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Strategies for the reduction of aggression

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2015-02-13
http://hdl.handle.net/10539/16996

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Table 3 - Summary table of the analysis of covariance (raw data)

Source of variation	Sum of squares	df	Mean Square	F	Significance of F
Covariates	114,811	3	38,270	3,302	0,025
Principled Morality (P)	105,328	1	105,328	9,088	0,003
Depression (D)	1,528	1	1,525	0,132	0,717
Psychopathic deviate (Pd)	0,367	1	0,367	0,032	0,859
Main Effects	89,524	3	29,841	2,575	0,060
Strategy	3,480	1	3,480	0,300	0,585
Group Pressure	0,527	1	0,527	0,045	0,832
Interpersonal Contact (IC)	83,821	1	83,821	7,232	0,009
2-way Interactions	4,707	3	1,569	0,135	0,939
Strategy X Group Pressure	4,226	1	4,226	0,365	0,548
Strategy X I.C.	0,006	1	0,006	0,001	0,982
Group Pressure X I.C.	0,499	1	0,499	0,043	0,836
3-way interaction	24,516	1	24,516	2,115	0,150

Since Scheffé's test corrected for the skewness of the data by using a logarithmic transformation, it seemed likely that the raw scores might be analysed more effectively if transformed using this transformation.

The suitability of the logarithmic transformation for the data of the present study was further evaluated by means of the range statistic as advocated by Winer (op.cit., p.401). The logarithmic transformation proved more effective than either the square root or reciprocal transformation in making the ranges more uniform.

The Bartlett-Box test for the transformed data yielded an F value of 1,164 (p = 0,32), i.e., the variances of the transformed scores were homogeneous.

An analysis of covariance was then performed on the transformed data.

Table 4 - Summary table of the analysis of covariance (log-transformed data)

Source of variation	Sum of squares	df	Mean square	F	Significance of F
Covariates	10,903	3	3,634	5,491	0,002
Principled Morality (P)	9,576	1	9,576	14,468	0,000
Psychopathic deviate (Pd)	0,045	1	0,045	0,068	0,795
Depression (D)	0,096	1	0,096	0,145	0,704
Main Effects	6,229	3	2,076	3,137	0,030
Strategy	0,052	1	0,052	0,079	0,780
Group Pressure	0,575	1	0,575	0,868	0,354
Interpersonal Contact (I.C.)	5,514	1	5,514	8,331	0,005
2-way Interactions	0,951	3	0,317	0,479	0,698
Strategy X Group Pressure	0,775	1	0,775	1,171	0,283
Strategy X I.C.	0,007	1	0,007	0,010	0,919
Group Pressure X I.C.	0,166	1	1,166	0,251	0,618
3-way Interactions	1,791	1	1,791	2,706	0,104

As can be seen from Table 4, interpersonal contact is again the only main effect which is significant. An examination of the means and standard deviations (cf. Table 1) reveals that the conditions in which interpersonal contact was present led to less aggression than the conditions in which there was no interpersonal contact.

The high significance level of the covariate Principled Morality, in addition to its greater Pearson product-moment correlation with aggressive responses than either that of depression or psychopathic deviate, led the experimenter to investigate this covariate further in a secondary analysis.

Table 5 - Correlation of the covariates with the dependent variable

	Principled Morality (P)	Depression (D)	Psychopathic Deviate (Pd)
No of aggressive responses	-0,32	0,08	0,05

8.2 Secondary analysis

Since principled morality is a continuous variable, an analysis of variance cannot be used to test its significance as a main effect. A multiple regression analysis was therefore used. The following independent variables were examined: strategy, group pressure, interpersonal contact and principled morality. These were entered simultaneously on the first step of the analysis. All possible higher order interactions were included on the subsequent step. Thus the full (saturated) model described by Kim and Kohout (1975, p.37) was used.

It should be realised at the outset that the number of observations per group should ideally be larger, and that the inclusion of all higher order interactions may introduce the problem of multicollinearity which can obscure the significance of certain variables. This analysis, therefore, should be regarded as an exploratory one which may provide indications for future research.

The full (saturated) multiple regression model is significant at the ,05 level (cf. Appendix 5). The interactions do not cause a significant increase in the value of R^{2*} after the main effects have been accounted for. The important contributors

*R^2 is the variance accounted for by the independent variables.

to the significance of the equation thus lie amongst the main effects. F values for each main effect are shown in Table 6.

