

SOCIAL CATEGORIZATION, INTERGROUP BEHAVIOUR AND SELF-ESTEEM: TWO EXPERIMENTS

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Resumen

Este informe presenta dos experimentos que investigan la hipótesis de que la auto-estima se eleva en la diferenciación intergrupala. Oakes y Turner (1980) han demostrado experimentalmente que los sujetos a los que se les da, y asumen, la oportunidad de diferenciarse experimentan una mayor auto-estima, mientras que no ocurre así en los que no tienen tal oportunidad. Este hallazgo permite una explicación alternativa en términos de la categoría de saliencia solamente. El Experimento 1 establece las desigualdades entre la diferenciación y la saliencia y proporciona hallazgos que apoyan la hipótesis en términos de distinción y no en términos de saliencia. Puesto que existe la posibilidad de una explicación parcial de los datos en términos de obediencia, se llevó a cabo un segundo experimento, casi idéntico al primero, que tiene en cuenta este problema. La hipótesis de la diferenciación positiva se impone de nuevo a la hipótesis de saliencia pero no puede descartarse una explicación parcial de fenómeno en términos de obediencia.

Abstract

Two experiments investigating the hypothesis that self-esteem is elevated through intergroup discrimination (the positive distinctiveness hypothesis) are reported. Oakes and Turner (1980) have shown experimentally that subjects who are given, and take, the opportunity to discriminate experience elevated self-esteem, while those given no such opportunity do not. This finding is open to an alternative explanation in terms of category salience alone. Experiment 1 disconfounds discrimination and salience and produces findings which

Acknowledgements

The authors would like to thank David Hogg for assistance in data coding, Dominic Abrams for comments relating to experiment 2, and two anonymous reviewers for their comments on an earlier draft of the paper.

support the positive distinctiveness rather than the salience hypothesis. Since there exists the possibility of a partial explanation of the data in terms of compliance, a second experiment (almost an exact replication of the first) is reported which examines this. The positive distinctiveness hypothesis is again upheld in contrast to the salience hypothesis, but the possibility of compliance as a partial explanation is not entirely ruled out.

Introduction

Numerous studies (see Brewer, 1979; Tajfel, 1982, 1980, 1981) have now replicated the phenomenon originally reported by Tajfel, Billig, Bundy and Flament (1971) that social categorization alone is sufficient to generate intergroup behaviour, specifically ingroup favouritism and outgroup discrimination (across diverse response modes, eg. Howard and Rothbart, 1980; Locksley, Ortiz and Hepburn, 1980). This independent variable refers to the division of people into distinct groups under conditions in which such factors as social interaction, cooperative interdependence, and attitudinal similarity are absent. Subjects are divided into groups on an *ad hoc*, trivial, and sometimes explicitly random basis: group membership is anonymous, and there is no social interaction within or between groups, nor link between self-interest and intergroup responses. Although the groups thus formed are truly minimal (the paradigm is referred to as the minimal group paradigm) subjects introduce ingroup favouritism into their responses towards anonymous ingroup and outgroup members (often in a format involving the distribution of money or points). The effect is important because it suggests that intergroup behaviour may be intrinsically competitive rather than dependent upon realistic conflicts or interest, and that group formation does not require cohesive interpersonal relationships (Tajfel and Turner, 1979; Turner, 1981, 1982).

One line of thought (Dion, 1973; Doise, 1978; Howard and Rothbart, 1980) is that the effect is mediated by some process of cognitive differentiation. For example, following Tajfel (1969), Doise (1978) argues that categorization causes the perceptual accentuation of inter-individual similarities within groups and differences between groups, and that this cognitive process produces attitudinal and behavioural differentiation. This explanation is a purely cognitive one, in which the only motivational assumption is that categorization fulfills a need for order and regularity in one's experience.

Another line of thought (Tajfel and Turner, 1979) is that discrimination is motivated by a more specific need, that for evaluatively positive distinctiveness for the ingroup in comparison with the outgroup. It is assumed that where individuals define themselves in terms of the relevant social categorization (i.e. identify with the group), positive distinctiveness contributes to their self-esteem. More recently, Brewer (1979) and Turner (1981) have sought to reconcile these two positions by proposing ways in which the categorization process and the motivation for positive self-esteem may work in concert to generate intergroup behaviour.

At present, however, perhaps the only direct evidence that social categorization effects reflect motivational as well as cognitive processes is an experiment by Oakes and Turner (1980). Subjects were categorized under minimal group conditions (as described above) and then half of them were given the opportunity (which they took) to discriminate between the groups on a point allocations task (the standard paradigm), while the other half were given no such opportunity (the control condition). The former subjects were found to have significantly higher self-esteem than the latter. The implication, consistent with the positive distinctiveness hypothesis is that categorized subjects discriminate to enhance their self-esteem. It is not clear how these data could be explained exclusively by cognitive processes.

