Frustration and Successful Vs. Unsuccessful Aggression: A Test of Berkowitz’ Completion Hypothesis

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Author experiment using a modified version of the Buss’ aggression paradigm tested Berkowitz’ completion hypothesis, which states unsuccessful aggressive attempts at the frustrator serve as further frustration and intensify aggression. Testing was done by varying the number of successful aggressive attempts for different experimental groups. The experiment indicated first a positive relationship between subjective levels of frustration and aggression, which supports a general frustration-aggression hypothesis, and second that unsuccessful aggressive attempts lead to increased aggression in terms of shock intensity. This was interpreted as supportive of Berkowitz’ completion hypothesis, although alternative interpretations in terms of cognitive and behavioral strategies cannot be excluded.

Key words: aggression, frustration, aggression machine, frustration-aggression hypothesis

INTRODUCTION

The original frustration-aggression hypothesis postulated that although the drive created by frustration was aggression-specific, a displacement process could take place and the drive then would be reduced through a process of catharsis [Dollard et al., 1939]. Both instigation and catharsis were supposed to be cumulative, but neither the forms nor the targets of aggression were specific. The revision by Miller [1941] changed only the specific aggressive drive into a general motivating force. Neither the broad nor the more restricted version of the hypothesis has received an unequivocal empirical support [Baron, 1977].

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Berkowitz revised the frustration-aggression hypothesis further by combining the original formulation that frustration builds up an aggression specific state ("anger") with Miller's amendment that aggression does not necessarily presuppose frustration. Berkowitz did this by introducing the concept of "suitable cues;" that is, in Berkowitz' conceptualization, frustration only creates "a readiness for aggressive acts" [Berkowitz, 1965]. This readiness is specific in the sense that it makes aggression more probable; but this is not a sufficient condition. Berkowitz contended that some stimulus cues are mandatory for that readiness to become overt aggressive acts. Under specific circumstances, the cues could even "pull out" aggression despite a lack of readiness in the form of anger [Berkowitz, 1965, 1969].

Berkowitz has fervently defended an extreme position in that both the drive to aggress and the forms and targets of aggression are assumed to be specific. This means that if a person is frustrated, the aggressive drive (anger) predisposes the individual to aggressive acts specifically, the aim of which is the infliction of harm or injury on the tormentor. There is no real substitute. In Berkowitz' own words, "An individual will not attain completion until the goal object has been aggressively injured" [Berkowitz, 1965]. This is usually referred to as the "completion tendency," a position that is contrary to all forms of displacement [Zillmann, 1979].

Berkowitz went even further by speculating that if attempts at hurting the frustrator are not successful, this failure in itself should be regarded as a further frustration adding to the original anger [Berkowitz, 1965, 1973]. The prediction, simply, is that if aggressive acts are unsuccessful in inflicting harm on the frustrator, then the individual will be more frustrated; as a consequence, the aggressive acts that follow will be more intense. Although there is some empirical support for this notion [Berkowitz, 1966], this theoretical prediction has to date not been adequately addressed. Although Berkowitz has modified and developed many of his early views on the frustration-aggression hypothesis, his later writings still defend the idea of a completion tendency [Berkowitz, 1983].

The present study was designed to test whether or not unsuccessful aggressive attempts at the frustrator will intensify future aggressive attempts at the same frustrator. This was done in an experimental setting in which the frustrator, the recipient of electric shocks, can avoid different proportions of the aggressors' harmful attempts and thereby remain unhurt. According to the prediction, an avoided attack constitutes a further frustration that will increase the intensity of the next attack.

METHODS
Subjects, Apparatus, and "Cover Task"

