JYVÄSKYLÄ STUDIES IN EDUCATION, PSYCHOLOGY AND SOCIAL RESEARCH 19

A DESCRIPTIVE MODEL OF AGGRESSION AND NONAGGRESSION WITH APPLICATIONS TO CHILDREN'S BEHAVIOUR

LEA PITKÄNEN

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ACADEMIC DISSERTATION TO BE PUBLICLY DISCUSSED,
BY PERMISSION OF THE FACULTY OF EDUCATIONAL AND SOCIAL
SCIENCES IN THE UNIVERSITY OF JYVÄSKYLÄ, IN
AUDITORIUM II—212, ON DECEMBER 13, 1969,
AT 12 O'CLOCK NOON

JYVÄSKYLÄ 1969
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URN:ISBN:978-951-39-8239-3
ISBN 978-951-39-8239-3 (PDF)
ISSN 0075-4625

Pieksämäki 1969 Sisälähetysseuran Raamattutalon kirjapaino

PREFACE

The purpose of the present study was the construction and testing of a descriptive model for interindividual differences in aggressive and nonaggressive behaviour. The volume contains two parts. The first investigation concentrates on human aggressive behaviour. The theoretical frame of reference consists of an integration of different theoretical approaches, where the main emphasis is, however, laid on learning theories. The second investigation endeavours to integrate the findings concerning aggression with a more general description of individual patterns of behaviour in situations generally instigating aggression. Aggression in different forms is then understood as only one of the alternative patterns of coping with noxious situations.

I carried out this study at the Department of Psychology in the University of Jyväskylä. Professor Martti Takala, Head of the Department, has followed the progress of my study from its very beginning. I wish to express my deep gratitude to him for all the encouragement, advice, and comments I have received in different phases of my work.

I am also greatly indebted to Professor Veikko Heinonen and Docent Isto Ruoppila for their support and constructive criticism in the penetrating analysis of the text. With Docent Raimo Konttinen I have discussed methodological problems and I am grateful for his advice. Furthermore, I am obliged to Docent Kirsti Lagerspetz, with whom I had a stimulating discussion about research on aggression, and to Professor Tapio Nummenmaa for discussions about the subject matter when I was outlining the first investigation.

The translation work was done by Miss Malle Vörk and checked by Mr. John Stratton. I wish to express my thanks to both of them, and especially to Miss Malle Vörk for her agreeable co-operation in translating.

The collection of the data was made possible by the kind co-operation of the National Association of Kindergarten Teachers and of the

teachers in the elementary schools of Jyväskylä. Particularly I want to thank the kindergarten teachers who assisted me in the gathering of the material, as well as the staff of the Computer Center of the University of Jyväskylä, where the results were mainly analyzed.

The necessary conditions for carrying out this task were created by the understanding support of my husband, Professor Pentti Pitkänen, and the patience of my daughters, Merita and Terhi. Most of all, I wish to express my warm thanks to them.

Concentration on this work was made possible by the grants from the Central Board of Finnish Research Councils (Valtion tieteellisten toimikuntien neuvottelukunta) covering the period from 1. 1. 1968 to 30. 12. 1969, for which I wish to express my gratitude. I also thank the University of Jyväskylä for the acceptance of this report into its series of Jyväskylä Studies in Education, Psychology and Social Research.

Jyväskylä, November 1969

Lea Pitkänen

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INTRODUCTION

The definition of human aggressiveness is more problematic than that of simple forms of motivated behaviour, as is revealed in the treatments by McNeil (1959), Buss (1961), Berkowitz (1962), Feshbach (1964), Pepitone (1964), Kaufman (1965), et al. Most problems of definition may be referred to the question on how many and on what kind of postulated concepts the explanation of aggression is based.

In Bindra's psychology of motivation (1959) integrating the empirical S-R approach and the neurophysiological approach an attempt was made to define the classes of motivational activities with no reference to factors underlying observed behaviour. Bindra adopted the view that »it is unnecessary and futile to postulate drives, motives, instincts, or any other end-determining systems in order to account for the various motivational phenomena» (p. 19). In place of this, Bindra considered it meaningful to categorize activities »conjointly in terms of the responses involved and the objects or events with respect to which they may be said to be directed» (p. 291). According to him, aggression and withdrawal are designed to alter the stimulus situation, and they constitute one category — the others are: general activity and exploration, eating, drinking and sexual activity, and maternal behaviour. The psychological problems of the goal-directed aspect of behaviour deal with (1) the origin of directed activities; development, which can be attributed to constitutionally determined species, strain, and individual differences; and (2) the occurrence of directed activities at a particular time, determined by habit strength, sensory cues, arousal level, and the state of blood chemistry.

Bindra's material concerning aggression dealt mainly with animal behaviour. In experiments on animals the definition of aggressiveness has generally not been very problematic. For instance, Lagerspetz (1964) used the term aggressiveness »to designate the frequency and/or intensity of aggressive behaviour in mice» (p. 9). Furthermore,

limitation of aggression to one class of behaviour is relatively clear on the basis of the quality of responses.

The application of this approach to human aggression is complicated by several factors, of which the following examples may be given. Hormonal effect on behaviour is rather direct in animals, but at a higher stage of development it is inhibited by controlling effects of the neocortex and by habits determining activities even when considerable changes take place in the internal balance (Takala, 1963). The process of learning responses is more complicated in human than in animal behaviour as a consequence of identification and model learning. Early experiences affecting the development of responses are much more varied in children than in the young of a particular animal species. The specific responses involved in certain goal-directed activities are much more diversified in man than in animals because of the great variety of means of expression available. The interpretation of the sensory cues affecting the occurrence of a response at a particular time is more complicated in man than in animals because of a highly developed associative memory. Together factors of this kind contribute to the occurrence of a great variety of aggressive behaviours, which makes it difficult to define aggression as a coherent class of activities in terms of stimuli and responses.

As for explanatory concepts, the dynamic theories of aggressiveness differ from Bindra's approach. According to the psychoanalytic theory aggression can be described either by stressing the reactive nature of aggressive urges employed by the self-preservative tendency of the ego-instincts, or as one of the two basic human instincts (the death instinct and the life instinct). In the psychoanalytic view of the structure and development of personality canalization and neutralization of special aggressive energy play a central role. Consequently a great variety of acts, even nonaggressive in regard to external criteria, can be explained on the basis of aggressive energy. In this case it is not possible to define aggressiveness as a class of activities of a similar quality. The concept of aggressive energy is also contained in the hydrodynamic instinct model presented by Lorenz, in which it is defined as neural energy, as discussed by Hinde (1959). On the basis of the concepts of motive or need, comparable with that of drive, aggression has been explained by many other theorists (Murray, 1938; et al.). According to instinctual or drive-oriented theories, every individual has an instigation to aggression, which even manifests itself in exclusively symbolic forms.

The behavioural approach to aggressiveness contains the assumption that aggressive activities are learned as responses to stimulus

situations. With the S-R theory as a starting point the drive elicited by a stimulus rather than the instincts has been considered the source of aggressive impulse. The instinctual view has been replaced by other explanatory concepts such as the well-known and controversial concept of frustration.

The frustration-aggression hypothesis derived from Freud's earlier view of the reactive nature of aggressive urges has been expressed in behavioural terms by Dollard, Doob, Miller, Mowrer, and Sears (1939). The criticism against the hypothesis has focused on the problems of the operational definition of frustration (Lawson, 1965; et al.) and on the one-to-one relation between frustration and aggression (Kaufman, 1965; et al.). According to the discussion by Geen (1968), Buss (1961, 1966) has also attacked the hypothesis by stating that »frustration is at best a weak antecedent of aggression», whereas Berkowitz (1962, 1965), when defending the hypothesis, has stated that »frustration is the major determinant of aggression». The definition of frustration by Berkowitz is broader than that by Buss, but their opinions differ also on the problems of whether frustration (without personal attack) elicits aggressive responses, and whether attack elicits more aggression than frustration.

In the frustration-aggression hypothesis most attention has been paid to defensive (just) aggression, but on this basis no explanation can be made of offensive (unjust) aggression, which is a more important indicator of aggressiveness at the common sense level (Minturn, 1967; et al.). In the earlier form of the S-R behaviour theory (Hull, 1943) the interpretation of behavioural motivation has been based on the immediate determinants of the tendency to respond, on drive, and the S-R habit. Due to the revisions by Hull (1952) and Spence (1956) dealing with incentive motivation and processes of anticipation as the determinants of the impetus to respond, the revised S-R theory is more valid in the explanation of molar behaviour and in the interpretation of interindividual differences in aggression.

Another explanatory model of motivated behaviour which stresses the role of stimulus variables is Miller's (1944, 1959) theory of approach-avoidance conflict presented within the conceptual framework of the S-R behaviour theory. The approach tendency is sustained by a drive stimulus which has its origin in the internal physiological condition. The avoidance tendency is motivated by fear, an acquired drive. The intensity of the aggressive approach tendency can be operationally measured by the strength of the negative experiences an individual is willing to accept in order to produce a goal-response. With the principle of stimulus generalization taken into account, the theory

of approach-avoidance conflict has been employed to explain displacement of aggression.

Displaced aggression is one form of human aggression resulting from inhibition of direct aggression. It presupposes appraisal of the situation. Because of the complex, controlled nature of human behaviour the connection between stimulus and response is not directly predictable. This view has been taken into account in the Expectancy x Value theory of motivation by Tolman, Lewin, and Atkinson (Atkinson, 1964). The theory of social learning by Rotter (1954) has been constructed on the same foundation. Man's cognitive qualifications for appraising a situation make his behaviour less dependent on physiological drive than is possible for lower species. Man is able to inhibit or attenuate aggression according to situational requirements. Intellectual and rational factors as determinants of behaviour have been emphasized in the cognitive models for dealing with motivational phenomena, e.g. in Festinger's (1957) theory of cognitive dissonance.

The above mentioned appraisal processes not only modify aggressive behaviour but also play a central role in the development of an individual's behaviour so that it takes nonaggressive forms. A further analysis of this process is made in the second part of this report.

In developmental psychology the term differentiation has been used to refer to the fact that an individual's behaviour acquires various forms during his life. Investigations testing the hypothesis on the differentiation of interindividual differences (Heinonen, 1963; et al.) in intellectual abilities have shown that a slight degree of differentiation often occurs, although the results have not been consistent — a possible consequence of the homogeneity of the subject groups, characteristics of the tests, etc. (Heinonen, 1964, 244). According to the corresponding hypotheses it can be assumed that differentiation also takes place in emotional behaviour, i.e., aggressive responses are gradually differentiated from diffuse expressions of negative affect to a specific kind of environmental stimulus. An individual's abilities to express himself develop, and he learns how to make more accurate discriminations between stimuli. According to the behavioural theory, however, reinforcement is the essential factor in the development of aggressive habits. The responses of every child are under the continuous control of his parents and other persons. Aggressive behaviour can be reinforced, eliminated, or given a more socially desirable direction. From his environment a child also adopts most of the patterns of behaviour which he tests and which, if reinforced, remain in his store of responses. On account of its noxious consequences aggressive behaviour is seldom really rewarded. Indifference and the

reaching of one's goal are sufficient reinforcers, and a number of secondary reinforcers may, in addition, be conditioned to the goal-responses.

Reinforcement history has a great influence upon individuals' response habits in stimulus situations, and differences in this history also have a great influence upon differences in individuals' response habits. Aggression in human behaviour cannot be considered as a class of activities separated from other forms of goal-directed behaviour, as is the case in animal behaviour. Aggressive behaviour has different modes, directions, objects, and aims, the aims being defined according to the classes of reinforcers. The quality of response habits is connected with an individual's behaviour in general, and the adoption of a particular form of aggression inhibits the occurrence of another form of aggression.

The fact that aggressive behaviour takes so many forms has resulted in a great number of analyses of the uniformity of aggressiveness. Either the problems have concerned the correlations between the aggression indices of different tests and their relationships to observations of behaviour, or the studies have been restricted to interindividual differences in overt aggression. The latter is one of the problems of this study. Previous investigations analysing aggression are more accurately discussed in Part I, Chapter 1. Typical of these analyses have been classifications of aggressive responses and examinations of the correlations between the classes. Apart from Mandel's (1959) study, the classification has not been connected with a theoretical approach.

Human aggressive behaviour is divided into more or less specific response classes which do not have any unitary physiological basis. The drive concept of aggression is not satisfactory to account for the different aspects of aggressive behaviour. Within the present study aggressive behaviour is considered as basically reactive, and offensive aggression is regarded as an aggressive habit adopted from reactive aggression through learning. The primary aggression is assumed to be directed at an initiatory object, but appraisal of the situation and inhibition of responses may transmute the reactions into indirect forms of aggression. The situational contexts of aggression, the cue-properties of aggression stimuli and the appraisal of the total situation should be stressed more than previously in the study of aggressive behaviour. Irrespective of its particular forms, aggressive behaviour is based on the same general learning principles. The learning process is determined by the general personal significance and the social consequences of aggression.

The present investigation comprises a descriptive model of aggressive behaviour (Chapter 2), in which an attempt is made to consider the variations in the direction, aim, and mode of the expression of overt aggression. Aggressive behaviour is used to mean instrumental responses, i.e. aggression (Buss, 1961). The 'motivational' aspects of aggression, such as anger (emotional reaction) and hostility (negative attitude), which may but need not necessarily be present in aggression, will not be considered. Here aggression is defined as an overt response considered aggressive by an observer. According to Buss's definition, a response is considered aggressive if it is observed to deliver noxious stimuli to another organism. Observations may be based on (1) immediate experiences, provided that the observer himself is an organism to which noxious stimuli are delivered, or (2) associations, if a sequence of events gives rise to associations with the motivational aspects of aggressive behaviour or with the noxious stimuli following the aggressive responses, when the observer as an outsider makes observations of the response and also of the stimulus situations preceding and following it.

In connection with the descriptive model of aggression hypotheses were made on the learning processes of different forms of aggression. The hypotheses concerned children's behaviour, on which empirical material was also based. The hypotheses concerning individuals' aggressive habits were derived by integrating different viewpoints selected from the theories of social learning, cognitive motivation, and personality traits. The theoretical frame of reference and the hypotheses are presented in Chapter 3.

The empirical examination endeavoured to verify both the descriptive model and the hypotheses behind it. The first problem of the investigation was to find out the applicability of the descriptive model in the description of individual aggressive habits:

A. Do interindividual differences in behaviour correspond to the characteristics included in the descriptive model of aggressive responses? The model comprises the intensity, direction (direct/indirect), and aim (defensive/offensive) of aggression as dimensionally varying characteristics. Further, more specific discriminations can be made on the basis of the mode of aggression (physical, verbal, mimic).

The dimensions of the descriptive model were assumed to be related to the reinforcement history of individuals' aggressive habits. For the verification of the hypotheses based on the theoretical construction a

number of personality and social background variables were chosen and studied:

B. Do individual personality variables and social background variables have the hypothesized relations to the aggressive habits predicted on the basis of the descriptive model?

In global rating of aggressiveness different aggressive habits were assumed to be emphasized in different ways:

C. How essential are different types of aggressive habits and the individual and social background variables in global rating of aggressiveness?

The aggressive behaviour of an individual was assumed to vary according to the stimulus situation irrespective of his normal aggressive habits:

D. How do the controlling stimuli in situations instigating aggression affect the average frequencies of different types of aggression and the structure of aggression?

While the first part of this report deals exclusively with aggressive behaviour, an attempt is made in the second part to differentiate nonaggressive behaviour as well, as an alternative to aggression. The starting point for the empirical study consisted of a descriptive model of aggression and nonaggression, and the hypotheses on aggressive and nonaggressive personality types. The hypotheses were constructed by integrating differerent theories, which was the procedure followed in the first study. The first problem was to verify the descriptive model, i.e., to find out how different kinds of aggressive and nonaggressive habits in situations generally instigating aggression can be described within the framework of the descriptive model. The second problem dealt with the differences in the verbal responses for thwarting symbolic stimulus situations between various aggressive and nonaggressive personality types. The comparison of the extreme groups was expected to furnish further information about interindividual differences in behaviour in situations generally instigating aggression.

PART I

STRUCTURE OF OVERT AGGRESSION

1. UNIFORMITY OF OVERT AGGRESSION AS SHOWN IN PREVIOUS INVESTIGATIONS

The hierarchical models of personality structure (Eysenck, 1960; Guilford, 1959) illustrate how personality can be conceived as a hierarchy of traits at different levels of generality. The most general level consists of types built up on the observed intercorrelations of traits. Under the trait level is the one which Eysenck has called »habitual responses.» The least general level has been called »specific responses,» and it has been the starting point for the study of the structure of aggressiveness. The concept of generality has been used to refer to the consistency of a certain kind of behaviour from one situation to another. In the present investigation, however, the problem of the structure of a trait is treated from a consideration of how unitary the manifestation of the trait is in individuals' behaviour. Consequently, the matter of main interest is the interrelationships of different forms of aggressive expression, i.e. the uniformity of aggression.

The conception of aggression covers a great number of different specific responses. After making observations of the behaviour of 9—16-year-old boys in a boarding-school, Mandel (1959) listed 2205 different aggressive responses, and Goodenough (1931), respectively, after observing children aged 7 months to 8 years, nearly 2000 different outbursts of anger on the basis of mothers' recordings. In a study of the interrelationships of aggressive responses the sampling of variables becomes the central problem. Responses can be classified in different ways. As categorization has usually lacked theoretical background in these investigations, the response classes vary considerably from one study to another, which makes comparison of the results as well as generalization of them more difficult.

The following survey concentrates on the studies of children's ag-

gression, the objectives of which resemble to a certain extent that of the present investigation. In this survey the main emphasis is given to the methods and the classifications of aggression.

1. 1. Classifying and descriptive studies

In earlier studies of children's aggression (Goodenough, 1931; Dawe, 1934; Jersild & Markey, 1935; Appell, 1942; et al.) the successions of aggressive events have been classified and the frequencies of different categories have been recorded. Apart from the influences of age, sex, and socio-economical status of the family, there has been little speculation on the causes of interindividual differences. Most studies have been carried out in nursery schools by observing aggressive behaviour occurring in relatively free situations. These studies have presented a great deal of descriptive material concerning the conflicts of girls and boys aged 2—5 (e.g. causes of quarrels, forms of aggressive responses,[1] outcomes of quarrels, victims of aggression, and interference by teachers), but the analyses of results have warranted few conclusions concerning the uniformity of individual aggressive behaviour.

Some of the studies of the frequencies of aggression have been made by observing behaviour according to check lists (Must & Sharpe, 1947; Gewirtz, 1948, unpublished dissertation; Sears, Whiting, Nowlis, & Sears, 1953; Walters, Pearce, & Dahms, 1957; et al.). Neither of these studies has included analyses of the intercorrelations of different categories of aggression. In her study Body (1955) took into account both the mode of aggression and the targets by observing physical and verbal aggression toward teachers, peers and objects, but she analysed only differences between two nursery schools. In several investigations (Faigin, 1958; et al.) the observed categories of aggression have been employed for combining one single estimate of aggressiveness without presenting the intercorrelations of the categories.

1. 2. Intercorrelations of different categories of aggression

Information furnished by previous studies concerning intercorrelations of different forms of aggression has been based on categori-

[1] Categories of responses catalogued earlier (Pitkänen, 1966).

zations of many kinds. Jersild & Markey (ibid.) divided aggression into four types: physical aggression toward other persons and toward objects, verbal aggression, and screaming, calling the teacher, etc. as one category. The intercorrelations of the first three were positive (+.17 — +.71), but the fourth category correlated with the others varyingly in each nursery school group (—.49 — +.50). The fourth category mentioned is comparable with indirect aggression, which, in the studies by both Bandura & Walters (1959) and Lesser (1959), correlated negatively with physical aggression toward peers. Their classifications of direct aggression were similar to that presented by Jersild & Markey (physical and verbal aggression), but Lesser made a further division into provoked and unprovoked aggression. The intercorrelations of direct aggression obtained by Lesser were positive, varying +.23 — +.73.

Sears, Ray, & Alpert (1965) divided aggression into two main groups: antisocial and prosocial (also Sears, 1961). In antisocial aggression a division was made into physical and verbal aggression, injury to objects, and mischief; in prosocial aggression into verbal disapproval of behaviour, and tattling.[1] With the exception of the category of tattling and mischief, the intercorrelations for boys were positive (+.04 — +.63) and showed greater consistency in trait structure than the intercorrelations for girls.

In the study by Kagan & Moss (1962) dealing primarily with the stability of some motive-related behaviours, the aggressive variables were also correlated in each age period (0—3, 3—6, 6—10, 10—14). The categories of aggression were somewhat broader (e.g. competitiveness and dominance of peers) than those in the studies discussed earlier. In spite of the age of the subject the intercorrelations of aggression were positive, varying +.17 — +.1.00.

It can be concluded that the intercorrelations of aggression variables are generally positive, but the size of the correlation coefficients varies considerably according to the selected categories of aggression. On the basis of the results one is justified in agreeing with McNeil[2] who has made the conclusion that »future investigations of aggression ought to exercise some caution about viewing expressions of hostility

[1] Originally, also direct physical aggression in phantasy, indirect physical and verbal aggression, vicarious aggression, and asking retribution were included in the division. Their frequency distributions were, however, low and skew, wherefore they were excluded from the analysis of results as separate variables.