Although the positive distinctiveness hypothesis seems to be upheld, Oakes and Turner (1980) also noted an alternative cognitive-motivational explanation: that the response format (a point distribution task) in the standard paradigm which permitted intergroup discrimination made the social categorization more salient than in the control condition, and

that group membership salience, not discrimination, increased self-esteem. There is some evidence that individuals tend to construct their stereotype of their own group from positive rather than negative characteristics (Howard and Rothbart, 1980; Stephan, 1977; Taylor and Jaggi, 1974) and also to assign positive rather than negative aspects of that stereotype to themselves (Dion, 1975; Dion and Earn, 1975; Dion, Earn and Yee, 1978). These «favourability biases», which seem to reflect a need for positive self-evaluation, imply that self-perception in terms of group membership might be more positive than self-perception in terms of unique personality traits. Thus, conditions which enhance the salience of some group membership in self-perception might tend automatically to elicit more positive self-concepts. Oakes and Turner's salience explanation of their results is a cognitive-motivational explanation which suggests that category salience alone is sufficient to elevate self-esteem in an intergroup context.

Experiment 1 below was designed to contrast the positive distinctiveness and salience hypotheses by orthogonally manipulating discrimination and group membership salience. The minimal group paradigm was employed (see Tajfel *et al.*, 1971; Turner, 1978; and Oakes and Turner, 1980), with the difference that subjects were *instructed* to cooperate or compete. In this way discrimination was varied but the responses format held constant. In order to manipulate group membership salience subjects were either categorized implicitly and made responses as individuals towards other individuals (interpersonal choices), or explicitly and made responses as group members towards the ingroup and outgroup (intergroup choices). The positive distinctiveness hypothesis predicts more positive self-esteem after intergroup competition than cooperation and also, for similar reasons (see Festinger, 1954; Codol, 1975; Turner, 1975), after interpersonal competition than cooperation. The salience hypothesis expects more positive self-esteem in the group than individual conditions. The salience hypothesis might also wish to argue that competition is a condition which elevates salience, and therefore predict more positive self-esteem under conditions of intergroup competition than intergroup cooperation or interpersonal cooperation or competition.

EXPERIMENT 1

Method

Design

The independent variables of salience (individual *versus* group) and discrimination (cooperation *versus* competition) were experimentally manipulated in a 2 × 2 factorial design with subjects ($n = 13$) randomly assigned to conditions.

The dependent measures were Oakes and Turner's (1980) self-esteem measure, and behavioural strategies in the allocation of points on decision matrices.

Participants and Sessions

The subjects were 52 11-12 year old Bristol schoolboys. The experiment was carried out at the school in two separate sessions (corresponding to the individual and group conditions) by an experimenter and his male assistant.

Procedure

On arrival at the sessions subjects were seated at desks well apart from each other and instructed not to communicate. The experiment was introduced as an investigation of how people make different types of decisions, and subjects were led to expect three separate decision-making tasks.

The first task was for subjects to indicate their preference for one or other of a series of pairs of unidentified paintings by two artists, Caravaggio and Mantegna. Twelve slides, ostensibly showing in pairs one painting by each artist (but in fact associated randomly),

were projected onto a screen and subjects indicated their preference on individual answer sheets, which were collected and supposedly marked to ascertain which painter each person seemed on the whole to prefer.

The second task was introduced as being concerned with how people achieve certain objectives in making decisions about awarding points to people. Subjects would be given either cooperative or competitive objectives in the allocation of points between recipients who would be anonymous. Since anonymity was necessary, it would be convenient to assign code numbers to everybody.

Subjects in the *individual condition* were told that code numbers had been assigned on the basis of painter preference — those preferring Caravaggio having numbers in the 60s and those preferring Mantegna numbers in the 80s. Points were to be distributed between self and anonymous others identified by code number alone (depending on code number, some others would be similar to self in terms of painter preference, while others would be different).

The decision making task was described in the context of a sample decision matrix. Subjects were told that they would be given a decision booklet containing 24 pages of decision matrices. Each matrix presented 13 pairs of points of which only one pair could be chosen as representing the way in which the subject wished to allocate the points between self and other in that particular matrix.

Before beginning the task subjects were called to the back of the room in alphabetical order and privately told their code number and given a matrix booklet. All subjects were in fact told that they preferred Caravaggio and were assigned the code number 62. Half the subjects in each session received booklets containing written instructions with the objective to 'gain as many points as possible for yourself' (*competition condition*), while the other half were instructed to «gain as many points as possible for *both* individuals» (*cooperation condition*).

Once seated again subjects were asked first to turn to page one of the booklets to familiarize themselves with their code numbers, and then page two to read carefully the written instructions outlining the objective they were to achieve in completing the matrices. They were then asked to begin the task and work through the booklet at their own speed, completing each matrix in order without leaving any out. The task completed, the matrix booklets were collected.

