00	−.24	19.00	–
Mummendey, Blanz, & Otten (1993)	1.00	1.00	2.00	1.00	.02	35.08	.66	23.00	.60	18.00	–
Mummendey, Blanz, & Otten (1993)	1.00	1.00	2.00	1.00	.42	44.11	.39	28.00	−.47	18.00	–
Wenzel & Mummendey (1993)	9.00	.00	1.00	2.00	.04	24.00	.17	24.00	.19	24.00	1/2
Wenzel & Mummendey (1993)	9.00	.00	1.00	2.00	.33	28.00	.62	14.00	.29	15.00	1/2
Mummendey, Otten, Berger, & Buhl (1995)	−1.00	9.00	1.00	2.00	.47	26.00	.69	14.00	−.10	12.00	1
Mummendey, Otten, Berger, & Buhl (1995)	.00	9.00	1.00	2.00	−.07	27.00	.05	14.00	.20	15.00	1
Mummendey, Otten, Berger, & Buhl (1995)	.00	9.00	1.00	2.00	.07	25.00	.00	14.00	−.14	12.00	1
Mummendey, Otten, Berger, & Buhl (1995)	.00	9.00	1.00	2.00	−.25	28.00	−.30	15.00	.21	15.00	1
Mummendey, Otten, Berger, & Buhl (1995)	1.00	9.00	1.00	2.00	−.08	24.00	−.07	12.00	.10	13.00	1
Mummendey, Otten, Berger, & Buhl (1995)	1.00	9.00	1.00	2.00	.35	27.00	.48	12.00	−.28	16.00	1
Mummendey, Otten, Berger, & Buhl (1995)	1.00	9.00	1.00	2.00	−.44	25.00	−.72	14.00	.06	13.00	1
Mummendey, Otten, Berger, & Buhl (1995)	−1.00	9.00	1.00	2.00	.36	23.00	.28	12.00	−.42	12.00	1
Mummendey, Otten, Berger, & Buhl (1995)	−1.00	9.00	1.00	2.00	.09	25.00	.27	14.00	.10	12.00	1

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Table 1. Cont'd

Study	Status	Num. rel.	Scale	Sample	r	N	r ig-fav pos.	N pos.	r ig-fav neg.	N neg.	MGP?
Berger (1995)	.00	9.00	1.00	2.00	−.28	45.00	.10	24.00	.67	22.00	1
Berger (1995)	.00	9.00	1.00	2.00	−.20	31.00	.05	17.00	.45	15.00	1
Alterhoff, Coull, & Otten (1995)	.00	.00	1.00	1.00	.04	54.00	.20	27.00	.13	28.00	1
Alterhoff, Coull, & Otten (1995)	.00	.00	1.00	1.00	.08	51.00	.26	25.00	.16	27.00	1
Alterhoff, Coull, & Otten (1995)	.00	.00	1.00	1.00	−.14	111.00	−.04	50.00	.19	62.00	1
Otten, Mummendey, Coull, Berger, & Buhl (1996)	9.00	9.00	1.00	2.00	−.05	63.00	.58	32.00	.57	32.00	3

Note:

Status = relative status of the in-group: (1) inferior, (0) explicitly equal, (−1) superior, (9) no information.

Num. rel. = numerical relation from the in-group point of view: (1) minority, (0) explicitly equal, (−1) majority, (9) no information.

Scale = type of scale: (1) evaluations, (2) resource allocations.

Sample = type of sample: (1) pupils of state schools, (2) university students.

r = effect size of valence (correlation, positive values indicate more in-group favoritism on positive than on negative scales).

N = sample size for the test of the valence effect (partly estimated on grounds of corrected df).

r ig-fav pos. = effect size of in-group favoritism on positive scales (correlation, positive values indicate in-group favoritism).

N pos. = sample size for the test of in-group favoritism effect on positive scales (partly estimated on grounds of corrected df).

r ig-fav neg. = effect size of in-group favoritism on negative scales (correlation, positive values indicate in-group favoritism).

N neg. = sample size for the test of in-group favoritism effect on negative scales (partly estimated on grounds of corrected df).

MGP? = deviation from strictly minimal group conditions: (1) evaluations were made with respect to a target that was assigned to either in-group or out-group, (2) there was interaction within and between the groups, (3) there was interaction and this was the target of evaluation.

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group favoritism and in-group favoritism (from $r = -.47$ to $r = .67$). Accordingly, the effect sizes within positive conditions as well as within negative conditions are significantly heterogeneous ($\chi^2(25)_{positive} = 58.34$; $\chi^2(25)_{negative} = 50.04$; $ps < .01$). Note that the out-group favoring effects are not at odds with common findings. They are presumably caused by status manipulations. They are nevertheless valid measures of bias, as only status-*un*related scales were used for the analysis.

