INDICATORS OF AGGRESSION: THE DISSIPATION-RUMINATION SCALE

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Summary—Discussion on results of recent studies on Irritability and Emotional Susceptibility scales introduces the presentation of a new scale to study individual differences related to aggressive behavior. The new Dissipation-Rumination Scale results from examining the influence of the interval of time between the instigation and the opportunity to aggress and is related to the inclination to overcome and abandon more or less rapidly feelings of distress and wishes of retaliation associated with the experience of insults suffered. While principal-components analysis confirms the unifactorial structure of the scale with respect to groups of Ss of different language and nationality, results of experimental studies clarify its construct validity.

INTRODUCTION

Preceding contributions (Caprara, 1983; Caprara, Cinanni, D’Imperio, Passerini, Renzi and Travaglia, 1985a) assert the need for objective and standardized measures of aggressive behaviors and dispositions. They also suggested that research should benefit from constructs better defined, though more limited, than those traditionally used, such as aggression and aggressiveness. The reasoning behind these suggestions is based first of all on the importance that aggressive phenomena, in the widest sense of the term, have acquired in basic research as well as in clinical practice and education, and secondly, on the great variety of psychological processes and manifestations which respectively contribute and correspond to such phenomena.

Although the concept of aggression has been applied to many different kinds of behavior, the variety of conducts and situations often covered by the same notion should indeed lead to distinctions and classifications capable of reflecting the profound differences in the triggering and sustaining mechanisms of behaviors which culminate in harm to another person.

While the temporal stability of a certain disposition to hurt and to harm others in a variety of situations, has been established (Huesmann, Eron, Leffkowitz and Walder, 1984; Olweus, 1984) the actual nature of this disposition needs to be broadly investigated. In particular a greater comprehension of the underlying emotional and cognitive processes is required in order to determine the locus of the stability of any behavioral disposition. This comprehension significantly depends upon the availability of inferred constructs clearly anchored to objective indicators.

To understand the hypothesized links between frustration, aggression and emotion better (Berkowitz, 1968, 1983; Zillmann, 1979, 1983), in an attempt to validate the Italian version of the Buss and Durkee (1957) Hostility Inventory, two relatively new constructs, irritability and emotional susceptibility, have been identified and measures of these constructs have been developed (Caprara, 1983).

Irritability has been defined as the tendency to react impulsively, controversially or rudely at the slightest provocation or disagreement. Emotional susceptibility has been defined as the tendency to experience feelings of discomfort, helplessness, inadequacy and vulnerability. Both constructs refer to the capacity to tolerate frustration and to control one’s own reactions in either real or apparent situations of danger, offense or attack.

The results of a number of studies, using the Buss aggression machine paradigm (Buss, 1961), provided evidence of their content and construct validity as well as of the importance of taking into account individual differences in experimental situations in order to develop more comprehensive theories and hypotheses.

It has been found that, when provoked by a negative judgment of their performance in a learning task, either highly irritable Ss or highly emotionally susceptible Ss are more likely to select high
levels of shock to communicate to an innocent confederate his mistakes in an extra-sensory perception task than are low irritable and low emotionally susceptible Ss (Caprara, Renzi, Alcini, D’Imperio and Travaglia, 1983). The same findings have been replicated in studies in which the presentation of aggression-eliciting cues as slides portraying weapons (Caprara, Renzi, Alcini, D’Imperio and Travaglia, 1984a; Caprara, Renzi, Amolini, D’Imperio and Travaglia, 1984b) or physical exercise which increased sympathetic excitation (Caprara, Renzi, D’Augello, D’Imperio, and Travaglia, 1986) were interpolated between the instigation and the opportunity to aggress.

Beyond confirming our expectations, these studies showed that the use of individual differences, clearly embedded in the same nomological network with the hypotheses to be tested, while broadening the possibility of falsifying the various hypotheses, also broadens the possibility of their generalization and articulation. The study of individual differences, in fact, places boundaries on the accuracy of hypotheses about situational variables and illustrates how situational variables may change their effects as a function of individual characteristics.

In this regard it is not surprising that highly irritable and highly emotionally susceptible Ss, after having been exposed to minor frustration such as a failure in a learning task, selected higher shocks than low irritable and low emotionally susceptible Ss in experiments where other alternative behavior was precluded. However, the finding that low irritable Ss and low emotionally susceptible Ss also selected higher shocks under failure represents strong evidence in favor of the frustration-aggression hypothesis (Dollard, Doob, Miller, Mowrer and Sears, 1939).

