BIELEFELDER ARBEITEN ZUR SOZIALPSYCHOLOGIE

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Modeling instrumental aggression with adults in a laboratory setting

(The author is indebted to the following coworkers:
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Summary

Five experiments with 353 young adults performing a game on an aggression machine are reported, three of them testing hypotheses concerning the effects of a model's aggressiveness and social status on instrumental aggressive behavior, and two investigating aspects of reliability and validity. Model's aggressiveness increased the Ss' aggressive behavior in all experiments. The use of presumptive monetary losses as a means by which Ss punish their opponents in aggression machine experiments are equally effective as presumed electric shocks, and therefore seem preferable in further experimental studies of aggression.

Zusammenfassung

Es wird über fünf Experimente mit insgesamt 353 jüngeren Erwachsenen als Versuchspersonen berichtet, deren instrumentell-aggressives Verhalten an einem Aggressionssimulator untersucht wurde. Drei der Experimente dienten der Prüfung von Hypothesen über den Einfluß von Modell-Aggression und Modell-Status auf instrumentell-aggressives Verhalten, und zwei weitere untersuchten Aspekte der Reliabilität und Validität. In allen Experimenten zeigte sich ein Anwachsen aggressiven Verhaltens dann, wenn das Modell aggressiv war. Ferner ergab sich, daß die Verwendung angeblicher Geldstrafen als Mittel, den Gegenspieler an der Aggressionsmaschine zum Rückzug zu zwingen, in gleichem Maße effizient war wie die Vergabe angeblicher Elektroschocks. Daher wird der Verwendungen von Geldstrafen in weiteren Aggressionsexperimenten dieser Art der Vorzug gegeben.

A number of experimental studies using children as sbujects (cf. BANDURA and associates' work since 1960) have demonstrated efficient modeling of aggressive behavior in laboratory settings by real-life, filmed, or cartoon models. Recent monographs on aggression (e.g. BANDURA 1973, BARON 1977) specify several determinants of efficient modeling of aggressive behavior.

Five experiments with young adults (353 subjects) performing a game on the SCHMIDT-MUMMENDEY (1972) version of an "aggression machine" are reported here. Three of them are designed to test hypotheses concerning the effects of a model's aggressiveness and social status on instrumental aggressive behavior, and two investigate aspects of reliability and validity. These investigations aim to prove that modeling procedures are (1) effective in young adults and (2) effective with regard to the instrumental type of aggression.

Summary of experimental procedures[1)]

Experiment 1:

The effects of model aggression, status of the model, and Ss' self-esteem on instrumental aggression (application of electric shock) are studied in a 2x2x2 experimental design. Possible effects of the Ss' knowledge of electric-shock experiments or of the MILGRAM type of psychological studies ("MILKNOW") are controlled.

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1) Detailed reports are given in: SCHMIDT, SCHMIDT-MUMMENDEY, SCHRÖER & STALLBERG (1976) for Exp.1, SCHMIDT, SCHMIDT-MUMENDEY, GOERTZ, MAUS, SCHRÖER & TROSKE (1976) for Exp.2, SCHMIDT, SCHIEBEL & TROSKE (1976) and MUMMENDEY, SCHIEBEL & TROSKE (1977 b) for Exp.3, MUMMENDEY, SCHIEBEL & TROSKE (1977 a) for Exp.4, and MUMMENDEY, SCHIEBEL, TROSKE & STURM (1977) for Exp.5.

Experiment 2:

Replication of Experiment 1 with omission of the self-esteem variable and infliction of monetary losses as aversive stimulation instead of presumed electric shock.

Experiment 3:

Replication of Experiment 2 with female subjects.

Experiment 4:

Investigation of the stability of aggressive behavior over periods of two and eight weeks; estimation of reliability measures of instrumental aggression.

Experiment 5:

Investigation of specificity/generality of the aggressive behavior studied in Experiments 1 to 4.

