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# Towards differential social psychology: individual differences in responding to an aggressive discussant

*Hermann Brandstätter*

## Controversial discussions: a general social psychological approach

### *Objectives of the research project*

When our experiments on group discussions were started almost fifteen years ago we, like most other social psychologists, assumed that in order to explain social behaviour the primary need was to state and test hypotheses on the environmental conditions of that behaviour. Individual differences were looked at as something which personality psychologists should care about and any individual differences that arose in the experiments were simply treated as error variance.

Within our general psychological perspective, the central interest was in some antecedent conditions of social influence in controversial discussions. In particular, interest focused on how speakers' friendliness/hostility affected their influence on their opponents, depending on:

1. the pre-established social-emotional relations (liking or disliking) between the opponents;
2. the contingency of the opponent's friendliness/hostility (contingent or not contingent on the subject's arguments);
3. the topic of discussion (matters of value or matters of fact);
4. the degree of ego involvement (active participant in the discussion versus observer of the discussion as partisan of the target of friendliness/hostility or as partisan of the friendly/hostile speaker;
5. the audience's reactions to the speaker's arguments (applause or disapproval).

During the first years of this research only modest success was achieved as can be seen from a number of review articles by Brandstätter (1978; 1985), Stocker-Kreichgauer and von Rosenstiel (1982) and Schuler (1982). Indeed, quite often more was learned from the unexpected results of the experiments than from confirmed hypotheses. The following briefly reports some of the results of the

first series of experiments in an attempt to clarify from where the individual difference approach in the second series of experiments started.

### *Experimental results*

*Liking.* When a person enters a controversial discussion or a bargaining process with a partner who turns out to be uncompromising, the subject's readiness to accept the other's influence or to make concessions decreases more rapidly with a liked rather than a disliked opponent. This effect can be understood as being mediated by the subject's expectations. Liking an interaction partner is linked to readiness to compromise as well as to expecting the other to respond in a similar way. Disappointment leads to increasing resistance to the opponent's influence attempts (Brandstätter and Hoggatt, 1982; Brandstätter *et al.*, 1983; Peltzer and Schuler, 1976; Schuler, 1975; see also Schuler, 1982; however, compare Kirchler and Brandstätter, 1982 for results not in line with this hypothesis).

*Contingency of friendliness/hostility.* Non-verbal friendliness/hostility of an opponent, if it is not contingent upon the subject's arguments but seems to express the opponent's attitude toward the subject as a person, has the same effects as an experimental manipulation of liking: a friendly or a similar (liked) opponent gains more influence in the early stages of a controversial discussion than an unfriendly or dissimilar (disliked) opponent.

*Matters of values and matters of facts.* In discussions on matters of facts, the opponent's verbal aggression provokes more negative reactions and more resistance to the opponent's influence attempt than in discussions on matters of values. This is particularly true for the actively participating subject, i.e., the target of the aggression, and to a lesser degree for an observing subject sharing the view of the interacting subject. In general, the effect of verbal aggression on person-perception and social influence appears to be mediated by the causal attribution of the aggression. In controversial discussions on matters of facts, internal attribution of hostility is common. The social norm demands more objectivity and allows less emotionality in discussing facts than in discussing values (Wagner *et al.*, 1982).

*Effects of aggression on the discussion partner.* An aggressive style of discussion, compared with a neutral or friendly style, tends to diminish the influence on the directly attacked partner, but the effects are usually rather small (Brandstätter and Klein-Moddenborg, 1982; Peltzer and Schuler, 1976; Wagner *et al.*, 1982). However, Kirchler and Brandstätter (1982) unexpectedly found higher-order interactions between subject's gender, partner's simi-

larity, partner's friendliness and partner's readiness to compromise, and no general superiority of a friendly discussion style. Kirchler (1984) reports, for both men and women, an influence advantage of the neutral style over the emotional (friendly or hostile) style in the long-term effects of the discussion. As will be seen later, only by taking into account individual differences in responding to social reward and social punishment can the effects of the discussion style be more reliably predicted.

*Effects of aggression on the observer.* It was originally expected that not only participants, but also observers would be less influenced by an unfriendly speaker than by a friendly one. Again, the experimental results are inconsistent. No significant difference was found by Rüttinger (1974) and Brandstätter and Klein-Moddenborg (1982); but Stocker-Kreichgauer and von Rosenstiel (1982) found speakers to be more influential when they were less friendly than their partners, and Wagner *et al.*, (1982) report more influence for the neutral than for the hostile speaker.