The procedure for the *group condition* was very similar, except that subjects were told that those who had preferred Caravaggio's paintings were in «Caravaggio» group and had been assigned code numbers in the 60s, and those preferring Mantegna were in «Mantegna» group and had code numbers in the 80s. Points were to be distributed between two others (not including self), one always from Caravaggio group and the other from Mantegna group.

The matrix task was described in terms of intergroup rather than interpersonal choices, and an appropriate sample matrix used. Subjects were told their group membership, and given a code number (all subjects were in fact in Caravaggio group and had code number 62). The competitive objective was «to gain as many points as possible for your own group», while the cooperative objective was to «gain as many points as possible for *both* groups».

To further enhance the salience manipulation subjects in the group condition only identified themselves on materials by means of their group labels, while subjects in the individual condition used their code numbers. The word «group» was conspicuously absent in the individual condition, and conspicuously present in the group condition.

The third and final task was the dependent measure monitoring self-esteem. Subjects were told that this task concerned the way in which people make decisions about themselves. It was explained that they would have to make decisions about «you as you feel at the moment» by completing a questionnaire containing three types of question (an example of each type was described). Subjects were assured that this task was not a test, and that

all answers would be treated with the strictest confidence — in particular, they would not be shown to teachers. It was stressed that all questions should be answered as seriously and honestly as possible. Once the questionnaires were completed subjects were debriefed and thanked for participating.

Dependent Measures

The decision booklets contained three types of matrix identical to those used in other minimal group experiments (Tajfel *et al.*, 1971; Turner, 1978; Turner, Brown and Tajfel, 1979). A matrix consists of two rows of numbers arranged in 13 two-number columns. The columns represent points which can be awarded to the recipients indicated alongside each row. Subjects tick or circle the pair of points they choose and write them out in a space provided beneath the matrix.

The matrix types are designed to measure the strength or «pull» of particular distribution strategies in relation to others. Those used in the present study are the same as in Oakes and Turner (1980) (also see Billig and Tajfel, 1973): they measure the pull of MIP + MD (FAV) on MJP and vice versa, FAV on F and vice versa, and MD on MIP + MJP and vice versa. These strategies are defined in detail by Turner (1978, p. 103), but very briefly: F refers to fairness; MD to maximising the difference in points awarded to the two recipients; MJP to maximising the total number of points awarded irrespective of which recipient receives most; and MIP to maximising the number of points received by the ingroup recipient (or by self, in which case the strategy is called MS).

It should be noted that the combined pull of MIP + MD is described as FAV (favouritism), and that self-favouritism (MS + MD) in the individual conditions is the same strategy and is measured on the same matrices as ingroup favouritism in the group conditions (for convenience of presentation MIP + MD will sometimes refer to FAV in both the individual and group conditions). Each matrix type is presented in four different formats, and each format is presented twice. Thus the matrix booklets contain 24 matrices. The construction and scoring of the matrices are described in detail in Turner (1978) and Turner *et al.* (1979).

In the group conditions the recipients were the groups as a whole. In the individual conditions they were «yourself, person number 62» and some other «person», where half the other persons were similar in painter preference to the subject (eg. person number 68) and half dissimilar (person number 83).

The self-esteem questionnaire was identical to that used by Oakes and Turner (1980). It contained 39 items in random order representing three different instruments for measuring self-esteem: Kuhn and McPartland's (1954) «twenty sentences» test (20 items), Julian, Bishop and Fiedler's (1966) version of the evaluative dimension of the semantic differential (9 items), and Rosenberg's (1965) «self-esteem scale» (10 items). Scoring procedures are as described in Oakes and Turner (1980), except that responses on the Rosenberg scale are summed across 10 items so that a higher score represents more positive self-esteem (as on the other measures).

Table 1. Experiment 1: Cell means and significant effects on dependent measures

| Dependent measures | Experimental Conditions | | | | F-statistics (1,48 df) | | |
|--------------------|-------------------------|------|--------------|-------|------------------------|----------|-------|
| | (A) <u>Individual</u> | | <u>Group</u> | | A | B | AB |
| | (B) Coop. | Comp | Coop. | Comp. | | | |
| FAV on MJP | 0.87 | 5.92 | 2.60 | 8.13 | 2.45 | 17.69*** | 0.04 |
| FAV on F | 1.75 | 6.52 | 1.88 | 10.71 | 4.03 | 43.21*** | 4.50* |
| MD on MIP + MJP | 1.08 | 4.83 | 2.15 | 6.23 | 1.14 | 11.31** | 0.02 |
| MIP + MJP on MD | 2.75 | 1.79 | 2.00 | 2.85 | 0.02 | 0.01 | 0.68 |
| MJP on FAV | 0.73 | 0.19 | 0.35 | -0.54 | 0.74 | 1.21 | 0.07 |
| F on FAV | 5.51 | 2.17 | 3.11 | 0.54 | 5.02* | 10.79** | 0.18 |
| RSS | 3.84 | 6.85 | 5.23 | 8.92 | 1.37 | 5.13* | 0.05 |
| SD | 5.48 | 6.06 | 5.66 | 6.37 | 0.85 | 6.00* | 0.05 |
| TST | 0.13 | 0.28 | -0.02 | 0.01 | 5.50* | 1.14 | 0.46 |
| Self-esteem factor | -0.36 | 0.33 | -0.32 | 0.35 | 0.01 | 6.43* | 0.01 |