Table 6 - Multiple regression (main variables)

Variable	Beta	F	Significance of F
Strategy	-,0273	0,079	p > ,05
Group Pressure	-,0735	0,587	p > ,05
Interpersonal Contact	-,2877	8,506	p < ,05
Principled Morality	-,3306	10,899	p < ,05

However, once all the interactions were added only principled morality was significant at the 0,05 level. Thus it may be concluded that principled morality was the strongest variable in the present study. The negative value of the correlation between principled morality and number of aggressive responses indicates that individuals who obtain high scores on the test of principled morality are less aggressive than those with lower scores.

It would seem from this analysis that the significance of the variable interpersonal contact needs to be interpreted with caution. In a more adequately controlled study third-order interactions may be significant, seeing they neared the 0,1 level of significance in the analysis of covariance in the present study. Furthermore, lack of sufficient number of subjects and the multicollinearity caused by the inclusion of all interactions might have swamped the effects of this variable.

Since the analysis of covariance on both the transformed and untransformed data produced similar results, the F test has proved to be robust. Scheffé's test also seems to offer an adequate test of homogeneity of variance with skewed distributions.

8.3 Summary of the results

8.3.1 The primary analysis

(1) The pacifist and activist strategies did not significantly differ in their effects on the aggressive behaviour of subjects.

(2) The hypothesis that group pressure would lead to significantly more aggressive behaviour than no group pressure was not supported.

(3) The hypothesis that interpersonal contact with the opponent would lead to less aggressive behaviour than the lack of such contact was sustained.

8.3.2 The secondary analysis

(1) The principled morality score (P) was a significant predictor of the subjects' aggressive behaviour. Individuals who obtained high Principled Morality (P) scores were significantly less aggressive than low scorers.

CHAPTER 9 - DISCUSSION

9.1 The primary analysis

9.1.1 Activist/pacifist strategies

From the summary of the results provided in the previous chapter it is evident that the activist and pacifist strategies did not differ significantly in their effects on aggressive behaviour. The positively skewed distribution of the data indicates that the number of aggressive responses given by the subjects was low overall.

Since the activist strategy was modelled on the 'shocking pacifist' of Vincent and Tindell (1969) and the pacifist on the pacifist of Shure et al. (1965), the results contradict the conclusion of Vincent and Tindell that their 'shocking pacifist' strategy leads to more aggression than the pacifist strategy of Shure et al. However, not much reliance can be placed on the conclusion of Vincent and Tindell since it was based on a post hoc comparison of their results with those of Shure et al. (op.cit.).

There were a number of extraneous factors in both of the above studies which could have accounted for the greater aggressive behaviour of their subjects. These will be discussed briefly here.

In the study of Shure et al. (op.cit.) the subjects were under group pressure to play aggressively. A subsequent study by Meeker and Shure (1969) showed that such group pressure led to significantly more aggressive play than when no group pressure was applied. The non-significant group pressure effect obtained in the present study was probably due to specific features of the group pressure manipulation which will be discussed below. Furthermore, in Shure et al.'s initial experiment, the pacifist's intent was not communicated to the subjects. A second investigation showed that such communication would

lead to significantly more co-operative behaviour. This was confirmed by Meeker and Shure (1969). The aggressive mode of play observed by Shure et al. (1965) could, therefore, have been due to this lack of communication. Similarly, the failure to communicate the rationale underlying the 'shocking pacifist' strategy could have led to the aggressive play reported by Vincent and Tindell (op.cit.). Research on Osgood's "GRIT" strategy (cf.. Linkskold & Collins, 1978) has shown the importance of communication in increasing co-operation when an activist or 'tit for tat' strategy is used. In the present study, the rationale underlying the pacifist and activist strategies was clearly communicated to the subjects. Group pressure was, furthermore, examined as an independent variable. Since the effect of the activist and pacifist strategies on behaviour were not contaminated by the abovementioned extraneous variables, it is not surprising that the overall aggressive behaviour of the subjects was less than that reported by Shure et al.(op.cit.) and Vincent and Tindell (op.cit.). It is possible, therefore, that the present study provides the truest reflection of the effects of the two strategies on aggression to date.