In terms of influence, there was no reliable difference between observers sharing the view of the victim and those sharing the view of the aggressor. However, the perception and evaluation of the aggressive style of argumentation was quite different. Whereas the victim's partisans perceive and clearly detest the speaker's aggressiveness, observers who identify with the aggressor's position do not even perceive the behaviour as aggressive, but as forceful and convincing.

Whenever the topic of discussion provided for a kind of punitive alternative, like pleading for a more severe punishment for drug abuse (Rüttinger, 1974) or for exclusion of members of radical parties from civil service (Stocker-Kreichgauer and von Rosenstiel, 1982), the adherents of such a punitive alternative seemed to be more susceptible to an aggressive influence attempt whether the plea was for or against the punitive alternative.

*Audience applause.* A speaker in a controversial discussion who is applauded by an audience or by a biased moderator gains more influence over those who watch or listen to such a discussion than a speaker whose arguments are disapproved by an audience (von Rosenstiel and Stocker-Kreichgauer, 1978). This corresponds to the concept of vicarious reinforcement.

Although observing an applauding or disapproving audience is in some ways similar to observing a speaker's friendly or hostile remarks, the effects are somewhat different. Whereas observers of an applauding or disapproving audience clearly react in the way the theory of vicarious reinforcement would predict, observers of a hostile or friendly debater may focus either on the social reinforcement aspect or on the social exchange aspect of the observed social

interaction, and accordingly they may resist or yield to the aggressive influence attempt, and resist or yield to the friendly influence attempt.

Each of the tentative generalizations based on the forementioned experimental results needs some critical discussion with reference to theoretical concepts and empirical findings of other veins of research on social influence in groups. These might include those stressing the cognitive aspects of influence (Burnstein, 1982), the social psychological perspectives of aggression (Mummendey *et al.*, 1982), or the difference between majority and minority influence (Moscovici, 1979). However, rather than entering into a more detailed discussion of these issues, we proceed with the individual difference approach which characterizes our most recent series of experiments.

### **Controversial discussions: an individual difference approach**

Remember that on average the friendliness/hostility of a speaker in a controversial group discussion did not make such a big difference in influencing participants and observers of the discussion as had been expected. However, larger individual differences were quite regularly noticed in the responses to a hostile adversary in comparison with the individual differences in responses to an emotionally neutral opponent.

These large individual differences were puzzling. Could it be that what had been conceived of as rather weak, although plausible, general effects of specific environmental conditions were in fact heterogeneous averages of stable individual differences when responding to these environmental conditions? If so, the average experimental effects would just mirror the preponderance of one or another personality characteristic in the sample of subjects, and a replication of the experiment would lead to the same results only if the new sample accidentally had the same distribution of the relevant personality characteristic. This would mean the abandonment of general psychological statements as oversimplifications, which may be at best descriptions of aggregates of data, but not representations of lawful functional relationships.

As a result it was decided to take individual differences into account in order to arrive at more reliable and valid predictions of how a person will perceive, attribute and answer the hostile or friendly behaviour of an opponent in a discussion. However, in looking around for suitable personality constructs, one could easily get lost in taking into consideration and trying out all those scales which have been used to measure persuasibility, or which could be used because they might touch one or another component of the

complex process. What is needed is a clear focus on one or two basic constructs that explain a person's reaction towards a rewarding or punishing interaction partner in a variety of situations.

### *Social reinforcement versus social exchange orientation*

Why is it that some subjects are influenced more and others less by an aggressive opponent than by an opponent presenting the arguments in an emotionally neutral or friendly way? From a general psychological perspective, reinforcement theory would predict yielding to an opponent who punishes the subject's utterance by aggressive remarks like 'What you say sounds stupid', or 'You have no idea of what you are talking about'. On the other hand, under the constraints of our experimental conditions, social exchange theory (as well as some other theories like those of cognitive consistency and of reactance) would predict anger and increased resistance against the aggressive influence attempt as a means of restoring distributive justice.<sup>1</sup>

Instead of assuming that one or the other type of theory would be true both were accepted as potentially valid, but for different types of people. The proposed general model of reinforcement versus exchange orientation (the R-E model) assumes that a person responds consistently to a friendly or hostile adversary in a discussion (or any other form of social interaction where one person tries to influence the other) either according to the reinforcement concept, or according to the social exchange concept. Reinforcement orientation would imply yielding to an *aggressive* adversary to avoid further attacks, while strengthening one's stance in front of a *friendly* opponent, i.e., a discussion partner who opposes the subject's view, but nevertheless acknowledges the merits of his or her arguments. On the other hand, exchange orientation would imply that a person returns what he/she receives: hostility and increased opposition for hostility, friendliness and yielding for friendliness.