| | <u>Individual Conditions</u> | | | | <u>F-statistics (1,24 df)</u> | | |
|----------------|------------------------------|---------|--------------------|---------|-------------------------------|-------|------|
| | (A) <u>Cooperation</u> | | <u>Competition</u> | | A | B | AB |
| | (B) Simp. | Dissim. | Sim. | Dissim. | | | |
| FAV on MJP | 0.57 | 1.15 | 5.88 | 5.96 | 16.16*** | 0.17 | 0.10 |
| FAV on F | 1.31 | 2.19 | 6.50 | 6.54 | 22.08*** | 2.24 | 0.20 |
| MD on MS + MJP | 1.35 | 0.81 | 4.35 | 5.31 | 10.39** | 0.05 | 0.61 |
| MS + MJP on MD | 4.62 | 0.88 | 2.73 | 0.85 | 0.77 | 6.88* | 0.75 |
| MJP on FAV | 1.27 | 0.19 | 0.88 | -0.50 | 0.70 | 2.93 | 0.04 |
| F on FAV | 6.92 | 4.11 | 2.35 | 2.00 | 13.73** | 2.72 | 1.65 |

Mean pulls can vary between -12 and +12; RSS varies between -20 and +20; SD between +1 and +8; TST between -1 and +1. Similar versus dissimilar others in the individual conditions is a within subjects factor.

* = $p < .05$, ** = $p < .01$, *** = $p < .001$.

Results

Matrix Strategies

As a check on the discrimination variable 2-way ANOVAs (individual/group \times cooperation/competition) were performed on the matrix strategies (see Table 1 for mean pulls and F-statistics).

Significant main effects in the expected direction are obtained on FAV on MJP, FAV on F, MD on MIP + MJP, and F on FAV ($F(1,48) = 17.69$, $p < .001$; 43.21 , $p < .001$; 11.31 , $p < .01$; and 10.79 , $p < .01$ respectively). Competition produces more favouritism and less fairness than does cooperation. The effect on FAV on F is qualified by an interaction between cooperation/competition and individual/group ($F(1,48) = 4.50$, $p < .05$), primarily due to especially strong discrimination in the group competition condition. It is worth noting that cooperation is expressed in less favouritism and more fairness, but not maximum

joint profit, which is the strategy logically equivalent to the cooperative instructions given in the experiment. The subjects also go beyond their instructions in pursuing the maximum difference strategy at the expense of maximum ingroup profit.

Less fairness and more favouritism is shown in group than individual conditions on the variables of FAV on F, and F on FAV ($F(1,48) = 4.03, p < .05$; and $5.02, p < .05$). The former result is explained primarily by the interaction already noted, but the latter is not qualified in this way. Thus despite the explicit instructions on how to allocate points, it seems that the group variable still tends to increase discrimination, especially when this is the group members' existing orientation.

In the individual conditions subjects make choices between themselves and similar or dissimilar others. In order to determine whether these interpersonal choices had been transformed into intergroup responses by a tendency to favour similar over dissimilar others, 2-way ANOVAs (cooperation/competition \times similar/dissimilar others as a within subjects factor) were performed on the data from the individual conditions (see Table 1 for means and F-statistics). As expected there was more self-favouritism and less fairness in the competition than cooperation condition, irrespective of whether the other was similar or dissimilar to self (FAV on MJP ($F(1,24) = 16.16, p < .01$); FAV on F ($22.08, p < .001$); MD on Ms + MJP ($10.39, p < .01$); and F on FAV ($13.73, p < .01$)). The only other significant effect was obtained on Ms + MJP on MD ($F(1,24) = 6.88, p < .05$); self-favouritism and maximum joint profit were pursued more against similar than dissimilar others. Because of the nature of this variable as a compound strategy, it is difficult to interpret this result as evidence for or against favouritism towards similar over different others. However, since there are no parallel effects on the pure measures of self-favouritism it seems reasonable to conclude that, as intended, choices in the individual conditions are interpersonal rather than intergroup.

Self-esteem

The three self-esteem measures were factor analysed by the method of principal factoring with iteration and using the method of orthogonal varimax rotation to simplify the factor structure. One factor emerged with an eigenvalue > 1 (1.819, 60.6% of variance accounted for). This factor clearly represents self-esteem as it loads on the Rosenberg scale (RSS), the semantic differential (SD), and the twenty sentences test (TST) (factor loadings were respectively 0.85, 0.82, and 0.66).