Measurement of instrumental aggression

SCHMIDT-MUMMENDEY (1972) describes a version of an "aggression machine" making use of DEUTSCH & KRAUSS' trucking game design and BUSS' teacher/learner paradigm of an "aggression machine" employing electric shock. Figure 1 shows in a simplified way the control panels exhibited to the Ss: a "map" with "Start" and "Goal" positions for the S (S1 to G1) and his antagonist, an experimenter's confederate seated in an adjacent room (S2 to G2) and the shock panel with 11 shock buttons representing different intensities. The buttons have to be pressed according to prior instructions in order to force the opponent to retreat and make way when both players meet in the "single-lane" road in the middle of the map; this road is a shortcut which must be used in

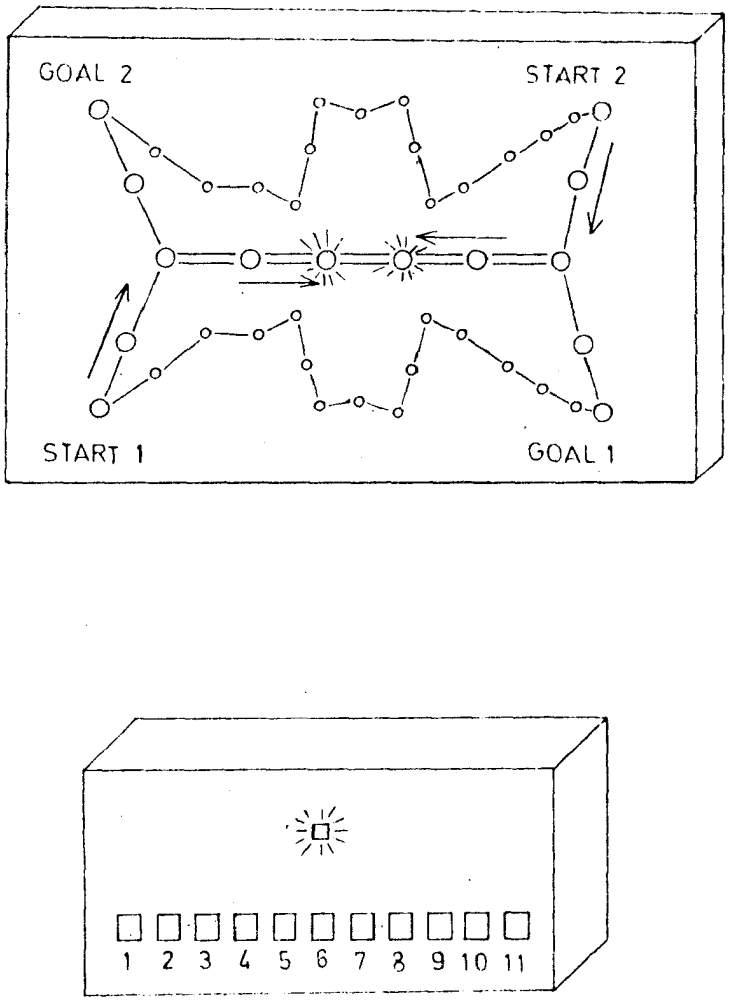

Figure 1: Subject's "map" and switchboard of the aggression machine

order to win the game. The Ss are told that the purpose of the experiment is "to investigate the functioning of punishment in a learning process". The Ss (who assume that they are "teaching" their antagonist) are instructed

to force their antagonists with electric shocks of different intensity and duration (recorded by the antagonist, who is the E's confederate) to retreat, when the antagonist signals (by lighting a lamp on the Ss' switchboard) that he insists on going his way. The Ss perform 12 trials in which their opponent refuses with increasing frequency to make way (1, 0, 1, 1, 2, 2, 2, 2, 4, 4, 4, 4 times per trial) so that each S has 27 possibilities to shock his opponent. Mean intensity and duration levels serve as individual measures of instrumental aggression.

Experimental results

In Experiment 1 80 male apprentices (mean age 18.6) served as Ss. Seated by the experimental apparatus, they observed a 6 minute video film showing a male person performing in the "aggression-machine game" either in a highly aggressive or in a nonaggressive way. The observed person was introduced by the E either as a university lecturer (high social status condition) or as a convict of the local prison (low status condition). Self-esteem of the Ss was assessed by an adjective check list with real-ideal self-descriptive instructions. 2x2x2 analyses of variance revealed significant effects of the model-aggression factor (o.oo1 for intensity, o.oo3 for duration of shock) but, contradictory to expectation, no interaction effects of status and aggressiveness of the model, and no effects of self-esteeem. Based on postexperimental interviews, Ss were classified according to their degree of previous knowledge of electric shock of MILGRAM-type experiments. Although 28 of 80 Ss had heard of experiments with electric shock there was no substantial influence of the MILKNOW variable on the amount of aggressive behavior in Experiment 1.