The bulk of psychological research (cf. Feschbach's summary of key studies, 1970, pp.190-192) indicates that females are less aggressive than males. Since all the subjects in the present study were female, the relative lack of aggressive behaviour of the subjects could have been influenced by this factor. Female subjects were used for purely practical reasons. Research has shown that male and female subjects react differently to a female experimenter (Deutsch, 1973, p.291). The sex of the subjects had therefore, to be controlled for in the present study. The relatively complex design made the inclusion of sex as an additional variable impractical. Female subjects were chosen because there are more female psychology students than males and a more truly random sample of female students could therefore

be obtained. Furthermore, it was easier for the experimenter and the confederate to establish rapport with subjects of the same sex. Shure et al. (op.cit.) do not specify whether their subjects were male or female, but one surmises from their use of the pronouns "he" and "his" that their subjects were male. Terhune (1970, p.213) and Rubin and Brown (1975, pp.170-171), in a review of the contradictory literature on the behaviour of the sexes in gaming studies, conclude that females are more co-operative than males when the opponent is co-operative at the outset. Since in the Shure et al. (op.cit.) study the pacifist is initially co-operative one would expect their subjects (presumably male) to be more aggressive than the females in the present study. Future research on activist and pacifist strategies should focus on the effect of the two strategies and the communication of the rationale underlying them on the aggressive behaviour of both sexes. Research by Ingram and Berger (1977) suggests that females may differ in their co-operativeness depending on their sex role orientation, viz. traditional vs career oriented. This is a factor which should also be considered in future investigations.

Terhune (op.cit., p.214) points out that females have more difficulty than males in understanding the strategic aspects of gaming situations. This was very apparent in the present study. The author noted a wide variation in the speed with which the subjects grasped the essential features of the gaming situation. Despite the provision of four trial games, many subjects were still unsure of the gaming alternatives (as revealed by post experimental questionnaires). Comments from co-operative subjects that they were unsure and "took the easy way out" by co-operating suggests that the lack of aggression may have been a result of subjects not understanding the game fully.

Shure et al. (op.cit.) and Vincent and Tindell (op.cit.)do not report

such problems. This may be because they used mainly male subjects and/or because Americans as a group have more experience with sophisticated push-button electronic devices. Thus South African subjects may need longer exposure to the gaming situation before the effects of any given strategy on behaviour can be measured.

While the use of a confederate to operate the control board added to the realism of the gaming situation, certain inexactitudes in her counterplay could have blurred any differential effects which the strategies could have had. Shure et al. (op.cit.)overcame this problem by having subjects unknowingly play against a computer. This solution, however, considerably reduces the realism of the experiment and one wonders how much the mere formality of such a situation influences the subjects. A compromise solution would be to use a confederate who would sit in the partition opposite the subject and send messages while the computer controlled the game playing.

In conclusion, it is apparent that methodological inadequacies in both the present and previous studies make it difficult to state at this stage, whether the activist and pacifist strategies have different effects on aggressive behaviour. It appears that they do not necessarily lead to an escalation of aggression if the reasons behind the actions are clearly explained and if characteristics such as the sex of the target individual are taken into consideration.

9.1.2 Interpersonal contact

Subjects in the interpersonal contact condition were significantly less aggressive than subjects in the no interpersonal contact condition. This accords with the findings of most social psychologists that anonymity with regard to the victim of one's attack leads to more aggressive behaviour (Zimbardo, 1959; Milgram, 1965; O'Neil & McDonald, 1976). Since there is no

contact between players in most gaming studies, the competitive behaviour reported may have been due to the lack of such contact. Besides serving to reduce the subject's feeling of anonymity, the meeting with the confederate served to make the experiment more realistic. The few subjects who voiced suspicion as to whether they were playing against another player, for example, were in the no contact condition.

The interpersonal contact in the present study was both face to face and positive in nature. The importance of the latter feature of the contact manipulation was highlighted by a comparison of the subjects' views of their opponents <u>after playing the game</u>.* Over 80% of the subjects in the interpersonal contact condition described their opponents positively, for e.g., fair, friendly and considerate. In the no contact condition, however, there was a far greater variation in the responses for e.g., stupid, stubborn, fair and unfair across both the pacifist and activist conditions. Only 50% of these subjects described their opponents positively. The positive prior interaction thus seems to have given the subjects a positive bias towards the confederate which influenced their interpretation of subsequent interactions. This finding is similar to that of Kelley (1950), i.e. the description of a stimulus person as warm or cold affected the subject's subsequent evaluation of that person.