The heterogeneity illustrates that there is significant within-variation under both valence conditions. To further analyze the differences between discrimination on positive and on negative scales, we computed the correlation of effect sizes of positive and negative scales. This Spearman correlation is rather small ($r_s = .08$). If the PNA were only a question of the level of discrimination, the correlation would have been higher.

Effect of valence on in-group favoritism

A further analysis was conducted with the *effect size of the valence effect.* In contrast to the aforementioned analyses of the effect of in-group favoritism, the following one is not a moderator analysis but an analysis of the experimental effect of valence (Stroebe & Diehl, 1991). We determined the effect sizes with the assumption that participants favor their in-group less in the negative domain than in the positive domain. Hence a positive sign indicates more in-group bias with positive scales than with negative scales in a study. The resulting mean effect size weighted by study size is $\bar{r} = .08$. This average value is not representative, as the analyzed studies are heterogeneous ($\chi^2(25) = 47.92$, $p < .01$). That is to say that the experimental conditions – which were performed to elicit variations of the PNA – influenced the amount of the valence effect as intended.

To further explore this, we examined which different experimental conditions were able to moderate the valence effect. To do this we computed Spearman correlations between the Fisher *Z*-values of the one-sided *t* tests and, respectively, the status of the in-group (low and high), numerical position of the in-group (minority and majority), type of scale (evaluations and resource allocations), and type of participants (pupils of state schools and university students). The results have to be interpreted cautiously because, in view of the small number of studies, confounds are likely. For type of scales and type of participants the results are more tentative because of uneven distributions. At the very least, the following descriptive data throw some light on variables that are usually discussed with respect to in-group favoritism under the perspective of the valence effect: the valence effect appears stronger for inferior in-groups than for superior in-groups ($r = -.37$). Valence is more important for resource allocations than for evaluations ($r = .26$). In contrast, neither the numerical relation between in-group and out-group ($r = -.11$) nor the type of participants ($r = -.09$) seems to moderate the magnitude of the valence effect.

Discussion

Whereas we find a medium effect size for in-group favoritism on positive scales, it is small on negative scales. Consequently, the mean effect size for the positive but not for the negative conditions is comparable to the results of a meta-analysis reported by Mullen et al. (1992, p. 109, $\bar{r} = .26$), who report data for positive and bipolar intergroup evaluations of artificial groups. Overall, there is significantly less discrimination in favor of the in-group in the negative domain compared with the positive domain. This is in accordance with former statements (e.g. Mummendey, Simon et al., 1992) that it is more common to discriminate when you allocate positive goods or ascribe positive connotated terms than when you allocate punishment or ascribe negative evaluations.

Over and above this we learn that the mean experimental valence effect is of small size. Additionally, the heterogeneity of the effect sizes shows that the variation between studies affected the asymmetry. For test planning purposes both have to be taken into account: the expected effect size is small unless 'appropriate'

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experimental conditions are created. The reported tentative post hoc analysis suggests that resource allocations and decisions made by inferior groups could be especially vulnerable to valence effects. Possibly, a valence manipulation is more unequivocal for resources than for verbal evaluations and more salient for a member of a low status group than for a member of a high status group.

The reported analyses suggest a further qualification of the PNA. The positive–negative asymmetry in social discrimination does not mean that there is always less discrimination in the negative domain. Rather, valence seems to influence the conditions under which in-group favoritism emerges. This conclusion is derived from two results. First, in the positive domain as well as in the negative domain there are both studies with in-group favoritism and studies without in-group favoritism. Second, this variation is not correlated for positive and negative conditions. This illustrates that negative scales are not simply less sensitive than positive scales: discrimination in the negative domain is *not* just discrimination in the positive domain on a lower level. The reported meta-analyses thus cannot be explained simply as an artifact of measurement sensitivity. Obviously, discrimination in the negative domain presupposes other conditions than discrimination in the positive domain. Without knowledge of these conditions, our understanding of social discrimination is incomplete.

In summary, the PNA in social discrimination is a robust and reliable phenomenon. Therefore it is a serious challenge for theories of social discrimination. Furthermore it calls in question the use of theories that are developed with positive conditions (e.g. distributing money), to solve practical problems that are concerned with negative conditions (e.g. interethnic violence). We hope that the reported data will encourage more widespread research on the positive–negative asymmetry.

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Further details on some of the studies that are included in the meta-analysis are available at http://thulb03.biblio.uni-jena.de/uv/verz.htm/

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