[2] McNeil studied the relationships between aggressive behaviour and social status, and at the same time examined the interrelationships of the four categories of aggression by the Chi square.

as a unitary phenomenon that can be captured by means of a single global estimate of 'aggressiveness'» (1962, 75). In many investigations the correlation coefficients have been lowest between direct physical aggression and indirect aggression. One difficulty in the interpretation of the correlational results ensues from possible technical relationships between different categories especially in the case of short-time observations; the presence of a particular type of response inhibits the occurrence of another type of aggression in an individual.

The method of *factor analysis* makes it possible to describe the interdependences of variables in such general terms which are not easy to discover by examining individual correlation coefficients. Very seldom, however, has it been applied to the structure analysis of a particular personality trait. Of the studies of aggression only that by Mandel (1959) has concentrated on the problem of structure analysis of the trait, especially on the question of whether spontaneous (triebmässig) and reactive aggressive behaviour can be factorially differentiated.

Mandel classified observed aggression into seven categories.[1] The matrix of intercorrelations was factor analysed. In regard to the problem of the reactive-spontaneous nature of aggression, the factors were complex. The first factor (»Faktor der Feindseligkeit») comprised both severe spontaneous and reactive aggression. The second factor was identified »Faktor der Körpernähe,» on which the variables of playful aggression had the highest loadings, and the third factor was called »Faktor der Hemmung oder Beherrschung der Aggression.»

The uniformity of aggression as a secondary problem was studied factor analytically in the research program of the Rip Van Winkle Foundation. Aggressive behaviour was measured by peer-ratings. The items (24) collected from literature and other sources had been categorized speculatively into physical, verbal, indirect, acquisitive, and unclassified aggression (Walder et al., 1961). A cluster analysis of the items implied that instead of many dimensions corresponding to the classifications originally postulated only one homogeneous dimension of aggression could be obtained. A factor analysis with additional variables yielded a common bipolar factor consisting of aggression

[1] Of these five belonged to the main division I (»Ernsthafte Verhaltensweisen») so that three categories formed the group »Mehr reaktiv,» and two categories the group »Mehr spontan.» One category constituted the main division II (»Handlungen, bei denen ernsthafter Charakter fraglich»), and one category the main division III (»Spielerische Handlungen»).

and rejection versus popularity and aggression anxiety. The researchers paid attention to the numerousness of possible logical divisions between factorially homogeneous items. The general factor of aggression was also closely connected with evaluations of personality in the study by Banta & Walder (1961).

Most of the factor analytical studies of aggression mainly furnish information about the relationships between aggression and other personality traits. Some studies (e.g. those by Wiggins & Winder, 1961; Mitchell, 1956) aimed at the preparation of a peer nomination inventory. The factor analysis carried out by Wiggins & Winder yielded two dimensions of aggression for the aggression variables (12) collected by interview: Pure Aggression (items loaded only on Hostility factor) and Disruptive Aggression (items loaded also on Attention-getting factor, which included also some of the variables of dependency.[1] In the factor analysis by Mitchell the items of aggression (5) constituted one of the three factors called Social Acceptability, Social Isolation, and Aggressive Maladjustment.

Teachers' ratings or observations have resulted in a more differentiated structure of aggression than peer-ratings (Cattell & Coan, 1957; et al.). In Koch's (1942) study of preschool children the observed variables (7) of overt aggression loaded on five primary factors. Altogether nine primary factors had been extracted. The total number of variables was 38, which included also variables of a child's social, neurotic, and playing habits. One of the second-order factors, Socialization (meaning that an individual's activity agrees with the standards of behaviour accepted by his social group), consisted of four primary factors,[2] all of which were loaded by aggression variables. The second-order factor, Restraint-Expansiveness, was loaded most highly by the primary factor Social Extraversion which accounted for the largest proportion of the common variance of verbal aggression and also for some of the common variance of indirect and physical aggression.

The reanalysis by Digman (1965) of the trait-rating material collected by Peterson and Cattell (1959) for nursery-school children yielded three second-order factors for the eight primary factors. The second-order factors were Successful Socialization, Extraversion-

---

[1] Other categories of variables were withdrawal, depression, and popularity.

[2] The factors were called Lack of Aggressiveness (containing the variables pout and sulk, and indirect or remote attack especially with negative loadings), Hypersensitivity (pout and sulk, and physical attack), Conformity or Conscientiousness (negative loadings: refuse and physical attack), and Immaturity (cry and whine, and refuse).

Introversion, and Emotionality. Of the primary factors Hostility was describable in terms of extraversion and emotionality.

Peterson (1960) examined the structure of trait-ratings by rotating only the two principal factors and found out that one of them, General Adjustment, was very much similar to Eysenck's general factor of Neuroticism. It was loaded by such aggression variables as disobedience and irritability. The other factor was identified as Extraversion-Introversion, and it included for example variables of dominance.

The studies discussed above have dealt with normal children. Results of the studies with *problem children* have been comparable with them: examinations of the two factors accounting for most of the common variance (Peterson, 1961; Peterson, Quay, & Tiffany, 1961; Eysenck & Rachman, 1965; Achenbach, 1966; et al.) have revealed that one of the factors covers extravert conduct problems (psychopathy) and contains the variables of unsocial and attacking behaviour, the other personal problems or diffuse psychopathology (neuroticism).

In the behaviour of juvenile delinquents many clusters or factors have been found, e.g. socialized delinquency, unsocialized aggression, and internal conflict (Hart et al., 1943; Lorr & Jenkins, 1953). Slavson (1943) outlined aggression in problem children into nine types, which included aggression from prolonged infancy, aggression as attention-getting, aggression as a release from organic tension, and aggression from hostility. Megargee (1966) assumed that the assaultive characteristic in criminals is connected with inhibitions against overt aggression: in the uncontrolled aggressive type these inhibitions are low, and he usually responds aggressively when frustrated, whereas the chronically overcontrolled type inhibits aggression until instigation to aggression summates to the point where it exceeds even his excessive defences. Empirical study revealed that the hypothesis was oversimplified: a relative balance of inhibition and aggression was not sufficient to account for the strength of aggressive responses in all situations.

1. 3. Summary

There are differences between the studies of children's overt aggression in the sampling of variables, systems of classification, assessment techniques, analyses of results, and number of identified factors.

Representative samples of variables and a thorough gathering of material have been the starting points in earlier descriptive studies

and in some factor analytical studies of children's aggression. Classifications, however, have been necessary to reduce the number of variables. In addition to verbal and physical aggression as the most usual categories, there are also categories of spontaneous (unprovoked) and reactive (provoked) aggression, indirect aggression in different forms, irritability, prosocial aggression, and competitiveness, as well as classifications based on the target or cause of aggression.

The main methods of assessing aggression have been observation, teacher rating and peer rating. The first two have resulted in a more differentiated structure of aggression than peer rating. The occurrence of more general aggression factors in peer ratings results partly from the halo-effect reflecting the peers' sociometric status, which, in ratings, increases the accumulation of negative or positive characteristics in popular or unpopular peers, partly from the sample of variables. When the battery of aggression variables and the variables of popularity which correlate negatively with them have been factor analysed (Walder et al., 1961; Banta & Walder, 1961), the largest proportion of common variance in ratings has been accounted for by the bipolar »reputation factor.» Walder's cluster analysis technique is not likely to reveal the dimensions of interindividual differences in behaviour in the same way as factor analysis.

In regard to the methods of observation and teacher rating the findings concerning the structure of aggression are comparable with each other on the basis of second-order factors and of the two first principal factors. One dimension of aggression covers socially reactive or dominant behaviour, the other maladjustment or hostility. An examination of the correlational results revealed that the lowest correlation coefficients prevail between the corresponding categories of aggression, direct physical aggression, and indirectly outbursting aggression.

When a greater number of factors has been rotated, the results have depended on the sample of variables in a fundamental way so that the invariance of the structures has been low. Because of considerable differences in the correlation coefficients between each category of aggression it is predicted in the present investigation that there are significant dimensions of aggressive habits between the specific response level and the trait level, provided that such principles of classification can be found for the sampling of variables which are essential in regard to social behaviour.

2. A DESCRIPTIVE MODEL OF AGGRESSION

When an attempt was made to outline the main types of interindividual differences in aggressive behaviour, there were many alternatives available. The main division could have been made on the basis of the mode of aggression, i.e. the organ system (physical, verbal) involved. This classification, although frequently used in previous studies, has usually not been related to interindividual differences in behaviour. The results concerning children's behaviour have also revealed a high correlation between physical and verbal aggression. Consequently, this principle of classification has not been considered essential.

In his conceptual classification Buss (1961) made further divisions on the basis of the active/passive quality of aggression. As for rating, it is a relatively complex characteristic, since aggressive behaviour is usually active. It is questionable whether passivity, without for example mimic aggression, which can be considered a response to a thwarting stimulus in some situation, can be recorded aggressive: passivity may result from cognitive appraisal of the thwarting situation and control of behaviour, or in some cases from inhibition of action caused by fear.

As is revealed in Chapter 1, indirect aggression has often been considered a separate category, yet greatly diversified in content. On the basis of previous correlational results the direction of aggression seems to be a more significant factor than the mode of aggression. Consequently, the direction of aggression should be an important principle of classification.[1]

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[1] Special attention was paid to the direction of aggression in the model of classification of verbal test responses presented by Rosenzweig (1947, 1948, etc.). No division was made, however, in the dimension direct/indirect; the

The division into offensive and defensive aggression can be found in earlier descriptive investigations of children, but it has not been revealed in correlational studies. The term aggression has often been used to describe offensive behaviour. Also the terms aggressor and victim as well as the definition of the concepts of aggression and attack as synonyms (Buss et al.) imply offensive behaviour. According to instinctual theories, offensive aggression represents spontaneous (triebmässig) aggression (Mandel, 1959; et al.), whereas the frustration-aggression hypothesis refers to defensive, reactive aggression. In the writer's opinion, the two forms of aggression have not been examined sufficiently in the previous observational studies. An attempt is made in the present investigation to differentiate between defensive and offensive behaviour.

An attempt was made within the present investigation to organize the characteristics of aggressive behaviour by constructing a descriptive model of aggressive responses. The purpose was to find out dimensions such as would (1) be closely based on theoretical interpretation of human learning of aggressive behaviour, (2) have differential psychological correspondence, and (3) be noticeable to an observer on the basis of a succession of immediate events. The following presentation of the descriptive model focuses on the observable formal characteristics of responses, and less attention is paid to interpretative aspects. In the attempt to find out the correspondence between the descriptive model and individual aggressive habits the contents of the formal dimensions are extended to conceptual constructs.

According to the definition by Buss (1961, 1), »all aggressive responses share two characteristics: (1) the delivery of noxious stimuli, and (2) an interpersonal context.» As was mentioned in the introduction, a response is defined as being overtly aggressive if it is seen to »deliver noxious stimuli to another organism,» either through immediate experiences or through associations. Responses lacking the defined characteristics remained outside the descriptive model. Such responses included aggressive autonomic responses, aggression in phantasy, and socially acceptable ways of treating a situation, such as nonaggressive exhortations concerning another person's behaviour, proposed compromises, and deliberate restraint from aggression (indifference) e.g. by silence or withdrawal, provided that the affec-

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division was based on the following qualities: aggression is turned outward (extrapunitivity), aggression is turned inward (intropunitivity), expression of aggression is avoided (impunitivity). Consequently, also nonaggressive responses were taken into account in this classification.

tive responses which may find expression in hostile facial gestures are controlled.

One dimension, called *intensity of aggressive response,* can be defined on the basis of the first mentioned characteristic of aggressive responses. Consequently, the quantity of the noxious stimuli following the response is a subjective experience of the observer.

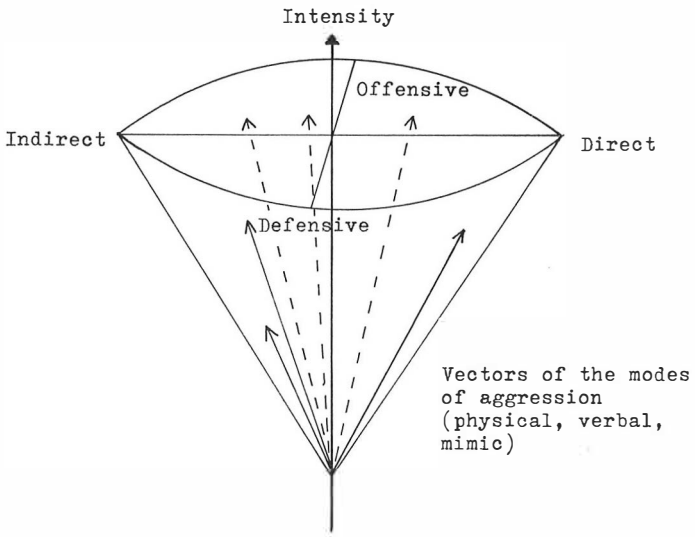
The second characteristic refers to the relations between an aggressive response and social interaction. The observer may see the aim of the response on the basis of a succession of events (whether behaviour delivering noxious stimuli is a defensive response to a thwarting stimulus situation or an unprovoked offensive act). On the basis of the anteceding stimulus situation observations are made concerning *the aim of the response (defensive/offensive),* which constitutes another dimension describing responses.

In an examination of the relationships between an aggressive response and its target attention can also be paid to the degree of directness or indirectness of the response toward the target. A direct response reaches the victim immediately, an indirect one via mediating events or people or a mediating response. For example, complaining is one form of indirect aggression, since the noxious stimuli can be expected to reach the original target only after complaint. Aggressive responses can, accordingly, be described on the dimension *direct/indirect.*

If even more specific characteristics of a response are taken into account, the organ systems involved can be analysed. These may include different parts of the body, especially the limbs (physical aggression), organs of speech (verbal aggression), and facial gestures (mimic aggression). Aggression expressed in writing can also be considered verbal. Physical, verbal and mimic means of aggression can be called *the modes of aggression.*

The aim and direction of a response were considered independent of each other, i.e., both defensive and offensive aggression can be either direct or indirect. Each of the four forms of aggression (direct defensive, indirect defensive, direct offensive and indirect offensive aggression) can manifest itself with different modes of aggression and with different intensities. From these characteristics the writer has constructed a descriptive model shown in Fig. 1.

The basic vertical dimension is the intensity of aggressive responses. The criterion of the zero point is what is observed as aggressive. The cross section presents a description of the interpersonal qualities of the responses: aim (offensive/defensive) and direction (direct/ indirect). The intensity, aim and direction of aggressive responses are



F i g u r e 1. A descriptive model of aggression.

considered to be dimensionally varying characteristics (continuous variables), while the modes of aggression are regarded as discrete variables. The descriptive model can be used to analyse aggressive responses. For example, beating somebody for taking a favourite toy is a defensive, direct response using a physical mode. The position of the act of beating in the dimension of intensity is probably very far from the zero point, although an estimation of its intensity is lastly dependent on the actual quality of the response and on situational factors.

3. HYPOTHESES

3. 1. Theoretical frame of reference

3. 1. 1. *Functions of aggression*

Definitions of aggression have often presented the idea that the intent or goal response of aggression is »an injury to another organism» (Dollard et al., 1939; et al.). When defining aggression behaviourally Buss (1961) omitted the concept of intent, but in the definition of the reinforcers of aggressive responses the intentionality of action was, however, revealed. Buss distinguished »two major classes of reinforcers of aggression: (1) the stimulus of the victim suffering injury or being in pain, and (2) extrinsic rewards» (p. 2). According to the differences between reinforcers aggression was divided into two types, of which angry aggression (or hostile aggression; Sears, Maccoby & Levin, 1957) is reinforced by the victim's pain. Instrumentally aggressive responses are reinforced by external reinforcers following any instrumental action. Feshbach (1964) made further divisions: after laying special emphasis on intentionality in his definition of aggression, he distinguished, in addition to instrumental aggression, aggressive drive-mediated behaviour, and divided the latter into expressive (the desire to hit) and hostile (the desire to hurt) aggression.

In the present investigation the goals of aggression were defined as follows. An aggressive response is understood to be (1) fundamentally a response by means of which an attempt is made to secure that the basic needs to preserve and continue life, as well as the various derivatives of these basic needs, will be satisfied, the primary goal of the response being the elimination of the thwarting stimulus situation; and (2) a response habit, generalized from its original contexts

through learning, in which case aggressive responses have various secondary goals.

Correspondingly, there are both primary and secondary reinforcers of aggression, of which the latter maintain the kind of response habit defined above that cannot be considered as primary reactive aggression. These are discussed in the section dealing with the aim of aggression. The primary reinforcers of aggression are defined as reduction of stimulation, which is a consequence of the elimination of a thwarting stimulus situation. This reinforcer consists of an extrinsic and intrinsic aspect. The former is a consequence of desired changes in the stimulus situation, the latter of the recovery of the internal balance of the organism. Cues about the elimination of the thwarting stimulus situation are different, yet somehow or other are related to another person's submission and yielding. Patterson, Littman, & Bricker (1967) found out that »if the victim had reinforced the aggressor's behaviour by showing defeat and submission, and perhaps some injury as well, there was an increased chance that the aggressor would select the same aggressive response and the same victim, later on. It can be said that anything suggesting that the other person is injured, which, according to the studies by Bramel, Taub, & Blum (1968), et al., is found gratifying if a person is angry with someone, is connected with expectations of the victim's submission. On certain conditions, which are discussed later, the findings mentioned above may become essential conditioned reinforcers of aggression. Sears (1958), too, proposed that the motive to injure others is acquired through a process of secondary reinforcement. According to Scott (1958), in animal aggression injury to another organism is also desired only in some special case.

Lorenz[1] (1963) made a distinction between fight-like contests between the members of different species and intra-specific aggression, aggression in the proper sense of the word. The latter is an essential part of the life-preserving organization of the instincts. In the preservation of life aggressive behaviour has important functions such as balanced distribution of the animals of the same species over the available environment, selection of the strongest by rival fights, and defence of the young. The extermination of the fellow-members of the species is not the aim of aggression, although the destructive effect of aggressive behaviour may manifest itself under exceptional circumstances.

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[1] English translations of the terms by Lazke (Lorenz, K. On aggression. London: Methuen, 1967.).

The concept of thwarting stimulus refers to the antecedents of aggression. In the experiments by Geen (1968) »pure» frustration (failing in a task) elicited less aggression than insult by a peer following success at a task. After studying the behaviour of mice, Lagerspetz & Nurmi (1964) have also shown that frustration is a weak antecedent of aggression; in the absence of another mouse frustration did not produce aggressive responses. The series of experiments carried out by Berkowitz during the last few years include many investigations of the antecedents of aggression. With his colleagues he has proved that (1) frustration does not usually elicit overt aggression in the absence of cues related to aggression (Berkowitz & LePage, 1967; Geen & Berkowitz, 1967); and (2) the target's cue value for aggression determines the magnitude of aggression directed against him (Berkowitz & Geen, 1967). On the basis of these studies »pure» frustration cannot be considered a potent antecedent of aggression.

According to the view adopted within the present investigation subjectively experienced thwart in a stimulus situation eliciting primary aggression may be directed toward (1) the goal-oriented activities of an individual, provided that he has reason to suppose that frustration is caused by another person, or (2) the actual well-being of an individual. The latter is brought about through noxious stimuli, which, according to Buss (1961), include active attack and annoyers which are often simple, irritating or aversive sensory stimuli. Special stress is laid here on the importance of attack upon a person's self as an antecedent of aggression, as had been done by Feshbach (1964) and Worchel (1960).

Experience of thwart follows cognitive appraisal of a situation, through which an individual can control not only his overt behaviour but also instigation to aggression (Brehm, Back, & Bogdonoff, 1964; Kaufman, 1965; Lazarus, 1966). When appraising a situation he may pay attention to (1) arbitrariness vs. nonarbitrariness[1] of frustration and strength of the noxious stimuli; (2) social status (little child, competitor, authority), prevailing condition (ill, tired), or personality traits of the instigator; and (3) scene (public, important for the individual's own goals). Evaluation of a stimulus situation as an intervening variable in aggressive behaviour has been considered important by Berkowitz (1962), Berkowitz, Lepinski, & Angulo (1969), Pepitone (1964), Feshbach (1964), Kaufman (1965), et al. Kaufman presented The Flow Chart for Aggressive Response based

[1] Arbitrary frustrations lead to more aggressive responses than nonarbitrary frustration (Pastore, 1952; Cohen, 1955; Brown, 1966; et al.).

on Feshbach's analysis, according to which mediating responses to aggressive provocation can be grouped to form four choice points: classification of a stimulus as aversive or as not aversive, initiation of a goal response (aggressive or nonaggressive), and continuation as well as completion of an aggressive or nonaggressive response.

Schachter (1964; Schachter & Singer, 1962) maintained that an individual's emotional behaviour is not an immediate result of any autonomical changes; it is a consequence of an individual's interpretation of his own internal reactions. Berkowitz et al. (1969, p. 300), however, have stated on the basis of their experimental study that within the limits of judged safety, appropriateness, and propriety, an individual wants to act in a way that is consistent with his conception of himself, i.e., that aggressive intentions are preceded by an individual's interpretation of the connection between his internal reactions and external reality.

3. 1. 2. *Direction of aggression: direct/indirect*

In the construction of the descriptive model the direction (direct/indirect) of aggression was included. It is predicted that this dimension is related to the response habits of an individual through processes of inhibition of aggression.