Also it is not surprising that highly irritable Ss and highly emotionally susceptible Ss selected higher shocks than low irritable Ss and low emotionally susceptible Ss, when exposure of aggressive slides was interpolated between the instigation and the opportunity to aggress. Rather the finding that low irritable Ss and low emotionally susceptible Ss, i.e. low ‘impulsive’ Ss also, selected higher shocks after being exposed to ‘aggressive slides’ than after being exposed to ‘neutral slides’ represents strong evidence in favor of the ‘impulsive aggression’ hypothesis (Berkowitz, 1974).

The findings of the experiment, in which a physical exercise and the associated sympathetic excitation were interpolated between the instigation and the opportunity to aggress, have led us to consider the possibility of integrating such alternative points of view as the neo-Hullian position (Berkowitz, 1983) and the transfer of excitation position (Zillmann, 1983). In fact while the former more appropriately fit the results of the experiment in which irritability was considered, the latter appeared to fit more appropriately the results of the experiment where emotional susceptibility was considered. These considerations posed the basis for the present contribution at a time when we have become more concerned with the importance of temporal patterns in the dynamics of aggression.

**AIM OF THE CONTRIBUTION**

The importance of temporal factors, particularly in connection with variations of aggressive conduct over the entire time span during which they occur as well with the passage of time between instigation and opportunity to aggress, has been emphasized recently by various authors (Goldstein, Davis and Herman, 1975; Konečni, 1975, 1984; Caprara et al., 1983). A number of reasons suggested by daily events and by clinical experience call for research which revises the relatively ‘static’ concept of aggressive conduct proposed by traditional laboratory research. Indeed all aggressive conduct, from triggering to completion, may be said to take place in a temporal dimension. Aggressive conduct has, to be sure, a duration which varies with each occurrence; moreover, it may be significantly different in intensity and quality in the various moments separating the provocation from the enactment.

The aggressor and his victim, as well as the observer or the court judge, are all perfectly aware of the importance of the ‘time’ factor. The aggressor appeals to the judge for clemency by showing how the aggressive conduct was sudden and non-premeditated. The prosecutor emphasizes the length of time intervening between the offense or the wrong inflicted and the aggressor’s retaliation, in order to prove the vindictiveness of the aggressor, the intentionality of his aggression and his
moral reprehensibility. It is generally considered to be a sign of good character to be able to ‘quickly forget’ offenses and provocations, even serious ones. Nonetheless, there are very few empirical or experimental studies which have tried to shed light on the processes and mechanisms to which the regulation of aggressive conduct over a time span may be ascribed.

Konecni (1975) has reported the phenomena of dissipation and rumination which stand for, respectively, the decrease or increase in aggressive conduct as a function of the lapse of time separating the instigation to aggress and the moment in which it becomes effectively possible to react aggressively. It remains to be investigated, however, when considering the constructs of dissipation and rumination, just how much should be ascribed to the lapses of time and just how much should be ascribed, on the other hand, to the type of provocation or instigation, to the type of aggressive conduct which can be carried out and to the interaction between these two variables.

It is likely that response to such questions might be found in anchoring the issues in question to more or less stable individual differences or personality characteristics. Thus, dissipation and rumination might be considered as corresponding to the opposite ends of a single dimension of behavior, opposite manifestations along the same continuum of a hypothetical personality dimension characterized, at the one end, by the inclination toward rapid dissipation and minimal rumination and, at the other end, by the inclination toward slow dissipation and maximum rumination. High dissipators—low ruminators should be expected to get over ill feelings quickly and the desire to retaliate against offences received. Low dissipators—high ruminators, on the other hand, should be expected to harbor and even to enhance, with the passing of time, feelings and desires of vengeance. On these premises a list of items was generated and a factorial study was conceived with the aim both of giving empirical support to the dissipation—rumination construct and of developing an instrument for its measure.

In the following, the results of this study and of studies aimed at ascertaining the scale reliability are presented. The results of recent experiments which provide additional information on the construct and its measure are also reported. In the Discussion the different characteristics of dissipation—rumination with respect to irritability and emotional susceptibility will be examined with the aim of gaining new insight into the processes which underlie aggression in different situations.