The constructs of reinforcement versus exchange orientation further imply specific emotional responses as intervening variables, i.e., feelings of fear (or shame) and self-complacency, respectively, in the case of reinforcement orientation, and feelings of anger and gratitude, respectively, in the case of exchange orientation. Being confronted with an unfriendly or even aggressive adversary, a situation which is quite typical in controversial discussions, a person responding with fear (or shame) will yield; whereas a person responding with anger will resist the influence attempt.

Being confronted with a friendly opponent, who by definition opposes the subject's view but acknowledges some aspects of his/her argumentation in a friendly way, a person responding with

self-complacency will resist; whereas a person responding with gratitude will yield. These emotional responses depend, of course, on both the person's propensities on the one hand and the characteristics of the social stimulation on the other. The social stimulation comprises the social context (e.g., power differences between the interacting persons, or social norms providing evaluation standards for specific behaviour settings) and the partner's behaviour.

#### *Empirical test of the theory*

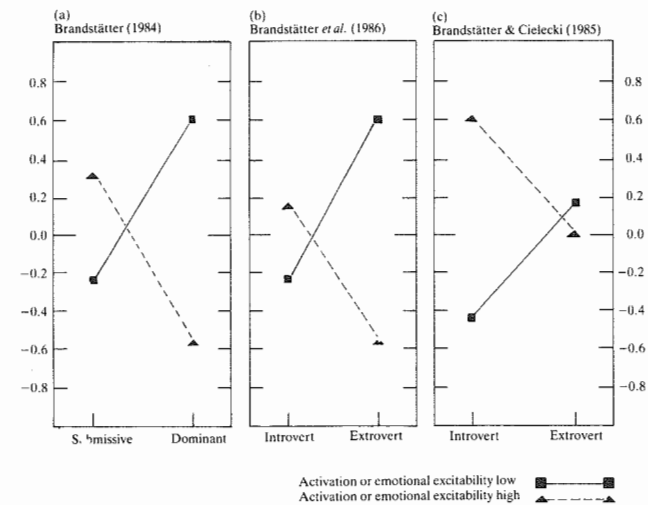
The following are reports on four experiments which consistently show the usefulness of the personality construct 'social reinforcement orientation versus social exchange orientation' in predicting who will yield to an aggressive opponent and who will resist the influence attempt. Since Experiments 1 and 4 had been designed before the R-E-model was developed, the results presented here are based on a re-analysis of the data. Experiments 2 and 3 were explicitly designed in order to test the model.

*First experiment: skin conductance and dominance as predictors of yielding.* The first experiment to be reviewed here was originally designed to test hypotheses on differences in kinds of participation, i.e., active participants versus observers (Brandstätter and Klein-Moddenborg, 1982; the skin conductance responses (SCR) of the experiment were recorded and analysed by Wissner, 1983). However, videotapes were available of those subjects who actively participated in the discussion. Based on these videotapes of the initial stage of the discussion (where the confederate had behaved neutrally) independent judges were asked to provide ratings of each subject's dominance/submissiveness. Brandstätter (1984) predicted that highly aroused dominant subjects would feel angered by an aggressive opponent and resist his influence attempt, while highly aroused submissive subjects would be scared by an aggressive opponent and eventually give in.

Each of the thirty-two subjects, students of business administration and economics, discussed a disciplinary court problem with a confederate. From his third argument onwards, the confederate either reacted aggressively to some of the subject's arguments (aggressive condition) or continued to respond in a neutral way (neutral condition). The electrodermal activity (EDA) was recorded throughout, and the subjects indicated their position on the issue on an eleven-point scale after each argument.

As Figure 4.1(a) shows, the predictions were confirmed: in dominant subjects, the amount of yielding decreases with increasing arousal; in submissive subjects the amount of yielding increases with increasing arousal (measured as average amplitude of SCR).

FIGURE 4.1  
Influence of an aggressive discussion adversary as a function of the subject's (a) automatic activation (SCR) and submissiveness/dominance, (b) autonomic activation (HR) and introversion/extroversion, (c) emotional excitability and introversion/extroversion



Although the emotions are not directly measured, it may reasonably be assumed that the degree of arousal covaries with the intensity of emotions. Being confronted with an aggressive opponent, in comparison with a neutral opponent, highly aroused dominant subjects are exchange oriented; whereas, highly aroused submissive subjects are reinforcement oriented.