Two-way ANOVAs (individual/group \times cooperation/competition) on the factor scores and the two highest loading constituent variables revealed distinctiveness main effects significant at the .05 level ($F(1,48) = 6.43, 5.13, \text{ and } 6.00$ respectively). Competition increases self-esteem. The only other significant effect was an unsuspected tendency for the individual conditions to produce more self-esteem than the group conditions on the TST ($F(1,48) = 5.50, p < .05$). The relevant means are displayed in Table 1.

Discussion

The main result is that both individual and group competition produce more positive self-esteem than does cooperation. This finding supports the positive distinctiveness hypothesis. Although some field experiments on natural groups have previously reported that intergroup competition improves members' self-esteem (Fiedler, 1967; Julian *et al.*, 1966; Myers, 1962), these studies confound competition (and group membership) with face-to-face interaction, task interdependence, cohesive social relationships, mutual acceptance, and so on, between members. The researchers interpret self-esteem as an aspect of the emotional adjustment and more cohesive interpersonal ties that obtain within competing groups. The present study, however, demonstrates that discriminatory responses *per se*, independently

of such factors, can increase self-esteem, presumably because such responses confer positive distinctiveness.

There is no evidence for the salience hypothesis. There was no significant effect for the interaction on self-esteem, and the only significant main effect for the group variable was in the opposite direction to the predicted: inter-personal choices produced greater self-esteem than intergroup choices on the TST. This result is extremely puzzling. It may be that subjects focussed on themselves as individuals simply found it easier to say something positive on an unstructured test than those focussed on themselves as members of minimal groups. Eleven to 12 year-old adolescents might be particularly self-oriented and hence derive elevated self-esteem from interpersonal comparisons.

Although the salience hypothesis is now less credible as an alternative explanation of Oakes and Turner's (1980) results, the hypothesis may still have some validity in the context of less «minimal» groups, in which subjects may exhibit a favourability bias in constructing own group stereotypes from individual exemplars of the group, and then obtain elevated self-esteem by assigning the stereotype to self through self-perception in terms of group membership. Evidence for part of this process can be seen in Turner, Hogg, Turner and Smith's (1984) finding that in the context of interacting groups the ingroup as a whole is evaluated more positively than self.

The results of the present study show that under certain circumstances discrimination can elevate self-esteem, and suggest that this is because people strive for positive distinctiveness. However, there is a possible alternative explanation. From Table 1 it can be seen that subjects in the competition conditions adopt competitive strategies (FAV and MD) to a greater degree than subjects in the cooperation conditions adopt cooperative strategies (MJP and F). Perhaps subjects in the competition conditions experience elevated self-esteem because they are complying more with the experimenters' instructions.

The conditions under which compliance elevates or depresses self-esteem can be discovered from literature on self-presentation (eg. Baumeister, 1982) or locus of control (eg. Abramson and Alloy, 1980; Rodin Rennert and Solomon, 1980). Self-esteem is elevated by private compliance or compliance which frees the complier from responsibility, and depressed by public compliance or compliance which implies perceived loss of control. In the present experiment it is difficult to know whether compliance should elevate or depress self-esteem. Do subjects perceive their compliance to be public or private? Do they perceive loss of control or increased control? Do they feel freed from responsibility or not?

Nevertheless, if the compliance explanation is correct then we should expect significant positive correlations between self-esteem and competitiveness in the competition conditions, and self-esteem and cooperation in the cooperation conditions. The appropriate correlational analysis (employing Pearson's r , and a one-tailed test) was performed on the data but revealed no such effect.

The final, and perhaps most important, point concerning a compliance explanation is that it can only be a partial explanation as it does not explain why, in the first place, subjects «comply» more with competitive than cooperative instructions. Presumably some other process is involved, one which may include an underlying motivation to discriminate to achieve positive distinctiveness.

Despite these problems with a compliance explanation it was decided to conduct a second experiment to explore in more detail the effects of compliance as a possible partial explanation.

Experiment 2 constitutes a replication of experiment 1, with three differences: first, subjects in the competition conditions were not instructed to compete, but rather left to allocate points as they wished — thus any competition is spontaneous, and any elevation of self-esteem in this condition cannot be explained by compliance; second, a pretest was administered to obtain subjects' enduring levels of self-esteem in order to investigate the

impact of discrimination upon transitory self-esteem as a function of enduring self-esteem; and third, the posttest self-esteem questionnaire was extended to include questions monitoring the independent variable of salience, and obtaining subjective perceptions of compliance.

The experimental hypotheses are the same as for experiment 1, with the further prediction (which is derived from the distinctiveness hypothesis) that subjects with lower enduring self-esteem should discriminate more than subjects with higher self-esteem when given the opportunity to do so, and should consequently experience greater elevation of self-esteem.