Twenty male undergraduates, all aged 19 to 26 years (mean, 24.3 years), served as paid subjects. Participation was voluntary on an informed consent basis. Subjects were recruited on campus through posters on billboards asking for voluntary subjects for psychological experiments involving alcohol. Interested subjects could sign up on a list or call the department. This same information was also given in different classes, and subjects were invited to sign up on lists. No pressure whatsoever to participate was used. Subjects were informed about the possibility of winning a larger sum of money, and they were guaranteed a minimum sum. Subjects were randomly assigned to one of the two experimental groups: 1) unsuccessful aggression, or 2) completely successful aggression.
A refined and extended version of the Buss' "shock-machine" procedure was used [Gustafson, 1985, 1986b]. Subject A's task (the real subject) was to supervise Subject B (a fictitious "partner") on a visual scan test that was said to demand high levels of concentration but no learning. Subject A sat in one room in front of a panel, and Subject B was said to be sitting in an adjoining room with the experimenter and was a male of roughly the same age as Subject A. Subject A was not allowed to meet Subject B at any time either before, during, or after the experiment to avoid introducing uncontrolled variables into the experimental situation. Subject A could communicate with Subject B by means of lights and buttons. The panel in front of Subject A consisted of a button marked "projector" that activated a picture in a slide projector shown on a screen in front of Subject B in the adjoining room for a period of 0.5 seconds. The picture displayed an irregular array of 40 blue dots interspersed by one to six red dots. Subject B's task was said to be to scan the display and report number of red dots. The experimenter classified the response as correct/incorrect and informed Subject A by lighting a corresponding lamp. A green lamp flashed for a correct response, and Subject A's task then was to press another button marked "correct," which in turn lit a green lamp in front of Subject B. A red lamp flashed for an incorrect response, and Subject A then had to press any one of ten buttons numbered 1 to 10 and marked "shocks," which gave an electric shock to Subject B as long as the button was depressed.

Subject A was also told that Subject B could avoid the shocks from Subject A by removing his hand fast enough from a reaction time key. When Subject A pressed a shock button, a light lit up in front of Subject B. If Subject B responded fast enough, no shock was delivered. If, however, Subject B was slow in his reaction to the light, the shock chosen by Subject A was automatically given to Subject B. The cover story for this arrangement was that it simulated a real-life situation. Thus, Subject A's aggression was either successful or unsuccessful. Each trial ended when either a red or green lamp lit up in front of Subject A. The green lamp was marked "aggression successful," and the red lamp "aggression unsuccessful."

The above procedure constituted one trial and was repeated 60 times. Each trial took about 20 to 30 seconds; trials were separated by a 5-second pause.

To make the conditions of frustration clearly discernible, Subject A also had a second panel marked "number of wrong responses," consisting of one upper horizontal row of 30 green lamps and a corresponding lower row of 30 red lamps. When the experiment started, all 30 green lamps were lit, and each incorrect response from Subject B turned out a green lamp and lit up a red starting from no. 1. The first five lamps were marked "uncritical, these trials do not count," and the following five were marked "100% chance of winning" on a green background; the next five were marked "critical on a yellow background, and the last 15 "money lost" on a red background.

In fact, no Subject B ever existed. The whole procedure was controlled by the experimenter. Of the 60 trials, 20 were preprogrammed as incorrect appearing in random order, spaced 5/15. Dependent variables were shock intensity and duration. Response latency (the interval between information given to Subject A about Subject B's response and Subject A's own response) was also recorded separately for correct and incorrect responses. These were all electronically measured and manually registered.

The general purpose of the study was to investigate the effects of stress on performance and concentration.
Manipulation and Arbitrariness of Frustration, Successful vs. Unsuccessful Aggression, and Instrumentality of Aggression

The subject was informed that he could win 500 Sw Crs (roughly U.S. $90), depending on his partner’s performance. He would win and be paid immediately if his partner made no more than 15 incorrect responses. The money was shown, and he was carefully informed about the panel that showed the accumulated number of incorrect responses. Subject A was carefully told that the first five incorrect answers from Subject B did not count and should be seen as practice trials. Incorrect responses should therefore induce no frustration in Subject A, but frustration then was predicted to increase with the increasing number of incorrect responses from Subject B. Before the experiment, the subject rated, on a 10-point scale, what he thought his chances were to win the money and the personal value the money represented. When Subject B’s task was demonstrated to Subject A (see below), the five test displays were easy to manage. The subject was told explicitly that if his partner concentrated and was cooperative, he would make few mistakes. Thus, many mistakes would make frustration arbitrary.

Successful aggression meant that Subject B did not avoid the shock, and unsuccessful aggression meant that Subject B did avoid the shock. Subject A was informed about this by the lighting of either the green or the red lamp on the panel. Of the 20 incorrect trials, all 20 were preprogrammed to be unsuccessful for the Unsuccessful Group (= high frustration), and only four were programmed to be unsuccessful for the Successful Group (= low frustration).

A statement concerning instrumentality was included stating that earlier research had shown that shocks sometimes make people more alert and concentrated. An aggressive response from Subject A in relation to incorrect responses from Subject B could therefore help to win the money.

Procedure

The subject was first taken to Subject B’s room and shown a complicated but credible experimental setup, said to be Subject B’s place during the experiment. He was informed about Subject B’s task and tested on five displays in a realistic simulation.