**FACTORIAL STUDY**

More than 800 Ss were involved in the various steps of the research. An initial group of 200 Ss was given 50 items in the form of a six-position Likert-like scale. The formulation of items was derived from the above definition of the dissipation—rumination construct.

Principal-components analysis of the first version of the scale allowed us, on the one hand, to ascertain that the construct was adequately represented by the first extracted component which accounted for most of the variance, and, on the other hand to select, with respect to this component, the 15 items with the highest loading coefficients and 5 items with loading coefficients close to zero. The latter were selected as a control to avoid response-set effects. The new version of the scale was administered to 366 Italian university students (250 males and 136 females) and, after having been translated into English (see the Appendix), to 291 U.S. university students (211 males and 80 females). Table 1 shows that the first principal extracted component covers a very high percentage of the total variance, whereas the following principal components cover minimal portions of the variance.

While the factorial structure of the scale displays a high degree of stability with respect to Ss of different language, nationality and cultural context, no significant differences were ascribable to sex differences.

**Reliability studies**

Coefficients \( \alpha \) were 0.79 \((P < 0.001)\) and 0.87 \((P < 0.001)\), respectively, for the Italian and U.S. groups. The reliability coefficient by the Spearman–Brown method for the two halves, contrasting the even and the odd items on 40 Italian Ss (20 males and 20 females) was 0.91 \((P < 0.001)\). The test–retest correlation on 50 Italian Ss (19 males and 31 females) was 0.81 \((P < 0.001)\).
Table I. Principal-component analysis: 1st (C₁), 2nd (C₂) and 3rd (C₃) components' factor loadings for each item (missing items are control items)

<table>
<thead>
<tr>
<th>Items</th>
<th>C₁</th>
<th>C₂</th>
<th>C₃</th>
<th>C₁</th>
<th>C₂</th>
<th>C₃</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0.629</td>
<td>0.349</td>
<td>0.202</td>
<td>0.493</td>
<td>-0.147</td>
<td>0.165</td>
</tr>
<tr>
<td>2</td>
<td>0.708</td>
<td>0.175</td>
<td>0.101</td>
<td>0.700</td>
<td>0.003</td>
<td>-0.024</td>
</tr>
<tr>
<td>3</td>
<td>0.546</td>
<td>0.276</td>
<td>-0.463</td>
<td>0.569</td>
<td>0.032</td>
<td>0.140</td>
</tr>
<tr>
<td>5</td>
<td>0.991</td>
<td>0.023</td>
<td>0.266</td>
<td>0.751</td>
<td>-0.172</td>
<td>-0.287</td>
</tr>
<tr>
<td>6</td>
<td>0.674</td>
<td>0.194</td>
<td>-0.434</td>
<td>0.652</td>
<td>-0.012</td>
<td>0.397</td>
</tr>
<tr>
<td>7</td>
<td>0.803</td>
<td>0.146</td>
<td>-0.161</td>
<td>0.703</td>
<td>-0.319</td>
<td>-0.047</td>
</tr>
<tr>
<td>9</td>
<td>0.545</td>
<td>0.068</td>
<td>0.449</td>
<td>0.466</td>
<td>-0.023</td>
<td>0.088</td>
</tr>
<tr>
<td>10</td>
<td>0.744</td>
<td>-0.130</td>
<td>0.122</td>
<td>0.827</td>
<td>0.217</td>
<td>-0.174</td>
</tr>
<tr>
<td>11</td>
<td>0.553</td>
<td>-0.077</td>
<td>0.287</td>
<td>0.373</td>
<td>0.217</td>
<td>0.389</td>
</tr>
<tr>
<td>12</td>
<td>0.643</td>
<td>-0.092</td>
<td>-0.076</td>
<td>0.491</td>
<td>0.222</td>
<td>-0.113</td>
</tr>
<tr>
<td>15</td>
<td>0.744</td>
<td>-0.087</td>
<td>0.129</td>
<td>0.682</td>
<td>0.149</td>
<td>-0.239</td>
</tr>
<tr>
<td>16</td>
<td>0.704</td>
<td>0.183</td>
<td>-0.216</td>
<td>0.662</td>
<td>0.138</td>
<td>0.281</td>
</tr>
<tr>
<td>17</td>
<td>0.455</td>
<td>-0.360</td>
<td>-0.104</td>
<td>0.371</td>
<td>-0.217</td>
<td>0.102</td>
</tr>
<tr>
<td>19</td>
<td>0.382</td>
<td>-0.543</td>
<td>0.094</td>
<td>0.386</td>
<td>0.246</td>
<td>-0.281</td>
</tr>
<tr>
<td>20</td>
<td>0.439</td>
<td>0.623</td>
<td>0.280</td>
<td>0.189</td>
<td>0.445</td>
<td>0.037</td>
</tr>
</tbody>
</table>