*Second experiment: heart rate and independence (16PF).* The same hypothesis linking arousal and personality variables to yielding responses was tested in a 'within subject design' by Brandstätter *et al.*, (1986). This time, the second-order factor QIII ('independence') of a recent German version of Cattell's 16 PF (Schneewind *et al.*, 1983) was chosen as the personality trait, and heart rate (HR) as the state measure of arousal (autonomic activation in Eysenck's sense; 1967, p. 233). The subjects were twenty housewives, twenty to thirty-five years of age, who discussed two legal cases, one with a neutral and the other with a hostile confederate. The subject's agreement/disagreement with the confederate as a dependent variable was measured in two ways:

1. the subject's ratings of the defendant's guilt;

2. the judges' ratings of the subject's agreement with the confederate, based on transcripts of the subject's arguments.

The predicted statistical interaction between the personality trait 'independence' and the state of arousal as measured by heart rate was tested by the regression of the difference between agreement with the aggressive confederate and agreement with the neutral confederate on the product term  $z$  (QIII)  $\times$   $z$  (HR). The regression is significant ( $\beta = -0.50$ ;  $p < 0.05$ ).

At this stage of the research, it was decided to test Gray's (1971; 1983) modification of Eysenck's (1967) idea, according to which introverts acquire conditioned responses more easily (both in classical and in operant conditioning) than extroverts do. Gray presents some evidence that introverts are more sensitive to punishment, whereas extroverts are more sensitive to reward, in particular if neuroticism is high.

In the present analysis, therefore, the second-order factor QV (extroversion) was substituted for QIII (independence) in the regression equation. It was discovered that with a value of  $\beta = -0.67$  ( $p < 0.01$ ) the product  $z$  (QV)  $\times$   $z$  (HR) was an even better predictor of the differential influence of the aggressive and the neutral confederate than the product  $z$  (QIII)  $\times$   $z$  (HR). A linear combination of QV and HR does not contribute substantially to the prediction of differential influence (Figure 4.1(b)).

However, adding the single components to the product term increases the predictability from  $R^2 = 0.45$  to  $R^2 = 0.71$ . In particular, the partial regression weight of heart rate is negative. This could mean that a high heart rate goes with high intensity of anger or fear which *cause* resisting or yielding to the aggressive speaker, depending on introversion/extroversion. This functional relationship is represented by the partial regression of the product term. At the same time, arousal can be regarded as an *effect* of yielding/resisting: yielding to an aggressive opponent reduces arousal, whereas resisting should increase arousal, because the subject risks (and expects) further attacks. Of course, such an interpretation waits for an additional experimental test, which has to show how arousal as measured by heart rate can be both the cause and the effect of yielding/resisting in a controversial discussion.

*Third experiment: emotional stability and extroversion (16PF).* In a third experiment to be reported here, Brandstätter and Cielecki (1985) operationalized the construct of reinforcement versus exchange orientation by a combination of the 16PF second-order factors extroversion (QV) and emotional stability (QII). No physiological measures were taken in this experiment. In the first session, twelve housewives, twenty to thirty-five years of age, answered an

attitude questionnaire dealing with forty different issues and completed a German version of Cattell's 16PF (Schneewind *et al.*, 1983). A week later, each subject took part in six brief discussions involving three different confederates with whom they discussed — via an intercom system — two of six different topics selected from the original attitude questionnaire. The discussions were chaired over the intercom by a female experimenter.

The confederates were instructed and trained to oppose the subject's view (known from her answers to the original questionnaire) by responding to her first argument in a neutral way, and then continuing, depending on the experimental condition, by reacting to her second argument in a verbally unfriendly, neutral or friendly manner. Without changing the discussion style, each confederate discussed two topics with the subject. The discussion of a topic ended with the subject's third argument. After each discussion the subject indicated her attitude on a graphic rating scale. Twenty to thirty days later, the subjects returned to the laboratory to complete once more the attitude and personality questionnaires. The short-term and long-term change scores constituted the dependent variables.