In a thwarting situation the prototype of a child's response is, as in animal behaviour, direct aggression, fighting and biting, until inhibitions adopted through child rearing come between stimulus and response and necessitate cognitive appraisal of the situation. In a thwarting situation a child may adopt a response habit by imitating models of behaviour or on the basis of selective reinforcement.

Emphasis laid on model learning is a consequence of recent behavioural approaches to aggression (Bandura & Walters, 1963; et al.), and it contradicts the catharsis hypothesis. On the basis of several investigations of hostility catharsis Berkowitz (1968) maintained that, in contradiction to the catharsis hypothesis, witnessed (e.g. film) aggression can heighten the chances that the observer himself will act aggressively: (1) The observer acquires new aggressive action patterns imitatively; (2) The film violence may lower restraints against aggression; (3) Stimuli (e.g. weapons) that have frequently been associated with a certain type of action are capable of evoking that response on later occasions; (4) Aggressive behaviour, even aggressive words, can furnish aggression-evoking stimuli. It was stated

also by Hartman (1969) that overall findings in his study contradict the catharsis hypothesis both in its classical and revised versions.

Experimental studies dealing with reinforcement history of aggressive behaviour (e.g. those by Davitz, 1952; Lovaas, 1961; Cowan & Walters, 1963; Walters & Brown, 1963; Brown & Elliot, 1965; Loew, 1967; Kotkin, 1968) have shown that the strength of aggressive habits readily depends on reinforcement, and that reinforcement of one kind of aggression (e.g. verbal) increases other kinds of aggression (non-verbal). Other investigations concerning reinforcement history have concentrated on the relationships between parents' child-rearing practices and children's behaviour. These relationships have proved rather complex. Interpretational frameworks vary, too. On the basis of the results it can be concluded that a child's aggression is increased by a high degree of both permissiveness and punishment (Glueck & Glueck, 1950; Sears et al., 1957, 1965; Bandura & Walters, 1959; McCord, McCord, & Howard, 1961; Eron, Banta, Walder, & Laulicht, 1961; Eron, Walder, Toigo, & Lefkowitz, 1963; et al.).

Relatively unchanged characteristics of behaviour determining the strength of aggressive habits were called by Buss (1961) temperament variables. They include impulsiveness, activity level, intensity of reaction and independence. Empirical studies (Jersild & Markey, 1935; Green, 1933; Dawe, 1934; Must & Sharpe, 1947; Sears et al., 1953, 1965; Kagan & Moss, 1962; Takala, Hagfors, Pitkänen, & Ruoppila, 1964; Walker, 1967; et al.) have shown that aggression correlates positively with general activity.[1] This correlation is higher when the individuals studied are younger.

The dimensions in the descriptive model presented above may be stressed differently in the combined variable of aggression and it is not possible to compare different studies in this respect. Within the present investigation the assumption has been made that the direction of aggression is related to reinforcement history of aggression, and, consequently, to cognitive appraisal of the situation in the following way. If aggressive behaviour is permitted, the strength of the habits of direct aggression is increased, and there is but slight consideration of nonaggressive alternatives. On the other hand, if adults' responses

[1] Arousal heightened experimentally (by a noise stimulus) has also been found (Geen & O'Neal, 1969) to increase the probability that a person will react aggressively to aggressive stimuli. On the basis of the conflict model another kind of assumption can be made: »If aggressive response tendencies are inhibited, there should occur an increase in the overt expression of aggression at some stage of decreased arousal» (Takala & Pitkänen, 1963, 121).

to aggression are extremely punitive, direct aggression is inhibited. The models of aggression provided by punitive behaviour do not, however, result in consideration of nonaggression; an attempt is made instead to vent the emotional state, i.e. anger, instigated by the situation, by means of less inhibited, indirect aggressive responses (Sears et al., 1957, 1965; Bandura & Walters, 1959; et al.). Compared with direct aggression, changes take place either in the target of aggression or in the aggressive responses.[1]

a) Stimulus generalization; the spread and displacement of aggression toward a substitute object.
b) Response generalization; a change in the response to the original target. A less direct response is substituted for a direct aggressive response.

Some part of each form of indirect aggression can be interpreted as an outburst of anger which may manifest itself in the following way. Aggression is directed toward a target other than the instigator (toward objects in the environment or persons, not subjected to inhibition), or the prevalence of negative affect is shown towards the original target, although the response is known to be ineffective as far as the goal is concerned. Another part of indirect aggression can be interpreted according to the dissonance reduction model (Festinger, 1957). The negative experience of being a victim is more tolerable, if it is possible to treat as a victim some other organism, or the original instigator via a mere mediating response, e.g. by destroying his property.

Factors concerning long-term child rearing and education are not the only cause of indirect aggression; under certain social circumstances it may caused by inhibition of direct aggression as a consequence of situational factors (e.g. an individual is unable to defend himself against arbitrary behaviour). Inability to defend oneself is assumed to have the following causes: within his group an individual

[1] The concept of displacement has been used in different senses. Dollard et al. (1939) have assumed that the tendency to be aggressive remains active in an individual until he finds a suitable object or scapegoat. The choice of the object has been explained by Miller (1948, 1959) on the basis of the approach-avoidance conflict. Lorenz (1963) has extended the interpretation of »displacement phenomena» so as to cover also »displacement activities»: the original tendency can be displaced, not only to another object, but to another activity, quite different from the original. According to Bindra (1959) »displacement phenomena» can be interpreted in terms of three factors: arousal level, habit strength, and sensory cues, which implies that aggression toward a substitute object is likely to occur only if it is one of the activities connected with this object.

may be younger, physically weaker, or equipped with a lower intellectual capacity than the average, or his habits of communication with others of the same age may be weak. In a thwarting situation direct aggression is inhibited because on the basis of his earlier experience he anticipates counter-aggression delivering noxious stimuli. Appraisal of the situation results in inhibition of aggression, but recurrence of arbitrary frustration and noxious stimuli instigates aggression, which can be assumed to culminate in the various outbursts described above.

The learning of indirect display of aggression is due to both previous experience and immediate situational factors. Within the present investigation an attempt was made to find out the relationships only between immediate situational factors and indirect aggression.

3. 1. 3. *Aim of aggression: defensive/offensive*

The defensive/offensive aim of aggression was included in the descriptive model as the second hypothetical dimension.

Defensive aggression, like direct aggression, was considered primary aggression, the goal of which is the elimination of a thwarting stimulus. When direct defensive aggression is inhibited, the response in a stimulus situation can be indirectly aggressive. Reinforcement increases the probability that a particular response is repeated in a new situation of the same kind. In addition, responses are generalized to various stimulus situations and the anticipatory cues preceding them. This is reflected in a lowering of the threshold of aggression, etc.

In defensive aggression the kind of stimuli often associated with the primary reinforcers develop into secondary reinforcers through the process of conditioning and thus become the aim of aggression. Such aims include an injury to another organism, self-assertion (e.g. attention-getting, etc.). Consequently, a thwarting stimulus situation is not a necessary condition for emitting an aggressive response. After secondary reinforcers have been developed they may elicit an aggressive response without drive. An individual learns to anticipate, on the basis of cues present in stimulus situations, when secondary reinforcement is probable, and he behaves in the habitual (directly or indirectly) aggressive manner. The aim of aggression is offensive, because it is not anteceded by a thwarting stimulus situation, which would make it possible to interpret the aim of the response as defensive.

The interpretation is consistent with Spence's (1956) modification of the S-R theory. The impetus to respond is determined by drive

and/or reinforcement by the equation ${}_{S}E_{R} = (D+K) \times {}_{S}H_{R}$; ${}_{S}E_{R}$ = excitatory potential, impetus to respond; D = drive; K = incentive motivational factor determined by frequency and amount of reward; ${}_{S}H^{R}$ = habit strength determined by the number of times a response has occurred in the presence of a stimulus. The summativity of D and K implies that a response is possible even if one of the determinants is absent (e.g. ${}_{S}E_{R} > 0$ if $K > 0$, although $D = 0$).

The concept pair defensive/offensive is not parallel to the concept pair angry (or hostile)/instrumental aggression. It is assumed that offensive aggression is maintained by reinforcers similar to those maintaining the kind of aggression customarily defined as instrumental, but injury to another organism, a usual criterion of angry aggression, is also considered to be a reinforcer of offensive aggression. Correspondingly, defensive aggression, and direct aggression in particular, can appear without any emotional reaction or intent to injure another organism.

The temperament variables (p. 34) correlating with total aggression may influence the development of the habits of offensive aggression in two ways. Social activity increases the potential frequency of conflicts. Slight appraisal of a thwarting stimulus situation is reflected in impulsive response usually related to the amount of direct defensive aggression which contributes to the development of secondary reinforcers.

The habits of offensive aggression can also be acquired through operant conditioning (Skinner, 1953). Particularly those who respond easily in social situations and imitate other people's behaviour may notice that certain kinds of (aggressive) responses are often followed by the same kind of stimuli, which, when repeated, obtain reinforcing value. This form of offensive aggression can be regarded as tyrannising aggression learnt during early childhood. The longitudinal study by Schaefer & Bayley (1963) showed that the amount of tyrannising aggression in the behaviour of adolescent boys correlated positively with their mothers' emotionally involved behaviour (overindulgent overprotection) at the time when the boys were 0—3 years old. Difficulties in the treatment of the child may result in the mother's reactions to her child becoming hostile (ignoring, punitive), as can be concluded from the studies by Schaefer & Bayley and also by Kagan & Moss (1962). As a circular effect the boys' offensive aggression is motivated by secondary reinforcers. This is analysed in more detail in the following paragraphs.

It has been proved that both punishment and ignorance increase the total amount of a child's aggression (cf. p. 34). According to

Bandura & Walters (1959), both of them cause dependency frustration. Attention and power obtained by aggressive behaviour are then found to be stronger reinforcers than when the relations between the child and his parents are harmonious and secure. In the studies by Wiggins & Winder (1961), Siegelman (1966), Sears et al. (1953), and Emmerich (1966), aggression and dependency correlated positively; the common variance was interpreted as attention-getting.

The assumption that the habits of offensive aggression depend on the relations between parents and children is based on the subjective value of secondary reinforcers. According to Rotter's (1954) theory of social learning »a person's experiences (or his interactions with his meaningful environment) influence each other . . . New experiences are a partial function of acquired meanings . . .» (postulate 5). The consequences of aggression are found subjectively to be more valuable, if aggression leads to goals which otherwise remain unreached. Secondary reinforcers may give aggression a positive value (Expectancy x Value theory of motivation; Atkinson, 1964), which exceeds the intensity of the negative value ensuing from the fear of consequences and affects the action tendency that pursues reinforcers. In a corresponding situation the response of some other individual may be inhibited, because the negative value is stronger than the positive one.

In addition to parental behaviour the general social background of an individual, e.g. a low socio-economical status,[1] may cause deprivation and feelings of inferiority, which give a positive subjective value to secondary reinforcers.

Defensive and offensive aggression are not supposed to be independent of each other in an individual's behaviour, because offensive aggression is thought to be acquired partly through defensive aggression; i.e., those who offend aggressively also defend themselves aggressively. In Mandel's factor analytical study severe spontaneous and reactive aggression together constituted the factor »Faktor der Feindseligkeit.» All of those who defend themselves aggressively are not, however, expected to adopt offensive aggression, if background factors do not lead to the pursuit of secondary reinforcers. Aggressive defence, e.g. against somebody else's aggressive offence, is generally considered acceptable in our society, and, especially when attempting to guide the sons to behave in a socially desirable way, parents may teach discrimination between just defence and unjust offence. Consequently, it can be assumed that in the boys' behaviour defensive

[1] Children from lower class backgrounds have tended to be more aggressive than children of upper class origins (Falk, 1959; Toigo, 1965; et al.).

aggression independent of offensive aggression correlates with socially acceptable general activity more highly than offensive aggression. The latter is assumed to correlate with less controlled, impulsive general activity. The dual nature of extraversion has been discovered by Eysenck & Eysenck (1963).

3. 1. 4. *Mode of aggression*

In previous classifications of aggressive responses the most usual categories have been physical and verbal aggression, although, according to correlational and factor analytical studies, these modes of aggression correlate rather highly with each other. This dichotomy is, to some extent, speculatively relevant in regard to interindividual differences in aggression; in addition to the differences in the organ system involved, the division into physical and verbal aggression implies differences in the noxious stimuli delivered to another organism (Buss, 1961) and in the process of socialization (Goodenough, 1931; Bandura & Walters, 1959). Physical aggression represents the most primitive and uncontrolled mode of response in a thwarting situation. It includes aggression expressed by different body parts (limbs, teeth) or weapons against other people, or, in the case of indirect aggression, against the other environment (animals, objects). The consequences of these responses are experienced as a feeling of pain or observed as destructiveness. The severity of the consequences determines the intensity hierarchy of the responses. Another person's negative attitude toward physical aggression forces a child to make discriminations between the intensities of different responses in a stimulus situation at a very early stage.

When a child's means of expression develop, it becomes possible to show aggression verbally. The intensity of the noxious stimuli delivered by verbal aggression cannot be as easily graded as that of the noxious stimuli delivered by physical aggression, because in the first case injury is more disguised or less immediate by nature. Verbal aggression can manifest itself e.g. as direct demands concerning the other person's behaviour, or as more indirect expressions of negative affect, i.e. anger. In addition to the physical and verbal modes of aggression, there occurs mimic aggression, which means expressions of discontent and anger by means of facial and other gestures. From the properties of noxious stimuli delivered by mimic aggression, this mode of aggression can be considered in general as more moderate and less direct than physical and verbal aggression.

Each mode of aggression consists of various specific responses,

which may appear either directly or indirectly, either in defensive or offensive aggression. The aim and direction of aggression are assumed to account first of all for interindividual differences in aggression and only after that for the mode of aggression; in the choice of response it can be considered more important whether an individual defends himself (offends) aggressively at all, and if he does, whether he does it directly or indirectly. The mode of aggression is presumably chosen after this, and it is probably even more dependent on the characteristics of the stimulus situation than the direction of aggression.

Buss (1961) has assumed that an individual's preferred mode of aggression corresponds to his response style, e.g., a person who attacks physically is also dominantly physical in other areas of behaviour. Physical fitness could then be related to the preference for the physical mode of aggression. The assumption was supported indirectly by the finding that the school mark in gymnastics and sports correlated positively with total aggression (although academic achievement otherwise correlated negatively with it; Takala et al., 1964), in which physical aggression was probably stressed rather heavily, because aggression was measured by global rating.

Correspondingly, the assumption can be made that the preference for the verbal mode of aggression is related to verbal abilities. This assumption was supported indirectly by Jersild & Markey's observations (1935) that verbal aggression correlates slightly with intelligence, in which verbal abilities probably played an essential role because of the measurement technique.

Both of these modes of response represent a more active way of responding than mimic aggression. It can be assumed that the habits of physical and verbal aggression correlate more highly with general activity in behaviour than the habit of mimic aggression.

As mentioned in Chapter 2, the descriptive model of aggression excluded a number of such response types which lack the qualities of aggressive response, e.g. responses showing anxiety or socially acceptable ways of treating a situation. Their relations to aggression through the inhibitory and controlling mechanisms they involve, as well as to other personality variables are analysed both speculatively and empirically in the second part of the report.

3. 1. 5. *Dependence of global rating of aggressiveness on different forms of aggression*

Aggression represents the violent manner of problem solving regardless of the form in which it manifests itself. It has been assumed earlier

(p. 37) that the preference for aggression rather than nonaggression is related to certain personality variables such as impulsiveness and general activity, and also to the kind of social background variables that are unfavorable for the learning of socially acceptable behaviour. Although it is assumed that individuals' aggressive habits are differentiated in accordance with the descriptive model, at the level of the second order factors aggression is assumed to be relatively unidimensional. There are individuals who very seldom respond in any aggressive manner: this results in a positive correlation between different forms of aggression, even though the observed aggressive responses are rather independent or may substitute each other.

In global rating the different forms of aggression are not assumed to be emphasized similarly; the assumption is made that the ratings are determined by the observability of the form of aggression most typical of each individual. Observability is determined partly by the observer's role within a group (personal involvement in the response), partly by the frequency of aggression as well as its non-acceptability in regard to the noxious stimuli and target.

In the study by Banta & Walder (1961) the best indicators of the general aggression factor were the peer-rating items referring to initiated interpersonal harm (in the terminology used in this report: offensive aggression), to retaliated interpersonal harm (indirect aggression), and to socially undesirable dominance behaviour. In the study by Lesser (1959), popularity within a peer group, which usually correlates negatively with total aggression, correlated with different manifestations of aggressive behaviour in the following way. »Provoked Physical Aggression [defensive] is relatively approved behaviour, Outburst Aggression, Unprovoked Physical Aggression [offensive] and Verbal Aggression [including both defensive and offensive aim] are progressively more disapproved, and Indirect Aggression is strongly disapproved» (p. 25).

It can be, therefore, assumed that global rating of aggressiveness is most strongly determined by the amount of indirect and offensive aggression, and only rather slightly by direct defensive aggression.

Besides the forms of aggression, situational variables may also affect global rating of aggressiveness. It can be assumed that the norms or expectations concerning behaviour in different situations are the most frequent situational factors determining the impression of aggressiveness.

3. 1. 6. *Effects of situational variables on aggressive behaviour*

Both in estimation of thwart and choice of response an individual takes advantage of his earlier experiences in corresponding situations. This has been called above the process of cognitive appraisal intervening stimulus and response. The noxious stimuli an individual delivers to another organism do not always have the same form or the same intensity; the frequency and intensity of aggression vary significantly, for example, according to the power of the attacking individual (Graham, Charwart, Honig, & Weltz, 1951). The study by Must & Sharpe (1947) showed that younger children are subjected mostly to verbal demands, and according to Spache (1951), boys tend to project hostility upon the environment when in conflict with adults, but toward the other person when the frustrator is a child. In the study by Pitkänen (1963) four factors were extracted from the items of a story completion test. Of these two could be interpreted on the basis of the target of aggression. The first factor contained aggression against peers, the second factor contained conflicts between authority figures and a child. In conflicts between boys and girls boys are usually offensive (Jersild & Markey, 1935).

Children have conflicts mostly with those of the same sex and age (Dawe, 1934; Walters et al., 1957). This is perhaps explained both by the copiousness of contacts and by the competition between those of the same size which corresponds to struggle between the members of a society for ranking order (also found in animals; Lorenz, 1963). Approximately as many conflicts occur with younger individuals as with older ones (Dawe, 1934). Aggression toward adults is relatively infrequent (Jersild & Markey, 1935; Graham et al., 1951; Cohen, 1955). One child does no behave aggressively toward one person only; the number of different targets correlates highly with the frequency of quarrels (Dawe, 1934). The amount of aggression toward adults and toward peers correlate positively, if not very highly (Jersild & Markey, 1935; Bandura & Walters, 1959).

Different situations require different degrees of control of behaviour, which in children's aggression can be defined by, for example, using the criterion of how condemnable direct, defensive, physical aggression is. Punishments following responses are conditioned to stimuli, which receive a behaviour-controlling function. In the present investigation the following terminology has been used. The more condemnable an aggressive individual considers direct, defensive or physical aggression to be in a certain situation, the stronger the con-

trolling stimuli are said to be. To shorten the expression, the term weak/strong situational control is used here.

Situational control is supposed to affect both the average frequencies of different forms of aggression and the structure of aggression, as is explained in more detail in the specification of hypotheses.

3. 2. Specification of hypotheses

Hypotheses to Problem A (p. 14)

In accordance with the descriptive model of aggression it is predicted that, with the employment of the method of factor analysis,

(1) the main proportion of the variance of interindividual differences in aggression is accounted for by the direction (direct/indirect) and aim (defensive/offensive) of aggression.

(2) The modes of aggression (physical, verbal, mimic) can account for the variance in a further analysis of the main forms of aggression.

(3) Different aggressive habits intercorrelate positively and combine in the second order factor into a general factor of overt aggression.

Hypotheses to Problem B

On the relationships between background variables and aggressive habits it is predicted that

(1) The direction of aggression is related to individual characteristics such as affect an individual's abilities to defend himself within his social group. If an individual is younger, physically weaker, or equipped with a lower intellectual capacity than the average, or if his communication habits with others of the same age (which can be estimated from the number of children in the family, general activity, and popularity within the group) are weak, his habits of indirect aggression are stronger than those of an individual who is very capable of defending himself.

(2) The aim of aggression is related to individual variables such as reflect strong or weak control of behaviour, and to social background variables such as reflect an approximate magnitude of experienced deprivations. If an individual is impulsive, if the socio-economical status of his family is low, or if the parents' attitude toward their child is indifferent, his habits of offensive aggression are stronger than those of an individual whose general activity is controlled and socially desirable, and if the social background variables are favourable.

(3) Physical fitness correlates more highly with physical than with

verbal or mimic mode of aggression, verbal abilities more highly with verbal than with physical or mimic mode of aggression, and general activity more highly with physical and verbal than with mimic mode of aggression.

Hypotheses to Problem C

It is assumed that global rating of the trait of aggressiveness is determined primarily by (1) the amount of offensive and indirect aggression, (2) their background variables, and (3) the amount of total aggression directed toward persons and occurring in situations such as generally require strong control of behaviour.