EXPERIMENT 2

Method

Design

The design is the same as for experiment 1 with the addition of a third independent variable orthogonal to the other two, of self-esteem (high *versus* low). The method for assignment of subjects to the high or low conditions is discussed in the results section below.

Participants and Sessions

Ninety Bristol University students were randomly assigned to experimental condition in the salience x discrimination design. The experiment was conducted in 8 separate one-hour sessions by an experimental team comprising one male and one female. The 8 sessions fall into 4 pairs, where each pair completes one condition in the salience x discrimination design.

Procedure

The procedure was identical to experiment 1, except:

- a) At recruitment (one week before the experimental sessions) subjects completed the self-esteem questionnaire in which they were instructed to answer the questions with reference to how they *usually* felt and not how they felt at the moment;
- b) Subjects in the competition conditions were given no objective for the decision making task. They were simply told to distribute the points however they wished, and that we were interested in the way in which they did this;
- c) After completing the posttest self-esteem questionnaire (identical to that used in experiment 1) a further questionnaire was administered, which was introduced as being an instrument to gauge participants' reactions to the experiment. It contained, imbedded among a number of filler questions, a question checking the psychological validity of the salience manipulation («For the purpose of the matrix task you were all allocated code numbers on the basis of whether you tended to prefer the pictures of Mantegna or of Caravaggio. To what extent do you feel that this information on people's picture preference influenced the decisions you made in the matrix task?»), and a question monitoring subjective perceptions of compliance with the experimenters' instructions concerning the decision matrix task («During the matrix task you were making decisions about how to allocate points between people. To what extent do you feel that the decisions you made were in compliance with explicit or implicit instructions from us about the objective of the task?»).

Results

Subjects' pretest RSS, SD, and TST scores were factor analysed using the method of principal factoring with interaction and using the method of orthogonal varimax rotation to

simplify the factor structure. One factor emerged with an eigenvalue ≥ 1 (2.025, 67.5% of variance accounted for). This factor loads relatively evenly on the SD, RSS, and TST scales (factor loadings were 0.72, 0.78, and 0.65) and thus clearly represents a self-esteem factor. A median split was performed on factor scores, and those subjects falling below the median were designated as low self-esteem, those above high self-esteem. The 90 subjects were found to be unevenly distributed across the 3 factor design (see Table 2 for values of n in each condition) and all ANOVAs were performed using uneven cells.

Table 2. Experiment 2: Cell means and significant effects on dependent measures

| Dependent Variables | Experimental conditions and cell sizes | | | | | | | | Significant effects and F-statistics (1,82 df) |
|---------------------|--|-------|-------|-------|-------|-------|-------|-------|--|
| | Individual | | | | Group | | | | |
| | Coop. | | Comp. | | Coop. | | Comp. | | |
| | H(8) | L(14) | (H8) | L(14) | H(13) | L(7) | H(16) | L(10) | |
| FAV on MJP | 0.09 | 0.09 | 1.00 | 1.23 | 0.48 | -0.04 | 1.64 | 1.93 | B: 4.00* |
| FAV on F | 0.34 | -0.09 | 0.78 | 0.02 | -0.20 | -2.73 | 1.80 | 0.79 | B: 3.94* |
| MD on MIP + MJP | 1.88 | -0.13 | 2.38 | 0.30 | -0.06 | -0.21 | 1.03 | 2.43 | B: 3.97* A.C: 5.16** |
| MIP+MJP on MD | 8.81 | 8.63 | 0.59 | 2.16 | 11.75 | 9.21 | 2.13 | 1.43 | B: 153.98*** |
| MJP on FAV | 3.16 | 3.84 | -0.19 | -0.98 | 5.40 | 6.25 | 0.17 | -0.63 | B: 47.13*** |
| F on FAV | 4.66 | 8.94 | 6.59 | 2.98 | 9.35 | 5.80 | 8.02 | 8.01 | A: 4.01* A.B.C.: 8.22** |
| TST (pre) | 0.12 | -0.14 | 0.48 | -0.16 | 0.29 | -0.11 | 0.22 | -0.05 | B.D.: 4.16* |
| TST (post) | 0.34 | -0.10 | 0.23 | -0.11 | 0.39 | -0.20 | 0.17 | -0.07 | B.C.D.: 7.19** |
| SD (pre) | 6.18 | 5.00 | 6.46 | 5.30 | 6.24 | 5.27 | 6.31 | 5.34 | |
| SD (post) | 6.07 | 5.18 | 6.46 | 5.44 | 6.28 | 5.49 | 6.22 | 5.53 | |
| RSS (pre) | 9.63 | 3.64 | 13.88 | 5.07 | 10.92 | 2.29 | 9.50 | 5.10 | |
| RSS (post) | 10.75 | 4.57 | 13.88 | 5.64 | 11.46 | 3.00 | 10.38 | 6.50 | |
| Compliance check | 5.00 | 5.93 | 4.00 | 2.71 | 7.38 | 7.29 | 4.00 | 3.50 | A: 4.23* B: 26.74*** |
| Salience check | 2.63 | 1.57 | 3.25 | 3.57 | 2.08 | 2.00 | 3.44 | 4.70 | B: 8.84** |