There is some indication that contact does not have to be face to face for there to be a reduction in aggressive or competitive game-playing behaviour (Marlowe, Gergen and Doob, 1967; McClintock and McNeel, 1966, p.182). Furthermore, apparently even indirect forms of contact (e.g. tape-recording and video-recording) lead to similar levels of attraction as does face to face contact (Byrne and Clore, 1966). Future research could, therefore, investigate what forms of indirect contact are important in reducing aggression

* The subjects' impressions of their opponents were rated as positive, neutral or negative by a graduate who was unaware of the experimenter's hypothesis.

and how these forms compare with face to face contact. This could lead to a more refined understanding of the role played by anonymity in increasing aggression.

One further factor remains to be discussed. This was the observation by the experimenter that subjects seemed to react in two basic ways when meeting their opponent. Either they were friendly and talkative or they blushed when introduced and offered very little spontaneous conversation. Furthermore, the latter tended to comment that they would have preferred not to have met their opponent. Since two of the unusually aggressive subjects fell into the latter category, and since research shows that subjects with low self-esteem are more competitive in games (Williams, Steele and Tedeschi, 1969; Facheux and Moscovici, 1968), some attempts should be made to control for this variable in future studies. Since depressives are characterised by low self-esteem (Storr, 1979, p.96) one might reasonably have expected that the use of the depressive (D) scale as a covariate would have provided some control over this factor. However, the small standard deviation of the depressive scores indicates that the depressive scale of the MMPI may only be sensitive to gross differences in self esteem and is thus not suitable for use in a non-clinical population. Another variable which may be related to the differences noted by the experimenter is introversion/extroversion. The author is unaware of any studies using this variable in a gaming context. This is probably due to the dearth of research allowing interpersonal contact between players.

In sum, from the primary statistical analysis it is apparent that the presence of interpersonal contact with the opponent led to a decrease in aggressive behaviour. However, this conclusion needs to be tempered with caution in the light of the secondary statistical analysis. Principled

Morality emerges as the most powerful predictor of behaviour. Interpersonal contact falls into insignificance when all possible interactions are included in the analysis. Since the number of subjects was, from a statistical standpoint, insufficient to really provide an adequate analysis of four main variables and their interactions, further investigation into the comparative and interactional effects of interpersonal contact and principled morality is needed.

9.1.3 Group pressure

Group pressure to play aggressively did not lead to an increase in the subject's aggressive play. This finding is surprising as it contradicts a large body of research in social psychology (Milgram, 1964; Zimbardo, 1969; Palontzian, 1972; Mathes and Kahn, 1975; Borden and Taylor, 1973). One possible reason for this anomalous finding was the fact that the subjects were physically separated from each other during the game. The group pressure manipulation was therefore, solely dependent on messages 'sent' by the subjects to each other. Research has shown that individuals who are physically separated from other members of a group and whose actions are, therefore, not visible to the others are less aggressive than individuals whose actions can be observed by fellow group members (Zabrack and Miller, 1972). Meeker and Shure (1969) however, found a significant group pressure effect even though the members of their groups were not visible to each other. One aspect of the Meeker and Shure study which could account for this difference was the provision of pressure messages after the first, second and fourth games in the their study. In the present study, pressure messages were only sent before the first trial. Since a number of the subjects reported that they completely forgot about these once the game began, it

is apparent that they needed reminders which were provided by the additional messages in the study of Meeker and Shure (op.cit.). Furthermore, when the subjects received the messages, they were still assimilating information on the gaming procedure and were thus not maximally receptive to the group pressure manipulation. Interestingly, on two occasions when the experimenter forgot to give the friends' messages to the subjects before the first game and did so later, both subjects became more aggressive after receiving the messages. (These subjects were dropped from the analysis of the data.) Thus timing of the messages, together with an insufficient number sent, seems to have contributed towards the ineffectiveness of the group pressure manipulation in the present study.

The use of groups composed of friends introduced unanticipated problems into the study. Friends may feel less obliged to conform to each other's demands. Dittes and Kelley (1956) found that individuals who were sure of their acceptance by a group conformed less to group demands than individuals less sure of their acceptance. Since groups of friends are more sure of their acceptability to each other than strangers they may feel less need to conform. Furthermore, groups of friends have certain expectations of each other. In the present study, subjects often expressed surprise that a particular friend had sent an aggressive message. This disconfirmation of their expectation must have caused considerable cognitive dissonance (cf. Festinger, 1957) and reduced the impact of the group pressure manipulation.