Hypotheses to Problem D

Situational control is assumed to affect both (1) the frequencies of different forms of aggression and (2) the structure of aggression, particularly through the direction of aggression. It is assumed that
(1 a) all forms of aggression considered, more aggression appears with weak than with strong situational control;
(1 b) there appears proportionally more direct (defensive and offensive) aggression with weak than with strong situational control;
(1 c) there appears proportionally more indirect (defensive and offensive) aggression with strong than with weak situational control;
(2 a) with the employment of the method of factor analysis more differentiation takes place in interindividual differences in direct (defensive and offensive) aggression with weak situational control than when the factorial structure is based on average frequencies of aggression independent of situational variables (Problem A);
(2 b) more differentiation takes place in interindividual differences in indirect (defensive and offensive) aggression with strong situational control than when the factorial structure is based on average frequencies of aggression independent of situational variables.

4. EXECUTION OF THE INVESTIGATION

There are both quantitative and qualitative differences between children's and adults' behaviour. In the present investigation the uniformity of overt aggression was examined on the basis of the behaviour of boys aged 5—6, because aggression is more spontaneous and perceptible in children than in adults, and because the background variables determining the strength of aggressive habits may be found more directly in children.

The choice of the population was partly determined by the attempt to form a homogeneous group of subjects the behaviour of whom could be observed in different situations of social interaction. According to Buss (1961), findings concerning the relationship between age and the amount of aggression are inconsistent (examples of observed positive, negative and zero correlations: Must & Sharpe, 1947; Jersild & Markey, 1935; Roff & Roff, 1940; et al.). The inconsistency of the results can at least partly be understood as a consequence of the diversity of the aggression variables in different studies and of the use of the sum scores. Yet the conclusion that the amount of aggression attains a rather steady frequency at the age of 4—5, and that relatively few changes take place until the age of 8 seems quite reliable. Information about stability of aggression has been provided by the longitudinal study by Kagan & Moss (1962) in which the stability correlations of the aggression variables between the age periods 3—6 and 6—10 were very significant. The age range of the population was limited to 5 and 6 years in the present study. The choice of the subjects was confined to boys. The development of aggressive motivation as well as manifestations of aggression differ to some extent for boys and girls (Goodenough, 1931; Jersild & Markey, 1935; Must & Sharpe, 1947; Meyer & Thompson, 1956; Lansky et al., 1961; Kagan & Moss, 1962; Sears et al., 1965; Mallick & McCandless, 1966). As the main emphasis in this investigation was on the explication and examination of the descriptive model of aggression, comparison of the differences between the sexes was excluded.

An analysis of specific responses presupposes detailed observations of the subjects' behaviour in different stimulus situations. To ensure the comparability of the observations the subjects' behaviour should be observed and rated by relating the characteristics of an individual with the average characteristics of the population. A possible procedure is to observe an individual as a member of a group, after a great number of observations has been made of the

behaviour typical of the group. Within the present investigation the social reference was a kindergarten.

4. 1. Method

Techniques for the assessment of overt aggression in children, employed in previous studies, have included time-sampling observation, by recording either all of the behaviour of a child in his aggressive contacts with other persons (Jersild & Markey, 1935; et al.), or the frequencies of certain variables chosen in advance (Koch, 1942; et al.), teacher rating (Emmerich, 1966; et al.), later ratings based on recordings (Kagan & Moss, 1962; et al.), detailed diaries kept by mothers (Goodenough, 1931), interviews with parents (Bandura & Walters, 1959; et al.), interviews with subjects (Bandura & Walters, 1959), self-ratings (Sears, 1961; et al.), or various equipments in experimental studies (Buss, 1963; Williams et al., 1967; et al.). The technique employed in this investigation was teacher rating in kindergartens. As the purpose was to examine the structure of aggression, teacher rating was considered to have certain advantages compared with time-sampling observation. Because of the teachers' long-term personal knowledge of the subjects, information was obtained about less usual forms of aggression, which was not expected to differentiate individuals on the basis of time-sampling observations, as shown by some previous studies. Apart from its value for practical reasons, this way of gathering material made it possible to obtain a sample large enough for analysis of results through the factor analysis model and representative enough for conclusions to be drawn.

In order to reduce the error variance as greatly as possible (Cattell, 1957, 63—68), attention was paid to the following points. (1) To increase reliability one month was allowed for observation of the children before rating. (2) The variables were defined concretely. (3) To weaken the halo effect the teachers were instructed to rate one variable at a time. (4) To randomize the error variance due to rating the subjects were chosen from many (26) kindergarten groups, so that the number of observers was also 26. (5) To ensure that the observations made by one teacher would be organized within some kind of framework yet without making the task too difficult, it was decided that each teacher should rate 7—10 children. (6) Ratings concerning the frequency of aggression were given in seven-point time scales, thus eliminating ambiguity in the meaning of the scales. (7) A preliminary study secured comprehensibility of the task and instructions, form of items, and appropriateness of the rating scales.

In addition to the frequencies of the aggression variables the teachers rated the target and scene of a response for each aggression variable, certain personality variables, and social background variables.

4. 2. Variables

Problem A. Correspondence between the descriptive model of aggression and interindividual differences in behaviour. The aggression variables (32) were chosen on the basis of the categories of aggression in previous studies (Dawe,

1934; Jersild & Markey, 1935; Koch, 1942; Sears et al., 1953; Walters et al., 1957; Mandel, 1959; Eron et al., 1961; et al.), and the premilinary observations in a kindergarten. It was considered essential that the variables chosen should represent different forms of aggression in accordance with the descriptive model of aggression (Fig. 1, p. 29). In order to reduce the number of variables, specific responses of the same kind and with corresponding implicit intensities were combined. The variables are presented in Appendix A. 1, grouped according to the following categories of aggression composed on the basis of the descriptive model and the theoretical frame of reference.

I Direct defensive aggression
1. Physical mode of aggression
2. Verbal mode of aggression
3. Mimic mode of aggression

II Indirect defensive aggression
1. Stimulus generalization
2. Response generalization

III Direct offensive aggression
1. Physical mode of aggression
2. Verbal mode of aggression

IV Indirect offensive aggression
1. Physical mode of aggression
2. Verbal mode of aggression

All of these forms of aggression do not manifest themselves with equal frequency in children's behaviour, wherefore different categories in the sampling of variables were not deliberately made to be of the same size.

In the definition of the antecedents of defensive aggression the two types of thwart (p. 32) were taken into account, viz., the instigator of defensive aggression is a person (X) who has been found to frustrate the goal-oriented activities of an individual or to attack him. Offensive aggression toward a person (Y) is unjust on the basis of a succession of observed events.

The *instructions* for rating were as follows: »Look up boy number 1 on the subject list. Try to remember how often you have observed him behave as described first on the list of variables (Tries to hurt X, e.g. by hitting, kicking or throwing something.). Mark his code number 1 on the first line of the rating sheet in the space you find appropriate».

The graphic scale was as follows:

The child behaves in the described manner on the average

never	once a school year	once a term	once a month	once a week	once a day	many times a day

After this the code number of the second subject was to be written on the scale, etc., until the first variable had been rated for all subjects. Then the second variable was treated correspondingly, and the ratings were placed on

the second scale of the rating sheet. The reliability of the ratings was estimated by a preliminary study. The subjects were twelve boys in a whole-day course of a kindergarten. The teacher of a whole-day course is not the same in the morning and in the afternoon. The ratings of the two teachers correlated +.21—+.97 for each variable, the median being +.75. The size of the correlation seemed to be positively related to the observability of a response. The inter-rater agreement, calculated from the sum scores over all the variables of aggression, was +.90.

Problem B. Dependences of aggressive habits on personality and social background variables. The dependent variables consisted of factor scores for the aggression factors obtained in the study of Problem A. The independent variables consisted of 7 personality variables and 12 social background variables (Appendix A.1), chosen in accordance with Hypothesis B. The personality variables were measured by kindergarten teachers' ratings. The ratings were written down on a graphic scale according to the following *instructions:* »Look up boy number 1 on the subject list and try to estimate, for the first variable on the list, his rank order in a group of 100 boys aged 5—6 who have been your pupils. Mark your rating on the rating sheet on the line corresponding to the question number, by writing the subject's code number in the space you find appropriate.

(1—10 = feature prominent; 90—100 = feature very slightly perceptible. Middle point of the scale at 50 for bipolar traits, e. g. active/passive; 1—10 = very active; 90—100 = very passive.)»

In the preliminary study the trait ratings of the two teachers correlated +.71 — +.86. The social background variables consisted of filed information and such estimations concerning the children's home conditions as the teachers were supposed to know about. In the preliminary study the teachers' ratings concerning the socio-economical status of a family revealed the lowest correlation (+.52). For other variables the inter-rater agreement varied +.63 — +1.00.

Problem C. Dependence of global rating of aggressiveness on ratees aggressive habits and background variables. The dependent variables consisted of 5 variables for aggressiveness judged according to a general impression (Appendix A): aggressiveness, frustration tolerance, position in the dominance hierarchy (teased by others; feared by others), and motivation of aggressive behaviour. The first four variables were rated by using the graphic scale expounded in Problem B. In the preliminary study the ratings of the teachers correlated +.86 — +.93. The motivation of aggression was rated on the basis of two alternatives. The inter-rater correlation was +.66.

The independent variables consisted of three groups of variables: factor scores for the aggression factors (Problem A), those for the factors of the background variables (Problem B), and those for the factors of the situational variables. The thirdly mentioned scores were based on ratings concerning the target and scene of aggression described in Problem D.

Problem D. Effects of situational factors on aggressive behaviour. Situational variables were grouped according to the scene (free play period outdoors, free

play period indoors, period of directed activity or formal group work) and target (teacher, taller boy, boy of the same size, smaller boy, girl) of aggression. The material was gathered together with the ratings of the frequencies of aggressive responses (Problem A) in the following way. For each variable the kindergarten teacher estimated, subject by subject, which persons the response in question had been directed against, and what kind of situation it had occurred in.

The *instructions* were as follows: »Try to remember who this boy has behaved towards in the manner described first on the list. If the target has been *mainly* a particular person or some particular persons of the mentioned alternatives, mark number *2* on the first row of the set of squares on this child's rating form. If he has behaved in this particular manner toward other persons *as well,* mark number *1* in the corresponding squares. If you have never observed him behave in this particular manner toward one or some of the persons mentioned above, mark *0* for each of them. Describe similarly in what kind of situation this boy has behaved as described. If he has behaved so *mainly* in one of the situations mentioned, mark 2 in the corresponding square. If he has behaved so in other situations *as well,* mark *1* in the corresponding squares. If he has never behaved so in one or some of these situations, mark *0* in the corresponding squares.

Note. 2 can be given even though the behaviour in question were more uncommon to him than to other children, if you only think that it has been directed toward a certain group of people or occurred in a certain situation. If the child has behaved as described toward all of the mentioned groups of people instead of mainly one, or in all kinds of situations instead of mainly one, *1* can be written in every square.

After pupil 1 has been rated for the frequency, target and scene of the first described behaviour, pupil 2 is rated similarly, etc., until all of the ratees have been described. After this the second behaviour on the list is rated, etc., until all of them have been rated in the same way».

The set of squares for rating was as follows:

	T	TB	SSB	G	SB	O	I	DA
1								
2								
3								

T = teacher
TB = taller boy
SSB = boy of the same size
G = girl
SB = smaller boy

O = free play period outdoors
I = free play period indoors
DA = period of directed activity or formal group work (e.g. meals, periods of creative expressions, play and music)

In the premilinary study the inter-rater agreement in ratings for each target and scene of aggression were estimated on the basis of the sum scores of the columns. The coefficients varied +.66 — +.90. The rating of teacher was least reliable among the targets and that of free play period outdoors among the scenes. The former is perhaps due to differences in a child's responses to different teachers, the latter to the extensiveness of the field of observation compared with indoor situations.

4. 3. Subjects and procedures

The population of subjects consisted of boys aged 5—6 in the Finnish kindergartens during the spring term of 1964, and the population of raters of their teachers. All kindergarten teachers were catalogued. The population of teachers was stratified according to the geographical member associations. A random sample was taken from each stratum, the number of teachers in each sample being proportional to the total number in the stratum.

Thirty-two teachers were asked by letter whether they would be willing to take part in the study. Four teachers refused. The conditions for inclusion in the final sample were that the teacher had worked with her group at least six months and that the group included at least 7 boys aged 5—6. The teachers excluded from the sample (11) were replaced by new representatives from the corresponding strata. If the list of pupils sent by a teacher revealed that her group included more than 10 boys aged 5—6, the subjects were chosen at random.

After the teachers had returned the premilinary inquiry forms and after they had been included in the sample, they were sent the rating forms and a note informing them that they would be paid 4 mk per subject. About the same time there was an article in *Lastentarha* (Kindergarten; the publication of the National Association of Kindergarten Teachers), signed by the chairman of the association, in which all members were encouraged to take part in the study. One month was allowed for the ratings. Two teachers failed to return the forms.[1] 26 teachers returned the forms filled in as requested. These teachers had graduated during the period 1935—1963 (median 1955), and seven of them were principals. The total number of children in their groups varied 20—26. The groups included 10 half-day courses, 12 whole-day courses, and 4 mixed courses. These differences between the courses were not likely to have any effect on the ratings of the frequencies of aggressive responses, since the teachers of the whole-day courses work on morning and afternoon shifts, and thus did not have any more time than the teachers of the half-day courses to make daily observations of the children.

The number of subjects per teacher was 7—10, the total number being 216. The average age of the subjects was 6 years 1 month.

4. 4. Analysis of results

The inner structure of aggression (Problem A) was examined by the technique of factor analysis at three levels: 1) primary factor composition of all aggression variables (Appendix A. 1); 2) factor compositions of direct, indirect, offensive, and defensive aggression separately; and 3) second order factor composition of the primary factors. The correlations were calculated as product-moment coefficients from normalized scores. The factor analyses were carried out by the principal-factor method (Harman, 1960), and the rotations by the varimax method (Kaiser, 1958). The primary factors were also rotated by the method of analytic cosine rotation (Vahervuo & Ahmavaara, 1958). All the

[1] Altogether 43 (32+11) teachers received the first inquiry. Of these 6 (4+2) refused.

operations except the analytic cosine rotation were carried out by the IBM 1130 computer.

Dependences of aggressive habits (described at the factor level in terms of the factor scores for the primary factors) on personality and social background variables (Problem B) were studied by the linear regression analysis method (Cooley & Lohnes, 1962; SSP library program 1.3.). Prior to the regression analyses the background variables were intercorrelated, factor analysed, rotated, and transformed into factor-level variables by means of factor scores. The factor scores were computed by the »short» regression method (Harman, 1960; IBM SS library program 2.2). This program does not yield formulae for factor scores, which makes replication of the study difficult. The procedure was selected, however, because the scale scores, on the basis of which the results had been analysed earlier by the writer (Pitkänen, 1966), intercorrelated so highly that interpretation of the relations between aggression factors and background variables proved to be problematic.

Dependences of global rating of aggressiveness on the ratees' aggressive habits (Problem C) were studied by linear regression analyses. A canonical analysis (Cooley & Lohnes, 1962) was performed for the description of the trait-rating variables in terms of different groups of variables (factor scores for the aggression variables, background variables, and situational variables).

Effects of situational variables on the frequencies of aggressive responses (Problem D) were examined from the distributions of the scores obtained through teacher rating. The correspondence between the aggression factors for the rated frequencies of aggressive responses over different situations (the primary factors) and those for each situational variable was investigated through a symmetric transformation analysis model (Mustonen, 1966). Eight intercorrelation matrices were calculated, one for each of the eight situational variables, on the basis of the teachers' ratings (p. 49). These matrices were factor analysed and rotated. Each rotated factor structure was compared with the rotated primary factor composition (point 1, above) through transformation analysis.

The operations were carried out by the IBM 1130 computer in the Computer Center of the University of Jyväskylä, with the exception of the canonical analysis, which was performed by the IBM 360/30 computer at the Finnish State Computer Center, and the transformation analysis, which was carried out by the Elliot 803 computer in the Computer Center of the University of Tampere.

5. RESULTS

5. 1. Correspondence between the descriptive model of aggression and interindividual differences in behaviour

5. 1. 1. *The descriptive model of aggression*

Together with the construction of the descriptive model of aggression (pp. 27—29) it was assumed that an observer can find out the intensity, direction and aim of aggressive responses on the basis of a succession of events. It was predicted that they would account for the main proportion of the variance of interindividual differences in aggression.

The hypothesis was studied by factor analysing the intercorrelations of the aggression variables. As the descriptive model being tested was three-dimensional an examination was first made into how the common variance of the variables can be described in terms of the first three factors. According to Harman (1967, 100) a principal-factor pattern, without unique factors, may be exhibited as follows:

$$z_1 = a_{11}F_1 + a_{12}F_2 + a_{13}F_3 + \ldots + a_{1m}F_m$$
$$\vdots$$
$$z_n = a_{n1}F_1 + a_{n2}F_2 + a_{n3}F_3 + \ldots + a_{nm}F_m,$$

where each of the n observed variables ($j = 1, 2, \ldots n$) is described in terms of m common factors (F). Each successive common factor contributes a decreasing amount to the total, original communality. Although the first three common factors do not account for all of the total communality and the correlations among the variables, they account, however, for a considerable proportion of it, which is also likely to be interpretationally the most important.

The first three principal factors accounted for the total communality 84.6 %. They explained the common variance as predicted.[1] Factor I was unipolar, the next two bipolar. *Factor II* was spanned by *direct vs. indirect* aggression, *Factor III* by *defensive vs. offensive* aggression. The correlation between the loadings of the variables on Factor I and the communalities (after seven factors) was 0.84. Factor I was interpretable as a general aggression factor. Interindividual differences in the frequencies of aggression are probably most reliably discovered for responses that are in one way or another essential from the point of view of the group of raters (e.g. to the work of kindergarten teachers). The correlation between the loadings on Factor I and the condemnability[2] of the responses described by the aggression variables was 0.66. Condemnability and the intensity or observability of aggression are likely to correspond to each other, on the basis of which *the first principal factor* was interpreted as representing the vertical dimension called *intensity*[3] in the descriptive model of aggression.

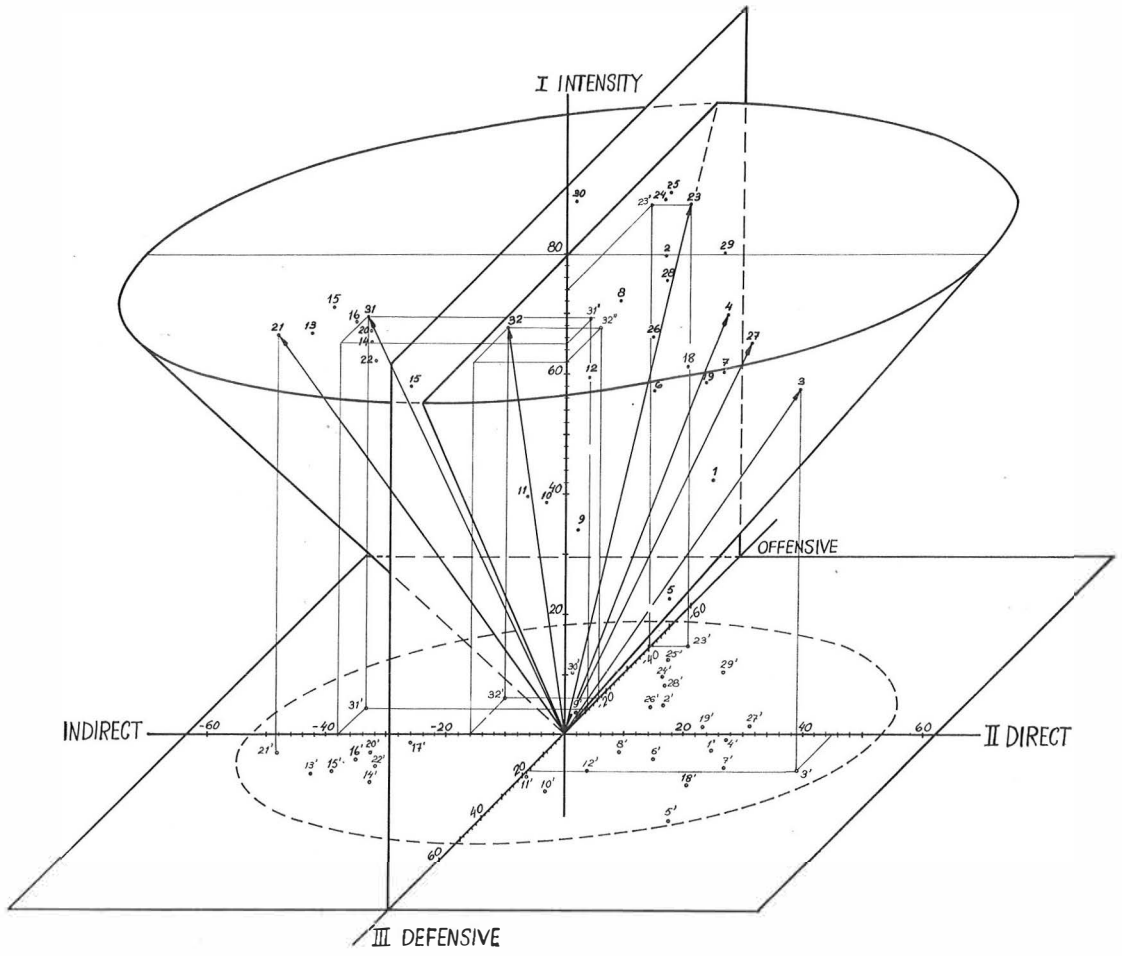
Fig. 2. illustrates the three-dimensional structure of the aggression variables. The location of the variables was determined by the loadings on the first three principal factors.