Means can vary from -12 to +12 for pulls, -1 to +1 for TST, 1 to 8 for SD, -20 to +20 for RSS, and 1 to 9 for the compliance and salience checks. Significant effects are indicated as follows: A = main effect for individual/group; B = main effect for cooperation/competition; C = main effect for high/low; D = main effect for pre/posttest; A.C, A.B.C., and B.C.D. are interaction effects.

* = $p < .05$, ** = $P < .01$, *** = $p < .001$.

Matrix Strategies

In the individual conditions subjects make choices between themselves and similar or dissimilar others. Three-way ANOVAs (cooperation/competition \times high/low \times similar/dissimilar others as a within subjects variable) revealed no main or interaction effects for the nature of the «other»: strategies are not differentially employed depending upon whether the «other» is similar or dissimilar to self. As in experiment 1, then, the choices, in the individual conditions seem to be interpersonal rather than intergroup, and each pull can be collapsed into a self/other pull.

Three-way ANOVAs (individual/group \times cooperation/competition \times high/low) revealed a significant main effect for discrimination on FAV on MJP, FAV on F, MD on MIP + MJP, MIP + MJP on MD, and MJP on FAV ($F(1,82) = 4.00, p < .05; 5.26, p < .05; 3.97, p < .05; 153.98, p < .001; \text{ and } 47.13, p < .001$). See Table 2 for means and F-statistics. Subjects who were instructed to cooperate do indeed utilize cooperative strategies (F and MJP) more than subjects who are left to their own devices. The latter adopt competitive strategies to a greater extent. Cooperation appears to be expressed in less favouritism, more MJP, and also in the greater use of combined strategy of MJP + MIP, while, in the absence of instructions on which strategies to use (competition condition) subjects adopt FAV and MD strategies (although to a much lesser extent than in experiment 1 see Table 3).

Table 3. Comparison of mean pulls in the cooperation and competition conditions in experiments 1 and 2.

| Pulls | Cooperation | | Competition | |
|-----------------|-------------|---------|-------------|---------|
| | Expt. 1 | Expt. 2 | Expt. 1 | Expt. 2 |
| FAV on MJP | 1.74 | 0.19 | 7.03 | 1.47 |
| FAV on F | 1.82 | -0.48 | 8.62 | 0.90 |
| MD on MIP + MJP | 1.62 | 0.26 | 5.53 | 1.33 |
| MIP + MJP on MD | 2.38 | 9.73 | 2.32 | 1.73 |
| MJP on FAV | 0.54 | 4.60 | -0.18 | -0.39 |
| F on FAV | 4.31 | 7.73 | 1.36 | 6.31 |

F on FAV is employed more in the group than the individual conditions ($F(1,82) = 4.01, p < .05$), but this can be explained with reference to the 3-way interaction on this variable ($F = 8.22, p < .01$). For high self-esteem subjects F on FAV is used more in the group than the individual condition when asked to cooperate (the effect is greatly attenuated in the competition condition) whereas low self-esteem subjects show more F in the individual than group condition when asked to cooperate, and the effect is reversed in the competition condition. It seems then that although the salience variable does have an impact it is not a simple effect. In general, subjects use F more in the present experiment than they do in experiment 1, and this is particularly the case in the competition conditions (especially group competition). See Table 3 for a comparison of pulls in experiments 1 and 2.

Finally, subjects with high self-esteem use MD on MIP + MJP more in the individual than the group conditions whereas those with low self-esteem do the opposite ($F(1,82) = 5.16, p < .05$).

Self-esteem

Four-way ANOVA with repeated measures on the last factor (individual/group \times cooperation/competition \times high/low \times pre/posttest) revealed significant effects on the TST variable only. Self-esteem is elevated after cooperation but depressed after competition ($F(1,82) = 4.16, p < .05$). This can however be qualified by the more highly significant cooperation/competition \times high/low interaction ($F = 7.19, p < .01$). It only emerges for high self-esteem subjects, while low self-esteem subjects manifest the opposite tendency but to a lesser degree.

Checks on Compliance and Salience

Subjects reported that they felt they had complied with the experimenters' instructions concerning what to do on the decision matrices to a greater extent in the cooperation than the competition conditions ($F(1,82) = 26.74, p < .001$ and in the group than the individual conditions ($F = 4.23, p < .05$).