After being placed in front of his own experimental panel, the subject was informed through a tape recorder about his task. The function of each button and light on his panel was carefully explained. The subject then calibrated the shock intensity scale “to control for differences in subjective shock sensitivity.” Electrodes were attached to the left index finger. Shock button no. 5 was depressed and the intensity continuously turned up until the shock was reported as “definitely unpleasant.” The subject was told that the intensity was decreased and increased respectively in steps of 5% per button down to button no. 1 and up to button no. 10. It was clear that high shocks were extremely uncomfortable.

Next the subject was casually asked to help the experimenter in checking that shocks actually reached Subject B. This was done to make the situation more credible and was justified to Subject A by saying that only he could determine if the calibrated level was correct. Subject A again entered Subject B’s room and held the electrodes between two fingers while the experimenter depressed shock button no. 5 in Subject A’s room. When Subject A was convinced, he returned to his room.

Finally, the subject, through a partly open door, could overhear a faked taped instruc-
tion given to Subject B. He was then left alone in his room during the supervision task. When the experimental session ended, the subject rated on 10-point scales his frustration at losing the money and the frustration he thought others might experience in the same situation. A debriefing conversation at the end of the session confirmed that all deceptions were believed.

RESULTS

Measures of Aggression

Data were analysed by dividing the responses for the 20 incorrect trials into four blocks with five reactions in each. For means of shock intensity and shock duration, see Figure 1.

Analyses of variance for repeated measures (ANOVAs) yielded a significant difference among groups in terms of shock intensity. The Unsuccessful Group was more aggressive than the Successful Group ($F = 4.26$, $df = 1,18$ $P < .05$). Further, both groups increased aggression as a function of frustration, that is, as frustration was increased from Block 1 to Block 3 so was aggression ($F = 5.47$, $df = 3, 54$, $P < .003$). However, this development over blocks tended to be different for the two groups. The Successful Group tended to become less aggressive during Block 4 when the money was lost, whereas the Unsuccessful Group continued to be equally aggressive during Block 4 as during Block 3. A univariate MANOVA only yielded a tendency ($F = 2.62$, $df = 3, 54$, $P < 0.06$). As for the measure of shock duration, there was no difference among the two groups as a function of successful vs. unsuccessful aggression ($F = .49$, $df = 1, 18$, NS), no effect of blocks ($F = .46$, $df = 3, 54$, NS), and the same development of aggression for the two groups over blocks ($F = 1.14$, $df = 3, 54$, NS).

Rating Scales

Means and standard deviations for the four rating scales are given in Table I. A general MANOVA indicated no significant differences on a multivariate test (Wilk's
TABLE I. Means and Standard Deviations for Four Different Rating Scales for the Two Experimental Groups (Successful and Unsuccessful Aggression)*

<table>
<thead>
<tr>
<th></th>
<th>Successful</th>
<th></th>
<th>Unsuccessful</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M</td>
<td>SD</td>
<td>M</td>
<td>SD</td>
</tr>
<tr>
<td>Value of money</td>
<td>7.53</td>
<td>3.1</td>
<td>5.21</td>
<td>2.4</td>
</tr>
<tr>
<td>Chances of winning</td>
<td>2.62</td>
<td>1.6</td>
<td>3.08</td>
<td>2.8</td>
</tr>
<tr>
<td>Own frustration</td>
<td>2.26</td>
<td>2.6</td>
<td>1.49</td>
<td>1.5</td>
</tr>
<tr>
<td>Other frustration</td>
<td>3.39</td>
<td>2.6</td>
<td>2.56</td>
<td>1.5</td>
</tr>
</tbody>
</table>

*No differences among groups attained statistical significance on univariate MANOVA tests although value of money approached significance ($F(1/18) = 3.48, P<0.08$).

Lambda = 0.78, NS). The univariate MANOVA tests yielded a weak tendency for the Successful Group to value the money as more attractive than the Unsuccessful Group ($F(1,18) = 3.48, P < 0.08$). On the other scales, corresponding $F$-ratios were 0.21, 0.67, and 0.78, respectively.

Response Latencies

Response latencies for both correct ($F = 2.82, df = 1, 18, P < 0.05$) and incorrect responses ($F = 6.12, df = 1, 18 P < .01$) decreased as a function of blocks. On the other hand, both groups spent an equally long time in deciding their aggressive responses ($F = .47, df = 1, 18, NS$).