The figure corresponded very well to the descriptive model of aggression hypothesized. All the variables were bound together by the general aggression factor, i.e. by the positive loadings on the first principal factor. Variables 9 and 5 (Appendix A. 1; mimicked resentment and verbal resistance, e.g., go away) had the lowest loadings, while variables 24 and 30 for offensive aggression had the highest loadings. Projections drawn on a plane illustrate the loadings of the variables on the second (direct/indirect) and the third (defensive/

[1] The factor matrix is obtainable mimeographed, see footnote, p. 202.

[2] When the material was being gathered for the study, 10 kindergarten teachers not included in the final sample of raters were drawn at random from the population of raters. They were asked to judge the condemnability of the responses described by the aggression variables on the 6-point scale (not condemnable at all — extremely condemnable).

[3] In order to find out whether the emergence of the dimension of intensity was influenced by the raters' working experience in a kindergarten, an additional factor analysis was performed of the battery, involving both the aggression variables and a variable for the time that had passed since the teachers' graduation. The latter did not load on the first principal factor. It had the highest loading (0.29) on the third factor, which indicated that more offensive aggression had occurred or had been rated as occurring in young teachers' groups than in those of older teachers.



F i g u r e 2. The three-dimensional structure of the aggression variables, the first three principal factors.

offensive) principal factor. There were only a few differences in the main dimensions between the hypothesized characteristics of the responses included in the list of variables, and the empirical structure of the variables. The most remarkable exception concerned variable 18: the variance for sneaking was explained more by direct than indirect aggression.

5. 1. 2. *Direction and aim of aggression*

It was predicted in **Hypothesis A. 1** (p. 43) that the direction and aim of aggression would account for a larger proportion of the variance of interindividual differences in aggression than the mode of aggression. The result supported the hypothesis. No factors emerged for the mode of aggression interpretable as independent of the aim of aggression. Direct defensive aggression was differentiated, however, according to the modes of aggression, after further factors had been extracted.

The varimax rotation of the first three principal factors yielded the followings factors.[1]

Factor I: Defensive aggression, directed toward the instigator, involving all modes of aggression, mainly direct, independent of offensive aggression (cf. Factor III). The per cent of the common variance explained by Factor I was 28.4.

Factor II: Indirect aggression involving both the defensive and offensive aim. The per cent of the common variance was 37.5.

Factor III: Offensive aggression together with intense defensive aggression involving different modes of aggression. The per cent of the common variance was 34.1.

The varimax rotations were also performed with 4—8 factors. The first seven eigenvalues accounted for just about (98 %) the total original (estimated) communality.[2] The loadings on the eight factor were low, and the factor was not interpretable. The interpretation was based on the seven-factor rotation carried out both by the varimax method and by the method of analytic cosine rotation.

Compared with the three-factor rotation, an increase in the number of rotated factors was not found to alter the interpretation of the factor for offensive aggression. In the six-factor rotation a relatively small proportion of the variance of indirect aggression was explained

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[1] The rotated factor matrix is obtainable mimeographed.

[2] There were many criteria available for selecting the number of factors to be rotated, but the numbers obtained by different methods varied remarkably. The Guilford & Lacey method yielded seven factors, and Burt's only four (Thomson, 1956, 122—123). Comparison of the product of eigenvalues with unity yielded nine factors, and if the criterion that only factors explaining at least 2 % of the total variance should be rotated had been followed, five factors should have been interpreted. In the present investigation the number of interpretable common factors was determined by employing Harman's criterion (1967, 169): the ratio of eigenvalues to the original (estimated) communality should be about 1.00.

by the other factor, whereas direct defensive aggression was divided into four factors. The one first detached from the general defensive aggression factor, found in the four-factor rotation, was identified as mimic aggression. The second specific factor, interpreted as the halo factor, was obtained in the five-factor rotation, and the third one, interpreted as verbal defensive aggression, in the seven-factor rotation. After these processes the original defensive aggression factor could be described in terms of physical defensive aggression.

The factors obtained in the seven-factor rotations[1] were interpreted[2] as follows:

1. Offensive aggression

The highest loadings were found in the variables for both direct and indirect physical offensive aggression. This cluster of responses also comprised physical defence. Variable 2 (behave defiantly) had more in common with the variables for offensive than with those for defensive aggression, and contrary to assumption, its location in Fig. 2 also fell on the quadrant of direct offensive aggression. In spite of the high loadings of the variables for the physical mode of aggression, this factor could not be interpreted on the basis of the mode of aggression, since the variables for both direct and indirect verbal offence also had high loadings. Of defensive verbal aggression sneaking and making scornful remarks were characteristic of boys who behave offensively. The positive relation of sneaking to offensive aggression may have been a consequence of frequent complaining of (physical) pain due to frequent or severe conflicts and fights, or of attention-getting, which has been assumed to be one of the central motives of offensive aggression.

The factors yielded by the varimax rotation and that by the analytic cosine rotation were very much alike.

The teachers' ratings concerning the targets of aggressive responses rendered it possible to examine how the form of aggression described by each factor was directed toward different targets. The means of the raw scores combined in factors[3] indicated that offensive aggression (means obtained from variables 23—32) has most often been directed toward boys of the same size. The subsequent places are held by smaller boys and girls. Taller boys and teachers have been attacked less frequently.

2. Indirect aggression (a)

The factor was spanned mainly by aggression toward objects in the environment through displacement, spread or projection of aggression, but the cor-

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[1] The rotated factor matrices (varimax rotation and analytic cosine rotation) are obtainable mimeographed.

[2] The variables with a loading of less than 0.30 are not taken into account in the interpretation of the factors.

[3] The table is obtainable mimeographed.

responding responses toward other persons also had loadings of approximately the same size. In addition to the variables mentioned above, swearing suggested the presence of anger and diffuse response in a thwarting stimulus situation. Besides indirect defensive aggression, this factor explained a proportion of the variance of indirect offensive aggression. The factor yielded by the analytic cosine rotation was narrower than that yielded by the varimax rotation: the former did not cover indirect offensive aggression.

The means of the rating scores for the targets of indirect aggression (variables 13—17 and 21—22) indicated that taller boys and teachers had caused more stimulus generalization than smaller boys or girls, while the latter had been vicarious targets more often than teachers or taller boys. The result was consistent with the displacement model of inhibited aggression.

3. Indirect aggression (b)

The factor had quite a narrow scope. The highest loadings were found in two variables of the same kind (20 and 31), for which dissimilar aims had been defined. The aggression variables included additional response pairs of a corresponding kind, but in these the mates divided into separate factors. Indirect aggression, in terms of which this factor and the variables spanning it could be described, was characterized by imposition on another person's tendency to take care of both human beings and objects. Direct aggressive responses remained threats. The factors yielded by the orthogonal and oblique rotations corresponded to each other.

Girls and smaller boys were relatively often targets of this kind of indirect aggression (variables 20 and 31). The highest mean was, however, that for boys of the same size, as in other factors.

4. Physical defensive aggression

With the exception of variable 3, the largest proportion of the variance of which was explained by the seventh factor, the variables for direct, defensive physical aggression had significant loadings on this factor. In addition, verbal and mimic threat as well as verbal opposition were loaded on this factor. The factor represented aggression whose purpose was to repel a thwarting stimulus immediately.

There were some differences between the factors yielded by the varimax and analytic cosine rotations, but they did not have any influence upon the general interpretation of the fourth factor.

The means of the rating scores for the targets (variables 1, 4, 6, 12) indicated that physical defence was used mainly against boys of the same size, but also against other peers, especially smaller boys.

5. Verbal defensive aggression

Compared with the fourth factor, this factor could be interpreted correspondingly as verbal defence. Yet it was coloured more affectively than the factor of physical defence, in which repellence of thwart was emphasized. A comparison of factors 4 and 5 gave rise to the assumption that if a child is capable of re-

pelling a thwarting stimulus in the most primary and direct way, emotional reaction instigated by the situation does not manifest itself as generalized negative attitudes such as making scornful remarks on somebody else's personality.

The only differences between the factors yielded by the orthogonal and oblique rotations were in the variable for crying.

The means of the rating scores for the targets (variables 5, 7, 8, 19) indicated that verbal defensive aggression was frequent if the instigator was a taller boy.

6. Mimic aggression

Of the variables for direct mimic aggression resentment and sulk had the highest loadings on this factor, but two variables for verbal offensive aggression were also loaded on it according to both the orthogonal and oblique rotation.

For the interpretation of the factor an inspection was made of the distributions of the rating scores for each target in variables for mimic aggression (9 and 10) and verbal offensive aggression (26 and 28) in a random sample of 100 subjects.

Variables	Teacher+ taller boy	Boy of the same size	Girl+ smaller boy
9+10	243	150	122
26+28	106	174	222

The difference between the frequency distributions was tested by Chi square, and it was found very significant ($p<.001$). The factor could be interpreted as representing some kind of displacement of restrained aggression, but it had burst out against smaller peers in the form of verbal offensive aggression.

7. Halo factor

The factor was spanned by variables for different forms of aggression. Variables 3, 18, 5 and 10 had, however, one thing in common: they were all first variables on the rating form, and variable 27 was the first variable after the three rating variables added for the purpose of reducing the response sets. The correlation between the order of size of the loadings and the order of rating of the variables was 0.62. The factor was interpreted as being spanned by a negative halo effect, whose influence upon rating was great at the beginning but weakened as rating required continuous discrimination in behaviour of a negative nature. The interpretation of the halo factor is supported by results concerning the relations of factor scores for the aggression factor to those for background factors (p. 67) and to global ratings of aggressiveness (p. 70).

5. 1. 3. *Mode of aggression*

It was predicted in **Hypothesis A. 2** that the mode of aggression may account for the variance of interindividual differences in aggression in a further analysis of the main forms of aggression. The variables for direct (1—12 and 23—28), indirect (1—13 and 29—32), de-

fensive (1—22), and offensive (items 23—32) aggression were factor analysed separately.[1] These analyses, with the exception of that for indirect aggression, yielded factors interpretable on the basis of the modes of aggression. The factors, especially those for defensive aggression, can, however, be interpreted also on the basis of the intensity of aggression.

Direct aggression: 5 factors

The structure corresponded to the primary factor composition, with the exception of the indirect aggression factor, the variables of which were excluded. Consequently, no factors interpretable on the basis of the modes of aggression and involving both the defensive and offensive aim could be found. Expected factors for the modes of aggression emerged only for defensive aggression.

Indirect aggression; 3 factors

No factors emerged for the modes of aggression. Two factors were interpretable on the basis of the aim of aggression. The third factor corresponded to the indirect aggression factor (b) of the primary factor composition.

Defensive aggression; 5 factors

No factors were found as obviously interpretable on the basis of the modes of aggression as those emerging for defensive aggression when the variables for offensive aggression were included in the factor analyses (both for the primary factors and for direct aggression); the factors spanned by direct defensive aggression could be described in terms of the intensity of aggression.

Factor I: Indirect defensive aggression.

Factor II: Intensive direct defensive aggression. The highest loadings on this factor were found in variables for defensive aggression that were loaded on the offensive aggression factor in the primary factor composition. The highest loadings were found for sneaking, scornful remarks, fighting, and defiant gestures and expressions.

Factor III: Mimic aggression together with verbal resistance (5).

Factor IV: Physical resistance together with verbal opposition (6).

Factor V: Halo factor.

The variables for verbal aggression divided into three factors, which differed according to the intensity (condemnability) of aggression. The variables for physical and mimic aggression divided into two factors respectively.

Offensive aggression; 3 factors

The common variance of offensive aggression proved to be very strong in the primary factor composition. The separate analysis yielded, however, factors interpretable on the basis of both the direction and mode of offensive aggression.

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[1] The rotated factor matrices are obtainable mimeographed.

Factor I: A general offensive aggression factor. The highest loadings were found in the variables for direct and indirect *physical* offence. In addition, verbal teasing and scorn were loaded on this factor.

Factor II: Indirect offensive aggression. Direct physical and verbal offence aimed at disturbing others were also slightly loaded on this factor.

Factor III: Both direct and indirect verbal offensive aggression. In addition, the variable of physical hurting loaded significantly.

If different forms of aggressive behaviour were widely represented in the variables, the factor analysis revealed that the most essential dimensions describing interindividual differences were: (1) Some boys not only defend themselves by responding vigorously, but also bring about similar situations for other persons in many ways. (2) Some children are characterized by displacement of aggression and indirect revenge, which is a possible consequence of the fact that these children are afraid or incapable of meeting thwarting stimulus situations by means of direct action. (3) In some children aggression is limited to thwarting stimulus situations. Their aggressive behaviour takes different forms, probably determined by the instigator: (a) an individual may try to eliminate the stimulus immediately, mainly physically; (b) he may protest against the progress of events verbally, in which case his response suggests the presence of suppressed affects; or (c) he may restrain himself from active resistance and content himself with showing displeasure by his appearance, in which case his activity may, however, burst out as attacks against other persons in some other situations.

The modes of aggression are probably connected with inhibition of behaviour in a thwarting stimulus situation. No factors interpretable on the basis of the modes of aggression, involving both the defensive and offensive aim, could be found.

5. 1. 4. *Second order factors*

It was predicted in Hypothesis A. 3 that different aggressive habits intercorrelate positively and combine in the second order factor structure into a general overt aggression factor. The intercorrelations of the aggression variables were positive, varying $+.08$ — $+.76$. The size of the intercorrelations of the factors (seven primary factors) depended on the operations by which they had been obtained:

a) The intercorrelations of factor scores were not significantly different from zero.

b) The intercorrelations of scale scores were positive, varying $+.33$ — $+.70$. The scale scores were compounded as follows. The variables were grouped

on the basis of the size of the loadings in both rotation solutions to represent the factors. (1) Offensive aggression: items 23—26, 28—30, 32, 2; (2) Indirect aggression (a): 13—17, 21—22; (3) Indirect aggression (b): 20, 31; (4) Physical defensive aggression: 1.4, 12; (5) Verbal defensive aggression: 5, 7—8, 19; (6) Mimic aggression: 9, 10; (7) Halo factor: 3, 16, 27. The scale scores (sums of unweighted scores) were calculated for each subject from normalized rating scores.[1]

c) The intercorrelations of the factors, obtained in the analytic cosine rotation (Vahervuo & Ahmavaara, 1958, 129), corresponded to the intercorrelations of the scale scores, varying 0.22—0.79.

The second order factors were extracted by factor analysing the correlation matrices (b) and (c). The proportion of the sum of estimated communalities explained by the first factor was 86.1 % and 76.3 % respectively. The first two eigenvalues accounted for the total communality 96.8 % and 92.3 % (the first three, 101.2 % and 102.4 %). The first factor had a very large scope, which supported the hypothesis on a general overt aggression factor. Both factor analyses considered, the highest loading on the first second order principal factor, (range +.86 — +.51) was found in the offensive aggression factor, and the next highest in the indirect aggression factor (a) and (b), the halo factor, the factors of physical defensive aggression, and verbal defensive aggression, while the lowest loading was found in the mimic aggression factor. This order was consistent with the loadings of the variables on the first principal factor for the primary factor composition, which had been interpreted as representing the dimension of intensity in the descriptive model of aggression (Fig. 2, p. 54).

The first factor did not, however, explain all of the estimated common variance. The rotated factor matrices are given in Table 1. The interpretation was based on the two-factor rotation:

Factor I: Direct defensive and offensive aggression
Factor II: Indirect defensive and offensive aggression

When both of the second order structures were taken into account the highest loadings on *Factor I* were found in the factors of physical and verbal defensive aggression (the highest loading on the first factor for the scale scores was in the halo factor, which, for the structure based on cosine solution, stood in the middle of the cluster of direct and indirect aggression). The primary factor of offensive aggression contained both direct and indirect aggression, which was a possible reason for the fact that its variance was explained by both of the second order factors.

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[1] The validity coefficients of the scale scores (estimated factor scores) (Vahervuo, 1956, 108) on the rotated factors obtained by the varimax method were as follows. F.I: 0.78; F.II: 0.86; F.III 0.54; F.IV: 0.60; F.V: 0.65; F.VI: 0.63; F.VII: 0.74.

Table 1. Rotated factor matrices, second order factors

Primary factors	Structure of scale scores			Structure based on cosine solution		
	I	II	h^2	I	II	h^2
1. Offensive aggression	60	62	74	42	64	59
2. Indirect aggression (a)	39	74	70	17	87	79
3. Indirect aggression (b)	20	82	71	28	83	77
4. Physical defensive aggression	74	35	67	70	31	59
5. Verbal defensive aggression	74	37	68	75	08	59
6. Mimic aggression	30	44	28	51	37	40
7. Halo factor	79	29	71	59	45	55

The highest loadings on *Factor II* were found in both indirect aggression factors. Factor II also accounted, to some extent, for the variance of the mimic aggression factor, which had been interpreted as reflecting some kind of displacement of aggression, i.e. stimulus generalization, which also took place in indirect aggression (a).

In spite of the differences in the operations by which the intercorrelations had been obtained, the structures of the second order factors corresponded rather well. They showed that the cluster of variables bound together by the general aggression factor could be described in terms of two orthogonal axes. They could be named on the basis of the direction of aggression, one of the two cross-sectional dimensions in the descriptive model of aggression.

5. 2. Dependences of aggressive habits on personality and social background variables

It was predicted in **Hypothesis B. 1** that background variables describing an individual's ability to defend himself within his social group correlate with direct and indirect aggression. The second order factors showed that direct aggression was most clearly represented in the primary factors of physical and verbal defensive aggression, and indirect aggression in those of indirect aggression (the variance of offensive and mimic aggression as well as that of the halo factor was explained by both of the second order factors).

In the examination of the hypothesis the dependent variables consisted of the factor scores for the seven primary factors of aggression.

The independent variables, defined exactly in Appendix A. 1, are given in Table 2.

Table 2. Correlation coefficients between background variables and factor scores for the aggression factors

Background variables	Direct defensive		Halo factor	Off. aggr.	Mimic aggr.	Indirect aggression		Differences direct/ indirect
	Phys. 4	Verb. 5	7	1	6	(a) 2	(b) 3	
Age	—10	—07	03	—11	—18**	—22**	—09	n.s.
Stature	03	—01	—02	—02	10	—16**	12*	$4—2^1$
Intellectual development	08	06	—09	—14*	—09	—07	—05	n.s.
Verbal development	10	14*	—08	—04	—07	—06	00	$4—2^1$, $5—2^1$
Active (vs. passive)	14*	12*	36**	18**	—12*	—01	—13*	$4—3^2$, $5—3^2$
Leader (vs. withdrawing)	06	23**	35**	22**	—07	—01	—19**	$4—3^2$, $5—2^2$, $5—3^2$
Popular (vs. despised)	11	03	—09	—07	—05	—10	—10	$4—2^1$, $4—3^1$
Number of children in family	00	—05	—06	01	—16**	—02	—11	n.s.

* Significant at .05 level, if $r \geqq .12$
** Significant at .01 level, if $r \geqq .16$, for a one-tailed test.
The significance of the difference (d): $^1 p < .05$, if $d \geqq 0.16$, $^2 p < .01$, if $d \geqq 0.23$, for a one-tailed test and for this range of size of the correlations (Mc Nemar, 1955).

The assumption that the strength of indirect aggressive habits within a particular social group is determined by inhibition of direct aggression in certain situations, e.g. because within his group an individual is younger, physically weaker, or equipped with a lower intellectual capacity than the average, or because his communication habits with others of the same age are weak, received only small support. The correlations between these variables and the factor scores for the aggression factors were low, and only some of them were significantly different from zero.

Age correlated negatively with the amount of aggression, but significantly ($p < .01$) only with indirect aggression (a), which supported the hypothesis. Contrary to the hypothesis, the differences between the correlations concerning age and indirect aggression, and age and direct aggression, were not significant. Small *stature* correlated positively ($p < .01$) with indirect aggression (a) which also supported the hypothesis. The positive correlation ($p < .05$) between large stature and indirect aggression (b) is perhaps related to fatness typical of passive boys. The correlations concerning *intellectual development* were not significant. With regard to *verbal development,* there was one significant correlation, and the differences between the correlations accorded with the hypothesis.

As far as the hypothesized variables for communication habits are concerned

it could be seen that direct aggression correlated positively with *general activity* and *leadership,* whereas indirect aggression (b) was characteristic of withdrawn and passive individuals. The differences between the correlations supported the hypothesis. A small *number of children* in a family did not correlate with indirect aggression as expected, with the exception of mimic aggression, which correlated with background variables in much the same way as the factors of indirect aggression.

Of the mode of aggression it was predicted in **Hypothesis B. 3** that physical aggression correlates positively with physical fitness, verbal aggression with verbal ability, and both of them with general activity more highly than mimic aggression. Only the factors for defensive aggression were interpretable on the basis of the mode of aggression. The hypothesis was partly supported.

The correlations between *general activity* and the modes of defensive aggression supported the hypothesis. In addition, the difference in the correlations between leadership and the verbal or mimic mode of aggression agreed with the hypothesis.