In general, the results supported the hypothesis: instances of short-term and long-term yielding to an aggressive speaker were high in emotionally unstable introverts and low in emotionally unstable extroverts (Figure 4.1(c)). In front of a friendly opponent there was a reversed pattern of influence: yielding to a friendly speaker (not shown in Figure 4.1(c)) was high in emotionally unstable extroverts and low in emotionally unstable introverts. Although this effect is not significant, the difference between reactions towards an aggressive opponent and reactions towards a friendly opponent is significant ( $p < 0.05$ ) and in line with the general reinforcement versus exchange model. No such effects were found in the subjects' responses to a neutral adversary.

Contrary to the second experiment, independence (QIII) had no effects similar to those of extroversion. Rather, emotionally unstable dependent subjects tended to yield to an emotional (unfriendly or friendly) style of argumentation, although this effect was not statistically significant. Therefore, extroversion (QV) and independence (QIII), both combined with emotional stability, seem to work in the same direction only when the adversary is unfriendly, but not when he/she is friendly. It may thus be argued that the product  $z$  (extroversion)  $\times$   $z$  (emotional stability) represents the general R-E-model, whereas  $z$  (independence)  $\times$   $z$  (emotional stability) represents an alternative model which might be called valence model of reinforcement versus exchange orientation (Brandstätter, 1985).

*Fourth experiment: sensitivity to social reinforcement and subject's*

rating of partner's dominance. The fourth experiment (Brandstätter *et al.*, 1986) tested this valence model of social reinforcement orientation versus social exchange orientation by reanalysing forty controversial discussions on matters of values between twenty pairs of subjects (all males or all females). Each pair had two discussions at a one-week interval. Since no confederates were used in this experiment, the exchange of arguments between the two subjects could develop in an unrestricted, natural way allowing the analysis of a genuine social interaction. In addition to the pre- and post-discussion ratings of their stance on the issue, subjects rated the convincingness of the partner's arguments during the discussion as well as immediately after the discussion via video play-back. They also judged the partner's friendliness and dominance during the play-back. From a questionnaire on sensitivity to, and dependence on, social reinforcement (praise and blame; see Perry, unpublished) an emotional excitability scale was derived. Perceiving the partner as dominant or submissive was operationalized as feeling weak or strong in front of the partner. The partner's unfriendliness/friendliness was also established in terms of the subject's impressions.

The model to be tested was:

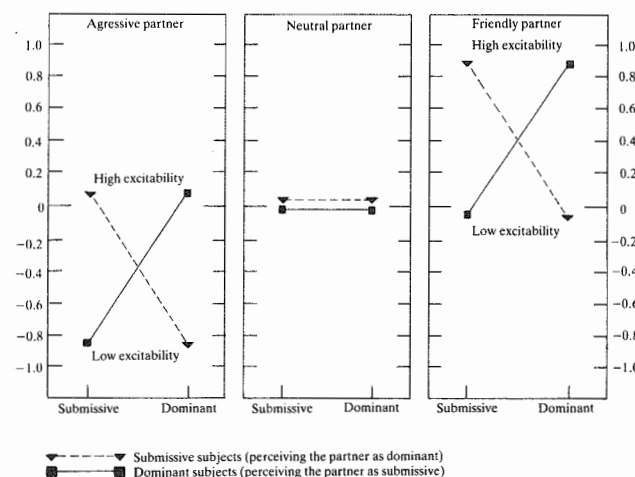
$$\hat{z}(\text{yielding}) = \beta z(\text{emotional excitability}) \times z(\text{partner's dominance}) \times |z(\text{partner's friendliness})|.$$

All component variables of the model were measured as z-scores (standard normal deviation scores) and averaged across the two discussions. Friendliness was entered into the model as an absolute variable (without sign) indicating the degree of the partner's emotionality (be it unfriendly or friendly).

The regression coefficient amounts to  $\beta = 0.40$ . None of the three components of the product term is correlated with the amount of yielding to the partner's arguments. However, by adding the partner's unfriendliness/friendliness (as perceived by the subject) to the regression equation a significant increase in the amount of variance accounted for is obtained.<sup>2</sup>

These results (see Figure 4.2) may be interpreted in the following way: Unlike emotionally stable subjects, emotionally excitable subjects yield to an emotional (unfriendly or friendly) argumentation when they perceive the opponent as dominant, and counteract an emotional influence attempt when they perceive the opponent as submissive. From this pattern of results it is concluded (though not yet empirically tested) that in emotionally excitable persons yielding to an unfriendly opponent is connected with fear, whereas yielding to a friendly opponent is connected with an emotion of gratitude.