Correlations

Pearson correlations computed between rated frustration (rating scale no. 4) and the dependent measure of shock intensity (Block 3) over both experimental groups attained a value of 0.46 ($P < 0.04$). This indicates an overall relationship between self-rated subjective frustration and overt aggressive behavior without implying the direction of causality.

DISCUSSION

The hypothesis of the present study is largely supported. When aggressive attempts at the frustrator are not successful because of avoidance behavior by the frustrator, subsequent aggressive attempts become more intense in terms of shock intensity. The general conclusion seems to be that unsuccessful aggressive attempts functionally equal additional frustration, leading to further increased aggression. In addition, the significant correlation between rated subjective frustration and intensity of aggression should be interpreted as supportive of a general frustration-aggression hypothesis. Some qualifications, however, are necessary.

Berkowitz argues that the predicted increased aggression in this situation was mediated by an increase in the internal state of readiness, in Berkowitz’ words “anger” but in broader terms “frustration.” Although it is possible for the subject to be incapable of monitoring minor fluctuations in this internal state, the emotional state is generally conceptualized as being a conscious phenomenon. In this experiment, subjects rated their subjective feelings of frustration, but there were no differences between the groups
in either of the two measures. Either these measures were not sensitive enough to tap actual differences, or there were no differences in terms of frustration.

At the level of the single subject, there obviously was a relationship between frustration and aggression as shown by the positive correlation. This was true for both groups. It therefore seems plausible that a global subjective rating at the end of the session is too insensitive to catch subtle differences on a group level. Possibly, factors such as apprehension about evaluation by the experimenter [Rosenberg, 1969] and demand characteristics [Orne, 1962] might influence these types of ratings. The conclusion therefore seems justified that frustration is increased by unsuccessful aggressive attempts and that different levels of frustration cause different levels of aggression. The "aggression machine" is sensitive enough to measure differences in aggression, whereas assumed differences in frustration need to be explored either indirectly by psychological test methods or directly by continuous physiological recordings. Certain semantic differential scales have, in similar research, proved to be useful in this respect [Gustafson, 1987].

Correlations between the latency for incorrect responses and shock intensity reveal a complicated pattern. Although correlations for the Successful Group are positive except for the first block (−0.19, 0.66, 0.77, and 0.36, respectively) correlations for the Unsuccessful Group are negative for all four blocks (−0.80, −0.53, −0.12, and −0.45, respectively). A positive correlation meant that latencies between receiving information on the one hand and reacting on the other becomes longer as the level of aggression is raised. This variation in the length intervals could be interpreted as reflecting variations in cognitive processing. The Unsuccessful Group spent less time in cognitively calculating what action to take to prevent Subject B from avoiding the shock thus acting more impulsively. Interestingly, the Unsuccessful Group continued to be aggressive also during Block 4, when the subjects knew that the money was lost. This can be interpreted as a form of retaliatory "angry" aggression and was predicted from the Berkowitz' hypothesis, as subjects in this group never had the satisfaction of being really successful in their aggression. This phenomenon has not been forthcoming in previous similar experiments with alcohol [Gustafson, 1985, 1986a].

The above analysis, however, opens up an alternative interpretation. Maybe ratings of subjective frustration constitute a correct estimation of what the subjects were actually feeling. Aggression is then not so much a function of an emotional state of anger or frustration, but rather a function of cognitive strategies. Subjects set up the goal of winning the money. The only way to influence Subject B to be more cooperative is to try different levels of aggression. There is no other variable response available. If this behavioral strategy is not successful because Subject B is avoiding the attacks, success in the behavioral approach is substituted for winning the money as the primary concern of Subject A. Subject A is thus caught in a cognitive-behavioral game with Subject B, and this game continues until the last trial. On the other hand, subjects in the Successful Group were successful enough during all blocks so as not to be distracted from the primary goal of winning the money. They simply used aggression as an instrumental response as long as the money still could be won, that is, during Blocks 1, 2, and 3. When aggression no longer was instrumental in winning the money (Block 4), it decreases.

The only way to test the two above interpretations explaining increased aggression either as a function of emotional frustration or as a function of cognitive processing is
to set up an experiment in which the emotional state and the cognitive instrumental strategies can be evaluated separately. This can be achieved by physiological registration of emotional arousal and by including also nonaggressive behavioral responses. Of course, interpretation in more traditional terms may also be valid. Because the Unsuccessful Group to a large extent only was able to ‘hit’ but not to ‘hurt,’ whereas the Successful Group not only hit but also hurt, the cathartic effect was smaller for the former as compared with the latter group. However, the present data permit no further conclusions in terms of catharsis.

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