Verbal defensive aggression correlated significantly with *verbal development.* The result supported the hypothesis; yet the correlation did not differ from the corresponding correlation of physical defence. The negative correlation of mimic aggression was, however, significantly ($p < .05$) different from those mentioned above.

The index of *stature* (Appendix A. 1) was employed as an estimate of physical fitness. It did not correlate with the mode of aggression as expected. On the basis of the results the hypothesis could not, however, be nullified; the correlations should be re-examined by employing variables which would measure physical fitness from a greater variety of aspects.

It was predicted in **Hypothesis B. 2** that variables reflecting (a) control of behaviour and (b) the amount of experienced deprivations correlate with offensive and defensive aggression. Only one of the primary factors of aggression was interpretable mainly as offensive aggression. Defensive aggression independent of offensive aggression was represented by the factors of physical and verbal defence. (Both of the factors for indirect aggression as well as the mimic aggression factor involved both defensive and offensive aggression.)

The independent variables consisted of 19 personality and social background variables (Appendix A. 1, Problem B). To reduce the number of dimensions, the background variables were transformed into factor-level variables.[1] The eigenvalues of the first six factors as a percentage of the sum of estimated communalities was 95.8.

The variable of poor home conditions divided into two factors (I and VI). *Factor I* was interpreted as *indifference toward the child;*

[1] The rotated factor matrix is obtainable mimeographed.

this being independent of the social status. *Factor VI* represented *low socio-economical status.*

The variances of general activity and leadership were also explained by two factors (II and IV). *Factor II* was interpreted as *socially acceptable activity,* the opposite of which consisted of passiveness, low level of intellectual and verbal development, and unpopularity,[1] and Factor IV as *uncontrolled behaviour.*

Factor V was a specific *age factor;* in the sample the subjects attending whole-day courses had been younger than those attending half-day courses. *Factor III* was spanned by *exceptional vs. normal home relations:* if the parents were divorced or if the child was illegitimate, there were fewer children in the family, and the subject was the only or the youngest child more often than when the family relations were normal.

Dependences of aggressive habits on background variables were examined at the factor level by the method of linear regression analysis. The variables were transformed into factor-level variables by means of factor scores. The independent variables consisted of the factor scores for the background variables. Each factor score for the seven primary factors of aggression was treated separately as a dependent variable.

The results obtained by seven regression analyses are summarized in Table 3. (The intercorrelations of the predictor variables were not significantly different from zero.)

It was hypothesized (Hypothesis B. 2) that the habit strength of *offensive aggression* is determined by parents' indifference toward the child arousing secondary motivation of aggressive behaviour, and possibly also by other background factors which may cause him deprivations and feelings of inferiority. The regression coefficients indicated that the dependence between the factor of parents' *indifference toward the child* and the offensive aggression factor was significant, whereas, the dependences between the former and the factors for direct defensive aggression were not. The result supported the hypothesis. The regression coefficient of the factor of *low socio-economical status* in the offensive aggression factor, however, was not significant. This contradicted the hypothesis.

A further assumption was that the dependence between the *lack of control of behaviour* and the habit of offensive aggression is stronger than that between the former and the habit of direct defensive aggres-

[1] The interdependences were probably strengthened as a result of the method used for gathering material.

Table 3. Results of the regression analyses, factor scores for background and aggression variables

Independent variables	Defensive aggression		Offensive aggr.	Indirect aggression		Mimic aggr.	Halo factor
	Phys.	Verb.		(a)	(b)		
I Indifference toward the child	—.06	.05	.16*	.12[1]	.08	.08	.12*
VI Low socio-economical status	.04	.05	.09	—.07	.01	.00	.25***
IV Uncontrolled behaviour	.07	.14*	.35***	.05	—.18**	—.09	.50***
II Socially approved activity	.09	.09	—.08	—.07	—.03	—.07	—.05
V Age (age reversed)	.06	.09	.13[1]	.21**	.08	.15*	—.06
III Normal (vs. exceptional) family relations	.02	—.04	—.09	.03	—.12[1]	—.12[1]	—.12[1]
R	.17	.24	.42***	.24*	.29*	.25*	.58***

* Significant at .05 level.
** Significant at .01 level.
*** Significant at .001 level.
[1] Significant at .1 level.

sion. The regression coefficients were consistent with the hypothesis. The regression coefficients of the factor of *socially approved behaviour* were not significant.

Of the two remaining factors of background variables only *the age factor* predicted, to some extent, the habit strength of offensive aggression. The age factor had been loaded significantly not only by age but also by the whole-day course and exceptional family relations variables. Both of these correlated significantly with the factor scores for offensive aggression ($r = .25$; $p < .001$, and $r = .16$; $p < .01$, respectively), while the correlation between age and offensive aggression was not significant. The regression coefficient of the age factor in the offensive aggression factor could perhaps be interpreted through secondary motivation of offensive aggression: a child spends 8—9 hours a day in a big group of children, with only a few teachers. This may result in a desire to attract attention at least negatively, especially if his family relations are somehow exceptional, in which case he has possibly been neglected. Another reason for a child's nonacceptable behaviour is probably the fact that it is tiring for him to stay with other children for such a long time. This increases his susceptibility to conflicts, and in this way also the amount of offensive aggression.

The significant dependence between the age factor (Factor V) and the *indirect aggression factor (a)* was parallel with that between the former and the offensive aggression factor. In this case the regression coefficient was, however, interpretable mainly through the negative correlation between age and the habit strength of indirect aggression, the interpretation of which has been presented earlier. Also the factor of indifference toward the child was slightly related to the indirect aggression factor (a). The habits of both indirect and offensive aggression were assumed to develop from primary defensive aggression under certain conditions.

The dependences between the factors for background variables and the *indirect aggression factor (b)* were, to some extent, similar to those between the former and the *mimic aggression* factor. These aggressive habits, particularly that of indirect aggression (b), were characteristic of passive boys and of boys who came from families with only a few children (often the subject was the only child); in many cases the parents were divorced or the child was illegitimate.

The dependences between the seventh factor, called the *halo* factor, and the background variables proved to be stronger than those between the factors reflecting actual aggressive habits, and the background variables; the multiple correlation of the halo factor was larger than those of the other factors for aggression variables. The best predictors were the factors of uncontrolled behaviour and low socio-economical status. The latter did not predict any other aggression factor.

Although the regression coefficients were small, there were dependences between aggressive habits and background variables that were consistent with the hypothesis. As the dependences had been obtained by employing the factor scores, they were likely to be more reliable than the correlations at the variable level.

5. 3. Dependence of global rating of aggressiveness on aggressive habits and background variables

5. 3. 1. *Dependence of global rating of aggressiveness on aggressive habits*

It was predicted in **Hypothesis C** that global rating of the trait of aggressiveness is determined primarily by the amount of offensive and indirect aggression, while direct defensive aggression independent of offensive aggression was assumed to have relatively slight effect on it in the case of boys aged 5—6.

The independent variables consisted of the factor scores for the seven primary factors of aggression. The dependent variables consisted of five variables of aggression judged according to a general impres-

sion: aggressiveness, which was considered the main variable for global rating of the trait of aggressiveness, frustration tolerance, position in the dominance hierarchy (teased by others, feared by others) and secondary motivation of aggressive behaviour. The intercorrelations of the dependent variables varied +.26 — +.46.[1]

Dependences between the independent and dependent variables were examined by the method of linear regression analysis by treating each trait-rating variable for aggressiveness separately as a dependent variable. The results of the five regression analyses are summarized in Table 4.

Table 4. Results of the regression analyses, trait-rating variables of aggressiveness, and factor scores for aggression variables

Independent variables	Aggressiveness (vs. peacefulness)	Frustration tolerance: low	Position in dominance hierarchy		Motivation of behaviour: secondary
			Teased	Feared	
1. Offensive aggression	.45***	.52***	.21**	.35***	.35***
2. Indirect aggression (a)	.16*	.26***	.10	—.01	.10
3. Indirect aggression (b)	—.01	—.28**	.08	.05	—.06
4. Physical defensive aggression	.04	.08	—.04	—.19**	.08
5. Verbal defensive aggression	.00	.29***	.10	.04	—.05
6. Mimic aggression	.10	—.01	.21**	.06	.05
7. Halo factor	.55***	.43***	.30***	.39***	.35***
R	.61***	.65***	.41***	.54***	.54***

The regression coefficients of the aggression factors in the variable of *aggressiveness (vs. peacefulness)* were parallel with the hypothesis, yet lower than expected. The best predictor was the halo factor. Contrary to the hypothesis, the multiple correlation of aggressiveness (vs. peacefulness) was not higher than that of the variable for frustration tolerance (a child tends to display aggression with very little reason — only after severely provoked).

[1] The intercorrelation matrix is obtainable mimeographed.

All the regression coefficients of the *offensive aggression* factor were significant, the largest of them being in the variable for low frustration tolerance and in aggressiveness (vs. peacefulness). The result supported the hypothesis. When both the high loading of the offensive aggression factor on the first principal factor in the second order factor structure (on the general overt aggression factor), and the dependences between the offensive aggression factor and global rating of aggressiveness are taken into account, it seems probable that this habit of aggression is *the best indicator of what is meant by aggressive behaviour.*

The largest regression coefficients of the *indirect aggression factor (a)* were found in the variables of low frustration tolerance and aggressiveness. As expected, they were smaller than the corresponding coefficients of offensive aggression. The other coefficients of the indirect aggression factor (a) were not significant.

Contrary to the hypothesis, the regression coefficient of the *indirect aggression factor (b)* in aggressiveness was not significant, and in the variable of frustration tolerance it was significantly negative. The latter indicated that the habit of indirect aggression (b) was more characteristic of boys with a high than of those with a low frustration tolerance. Moreover, it had been found out earlier that the strength of this habit correlated positively with passiveness. It is possible that these boys have overlearned inhibition of emotional and spontaneous reactions; they can be called »overcontrollers» (Block & Martin, 1955). The indirect aggression factor (b) represented a form of aggression whose existence, in the theoretical frame of reference, had not been predicted.

The regression coefficients of the factors of *physical, verbal* and *mimic defensive aggression* in aggressiveness (vs. peacefulness) were not significant, which supported the hypothesis. The regression coefficient of the verbal aggression factor in frustration tolerance, however, was significant, which was parallel with the significant dependences between the factors of verbal aggression and uncontrolled behaviour (Table 3). The nonsignificant regression coefficients of the physical defensive aggression factor independent of offensive aggression suggested that the strength of this aggressive habit was not a powerful determinant of the impression about aggressive personality. On the contrary: the dependence between the physical aggression factor and position in the dominance hierarchy indicated that, unlike offensive boys, defensive boys were not feared by others. Yet physically defensive boys were not in a low position in the »pecking order» of the group, as shown by the nonsignificant regression coefficient in

the variable »teased by others». The significant regression coefficient of the mimic aggression factor in this variable was in accordance with the dependence between the mimic aggression factor and passiveness, which had been interpreted as being connected with weak communication habits and inability to defend oneself.

The regression coefficients of the *halo factor* were very significant. The largest of them was found in aggressiveness (vs. peacefulness). With the regression coefficients (Table 3) of the factors of uncontrolled behaviour and low socio-economical status in the halo factor taken into account (the latter did not predict any other aggression factors), the interpretation of the halo factor can be considered justified.

5. 3. 2. *Description of global rating of aggressiveness in terms of the different groups of variables*

It was predicted in **Hypothesis C** that global rating of the trait of aggressiveness is determined not only by aggressive habits but also by individual background variables and the targets and scenes of aggression characteristic of an individual's aggressive behaviour.

In order to find out those aspects of global rating of aggressiveness and of the predictor variables most closely related to each other, a canonical analysis was carried out. The dependent (criterion) variables consisted of the same five trait-rating variables as those in the regression analysis described in the preceding chapter.

The independent (predictor) variables (16) consisted of three groups of variables:

1) factor scores for the seven primary factors of the aggression variables,
2) factor scores for the six factors of the background variables, and
3) factor scores for the three factors of the situational variables.

The factors of the situational variables were obtained as follows. On the basis of the teachers' ratings concerning the targets and scenes of aggressive responses the sum scores were calculated for each subject over all the aggression variables in each situational variable. The intercorrelations of the sum scores varied +.38 — +.77. To reduce the number of dimensions and the harmful influence of multicollinearity these variables were also transformed into factor-level variables by means of factor scores. The rotated factor matrix is presented in Table 5.

Table 5. Rotated factor matrix, situational variables

Variables	I	II	III	h^2
Target of aggression				
Teacher	23	82	18	76
Taller boy	71	38	26	72
Boy of the same size	79	24	21	73
Smaller boy	38	22	69	67
Girl	29	38	70	71
Scene of aggression				
Free play periods outdoors	76	09	37	72
Free play periods indoors	56	42	49	74
Periods of directed activity	23	76	43	81

Factor I indicated that the amount of aggression toward taller *boys* and that toward boys of the same size were closely related to each other. This type of aggression was frequent during free play periods both outdoors and indoors.

Factor II was spanned mainly by aggression toward a *teacher* and during periods of directed activity; it thus reflected the kind of aggressive behaviour that most clearly breaks norms in regard to both the target and scene of aggression.

Factor III reflected aggression toward *girls and smaller boys*. All the variables for the scene of aggression were also loaded on this factor.

The correlations of the factor scores for the situational variables to the factor scores for the aggression and background variables are presented in Table 6.

Table 6. Correlation coefficients of situational variables to aggression and background variables, factor scores

Factors of situational variables	Aggression factors							Background factors					
	Offensive aggression	Indirect (a)	Indirect (b)	Physical defence	Verbal defence	Mimic aggression	Halo factor	Indifference toward child	Socio-economical status	Socially approved activity	Uncontrolled behaviour	Age (reversed)	Normal family relations
I	24***	09	—08	06	20**	12	46***	20**	16*	14*	35***	—02	02
II	37***	03	—04	12	—04	11	29***	27***	19**	03	32***	13	—07
III	23***	11	—03	07	19**	13	32***	21**	24***	08	25***	22**	00

All the factors of the situational variables correlated significantly with the offensive aggression factor, halo factor, and the factors for indifference toward the child, low socio-economical status, and uncontrolled behaviour. In addition, aggression toward peers (Factors I and III) correlated particularly with the verbal defensive aggression factor.

The interdependences of the independent variables are shown in Tables 3 and 6. The factor scores for the same group of variables did not intercorrelate highly. The highest correlation coefficients did not exceed | 0.16 |.

The results of the canonical analysis are shown in Table 7. The maximum canonical correlation obtained was 0.82, which was statistically very significant. The second and the third canonical correlation were also significant. Consequently, the independent variables as linear combinations accounted for the variance of the trait-rating variables of aggressiveness in at least three different ways.

The first pair of axes ($p<.0005$): The variance of low frustration tolerance, aggressiveness, secondary motivation of aggression, and position in the dominance hierarchy was accounted for by the o f f e n s i v e aggression factor and the h a l o factor to a statistically significant extent. The result was in accordance with those obtained earlier by the regression analysis. The first vector-pair was also lightly weighted by the indirect aggression factor (a), the factor of uncontrolled behaviour, and the factors of situational variables. It had been predicted that the variance of the trait-rating variables of aggressiveness would be accounted for by those situational variables which represent the amount of aggression directed toward those persons and occurring in those situations generally requiring strong control of behaviour. This type of aggression was reflected by Factor II of the situational variables, and to some extent also by Factor III. The first vector-pair was not, however, weighted more heavily by Factors II and III than by Factor I; the loadings of the factors of the background variables were also lower than expected.

The second pair of axes ($p<.0005$): The variance of variable 3 (teased by others) was accounted for by the factor of socially approved behaviour; the negative loading indicated that a l o w position in the dominance hierarchy was related to a low intellectual capacity, passiveness and unpopularity. The second vector-pair was weighted also by the factor containing aggression toward girls and smaller boys, and to a small extent by the factor of indifference toward the child.

The third pair of axes ($p<.005$): The other part (cf. the first vector-pair) of the variance of the variable of l o w frustration tolerance was accounted for by the factors of physical and verbal defen-

Table 7. Canonical correlations and vectors

Variables Predictors	Latent vectors 1	2	3	4
Aggression factors				
1. Offensive aggression	57	—25	—09	—19
2. Indirect aggression (a)	24	—11	24	10
3. Indirect aggression (b)	01	05	—36	—03
4. Physical defensive aggression	03	11	28	23
5. Verbal defensive aggression	03	—01	29	—32
6. Mimic aggression	00	07	—30	—07
7. Halo factor	47	—08	—34	—24
Background factors				
8. Indifference toward the child	15	29	—19	06
9. Low socio-economical status	—05	—10	—06	32
10. Socially approved activity	07	—56	10	—03
11. Uncontrolled behaviour	29	—23	—31	—21
12. Age (age reversed)	—10	14	07	—36
13. Normal (vs. exceptional) family	03	05	—03	—08
Factors of situational variables				
14. Aggression toward boys (I)	27	20	49	02
15. Aggression toward the teacher (II)	25	07	18	55
16. Aggression toward smaller peers (III)	23	34	05	06
Criteria				
1. Aggressiveness (vs. peacefulness)	49	—23	—27	—15
2. Low (vs. high) frustration tolerance	64	—28	78	—25
3. Position in domi- { teased by others	—09	89	—03	—30
4. nance hierarcy { feared by others	37	—22	—57	—26
5. Motivation of aggression: secondary	46	16	—07	87
Canonical R	82	52	43	35
Chi square	350.53	135.56	74.11	35.37
df	80	60	42	26
p<	.0005	.0005	.005	.1

sive aggression and by the factor of aggression toward boys, high frustration tolerance was accounted for by the factors of indirect aggression (b) and mimic aggression. The negative loadings of the halo factor and the factor of uncontrolled behaviour can be explained as due to the orthogonality between the predictor variates III and I. The negative loadings of those dependent variables which, together with the variable of frustration tolerance, were weighted in the first criterion variate, can be understood correspondingly.

The *fourth* canonical correlation was not large enough to be statistically significant. The fourth vector-pair could, however, be given a meaningful interpretation: it can be employed as a guideline. The variance of the variable of *secondary motivation* of aggression (by means of his aggressive behaviour a child attempts to satisfy his needs which have remained unsatisfied, e.g. tries to be leader of his group or to attract attention) was best accounted for by Factor II of the situational variables. Factor II contained the amount of aggression directed toward those persons and occurring in those situations generally requiring strong control of behaviour. The fourth vector-pair was weighted also by the factor of low socio-economical status and the age factor (the aggressive behaviour of older children was motivated secondarily to a greater extent than that of younger children).

No vector-pair was weighted by Factor III of the background variables, which contained the number of children in the family and exceptional vs. normal family relations.

On the basis of the canonical correlations the conclusion could be drawn that the variance of the five global variables of aggressiveness rated by the kindergarten teachers was not limited to one general halo dimension that could be considered an interpretation of the first canonical vector-pair. This general aspect had been present most clearly in the rating of the variable aggressiveness vs. peacefulness. Of the aggressive habits the habit strength of offensive aggression had been the foremost basis for the global rating of aggressiveness, as shown by the results of both the canonical analysis and the regression analysis (p. 69). The variance of the rating of an individual's low frustration tolerance was also explained by the habit of defensive aggression independent of offensive aggression. Besides these, there were two other aspects of aggressive behaviour: aggression toward smaller peers, which was related to a low position in the dominance hierarchy, and aggression toward a teacher, which was related to the secondary motivation of aggression.

5. 4. Effects of situational control on aggressive behaviour

5. 4. 1. *Effects of situational control on the frequencies of different forms of aggression*

The aggressive behaviour of an individual was assumed to vary according to the stimulus situation in spite of his average aggressive habits. It was predicted in **Hypothesis D** that situational control (defined p. 42) affects both the frequencies of different forms of aggression and the structure of aggression.

In order to study the frequencies of different forms of aggression

in different situations (with various targets and scenes) the aggression variables were classified by employing the empirically obtained descriptive model of the aggressive responses (Figure 2, p. 54). From the scores obtained by the teachers' ratings concerning the situational variables the sum scores were calculated over all the subjects for each situational variable, considering 1) all the aggression variables (items 1—32), 2) the variables of direct (items 1—8, 10—12, 18—19, 23—29) and 3) indirect (items 9, 13—17, 20—22, 30—32) aggression, and 4) the variables representing each of the quadrants direct-defensive, direct-offensive, indirect-defensive, and indirect-offensive aggression. The sum scores for each situational variable as percentages of the sum scores over all the situational variables are presented in Table 8.

In connection with the selection of the targets of aggression it was assumed, on the basis of the frequencies of aggression presented by Dawe (1934), Jersild & Markey (1935), Graham et al. (1951), Cohen (1955), and Walters et al. (1957), that, on the average, situational control is strongest when the target is a teacher, next strongest when it is a taller boy, a girl, a smaller boy, and weakest when the target is a boy of the same size. The concept of situational control was defined by using as a criterion the strength of the inhibition of direct, defensive, physical aggression. The rating scores for the targets of this form of aggression were distributed as follows: teacher 1.5 %, taller boy 18.5 %, girl 17.9 %, smaller boy 23.1 %, boy of the same size 39.0 %. The distributions for the scenes were: periods of directed activity 16.9 %, free play periods indoors 38.3 %, free play periods outdoors 44.8 %.