A further consideration when using naturally occurring groups is the salience of the experimental task to the group members. The group goal of a group of friends is essentially affiliative rather than achievement oriented. While care was taken to motivate subjects to play together as a group to win the prize money, it is possible that such a goal was irrelevant to the group.

The friends of the selected subject probably viewed their agreement to participate in the experiment as more important than winning games or money.

In conclusion, it is apparent that the non-significant effect of group pressure could be accounted for by extraneous factors which rendered the group pressure manipulation ineffective. The use of naturally occurring groups of friends, while making the experiment more realistic, introduces a number of problems which need to be carefully considered when such groups are introduced into an experimental setting.

9.2 The secondary analysis of the data

9.2.1 The depression (D) and psychopathic deviate (Pd) scores

As mentioned in the previous chapter, the low correlations of the D and Pd scores with the dependent variable, and the small standard deviation of the scores, indicated that further investigation of these would not be worthwhile. It is perhaps not surprising that the standard deviations were small, considering that the items, which were originally standardised on clinical samples, were administered to a non-clinical sample. On the other hand it is also possible that the scales of the MMPI are poor measuring instruments, since there is a considerable body of research which questions the psychometric adequacy of the MMPI (Comrey, 1958; Horn, Wanberg & Appel, 1973; Lingoes, 1960). Comrey (op.cit.) and Horn et al (op.cit.) point out that the scales lack internal consistency. Comrey has identified eight factors in the Pd scale alone. Since the scale is composed of only 50 items, it is apparent that none of the factors is adequately measured. Nine items load on factors that are clearly related to psychopathy, viz. psychopathic personality, antisocial behaviour and history of delinquency. The factor on which the greatest number of items load is a neuroticism or general adjustment factor. From this it is evident that the scale does not provide a clearer

picture of psychopathy than that which is obvious from a case history.

The most important factor in the D scale was Neuroticism (Comrey, op.cit.). The question thus arises as to whether the MMPI is anything more than a measure of general adjustment. Horn et al. (op.cit.) identified six main factors which seem to account for all the covariance amongst the MMPI scales. Not surprisingly, one of the main factors was anxiety vs ego strength. Horn et al. conclude that

> Yet one can seriously question the implicit assumption that the scales of this device are measuring unitary psychological attributes which can be expected to enter into meaningful and replicable lawful relationships with other variables. (pp.131-132)

Future researchers intending to use the scales of the MMPI would do well to heed these words.

9.2.2 Principled morality (P)

The principled morality score seems to be, from the secondary analysis of the data, a promising predictor of behaviour in a gaming situation where ethical implications are inherent in the various options open to the subject. However, a number of features of the present study could have attenuated the correlation ($r = -,39$) between P and the dependent variable.

First, the subjects, being university students, were on average of middle to upper middle class socio-economic status and were therefore not in need of the monetary prize that was made contingent upon aggressive behaviour. Thus the impact of the moral dilemma of the game was lessened. Second, some subjects played co-operatively because they did not fully understand the game and co-operation seemed "an easy way out". Since Rest's test correlates positively with IQ, and since individuals with lower IQs may have found the game difficult to comprehend, low P scorers may have been co-operative for reasons other than moral ones.

A related factor which must be considered is that the subjects have above average intelligence. Thus the range of IQs is restricted. This lowers the correlation which one could expect to obtain between P and the dependent variable.

The restricted IQ range and the positive correlation of P with IQ may also account for the skewness of the data toward low aggression scores.

Interestingly, all of the subjects showed considerable variability (over 2 points difference at least) in their P scores on different dilemmas. This suggests that none of the subjects had fully obtained the level of principled moral reasoning. Furthermore, a consistently high level of morality is, according to Kohlberg and Turiel (1973), attained by few individuals. Thus it would seem that an index of morality which includes lower levels of moral reasoning would be a more accurate predictor of behaviour.

The relatively small sample size used in the present study made an adequate assessment of the interaction of principled morality with the other variables impractical. One would expect, in accordance with Kohlberg's theory, that individuals with high P scores would be less affected by situational manipulations such as interpersonal contact and group pressure.

9.2.3 Interpersonal contact

It is not clear why interpersonal contact became insignificant when placed in a regression analysis together with second and third order interactions. Possibly the inclusion of all interactional terms lowered the power of the F test due to the decreased degrees of freedom of the error term. A larger sample is needed in order to evaluate the relative contribution of main effects and their interactions.