% Var. | 38.8| 7.9| 7.1| 38.2| 8.3| 7.2|
% Cum. | 38.8| 46.7| 53.8| 38.2| 46.5| 53.7|

Experimental studies
Two studies have been conducted according to a procedure in which Ss after receiving a communication by a confederate (insulting vs not insulting) were offered the opportunity to reciprocate: (a) by selecting the level of shocks to deliver to the same confederate to communicate his mistakes in an extra-sensory perception task; and (b) by evaluating the confederate for a position on the staff of the laboratory.

In the first study (Caprara, Coluzzi, Mazzotti, Renzi and Zelli, 1985b), Ss were previously selected on the basis of the Dissipation–Rumination Scale. Among Ss scoring in the first and in the third quartile a group of high dissipators–low ruminators and a group of low dissipators–high ruminators were identified. While half of the Ss of each group had the opportunity to reciprocate immediately after the confederate written communication, half of the Ss could reciprocate only after 24 hr. Findings showed that insulted Ss selected higher levels of shocks that non-insulted Ss and that low dissipator–high ruminator Ss selected less favorable evaluations than high dissipator–low ruminator Ss when previously insulted. Since time interval did not play any significant role, other studies are being conducted to examine a more prolonged time span. The finding that Ss who were expected to be more inclined to forget and to forgive quickly, still showed no signs of dissipating their aggression after 24 hr, was taken as evidence of the role of insult as a powerful instigator to aggression.

In the second study (Zelli, 1984), a similar experiment was conducted to examine the influence of irritability, of emotional susceptibility and of dissipation–rumination on subsequent aggression with or without a previous insulting communication. Ss were administered the three scales before being introduced into the experiment and only the immediate reciprocation condition was considered. In addition to a general multiregression analysis separate ANOVA were performed taking into account the upper and the lower halves for each scale. Again insult was a powerful instigator to aggression and again dissipation–rumination a good predictor of aggression, indeed it was the only significant discriminator among the three individual differences considered. On the one hand, insulted Ss selected less favorable evaluations than non-insulted Ss, on the other hand, low dissipator–high ruminator Ss selected less favorable evaluations than high dissipator–low ruminator Ss when previously insulted.

Discussion
While the psychometric findings are more than satisfactory, the findings of the reported studies appear equally interesting. In particular the study of Zelli (1984) draws our attention to the differing role that different individual characteristics play in different situations. In contrast to earlier experiments, where a failure in a learning task was manipulated as an instigation to aggress, neither irritability nor emotional susceptibility had any significant influence on subsequent aggression when
insult was manipulated. In this case only dissipation–rumination proved to be a significant predictor of aggression.

This leads us to speculate as to what makes our experiments described above different and, consequently, about the different psychological processes which may be involved. In particular, our reasoning is that, in contrast to the earlier experiments where irritability and emotional susceptibility had a significant role in examining kinds of impulsive or reactive aggression, in Zelli's experiment the nature of instigation and the opportunity to aggress directly against one's provoker alerted from the beginning the habitual resistances most persons have towards aggression and, consequently, reduced the role, if any, of impulsivity.

In the experiments where failure was manipulated, it is likely that there was a quasi-automatic association between the communication of failure on behalf of the experimenter and the increasing level of shocks delivered to the innocent confederate. In the experiment where insult was manipulated, on the other hand, it is unlikely that the Ss were not aware in some way of the possibility of retaliation they have been offered by delivering shocks and devaluing their provoker. This awareness evidently implies a variety of cognitive process and controls by which the Ss perceives, attributes, anticipates and comes to realize the inequity of the insult and to decide the appropriateness of this response.