Although salience was in general extremely low (grand mean of only 2.91 on a nine-point scale), it was slightly less in the competition than the cooperation conditions ($F(1,82) = 8.84, p < .01$).

Discussions and Conclusions

The salience manipulation in experiment 2 is identical to that in experiment 1, and yet again produces no elevation of self-esteem as a result of salience alone. The salience hypothesis could therefore seem to be invalid as an alternative explanation of Oakes and Turner's (1980) data. The reason that the salience manipulation of Oakes and Turner's (1980) data. The reason that the salience manipulation check failed to reveal a significant effect for that variable can, with hindsight, be attributed to the way in which the check was worded (see above). It implicitly invites subjects to state whether they favour one or the other group; a judgement which will be affected by the discrimination variable at least as much as by the salience variable. That the salience manipulation had an effect is shown by its impact upon other dependent variables (see Table 2).

As regards the positive distinctiveness hypothesis, the results obtained from experiment 1 are not replicated in experiment 2. Subjects in the competition conditions do not manifest elevated self-esteem. This does not necessarily refute the positive distinctiveness hypothesis, as a comparison of mean pulls in the cooperation and competition conditions in each experiment (see Table 3) clearly shows that although in both experiments subjects in the cooperation conditions adopt cooperative strategies to roughly the same degree (in fact they are overall more cooperative in experiment 2), subjects in the competition conditions are far less competitive in experiment 2 than 1. The positive distinctiveness hypothesis would therefore predict less elevation of self-esteem in experiment 2 than experiment 1: subjects discriminate less.

However, the data reveal that not only is self-esteem not elevated in the competition conditions but it is actually depressed (on the TST), while it is elevated in the cooperation conditions. This, coupled with the finding that subjects reports significantly greater compliance in the cooperation than competition conditions, would seem to support the compliance hypothesis. But compliance becomes an incomplete explanation if we note that the effect for cooperation/competition \times pre/posttest on the TST scores is subsumed by a more highly significant 3-way interaction with high/low. Subjects who cooperate and report compliance only experience elevated self-esteem if they initially have high self-esteem. Low self-esteem subjects' self-esteem is left unchanged. Subjects who compete but report little compliance experience elevated self-esteem if they initially have low self-esteem, while high self-esteem subjects' self-esteem is depressed. A compliance explanation cannot be the entire story unless corresponding to this self-esteem finding there is a cooperation/competition \times high/low interaction on self reported compliance and the relevant pulls. Analysis of the data does not furnish this finding.

The lack of correlated effects also hinders a positive distinctiveness explanation of the results. Although in the competition conditions low self-esteem subjects do show slightly increased self-esteem while high self-esteem subjects do not, it is not the case that this occurs because the former discriminate to a greater extent. So, although the predicted relationship between enduring self-esteem and elevation of self-esteem in the competition con-

ditions does emerge it is not mediated by degree of discrimination. A possible explanation could be that as enduring self-esteem increases the degree of discrimination required to further elevate self-esteem becomes greater.

Unfortunately, the effect for self-esteem change in the competition conditions is in such a direction that it could simply be a regression effect. If it was, however, it is surprising that although high and low self-esteem subjects at pretest are equidistant from the grand mean (see Table 2), high self-esteem subjects regress approximately five times further than do low self-esteem subjects.

The effect for high/low in the cooperation conditions cannot be explained away as regression (self-esteem increases for high self-esteem subjects, but remains unchanged or is depressed for low self-esteem subjects). It would not seem to be a compliance effect as the elevated self-esteem of high self-esteem subjects is not correlated with increased use of the MJP strategy nor with self reported greater compliance. Nor can it be explained in terms of distinctiveness — cooperation should not elevate self-esteem, irrespective of whether subjects have low or high self-esteem.

Finally, although salience has no impact upon self-esteem, several other (weak) effects for the salience variable were obtained. Subjects report marginally more compliance in the group than the individual conditions and also use F on FAV more. This last effect is subsumed by a complex 3-way interaction. The strategy of MD on MIP + MJP is used more in the individual than group conditions by high self-esteem subjects but vice versa by low self-esteem subjects. Since these findings are not systematic and have little direct relevance for any of the experimental hypotheses we shall not attempt *post hoc* explanations.

In conclusion, the two experiments reported in this paper do not uphold the thesis that group salience alone elevates self-esteem. Subjects in Oakes and Turner's (1980) study would seem then to experience elevated self-esteem due to behavioural discrimination in the service of positive distinctiveness rather than due to salience alone. Taken together, experiments 1 and 2 furnish data which cannot be explained exclusively in terms of compliance or in terms of positive distinctiveness. Some of the data are amenable to a compliance explanation and some to a positive distinctiveness explanation, but self-esteem clearly seems to be motivationally implicated in intergroup behaviour. Further research is needed to explore the precise relationship between compliance, positive distinctiveness, and self-esteem in the minimal group paradigm.

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