Finally, the proportion of variance accounted for in the present study was 31,78%. Fifteen predictors were included in this saturated regression

analysis. There is evidently a large amount of variance still unaccounted for. A major source of this remaining variability may have been the idiosyncracies of the apparatus used and/or social features of the experiment which were not controlled for, for example, the effects of the experimenter on the subjects. More effective personality measures of extroversion, neuroticism, psychopathy and depression are also needed.

CHAPTER 10 - CONCLUSION

10.1 Theoretical perspectives

10.1.1 Psychoanalytic theory

Since the adequacy of the Pd and D scales of the MMPI in determining depressive and psychopathic tendencies amongst non-clinical individuals is dubious (as discussed in the previous chapter), no definitive statement about the adequacy of psychoanalytic theory can be made from the present results. It is probable that if a more sensitive measure of depression were used psychoanalytic predictions could be more adequately tested. As was noted in Chapter 4, Rado (1924) and Klein (1934) point out that predepressives are prone to sudden outbursts of aggression. It is thus possible that the relationship between depression and the internal direction of aggression will not be as pronounced amongst normals as amongst a clinically depressed population. A few of the subjects seemed to be suffering from low self esteem, and according to Jacobson (1971) they should be prone to depression. These subjects were more aggressive than the others, and thus depressives may not invariably be less outwardly aggressive than normals.

With regard to psychopathy, Eissler (1948) noted that it is only delinquents who predominantly externalise their aggression. Other individuals, for example, neurotics tend to turn their aggression both inwards and outwards. Once again it is possible that the traditional psychoanalytic conception of psychopathy/delinquency would have to be modified when considering non-clinical individuals with psychopathic tendencies. In fact, it is possible that in normal populations it may be more fruitful to examine concepts such as ego strength and self-esteem rather than evidence of pathology. Tests reflecting an individual's

characteristic response style in aggression arousing situations, for example, Rosenzweig's picture frustration test, may prove more valuable than a measure of depressive and psychopathic tendencies. It would also be theoretically and clinically informative to examine the depressive and psychopathic tendencies of those who are predominantly intropunitive and extrapunitive respectively.

In sum, it is possible that in non-clinical samples the aggressive behaviour of depressives and psychopaths may not be as predictable as traditional psychoanalytic theory suggests. This hypothesis requires further empirical investigation before any definitive statement can be made. Psychoanalytic theory which focuses on concepts such as ego strength and self esteem should also be considered in future research using non-clinical subjects.

10.1.2 Cognitive developmental theory of morality

The fact that Rest's principled morality score (P) proved to be a significant predictor of the subject's behaviour in a gaming situation with moral implications supports Kohlberg's (1973) contention that individuals who have achieved some degree of principled moral reasoning will also act in a morally principled manner.

Kohlberg's claim that few individuals ever become totally principled in their moral reasoning was supported by the observation that subjects varied considerably in the amount of principled reasoning which they showed on the different dilemmas.

Since P only correlated -,302 with the number of aggressive responses, it is evident that the other stages of moral reasoning also favoured by the subjects could have exerted an influence on their thinking and subsequent behaviour.

Peters (1973) has pointed out that Kohlberg's theory neglects emotional factors which may influence an individual's behaviour. Such emotive factors may have been operating in the present study. Unfortunately, the inadequacy of the MMPI as a measuring instrument for use on non-clinical subjects prevented the author of the present study from evaluating the importance of emotional factors. Podd's (1971) examination of the relationship between ego identity and moral judgement, and Kohlberg's (1973) consideration of Erikson's stages of man in relation to moral development, indicates that this lack in the theory has in fact been recognised. Theory and research attempting to relate moral development with personality and emotive factors is, however, still in its infancy.

A final factor which may have decreased the correlation of P with aggressive behaviour is the effect of situational and social factors on the subjects. Kohlberg (1973) has suggested that truly principled subjects will not be influenced by situational factors. None of the subjects in the present study had reached a purely principled level of moral reasoning, however, and thus situational pressures are likely to have been influential. Future research, using a large number of subjects, is needed to allow the interactions between level of moral development and social factors to be adequately assessed.

Thus, while Kohlberg's conception of principled morality has certain predictive powers regarding the behaviour of principled individuals, a more complex conception of morality is required.