FIGURE 4.2  
Influence of an aggressive, neutral and friendly discussion adversary as a function of the subject's dominance and emotional excitability (adapted from Brandstätter *et al.*, 1986)



On the other hand, counteracting an unfriendly opponent should go with anger, and resisting the influence attempt of a friendly opponent is supposed to go with self-compacency.

### General discussion

All four experiments clearly support the individual difference approach in predicting yielding to an aggressive style of argumentation: When emotionally aroused, submissive as well as introvert persons yield to an aggressive opponent more than to an emotionally neutral one (reinforcement orientation) whereas dominant as well as extrovert persons show less yielding to an aggressive than to a friendly opponent (exchange orientation). It has been assumed that reinforcement-oriented subjects respond to aggression with fear and try to avoid further attacks by yielding, whereas exchange-oriented subjects respond with anger and increase their resistance.

### Conceptualizing and measuring reinforcement versus exchange orientation

A series of experiments was started with the idea in mind that a subject's dominance/submissiveness would enable a prediction as to



whether he/she would respond with anger or fear to an aggressive opponent, and that arousal would indicate the intensity of anger or fear. First, in a reanalysis of an experiment conducted by Brandstätter and Klein-Moddenborg (1982; see Wissner, 1983, for a report on a subset of these data) the only way to measure the personality trait of dominance/submissiveness was to have judges rate the videotapes of the subjects' interaction behaviour during the initial (neutral) stage of discussion. Arousal was measured by the average amplitude of SCR (skin conductance response).

In the second experiment, explicitly designed to test the R-E-model, the 16PF second-order factor of independence (QIII in the version of Schneewind *et al.*, 1983) was chosen as a measure of dominance/submissiveness, partly to avoid the time-consuming and expensive behaviour-rating procedure of the first study and partly to discover whether the effect could be generalized to a different measure of dominance/submissiveness. Since Aries *et al.*, (1983) had shown that dominant behaviour in small groups can be predicted from questionnaire measures of dominance, it was expected that the effect of reinforcement versus exchange orientation would come up again notwithstanding the change in the operationalization of the personality trait. In the second experiment, heart-rate was substituted for the skin conductance response as a measure of arousal because of its higher reliability and easier applicability.

Originally, the aim was to collect physiological measures for the third experiment as well, but this had to be dropped owing to the complexity of the design. A substitute therefore had to be found for the state measure of arousal. It was decided to use the 16PF second-order factor QII (emotional stability), assuming that this scale would indicate a person's emotional excitability. Since extroversion (in combination with heart rate) had already proved in the second experiment to be a better operationalization of reinforcement versus exchange orientation than independence, this measure was used again in the third experiment.

At this stage, however, the original assumption was abandoned that the construct of general reinforcement versus exchange orientation ('general' in the sense of being 'equally valid for social reward and punishment') can be operationalized by combining measures of arousal or emotional excitability with measures of dominance or independence or, equally well, with measures of introversion/extroversion. It now seemed more likely that only introversion/extroversion (combined with emotional excitability) is related to the general R-E-model, whereas submissiveness/dominance (again in combination with emotional excitability) has its place in the valence model of reinforcement versus exchange orientation. Thus, within

the general R-E-model, introversion would imply focus on the self by stressing the reinforcement aspect of a social situation, while extroversion would imply focus on the other by stressing the exchange aspect of the social situation.

With increasing arousal, extroverts resist more an influence attempt by a hostile adversary (provoking anger) and yield more to a friendly adversary (provoking gratitude), whereas introverts yield more to a hostile adversary (provoking fear) than to a friendly adversary (provoking complacency).

#### *The valence model of reinforcement versus exchange orientation*

The valence R-E-model differentiates between persons according to their preference for 'weak' (unstable submissive) or 'strong' (unstable dominant) reactions. Weak would mean: yielding to an aggressive adversary in order to avoid further punishment (reinforcement orientation toward a hostile opponent), and yielding to a friendly adversary as an expression of gratitude (exchange orientation toward a friendly opponent). Least influential would be an emotionally neutral style of discussion. A strong reaction would imply angry resistance or even counteraction against the influence attempt of a hostile adversary (exchange orientation toward a hostile opponent), and complacent insistence on his/her standpoint while confronting a friendly opponent (reinforcement orientation toward a friendly opponent). An emotionally neutral opponent would exert more influence on unstable independent persons than would an unfriendly or friendly opponent.