Whether there are doubts about the role that cognitive processes play in this experiment, as compared with the previous experiments, the results provided by the use of individual differences help in clarifying these doubts. In fact it should be obvious that cognitive processes are implied in dissipation–rumination where the Ss store in memory the feelings of the insults suffered waiting for the time of revenge. On the contrary, cognitive processes by definition, play a minor role in irritability and emotional susceptibility. Consequently it is plausible that dissipation–rumination, rather than irritability and emotional susceptibility, plays a more discriminant role in experiments where the occurrence of aggression is largely mediated by cognitive processes. This leads us to emphasize again the importance of examining individual differences in combination with performing experiments as a promising avenue to elucidate the mechanisms and processes implied by different forms of aggression. In particular, while greater attention has been given in the past to the emotional components of aggression, the studies reported above draw one's attention to the cognitive components of aggressive behavior. In so doing, a new point of view is advanced as far as the distinction and classification of the different forms of aggression are concerned.

There is no doubt that it is more important to distinguish different forms of aggression rather than pursuing the improbable task of defining and examining aggression in general. Also it is likely that distinctions based on the structural aspect of the different behaviors will probably result in less ambiguity than those proposed to date on the basis of the inferred motives of behavior (Feshbach, 1964) or on the basis of mere descriptions of social interactions and behaviors (Manning, Heron and Marshall, 1978). By focusing on the structural aspects of the different forms of aggression it is possible to focus on the characteristic properties of the mediating system, paraphrasing Magnusson (1976), in terms of cognitive and emotional processes which are involved as well as in terms of development and functioning. It is evident that certain forms of aggression are not possible if the Ss does not possess yet or has lost certain capabilities as well that other forms of aggression have higher probability of occurring under such circumstances.

Taking advantage of what we know as far as the different stages of cognitive and emotional development are concerned, as well as of what we know about the different manifestations of cognitive and emotional impairment due to illness, trauma or aging it should be possible to make better distinctions among the various more or less similar and dissimilar forms of aggression. Furthermore, both the distinctions on the basis of inferred motives, such as that of Feshbach between 'instrumental' and 'hostile' aggression, and those on the basis of observations in natural settings, as recommended by a number of developmental psychologists and human ethologists, should gain in explanatory value by a better distinction and comprehension of process underlying the organization of motives and behaviors.

The analysis of Berkowitz (1974) of impulsive–reactive aggression has been an important step in this direction. However, it would be unwise to confine ourselves to a mere symmetrical distinction between impulsive and controlled aggression, or to advance a distinction between emotional and cognitive aggression. On the contrary, in any form of aggression we should be able
to distinguish its properties in terms of the amount of variability accounted for by emotional and cognitive processes, by automatic-semiautomatic mechanisms and by controlled mechanisms. In this regard it is likely that focusing on the structural properties of aggressive behavior, while providing a new insight into its determinants, will sustain our efforts in being able to prevent and control its undesirable effects.

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REFERENCES
**APPENDIX**

Participant Code ___________________ Gender ___________________
Date ___________________

**Coping**

Using the following scale, indicate the response which reflects your **first** reaction to each statement by placing an appropriate number before each item. Please do not leave out any item and be spontaneous and accurate as much as possible within the limits of choices offered below:

5 = completely true for me
4 = fairly true for me
3 = true to a certain extent
2 = false to a certain extent
1 = fairly false for me
0 = completely false for me.

1. I never help those who do me wrong.
2. I will always remember the injustices I have suffered.
3. The more time that passes, the more satisfaction I get from revenge.
4. It is easy for me to establish good relationships with people.
5. It takes many years for me to get rid of a grudge.
6. When somebody offends me, sooner or later I retaliate.
7. I do not forgive easily once I am offended.
8. I often bite my fingernails.
9. I won’t accept excuses for certain offenses.
10. I hold a grudge, for a very long time, towards people who have offended me.
11. I remain aloof towards people who annoy me, in spite of any excuses.
12. I can remember very well the last time I was insulted.
13. I am not upset by criticism.
15. I still remember the offenses I have suffered, even after many years.
16. If somebody harms me, I am not at peace until I can retaliate.
17. When I am outraged, the more I think about it, the angrier I feel.
18. I like people who are free.
19. I am often sulky.
20. Sometimes I can’t sleep because of a wrong done to me.