In Experiment 2 the design of Experiment 1 was replicated without consideration of the self-esteem variable. Instead of applications of supposed electric shocks, presumptive monetary losses were applied as punishments. In spite of the lack of the MILKNOW effect in the former experiment, the fact that one third of non-student Ss had some acquaintance with electric-shock experiments seemed to substantiate humanistic argumentation against the methodology. Therefore the Ss in Experiment 2 were told that they had the opportunity to deduct different amounts of money from their opponents by pressing the buttons (see Fig.1) of diverse intensity and/or duration. In all experiments Ss were paid DM 10,-, while their antagonists were presumed to receive DM 20,- for participation in the experiment. 80 students of intermediate schools (mean age 17.4) served as Ss in the 2x2 experimental design. There was a significant effect of model-aggression and of the interaction of status and aggressiveness of the model (each at the o.o1 level) for intensity of punishment but not for the duration measures. Descriptive statistics and qualitative observations of Ss' behavior are comparable for aggressive behavior by means or presumptive shocks or monetary losses.

Experiment 3 was an exact replication of Experiment 2, employing 80 female Ss, mainly nurses and social workers, mean age of 18.9. This experiment revealed significant intensity (o.o1) and duration effects (o.o5) of the "agressiveness of the model" factor but not the interaction effect of status and aggressiveness of the model as in Experiment 3.

Comparisons of experiments 1, 2, and 3 show high agreement of the experimental results for different form of punishment and subjects. Mean scores of intensity and duration over all experimental conditions were practical iden-

tical. Correlations between mean intensity and duration of punishment were o.68, o.62, and o.63. A statistical analysis of trends of aggressive behavior demonstrated an increase as expected, if trials 1-4, 5-8, and 9-12 were compared, but for Ss who had seen a high-aggressive model there was a slight decrease for trials 5-8; these persons started with much more higher degrees of punishment intensities than those who observed a nonaggressive model. Nonparametric trend analyses of aggressive behavior (according to LIENERT's, 1971, hierarchical classification methods of trends) revealed two distinct reaction patterns: Ss who observed aggressive models showed more frequently nonmonotone, Ss who observed nonaggressive models exhibited more frequently monotone trends and constancies of aggressive behavior.

In Experiment 4 measurement of aggressive behavior was repeated in two independent groups of male apprentices (mean age 16.o) who saw a high-aggressive model in the first session, after two weeks (n = 21) and after two months (n = 15) respectively, in comparison with no-treatment control groups. Aggressive behavior did not differ significantly after two weeks in either experimental or control group, but modeling effects were obviously (though not significantly) lower after two months. Stability coefficients for non-treated control group subjects were equally high after two and eight weeks; for the total control group (n = 19) they were o.85 (intensity) and o.87 (duration).

In Experiment 5 instrumental aggressive behavior of the kind investigated here was correlated with different measures of aggressive behavior: behavior observation (teacher ratings), self-ratings, questionnaire data, and projective measures. 54 students of intermediate schools (mean age 15.4) served as Ss. None of the correlation coefficients with either intensity or duration measures of

the aggression machine was significant, thus indicating high situational specificity of the aggression machine type of instrumental aggressive behavior.

Conclusions

The experiments reported confirm our expectations that instrumental aggressive behavior can be efficiently modeled with adult subjects in a laboratory setting. Model aggressiveness increased the Ss' aggressive behavior in all experiments. One study revealed a significant interaction between model's status and aggressiveness. The use of presumptive monetary losses as a means by which subjects punish their opponents in "aggression machine" interactions seems to be as equally effective as presumed electric shocks, and therefore seem preferable in experimental studies of aggression. Instrumental aggressive behavior appears to be remarkably stable but highly specific, therefore results of laboratory studies of this kind cannot be unconditionally generalized to behavior in natural settings.

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