The most exciting consequence of the relative success of P is that it indicates that an individual's morality is not completely situationally determined, as the research of Hartshorne, May and Shuttlework (1930), cited in Kohlberg (1973), seemed to indicate.

10.1.3 Attribution theory

Attribution theory did not form part of the theoretical focus of the present study because, as Kelley and Michela (1980) note, the theory is "... piecemeal and greatly in need of synthesis"(p.494). However, the present study indicated that the attributions the subjects made with regard to their opponents may have played an important role in determining their subsequent aggressive behaviour.

Subjects who experienced prior interaction with their opponent gave more positive evaluations of their opponent after playing the game than did subjects who never met their opponents (x^2 = 6,93, df = 2, p < ,05). From this it seems likely that the positive prior interaction led the subjects to regard the messages and moves of their opponents during the game in a positive light. Since they were also less aggressive than subjects in the no interpersonal contact condition it is possible that the attributions they made regarding their opponents may have mediated their subsequent action towards them. Similarly, the greater aggression shown by subjects in the no interpersonal contact condition could have been a result of the negative attributions made regarding their opponents. It is difficult to assess from the data of the present study whether the attributions were an important causal determinant of behaviour, since the attributions were obtained from post-experimental questionnaires. Further research investigating the importance of attributions in mediating aggressive behaviour is obviously necessary.

10.2 Practical implications of the present study

The significant reduction of aggression when the confederate made positive interpersonal contact with the subject supports the generally accepted stress on the importance of a good relationship between therapist and patient (Rogers, 1951; 1961; Strupp, 1971).

It was observed that a number of subjects reacted negatively to the confederate, possibly because of their more introverted personalities. In psychotherapy, a therapist should be sensitive to the different reactions and needs of the client and should be able to vary her approach accordingly.

Since positive interpersonal contact reduced aggression in the present study, it is possible that the running of groups which promote the development of positive, close relationships amongst young people may be important in reducing the incidence of delinquent behaviour.

Glueck and Glueck (1950) report that many delinquents have a poor relationship with their parents. Therapy for delinquents should, therefore, focus on improving the relationship between the parents and the child. Parent training groups and family therapy, which aim at improving the communication patterns and relationships between family members, may therefore be relevant in this respect.

With regard to moral reasoning, Kohlberg has started groups in which children discuss moral dilemmas and are exposed to a level of moral reasoning slightly higher than their own. Kohlberg hopes that the children will eventually attain principled moral reasoning by gradually assimilating and accommodating progressively higher stages.

Therapy with aggressive individuals could also focus on developing their cognitive moral reasoning skills. Simon (1974) and Simon and Olds (1977) have developed techniques for helping indivuduals discover what their values (both moral and other) are. Their works provide a set of programmes and techniques which may be valuable in the treatment of aggressive individuals.

The non-significant results obtained with regard to the activist/pacifist strategies and group pressure make it difficult to comment on any practical implications which these variables may have.

10.3 Suggestions for future research

The adequacy of the laboratory experiment as a method of testing hypotheses relevant to social psychology has been seriously questioned. Orne (1962) has pointed out that in the experimental situation the subject's behaviour is affected not only by the experimental variables but by the perceived demand characteristics of the experimental situation. In fact, Orne reports that the subject's perception of the purpose of the experiment may be a better predictor of his behaviour than the experimental variables. Orne (op.cit.) has suggested a number of ways of determining what the particular demand characteristics of any experiment are. Since controlling for the demand characteristics of an experimental situation entails doubling the number of groups used and since the present study was to a large extent exploratory it would have been impractical to include such controls. Future experimenters would, however, do well to control for these factors if they wish to increase "... the reproducibility and ecological validity" of their work (Orne, 1962, p.776).

One of the chief values of the laboratory experiment is that it enables one to investigate interactions between variables. Since it is probable that a factor such as the type of strategy used will have different effects on individuals with different personality traits or who are at different levels of moral development, future research on activist and pacifist strategies should focus on such interactions rather than on the strategies per se. The future researcher should, therefore, be prepared to use a large number of subjects in order to investigate such interactions adequately. The interaction between an individual's level of morality and the types of situational pressures placed upon him provides a rich source of hypotheses (cf. Kohlberg, 1971) for future research.

The inclusion of groups of friends in an artificial laboratory situation seems to have limited usefulness, unless the experimenter's knowledge of the goals and values important to the groups is improved by means of questionnaires or interviews.