The amount of total aggression toward teachers was significantly ($p<.001$) smaller, and that toward boys of the same size significantly ($p<.001$) greater than if the ratings for the target had been completely random. The frequency distribution of the rating scores was as expected, and the scores could not be considered random. Correspondingly, the amount of total aggression during periods of directed activity was significantly ($p<.001$) smaller, and that during free play periods outdoors significantly ($p<.001$) greater, compared with the random distribution. The result supported the hypothesis: all the forms of aggression considered, more aggression appeared with weak than with strong situational control.

The difference in the frequency distributions for the *targets* between direct and indirect aggression were smaller than expected. In both cases the distributions followed the total distribution. In accordance with Hypotheses D. 1 b and D. 1 c, the amount of indirect

Table 8. Frequency distributions of the rating scores for the situational variables, percentages

Form of aggression	Target of aggression				
	Teacher	Taller boy	Girl	Smaller boy	Boy of the same size
Total distribution %	9.1	21.7	17.3	19.0	33.0
σ (P)	2.1	2.8	2.6	2.7	3.2
Direct aggression %	8.6	21.1	17.7	19.6	32.9
Indirect aggression %	10.8	23.8	15.5	16.7	33.2
Direct defensive %	6.8	22.1	16.4	19.5	35.1
Direct offensive %	11.0	19.7	19.5	19.8	30.1
Indirect defensive %	12.3	25.4	13.4	15.3	33.6
Indirect offensive %	8.7	21.7	18.3	18.7	32.8

Form of aggression	Scene of aggression		
	Directed activity	Free play period indoors	Free play period outdoors
Total distribution %	21.8	36.3	41.9
σ (P)	2.8	3.3	3.4
Direct aggression %	21.6	36.6	41.8
Indirect aggression %	22.3	35.4	42.3
Direct defensive %	19.7	36.8	43.5
Direct offensive %	24.1	36.3	39.6
Indirect defensive %	21.9	35.2	42.9
Indirect offensive %	22.9	35.9	41.2

aggression toward teachers and taller boys (due to the amount of indirect defensive aggression in particular) was, however, proportionally somewhat greater than the amount of direct aggression toward them. The reverse difference was found in aggression toward girls and smaller boys, not in aggression toward boys of the same size as expected in Hypotheses D. 1 b and D. 1 c. The amount of indirect aggression was determined by the power of the target rather than by general controlling and inhibiting factors such as advice and instructions (girls or smaller peers should not be harmed). A probable interpretation of the result is that when the attacker is more powerful than the target, his chances of eliminating the thwarting stimulus are more varied than when the target is more powerful. In this opposite case the instigated aggression can be displayed indirectly.

The frequency distributions for the *scenes* in the different forms of aggression followed the total distribution even more closely than those for the targets. The most remarkable exception was found in direct offensive aggression: contrary to Hypothesis D. 1 c, the amount of direct offensive aggression was relatively great during periods of directed activity, and relatively small during free play periods outdoors. The result was due to the fact that half of the variables for offensive aggression contained disturbance of a group's activities, and that periods of directed activity had been rated as the scenes of these disturbances as often as the other alternatives (in general, the differences between the scenes were clearly parallel with the total distribution).[1]

5. 4. 2. *Effects of situational control on the structure of aggression*

It was predicted in **Hypothesis D. 2 a** that with the employment of the factor analysis method more differentiation takes place in interindividual differences in direct (defensive and offensive) aggression with weak situational control than when the factorial structure is based on average frequencies of aggression independent of situational variables. **Hypothesis D. 2 b** was formulated correspondingly so as to concern interindividual differences in indirect aggression with strong situational control.

The intercorrelations of the aggression variables for each situational variable were calculated, and the factor analysis and varimax rotations were carried out for each of them. The correspondence of the structures to the primary factor composition technically independent of them was investigated by the method of symmetric transformation analysis. (In this method, developed by Mustonen, divergent transformation is to a large extent similar regardless of the direction of transformation.) The analyses were based on the orthogonal five-factor rotations. An attempt was also made to carry out transformation analyses on the basis of the six-factor and seven-factor rotations, but the number of factors was too great. The transformation analy-

[1] The frequency distributions for the aggression variables as raw scores as well as the distributions of the targets and scenes for each variable are obtainable mimeographed. It can be seen from this table that the most usual aggressive response in kindergartens was verbal resistance (5; e.g. go away) against boys of the same size and during free play periods outdoors. The most unusual aggressive response was offensive aggression toward another person by means of teasing somebody under his protection (31).

tical comparisons were made, as mentioned above, for all the situational variables except aggression toward teachers; the distribution of the rating scores for aggression toward teachers was sufficient for multidimensional analyses in only 17 variables.

The primary factor composition of the aggression variables, yielded by the five-factor rotation, was comparable with that yielded by the seven-factor rotation:

Factor I: Indirect aggression containing both of the indirect aggression factors (a and b) interpreted pp. 56—57.

Factor II: Halo factor corresponding closely to the factor interpreted p. 58.

Factor III: Offensive aggression corresponding closely to the factor interpreted p. 56.

Factor IV: Mimic aggression corresponding closely to the factor interpreted p. 58.

Factor V: Direct defensive aggression independent of offensive aggression containing the factors of physical and verbal defensive aggression (interpreted p. 57). The factor was loaded most highly by verbal threatening, fighting, physical resistance, and scornful remarks.

The transformation matrices L (P, S) and the residuals, by factors, are presented in Table 9.

Target of aggression. »Abnormal» or divergent transformation (shown by the residuals) was altogether rather small. The smallest total residuals were obtained when the factor configurations for taller boys and girls were represented in the factor space for the primary factors, and the largest total residual in the transformation of the factor configuration for boys of the same size in this same factor space. The stronger inhibitions of direct aggression (due to the power of the target) or the general controlling stimuli connected with it had been, the better was the correspondence between the factor composition for the aggression variables operationalized by the rated frequencies of aggression toward this particular target, and for the same aggression variables operationalized by the rated frequencies of aggression over different situations.

Scene of aggression. The differences in divergent transformation between the factor structure for periods of directed activity and for free play periods indoors, when both of them were represented in the factor space for the primary factors, were parallel to that obtained for the target variables: the correspondence between the factor structure and the primary factor composition was somewhat better with strong than with weak situational control. This generalization was not, however, applicable to the factor structure for free play periods outdoors; the residuals were smallest although situational control was

Table 9. Matrices L (P, S), transformation matrices, and matrices Diag E (P, S)' E (P, S), residuals by factors

P = primary factors of the aggression variables
S = factors of the aggression variables for each situational variable

Primary factors		Target of aggression: Boy of the same size I	II	III	IV	V	Taller boy I	II	III	IV	V
Indirect aggr.	I	93	00	12	05	—15	60	07	—11	00	79
Halo factor	II	45	85	—28	44	84	39	67	—38	31	—41
Offensive aggr.	III	06	05	61	—22	84	39	23	84	—22	—20
Mimic aggr.	IV	04	—22	32	96	23	13	—36	27	89	—03
Direct defensive	V	—47	48	19	04	—60	—56	61	26	26	41
Residuals by factors		0.61	0.71	1.00	0.54	1.34	1.00	0.44	0.55	0.49	0.82
Total residual				4.20					3.31		

Primary factors		Smaller boy I	II	III	IV	V	Girl I	II	III	IV	V
Indirect aggr.	I	69	—02	10	10	71	98	17	04	05	11
Halo factor	II	40	82	—27	—01	—33	—13	43	16	—57	67
Offensive aggr.	III	10	21	94	—20	—19	—03	05	98	07	—20
Mimic aggr.	IV	18	—16	15	90	—33	—01	—53	14	47	70
Direct defensive	V	—58	52	11	36	49	—17	71	—06	67	10
Residuals by factors		0.93	0.50	0.79	0.62	0.95	0.56	1.06	0.54	0.54	0.73
Total residual				3.78					3.43		

Primary factors	Scene of aggression: Free play outdoors I	II	III	IV	V	Free play indoors I	II	III	IV	V	Directed activity I	II	III	IV	V
I	99	00	07	02	08	80	38	—41	24	00	83	—13	10	53	06
II	00	84	—19	52	—03	09	31	70	42	—49	—50	—07	42	64	40
III	—06	28	95	—10	00	44	04	56	—58	39	14	62	73	—17	—20
IV	—03	—47	23	85	—01	24	—66	19	57	38	—04	77	—54	32	13
V	—08	02	—01	03	1.00	—33	57	08	32	67	21	07	05	—41	88
Residuals by factors	0.46	0.30	0.56	1.01	0.59	0.95	0.89	0.94	0.49	0.93	0.91	0.62	0.62	1.05	0.75
Total res.			2.92					4.20					3.95		

weakest. It is possible that as the field of observation had been wider during free play periods outdoors, the ratings of interindividual differences had been more global and more dependent on the total impression concerning the frequencies of aggressive responses than the ratings concerning free play periods indoors.

The information provided by the total residuals on structural invariance can be supplemented by considering the transformation matrix coefficients (L) together with the residuals (R) of the factors. The coefficients are summarized in Table 10, organized as follows. The similarity indices of the expected corresponding factors are given first, and they are followed by L-coefficients $\geqq 0.40$ indicating into which primary factors the variance of the factor for a particular situational variable was divided. No formula has been developed for the estimation of the standard error of L-coefficient. The correspondence between the factors has been considered very good if $L \geqq 0.80$ (Niskanen, 1968; et al.). According to Niskanen, the correspondence is moderate if $0.30 < L < 0.50$. The standard error of the factor coefficient of 0.40, if the number of subjects is 200, is 0.07 (Harman, 1967, p. 435); the loading of 0.40 thus deviates very significantly ($p < .001$) from zero. If the standard errors of L-coefficients correspond approximately to those of the factor coefficients, $L = 0.40$ can be considered as an indication of real correspondence between the factors.

Target of aggression. As regards indirect aggression, the results of the transformation analyses accorded with the hypothesis: more differentiation took place with strong situational control than the primary factor composition indicated, or than with weak situational control.

(1) When the factor configurations for taller boys or boys of the same size as targets of aggression were represented in the factor space for the primary factors, the residual of the indirect aggression factor for taller boys was greater than that for boys of the same size.

(2) There was a very good correspondence between the first primary factor (indirect aggression) and Factors I for boys of the same size and for girls, whereas the variance for indirect aggression divided into two factors for smaller and taller boys.

(3) The finding of structural invariance in indirect aggression shown by the very good correspondence between the first primary factor and Factor I for girls was complicated by the similarity indices for the mimic aggression factor: interpretationally, the mimic aggression factor was close to the indirect aggression factor. In the mimic aggression factor the correspondences were very good except in the com-

Table 10. Comparison of the factor structures

Primary factors	Boy of the same size	Smaller boy	Girl	Taller boy
I Indirect aggression	I $L^1=.93$; $R^2=0.61$ Indirect aggression.	I L=.69 ; R=0.93 Aggression displayed toward objects.	I L=.98 ; R=0.56 Indirect aggression.	I L=.60 ; R=1.00 Aggression displaced toward other persons. Taller boys: indirect physical offensive aggression.
		V L=.71 Aggression displaced toward other persons, crying.		V L=.79 Aggression displayed toward objects, swearing.
IV Mimic aggression	IV L=.96 ; R=0.54 Mimic aggression.	IV L=.90 ; R=0.62 Mimic aggression.	IV L=.47 ; R=0.54 Aggression displayed by facial gestures and physical resistance.	IV L=.89 ; R=0.62 Mimic aggression.
			V L=.70 Aggression displayed by sulk and lenient verbal responses.	
II Halo factor	II L=.85 ; R=0.71 Direct defensive aggression with different modes; independent of offensive aggression.	II L=.82 ; R=0.50 Direct defensive aggression with different modes, particularly verbal offensive aggression.	II L=.43 ; R=1.06 Direct defensive aggression with different modes, some verbal offensive aggression.	II L=.67 ; R=0.44 Direct defensive aggression with different modes, physical offensive aggression.
	V L=.84 Physical defensive and offensive aggression. I L=.45 IV L=.44	I L=.40	V L=.67	
III Offensive aggression	III L=.61 ; R=1.00 Particularly verbal offensive aggression. Defence by swearing and threatening.	III L=.94 ; R=0.79 Offensive aggression.	III L=.98 ; R=0.54 Offensive aggression.	III L=.84 ; R=0.55 Offensive aggression.
	V L=.84			
V Direct defensive aggression.	V L=—.60 ; R=1.34 II L=.48	V L=.49 ; R=0.95 II L=.49	V L=.10 ; R=0.73 II L=.71 IV L=.67	V L=.41 ; R=0.82 II L=.61

[1] L = transformation matrix coefficients
[2] R = residuals by factors

Table 10. (continued)

Primary factors	Free play outdoors	Free play indoors	Directed activity
I Indirect aggression	I L=.99 ; R=0.46 Indirect aggression.	I L=.80 ; R=0.95 Indirect aggression, physical offensive aggression.	I L=.83 ; R=0.91 Indirect aggression.
			IV L=.53 Aggression shown by cry and sulk or displaced toward other persons.
IV Mimic aggression	IV L=.85 ; R=1.01 Mimic aggression.	IV L=.57 ; R=0.49 Mimic aggression and verbal resistance.	IV L=.32 ; R=1.05
			II L=.53 Aggression shown by resentment and defiance. Breaking of rules, verbal offensive aggression.
II Halo factor	II L=.84 ; R=0.30 Physical defensive aggression.	II L=.31 ; R=0.89 Aggression displaced toward other persons; also physical defensive and offensive aggression.	II L=—.07 ; R=0.62
	IV L=.52	III L=.70 Physical and verbal offence by opposition and resistance (especially in periods of group activity).	IV L=.64 III L=.42 Physical offence; also physical defence or threat of it. V L=.40 Verbal defence and offence, display of aggression toward objects.
III Offensive aggression	III L=.95 ; R=0.56 Offensive aggression	III L=.56 ; R=0.94	III L=.73 ; R=0.62
		I L=.44	II L=.62
V Direct defensive aggression.	V L=1.00 ; R=0.59 Direct defensive aggression.	V L=.67 ; R=0.93 Verbal defensive and offensive aggression.	V L=.88 ; R=0.75
		II L=.57	

parison for girls. When the target of aggression was a girl, mimic aggression divided into two factors.

(4) Two factors identifiable as indirect aggression were also obtained in the factor analysis for aggression toward teachers. The number of variables included in the analysis was 17. Four factors were interpreted.

Factor I contained indirect aggression toward objects in particular, and of mimic aggression crying and threatening.

Factor IV was spanned by the variable of sulk and those for displacement and spread of aggression toward other persons.

Factor II included direct expressions of aggression.

Factor III contained the variables for disturbance of activities with both the defensive and offensive aim.

The results of the transformation analyses also accorded with the hypotheses for direct aggression: more differentiation took place with weak situational control than the primary factor composition indicated, or than with weak situational control.

(1) When the factor configurations for taller boys and for boys of the same size were represented in the factor space for the primary factors, the residuals of both the offensive aggression factor and the direct defensive aggression factor were greater for boys of the same size than for taller boys.

(2) There was a very good correspondence between the third primary factor (offensive aggression) and Factors III for taller boys, smaller boys, and girls, whereas the variance of offensive aggression divided into two factors for boys of the same size.

(3) The fifth primary factor, spanned by direct defensive aggression, had no counterpart in the other factor structures; the factors corresponding to it most closely were II and V. There was some overlap between the direct defensive aggression factor (V) and the halo factor (II). It can be interpreted as a consequence of the fact that the variables spanning the halo factor represented direct defensive aggression with different modes. A further interpretation is that the halo effect was more apparent and prolonged on the ratings of the targets, boys of the same size in particular, than on the ratings of the frequencies of aggression over different situations.

Scene of aggression. The correspondences between the primary factors and the factors for free play periods outdoors were very good. (The structural invariance has been discussed in connection with the inspection of the total residuals.) For the other scene variables the results of the transformation analyses accorded with the hypothesis:

more differentiation took place in indirect and mimic aggression with strong situational control (periods of directed activity) than the primary factor composition indicated. In direct defensive aggression the difference was the reverse: more differentiation took place in direct aggression with weak (free play periods indoors) than with strong situational control. There were no considerable differences between the structures in offensive aggression. The L-coefficients between the second primary factor (halo factor) and the factors for periods of directed activity suggested that the halo effect had been strong on the ratings of this particular scene of aggression.

The information provided by the transformation analyses on structural invariance gave preliminary support to the assumption that an individual has different habit hierarchies of aggressive behaviour in different situations. Particularly the target of aggression has consistent influence on the structure of aggressive behaviour. The finding can be utilized in further investigations, for example when an attempt is made to vary situational control in the items of an aggression test.

6. SUMMARY AND DISCUSSION

The starting point of the present investigation was the assumption that individuals have aggressive habits in terms of which interindividual differences can be described more generally than at the level of specific responses but in greater detail than at the level of personality traits. In order to explicate the hypotheses on the forms of aggressive habits, a descriptive model of aggression was constructed on the basis of the observable characteristics of aggressive responses. In connection with the descriptive model assumptions were made on the learning processes of different aggressive habits. The empirical examination was focused on the verification of both the descriptive model and the hypotheses concerning the acquirement of aggressive habits. The results are discussed by problem groups in the following chapters.

6. 1. The descriptive model of aggression and individual aggressive habits

Three dimensionally varying characteristics were included in the descriptive model of aggression: the intensity of aggression defined by the quantity of the noxious stimuli delivered by responses, the direction (direct/indirect), and aim (offensive/defensive) of aggression, both defined on the basis of the interpersonal context of aggression. In addition, more specific discriminations can be made on the basis of the modes of aggression (physical, verbal, mimic): each mode of aggression may occur toward a target more or less directly, with different intensities, and either with the defensive or offensive aim.

No corresponding combination of characteristics has been employed in previous studies.

The correspondence between the descriptive model and individual aggressive habits was studied through the factor analysis model. The first three principal factors described the interdependences of the 32 aggression variables as expected. The unipolar general aggression factor was interpretable as the intensity or observability of aggression. The next two factors described the qualitative features of interindividual differences, and they were interpreted as the direction (direct/indirect) and aim (defensive/offensive) of aggression. Thus the factors with the largest eigenvalues did not include the mode of aggression, which has been one of the most common principles in the categorizations of aggressive responses in previous studies. *The results supported Hypothesis A. 1.*

It was predicted in *Hypothesis A. 2* that the mode of aggression may account for the variance of interindividual differences in aggression in further analyses for the main forms of aggression. These analyses yielded factors interpretable to some extent as expected, yet more so on the basis of the intensity of aggression or the process of socialization. The factor analysis for direct aggression revealed that *no factors interpretable on the basis of the modes of aggression involving both the defensive and offensive aim could be found.*

All of the empirical common variance was describable in terms of the following types of aggressive habits. (1) Offensive aggression with different modes of responses; also intense defensive aggression toward an instigator. (2) Inhibition of direct aggression and, ensuing from it, outbursts of anger toward objects in the environment and toward innocent persons, and the delivering of noxious stimuli to the initial target through some mediating events. Furthermore, the variables representing the most indirect aggression had more specific common variance which could be interpreted as indirect aggression (b). (3) Direct defensive aggression in thwarting situations with different modes of responses but without the habit of offensive aggression. There were further interindividual differences in direct defensive aggression at least partly due to the instigator: (a) an individual may try to resist a thwarting stimulus immediately, with the physical mode in particular; or (b) he may protest against the progress of events verbally, in which case his response suggests the presence of suppressed affects; or (c) he may restrain himself from active resistance and content himself with showing displeasure by his appearance, in which case his activity may, however, burst out as attacks against other persons in some other situations. Interpretationally mimic ag-

gression was rather close to indirect aggression. In addition to the mentioned aggression factors the halo factor was also extracted, the interpretation of which is discussed in Chapter 6.3.

In aggressive habits direct and indirect aggression were more independent of each other than defensive and offensive aggression. This could also be seen in the structure of the second order factors. *Contrary to Hypothesis A. 3,* the common variance of the primary aggression factors could not be explained by one general second order factor only; two factors were required, one of which was interpreted as direct, the other as indirect aggression.

The difference between the direction and aim of aggression for diffenrentiating between individuals' behaviour can be interpreted as a consequence of the acquirement of the aggressive habits. It was assumed that the adoption of indirect aggression is due to inhibition of direct aggression under certain circumstances, whereas the habit of offensive aggression was assumed to develop at the side of defensive aggression through secondary reinforcers. A conceptual separation of offensive and defensive aggression was, however, found relevant, since there were individuals whose aggression was limited to situations which they had found thwarting, i.e., to defensive behaviour.

When the obtained factors were compared with previous factor analytical results for children's aggression, it was found that the offensive aggression factor corresponded to the factor called »Faktor der Feindseligkeit» obtained by Mandel (1959), which contained both serious spontaneous and reactive aggression. The correspondences between the other factors were slight, because Mandel's advance classification had excluded indirect aggression, and because the variables of the present investigation did not include playful aggression.

The low correlation between direct defensive and indirect aggression corresponded both to the intercorrelation coefficients of corresponding aggression variables obtained in previous studies and to the factor analytical results concerning interdependences of aggression and other personality traits. On the basis of the studies by Koch (1942) et al. it seems probable that extravert personality traits correlate particularly with direct aggression, and general maladjustment with indirect aggression. Presumably there are also other connections between aggressive habits and total personality. The assumption was examined by the writer in a further investigation reported in Part II, in which both aggressive habits and nonaggressive habits replacing aggression in thwarting situations, as well as the relationships between both of these habits and other personality traits were analysed.