Since feeling weak or strong (i.e., being controlled by the environment versus being in control of the environment) is a state which is a combined effect of personality traits (e.g., dominance, assertiveness, or competence) and of characteristics of the environment (e.g., the partner's different resources of power, the difficulty of the problem), power differences between the interaction partners could easily be implemented in such a model. The predictions on how power differences will modify the responses (emotions, attributions, attitude change) to a friendly or aggressive opponent are quite straightforward.

Speaking of arousal and dominance as predictors of individual differences in the reactions to a rewarding or punishing interaction partner, one is reminded of Mehrabian and Russell (1974) and Russell and Mehrabian (1977), who refer to the basic semantic dimensions of Osgood *et al.*, (1957) in describing a person's interaction with the environment in terms of valence, dominance and arousal.

For social situations at least, such a three-dimensional description



seems to be more suitable than a circumplex order of emotions along the dimensions of 'unpleasant-pleasant' and 'sleepy-arousing' (Russell and Pratt, 1980). One could say that a person's relation to his/her environment at any one moment can be abstractly represented as a vector in a three-dimensional space determined by a person's dispositions to preferences (evaluations), dominance and arousal. Alternatively, it could be represented in terms of the characteristics of the environmental stimulation which may elicit (a) positive or negative emotions, (b) the experience of strength or weakness in coping with the environment, and (c) more or less arousal. The construct of reinforcement versus exchange orientation in rewarding and punishing social encounters, as well as the proposed operationalizations (dominance or independence for the dominance dimension; skin conductance, heart-rate, or emotional stability for the arousal dimension; and the partner's hostility/friendliness for the valence dimension) fit well into the general framework provided by Mehrabian and Russell (1974).

*Combining the general R-E-model with the valence R-E-model.*

Since each person shows some combination of extroversion and independence, both models should be combined into one regression equation which should then be tested separately in each of the three conditions; i.e., for yielding (Y) to a hostile, neutral or friendly adversary. This equation takes the form of:

$$\hat{Y} = \beta_1 (\text{extroversion} \times \text{arousal}) + \beta_2 (\text{independence} \times \text{arousal})^2$$

In those experiments (the second and the third) where measures of independence as well as extroversion were available, a combination of the general R-E-model with the valence R-E-model resulted in better predictions than those achieved by each model individually.

A particularly interesting aspect of such a combined model is the fact that it allows for mixtures of emotions (of anger and fear, or of gratitude and complacency) which imply conflicting action impulses.

*Emotions as intervening variables.* Crucial for predicting individual differences in resisting/yielding to an aggressive adversary according to both the general and the valence R-E-model is the assumption that aggression provokes fear in introvert and submissive subjects and anger in extrovert and dominant subjects, in particular if arousal is high. Aroused introverts (as well as aroused submissive subjects) are supposed to yield, and aroused extroverts (as well as aroused dominant subjects) are supposed to resist the influence attempt *because* they are frightened or angered.

The experiments show that high arousal (as a state) or a strong

disposition to be aroused (i.e., low emotional stability as a trait) leads introverts to yield and extroverts to resist.<sup>3</sup> However, even if this assumption of emotions as intervening variables sounds reasonable, how can one assess whether the subjects did in fact experience fear and anger? As yet this does not seem feasible. Should subjects have been asked after the end of the discussion how they had felt during its course? Certainly, many subjects would have been reluctant to admit fear or anger. A better method would be to analyse the expression of emotions in face, voice and gestures. This would be a viable strategy since all discussions were recorded on audio- or videotapes, but as yet such a time-consuming analysis has not been undertaken. Only when these analyses are accomplished will it be possible to decide if fear and anger were the causes or at least concurrent processes of yielding and resisting. However, even without direct evidence for these emotions, which in the R-E-model have the status of intervening variables, the predictability of individual differences in reactions to an aggressive opponent may have some theoretical significance.

*Gray's model of differential conditionability.* Although the choice of extroversion and emotional stability as predictors in the general R-E-model was influenced by Gray's idea of differential conditionability by reward and punishment, there is an important difference between his model and the general R-E-model. This difference relates to the types of interactions between extroversion and neuroticism predicted by the two models.

According to Gray's model (1971) introverts are more responsive to punishment, while extroverts are more responsive to reward. From this it follows that introverts yield more both to an aggressive and to a friendly opponent than extroverts. The R-E-model on the other hand implies that highly aroused introverts are reinforcement oriented, whereas highly aroused extroverts are exchange oriented. This means that introverts yield more to an aggressive opponent but less to a friendly opponent than do extroverts. Furthermore, extroverts, confronted with an aggressive opponent, not only yield less than introverts, but counteract the opponent's influence attempt by moving away from his position (thus showing a kind of reaction); confronted with a friendly opponent, aroused extroverts do not show increased insistence on their original attitude, but yield in exchange for the other's friendliness.