With regard to methodology per se, it appears that the use of a computer to control game moves is preferable to the use of a confederate. As was suggested in the previous chapter, a confederate should sit on one side of the gaming apparatus and should send messages to the subject in order to give the experiment a semblance of realism. Subjects must be given a sufficient number of practice trials to accustom them to the game moves and the gaming apparatus.

To summarise, the present study has demonstrated that both situational and intrapersonal factors influence an individual's aggressive behaviour in a gaming situation. More refined measures of psychopathy and depression are needed in order to assess their influence on aggressive behaviour. Groups of friends and other naturally occurring groups should only be brought into a laboratory situation if the experimenter has a detailed knowledge of the goals important to the group. The pacifist and activist strategies require further investigation in a laboratory situation to determine whether they do have different effects on aggression. Finally, the author is of the opinion that an investigation of the interactions of these strategies with different personality and situational variables could be a fruitful area for future research.

APPENDIX 1 - MESSAGES AVAILABLE FOR SUBJECTS TO SEND TO THEIR OPPONENTS

1. You may have the first move.
2. I believe in fair play - we should alternate in winning games.
3a. If you are unfair I will not use my cancel or retaliate switches as they cause physical discomfort.
3b. If you are unfair I will use my cancel or retaliate switches regardless of physical discomfort.
4a. Play unfairly and I will resist your moves by turning my lights on - I will not use my cancel or retaliate switches.
4b. Play unfairly and I will not just resist your moves by turning my lights on - I will use my cancel or retaliate switches.
5. The cancel and retaliate switches allow us to subject each other to unnecessary physical discomfort.
6. I will move first.
7. I intend to win as many points as I can even if I have to use my cancel switch.
8. Do not worry about the loud noise.

APPENDIX 2 - MESSAGES AVAILABLE FOR SUBJECTS TO SEND TO THEIR FRIENDS

A. Avoid losing points by avoiding deadlocks.

B. Don't use the cancel or retaliate switches.

C. Make your own decisions.

D. Use the retaliate switch if your opponent uses her cancel.

E. Win as many points as you can by using the cancel switch.

F. Use the retaliate switch but don't use the cancel switch.

G. Try to equal the other subject's score.

APPENDIX 3 - BIOGRAPHICAL QUESTIONNAIRE

Biographical data

Subject number :

Age :

Year of study :

Major subjects :

Submajors :

APPENDIX 4 - POST EXPERIMENTAL QUESTIONNAIRE

Give your impressions of your opponent:

What do you think her impressions of you are ?

What factors could have influenced the way you played the game ?

What do you think the aim of the research is ?

Have you heard or read about similar studies ?

What criticisms do you have of this research ?

APPENDIX 5 - MULTIPLE REGRESSION (SATURATED MODEL)

			DF	Mean Square	F
Multiple R	0,564	Regression	15	1,50	2,24
R Square	0,318	Residual	72	,67	
				Significance of F	p<,05

Variables in the equation

Variable	Beta	F	Significance of F
X_1	0,010	0,116	N.S.
X_2	-0,202	0,476	N.S.
X_3	-0,078	0,071	N.S.
X_8	-0,322	9,206	p<,01
X_4	0,290	0,985	N.S.
X_5	0,065	0,050	N.S.
X_6	-0,034	0,014	N.S.
X_{17}	-0,124	0,181	N.S.
X_{18}	0,087	0,089	N.S.
X_{19}	-0,230	0,628	N.S.
X_7	-0,039	0,018	N.S.
X_{66}	-0,450	2,384	N.S.
X_{67}	-0,076	0,068	N.S.
X_{68}	-0,106	0,132	N.S.
X_{69}	0,244	0,702	N.S.

X_1 = Strategy

X_2 = Group pressure

X_3 = Interpersonal Contact

X_8 = Principled Morality

$X_4 = X_1 * X_2$

$X_5 = X_1 * X_3$

$X_6 = X_2 * X_3$

$X_{17} = X_8 * X_1$

$X_{18} = X_8 * X_2$

$X_{19} = X_8 * X_3$

$X_7 = X_1 * X_2 * X_3$

$X_{66} = X_1 * X_2 * X_8$

$X_{67} = X_1 * X_3 * X_8$

$X_{69} = X_1 * X_3 * X_8$

$X_{69} = X_1 * X_2 * X_3 * X_8$

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Name of thesis Strategies for the reduction of aggression 1981

PUBLISHER:
University of the Witwatersrand, Johannesburg
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