It is only with respect to the differential reinforcement effects, not with respect to the differential exchange effects, that the valence R-E-model bears resemblance to Gray's model.

*Possible generalizations and restrictions of the R-E-models*

An important task for future research based on the R-E-models will be to examine whether findings obtained with regard to controversial discussions can be generalized to all those situations where a person has to face some kind of reproach or criticism. If this can be demonstrated, then the present approach offers a contribution towards a better understanding of the effects of social reward and punishment in general.

Thinking of possible generalizations of the reported functional relationships, one must be aware that in all four experiments the interaction partners had equal social status and power. Whether a person responds to aggression with fear or anger will not only depend on his/her anxiety or irritability, but also on structural characteristics of the interpersonal relationship, such as power differences. It has already been pointed out that power differences affect the state of dominance/submissiveness and are, therefore, dealt with by the valence R-E-model. In addition, it should be borne in mind that a person's emotions and action impulses may contradict the self concept (*Leitbild*). If this kind of conflict is pronounced it becomes increasingly difficult to predict which of the conflicting forces, namely involuntary impulses or voluntary self presentation, will prevail. A more comprehensive model of individual differences in responding to social reward and punishment will have to take into account the concept of the ideal self and the differences of power between the interaction partners.

In general, the experimental results reported here point to the importance of individual differences in responding to social reward and punishment. It may well be that some other research domains of social psychology and organizational psychology, in which inconsistent or contradictory experimental data are abundant (e.g., research on altruism, aggression, equity and some aspects of attribution), could profit from such an individual difference approach.

It is conceivable that the empirical evidence for many of the allegedly general social psychological theories rests on dubious aggregate measures across samples in which a majority of subjects share certain personality characteristics which are crucial for the applicability of the theory. A closer look at these individual differences may serve the dual task of restricting the domains of specific theories as well as contributing to the development of more comprehensive theories.

The present paper does not attempt an explanation of the individual differences in (general or valence-specific) reinforcement versus exchange orientation. It may well be that a person's reinforcement history can, at least in part, explain both reinforcement

and exchange orientation. It can be assumed that reinforcement-oriented subjects have been reinforced in the past for yielding to an aggressive opponent and resisting a friendly opponent, whereas exchange-oriented subjects have been reinforced for resisting both an aggressive and a friendly opponent. However, even if one accepted the behaviourist reinforcement theory as a very general and fundamental explanation of any social behaviour (as Homans, 1961, does), the proposed R-E-models allow predictions which could be derived from reinforcement theory only on the basis of detailed knowledge of both the biological basis of personality (Eysenck, 1967) and the person's reinforcement history.

**Notes**

1. One could object that a person's yielding to an aggressive opponent could also be explained by exchange theory (Mikula, 1985). So, we could assume that he/she accepts the partner's aggression as a justified response to his/her own preceding unfriendly behaviour towards the partner; or, that yielding is preferred in order to keep the expected overall and long-term balance of costs and rewards of the interaction at an optimum level. However, such a wide interpretation of the exchange principle, if at all reasonable, is in any case irrelevant in the context of these experiments. The original German name of the model is *Soziale Verstärkungsorientierung versus soziale Ausgleichsorientierung*. The term *Ausgleichsorientierung* has been translated into 'exchange orientation'. 'Reciprocity orientation' (Gouldner, 1960) would have been an alternative label as Mikula suggested (personal communication).

2. Figure 4.2 is based on the regression equation:

$$\hat{z}(\text{yielding}) = 0.46 z(\text{partner's dominance}) \times z(\text{subject's emotional stability}) \times z(\text{partner's friendliness}) + 0.40 z(\text{partner's friendliness})$$

whereby -1, 0, +1 are substituted for the respective z-scores of partner's friendliness (A, N, F), and -1 and +1 are substituted for the two levels of partner's dominance as well as the two levels of subject's emotional stability.

3. In the pattern of reactions to an aggressive opponent, submissive/dominant and introvert/extrovert subjects with low activation or low emotional excitability show the mirror-image of the subjects with high activation or high emotional excitability. Our expectation was that low activation or low emotional excitability would result in a levelling of the differences between submissive and dominant or introvert and extrovert subjects respectively, not in a reversal of the differences. As yet no convincing explanation for this specific pattern of interaction is available.

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