6. 2. Learning of aggressive habits

The theoretical frame of reference concerning the acquirement of aggressive habits was constructed by integrating different theories of behaviour. No theory alone was considered sufficient to cover the processes present in the development of different kinds of aggressive habits.

With regard to the *direction of aggression* in the habits of an individual the assumptions were concerned with reinforcement history of aggressive behaviour, inhibition of aggression under certain social circumstances, and reduction of cognitive dissonance. Discussions of developmental psychological aspects in the acquirement of the habits of direct and indirect aggression, which have been presented in previous studies of the relationships between parents' child-rearing practices and children's aggressive behaviour, correspond to the theoretical approach adopted within the present investigation. Learning theory interpretations on the complex effects of punishment and reinforcement of aggression have been presented by Sears et al. (1957), Bandura & Walters (1959), et al. In the assumptions on the reinforcement history of children's aggression the essential role of the child-rearing practices has been clearly comprehended. Reliable information about these practices is, however, obtainable only after considerable effort. The results of earlier studies have varied considerably. Within the present study no empirical information was gathered about parents' child-rearing practices. Consequently, some of the assumptions presented in the theoretical frame of reference remained unverified. One way to study the mentioned relationships would be to choose the subjects so as to represent different types of aggression and to make a thorough investigation of both subjects and their families. The second part of the report includes an examination of some aspects in the presented assumptions.

It was assumed that the direction of aggression is also determined by situational factors which, through cognitive appraisal, have the effect that an individual may or may not consider it possible to defend himself directly. The assumptions on situational factors were examined empirically. The results *supporting Hypothesis B. 1* implied that an individual's inability to defend himself in a kindergarten group was related to his habits of indirect and mimic aggression. Two factors were extracted for indirect aggression. One of these was more specific in content and more characteristic of individuals who impose on other persons' tendency to take care of the others, and it was related to passive total behaviour and a high rather than low frustration toler-

ance. The finding corresponds to the assumption made by Buss that indirect aggression is characteristic of individuals who are typically sly and circumspect in their attacking behaviour. The result encompassed, however, only a part of the aggression defined as indirect within the present investigation.

Effects of specific situational factors on aggressive responses (*Hypothesis D*) were studied by comparing both the frequencies of the different forms of aggression, and the factor configurations for aggression emitted under different degrees of situational control. The results showed that (1) the hypotheses were supported more strongly when situational control was varied by the targets of aggression than when it was varied by the scenes of aggression (free play periods outdoors, etc.), (2) the amount of indirect defensive aggression was determined more strongly by the power of the target compared with that of the attacker than by general controlling and inhibiting factors (e.g., girls or smaller peers should not be harmed), and (3) more dimensions of interindividual differences emerged for indirect aggression with strong situational control than was shown by the primary factor composition for aggression variables. Correspondingly, more dimensions emerged for direct aggression with weak situational control than was shown by the primary factor composition.

When situational variables are taken into account in an examination of interindividual differences in aggression, new problems arise. Some of them deal with the social psychological aspects of aggression. In social groups (kindergarten, school, etc.) competing gangs may be formed which determine the targets and forms of an individual's aggression, perhaps limiting the occurrence of interindividual differences. Similarly, in a social group one of the members may become a scapegoat and thus the target of a great amount of indirect aggression, or aggression may be limited to fights between two constant competitors. If the differential psychological approach is linked with social psychological viewpoints, there appear new opportunities for examination of aggressive habits.

In the theoretical frame of reference *defensive and offensive* aggression were conceptually separated through reinforcers of aggression. It was thought essential in the conceptual analysis to consider the circumstances under which the emission of an aggressive response becomes independent of the emotional arousal instigated by a thwarting stimulus situation. The development of offensive aggression was assumed to be related to the circumstances under which such consequences of aggression as attention-getting, dominance, and seeing the victim suffering injury, are found to be subjectively important stimuli

and, through conditioning, become secondary reinforcers of aggression, i.e. goals of aggressive behaviour. An individual's general activity was assumed to contribute to the development of offensive aggression through the quantity of both conflicts and defensive aggression, and through the probability of operant conditioning. *Hypothesis B. 2 was supported* by the fact that uncontrolled behaviour (activity) predicted very significantly the habit strength of offensive aggression but not at all that of physical defensive aggression independent of it. Lack of control of behaviour may, however, explain only some of offensive aggression, since both these features in an individual's behaviour may be determined by the same background variables. Parents may reinforce the impulsive and tyrannical behaviour of their small child, because they appreciate the general activity it implies, or they may allow it to become reinforced by remaining indifferent toward his responses. Parallel to the result concerning general activity was the dependence between parents' indifference toward the child and offensive aggression. Contrary to the hypothesis, a low socio-economical status did not predict offensive aggression. Consequently, the variables in the present study indicated that lack of maternal care was a more fundamental source of secondary motivation than general depriving circumstances.

The relation between attention-getting and offensive aggression was also revealed by the regression coefficients of the aggression factors in the global rating of secondary motivation of behaviour; the regression coefficient of the offensive aggression factor was very significant, but those of the defensive aggression factors were not.

There are many forms of unsocialized behaviour to which the interpretation of early offensive aggression is applicable. Some of them may develop through the reinforcement of defensive aggression, in which case an individual's behaviour gives an impression of unconcern about the norms of aggressive expressions that prevail in our society. Other forms of unsocialized behaviour, e.g. sadism, which represents utmost desire to injure another organism, may develop from indirect aggression toward substitute objects into an aggressive habit independent of stimulus situations. Correspondingly, destructiveness may become detached from its original connection with stimuli instigating aggression, provided that the stimuli of destruction following anger outbursts bring satisfaction and become secondary reinforcers. The more abnormal responses (extreme groups) are concerned, the more complex dynamic processes determine the subjective value of the consequences of the responses. Moreover, interpretation is complicated by the symbolic functions of the responses.

Within the present investigation the assumption was made that defensive aggression is the primary form of aggression. According to Lagerspetz' (personal communication) observations of the behaviour of mice, however, it is offensive aggression that can be interpreted as the primary disposition: if a mouse that has lived in isolation is placed into a box with another mouse, the former attacks the other mouse immediately, whereas a mouse that has lived with other mice does not react in the same way. According to Lagerspetz' interpretation, the differences is due to the fact that the punishment delivered through the victim's counter-aggression inhibits the development of aggressive habits. It is thus the non-offensive behaviour that is learnt. One cannot, however, make generalizations about human behaviour on the basis of observations of the behaviour of mice, because, for example, the interpretation of sensory cues is more complex in man than in mice. Lagerspetz & Portin (1968) studied, by simulation of cues, the stimuli necessary for the occurrence of aggressive responses in mice: the rotating motion of a bottle brush was a cue sufficient for the elicitation of aggressive responses.

Hypothesis B. 3 included assumptions on the relationships between the modes of aggression and background variables. The interindividual differences were describable in terms of the modes of aggression in defensive aggression only. Contrary to the hypothesis, the correlation between stature and the habit of physical aggression was not higher than that between stature and the habits of verbal or mimic defensive aggression. On the basis of the result the hypothesis cannot, however, be nullified; the correlations should be re-examined by employing variables which would measure physical fitness from more sides than does the index of stature employed in the present study. Verbal development correlated significantly with the habit of verbal defensive aggression but not more highly than with that of physical aggression. The hypothesis was, however, *supported* by the fact that the variables of general activity correlated more highly with the habits of verbal and physical aggression than with that of mimic aggression.

6. 3. Global rating of aggressiveness

Hypothesis C concerned the kind of aggressive habits of an individual which determine most strongly the impression about his personality trait of aggressiveness. The results showed first of all that

global rating of aggressiveness was determined most strongly by the habit strength of offensive aggression and by intense defensive aggression connected with it. The finding *supported the hypothesis* and accorded with previous results. Mandel (1959) had found that the highest loading (0.68) of the variable of aggressiveness rated by teachers was on the factor »Faktor der Feindseligkeit». In the study by Banta & Walder (1961) the best indicators of the general aggression factor were the peer rating items referring to initiated interpersonal harm. The results showed further that global rating of aggressiveness was determined next by the habit of general indirect aggression: rating was independent of the more specific form of indirect aggression. The habit that least determined the rating of aggressiveness was, in addition to the habit of specific indirect aggression, that of physical defence independent of offensive aggression. The finding corresponded to that of Lesser (1959).

Of the aggression factors the one interpreted as the halo factor was also strongly related to global rating of aggressiveness. The halo factor correlated more highly than the other aggression factors with the background factors of uncontrolled behaviour and low socio-economical status.

Secondly it could be seen that besides the general impression about aggressive behaviour the kindergarten teachers' ratings were also concerned with more specific aspects of aggression. Low frustration tolerance was related, as a separate component, to defensive aggression independent of offensive aggression, the targets of which were mainly taller boys and boys of the same size. The amount of aggression toward smaller peers as well as passiveness in total behaviour were related to a low position in the dominance hierarchy (often teased by others), and the amount of aggression toward teachers as well as a low socio-economical status to aggressive behaviour interpreted as attention-getting.

Contrary to the hypothesis, no differences could be found between the variables for the targets and scenes of aggression in the respect how strongly they had determined the impression about aggressiveness.

6. 4. Generalizability of the results

Within the present investigation the uniformity of overt aggression was studied on the basis of the behaviour of boys aged 5—6. Naturally, aggression displayed by children deviates in many respect from that of adults, wherefore the results do not lend themselves to direct

generalization with regard to other age groups. It was assumed, however, that if dimensions describing theoretically interpretable interindividual differences can be found in children's aggression, the result provides a starting point for an investigation and description of adults' aggression, provided that those changes in behaviour are taken into account which result from the development of means and habits of communication and from prevailing norms and pressures against expressions of aggression. Normally such changes manifest themselves in all communication between adults as slightness of intense, particularly of physical, aggression. Aggression is displayed in more subtle forms, such as verbal, mimic, and indirect aggression. The latter can also be taken to include hostility, which, according to Buss, can be understood as a conditioned anger reaction controlled in an actual thwarting situation by the process of negative labelling.

The conception of aggression employed here is a product typical of western cultures, moulded by their norms. In generalizations this aspect should be taken into account. It seems probable that the verbal component of the rating method strengthens those interdependences of variables which can be understood as a consequence of common social expectations and evaluations. For example, the large common variance of the variables for offensive aggression compared with that for defensive aggression may be due to the fact that unjust offensive aggression is generally considered very condemnable. As the difference between offensive and defensive aggression is, however, theoretically interpretable, and because the separate halo factor was extracted in addition to the offensive aggression factor, there is no reason to base the present interpretation only on the conceptual framework of the raters.

Within the present investigation an estimation of the reliability of the variables was left to a preliminary study, since it was not considered possible to obtain absolutely independent ratings from the two different teachers in each whole-day course, as the time for observation was one month and the material was gathered by post, and since the inter-rater agreement was rather good in the preliminary study.

In the research project the main emphasis was given to the construction of a descriptive model and to the assumptions behind it. The realization of the empirical examination was one way to test the main points of the hypotheses. In further investigations it will be possible to deal with one specific problem group at a time and to explain more thoroughly the empirical correspondences which the results obtained in the present study seem to indicate.

PART II

AGGRESSION AND NONAGGRESSION

1. PROBLEMS

The descriptive model of aggression presented in Part I as the starting point of the hypotheses on aggressive habits, was limited to a description of behaviour delivering noxious stimuli to another organism. The descriptive model thus excluded nonaggressive responses in thwarting stimulus situations. No attempt was made, either, to relate aggressive habits to personality traits other than social reactivity or general activity. The following questions remained unsolved: (1) whether it is also possible to find dimensions of individual habits in nonaggressive responses to thwarting situations, and (2) how different aggressive and nonaggressive responses are related to individual personality traits.

If the term aggressiveness is used to refer to the frequency of aggressive responses in individual behaviour, it can be assumed to have a normal distribution in a population. Accordingly, aggressive behaviour would be typical of some individuals only, while the others would be »normal» or nonaggressive. With regard to the description of interindividual differences in behaviour, the definition is very general. Thwarting stimulus situations are so frequent and have so high a stimulus value in social interaction that an individual can also be expected to adopt some other habits than only strongly aggressive or nonaggressive ones.

Stimulus-response behaviour has seldom been analysed many-dimensionally in empirical studies; the tendency has been to judge behaviour one-dimensionally and pay attention to the abundance/scarcity of a certain kind of response over various situations. In the study by Wittenborn (1956) both mother and child were given descriptions of situations, some of which were aggression instigating, and then asked what the child would like to do in these situations. The interviewer

checked the answers according to 6—8 alternative categories made up in advance. These intuitively chosen categories varying from one situation to another contained different aggressive responses as well as those concerning dependency, submissiveness, sympathy, etc. McClelland & Apicella (1945) classified the verbal responses of male college students to experimentally induced frustration, distinguishing the categories of withdrawal (instigation alteration, e.g. rejection), attack (instrumental act variation), limitation (frustration deprecation, e.g. rationalization and humour), and substitution (goal response alteration, e.g. socially approved responses).

Feshbach (1964) has stated speculatively that »the reduction of anger and aggressive drive can be accomplished through (a) injury to the frustrating source or some form of displaced aggression; (b) facilitation of mediating responses which are incompatible with anger and hostility; (c) modification of the initial eliciting stimulus condition either through removal of the stimulus or through a change in the meaning of the stimulus» (p. 266). Of these, alternative (b) corresponds mainly to McClelland & Apicella's category of substitution, (c) to those of withdrawal and limitation.

According to the discussion by Crowne & Marlowe (1964), nonaggressive behaviour is related to the strength of an individual's approval motive. The hypothesis that approval-dependent individuals defend themselves against arousal of hostility by means of avoidant defences (repression and reaction formation) which block cognitive awareness of an individual's emotional state, was supported by the experimental study by Conn & Crowne (1964). As a consequence of defensive processes the behaviour of approval-dependent individuals is conforming, submissive, and easily influenced. Of the relations of the approval motive to other personality traits the observation has been made (Crowne & Marlowe; p. 84) that high-need-for-approval persons are more responsible than lows to perceived situational demands and are more likely to respond affirmatively to social influence.

According to Lazarus (1966), however, defensiveness is only one alternative way of treating a thwarting stimulus situation nonaggressively; he distinguished the following coping-reaction patterns (pp. 313—318): (1) Direct actions containing (a) actions aimed at strengthening the individual's resources against harm, (b) attack patterns, and (c) avoidance patterns; (2) Defensive reappraisals; (3) Anxiety-reaction patterns.

The form of coping is determined by a cognitive process called »secondary appraisal» (p. 155). Category 1 a is more general than

1 b or 1 c, and, according to Lazarus, it lacks the generalizing properties of classes of action. Action is characterized by rational problem solving, and its form depends on situational variables. Attacking (aggressive) coping patterns follow secondary appraisal, which consists, for example, of weak situational constraints (norms and pressures against attack), or weak internalized values against attack. Repression follows the secondary appraisal that the harmful agent is overpowering, and weak pressures inhibiting avoidance responses. Defensive reappraisal involves thought processes of many kinds. Lazarus has supposed (p. 317) that it occurs when »the threat is very great and no direct form of coping is viable». Defences (externalization of blame, finding of scapegoats, or displacement) can be considered »as identifying an agent of harm» when that cannot be located. In his speculation on defensive reappraisal Lazarus refers to pathological responses more clearly than Crowne & Marlowe. The last mentioned response category, anxiety, »is a threat reaction when no clear action tendency is generated» (p. 310). The basic impulse is avoidance, but it fails, since no agent of harm is located, or it is ambiguous.

In addition to aggression, the classifications referred to above involve also substitute reactions incompatible with anger and hostility, reactions which tend to modify the meaning of a situation, defensive reactions, avoidance and anxiety, etc. These forms of behaviour have been derived from approval motive or situational factors. No general predictions of the reactions in a thwarting situation can be made on the basis of these explanations.

In the present analysis of interindividual differences of behaviour in a thwarting stimulus situation two points have been emphasized. (1) Recent personality psychological investigations have shown that a large proportion of the common variance of social and emotional behaviour can be described in terms of two orthogonal dimensions. (2) Stimuli generally instigating aggression in social interaction are so frequent that the impression of an individual is affected by his coping behaviour in these situations. Since total behaviour can be described two-dimensionally, it is also likely that a considerable part of aggressive behaviour and of its alternatives is describable in terms of the corresponding dimensions.

The employment of the factor analytical model for the purpose of reducing the great number of variables describing personality to fewer more general concepts has resulted in an abundance of personality factors (French, 1953; Cattell, 1957; Guilford, 1959; Hundleby et al., 1965; et al.). In order to examine the interdependences of these factors, (1) second order factor analyses have been carried out, (2)

only the first two or three principal factors have been examined, and (3) the method of circumplex order included in the radex theory (Guttman, 1954) has been employed. A circumplex is a system of variables which has a circular law of order. The neighbourhood of variables is determined by the amount of common variance between them. Through the kind of analyses mentioned above it has been proved by Eysenck (1960), Kassenbaum et al. (1959), Carrigan (1960), Peterson (1960, 1965), Schaefer (1961), Becker & Krug (1964), Black (1965), Walker (1967), et al. that a large proportion of the common variance of personality traits is describable in terms of two orthogonal dimensions.

The researchers have given divers names to the two main dimensions, which is partly due to the differences in the locations of the axes (rotations), partly to the differences in the examined variables and the interpretational frame of reference. Eysenck has called them Extraversion vs. Introversion, and Neuroticism vs. Stability. The names of the latter dimension vary particularly: it has been termed ego weakness/ego strength (Kassenbaum), general adjustment (Peterson), emotional stability (Becker & Krug), control (Walker), hostility/love (Schaefer), etc.

Previous studies have shown that common variance of both variables for personality inventories (common variance of items and scales; Konttinen, 1968) and of those for ratings of personality traits (Peterson, 1965; et al.) can be described two-dimensionally.

In two-dimensional comparisons the following qualities are often ranked in the same category: stable — good (Osgood et al., 1957; evaluation dimension) — nonemotional — adaptable, and similarly: neurotic — bad — emotional — hostile. These parallelisms are partly due to the fact that the observer's evaluations and the halo effect agreeing with them label and limit discriminations when the characteristics of another person are being judged (Takala, 1953; et al.), partly to the common variance of the traits, generated associatively from observations of behaviour. The cognitive association network was discussed in the investigation by P. Pitkänen (1967) as a possible interpretation of the fact that the results of the stimulus factor analyses (based on similarity estimations of stimuli) and those of the response factor analyses (e.g. ratings or personality inventories) corresponded with each other quite closely. Furthermore, Kuusinen (1969) found that the structure of personality ratings was unaffected by the differences in the rated objects (fellow-students, well-known persons and personality concepts, photographs, handwriting, irrelevant concepts). The correspondences found by P. Pitkänen and Kuu-

sinen covered more than two dimensions only. The two-dimensional descriptive model is apparently an uncomplicated and economical means of describing the perception of other persons.

The problems of the study were:

A. The description of various aggressive and nonaggressive response habits in thwarting stimulus situations by means of the two-dimensional model.

B. An analysis of the responses of the extreme groups chosen on the basis of (A) to symbolic aggression stimuli.

2. HYPOTHESES

2. 1. Behaviour in thwarting stimulus situations

2. 1. 1. *Main dimensions describing behaviour*

The basic assumptions for the definition of the main dimensions describing overt behaviour in thwarting stimulus situations are: (1) an individual's habitual responses to thwarting stimulus situations (as defined p. 32) are closely connected with his total personality, and (2) inhibition of impulses to aggression is possible in two ways: by suppressing the behavioural or extrinsic aspect, or by neutralizing the emotional or intrinsic aspect (cf. p. 31). The hypothesized *main dimensions* are presented in Figure 3: *the number of overt responses* in a stimulus situations and *the strength of control of behaviour.*

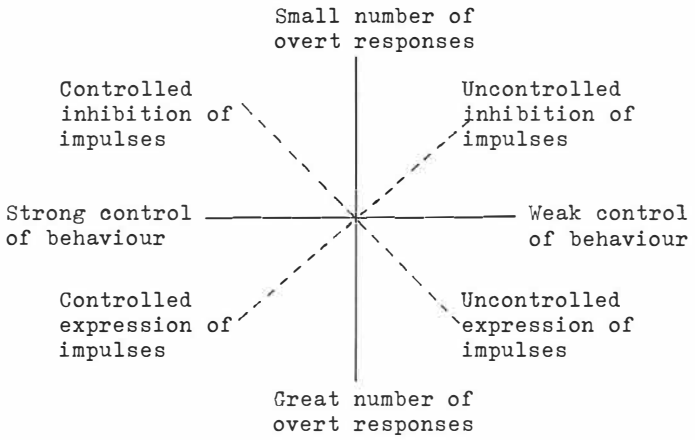

Figure 3. A two-dimensional descriptive model of behaviour in thwarting stimulus situations.

With regard to observations of behaviour, the dimension of the number of overt responses is used to indicate the frequency of the responses which tend to actively modify the initial stimulus condition and to eliminate the thwart. The dimension of the control of behaviour describes deliberateness vs. impulsiveness or social desirability vs. undesirability of responses.

With regard to the underlying mental processes, the dimensions are assumed to relate to the following.

The primary effect of a thwarting stimulus on an organism is activating, which is revealed both as emotional and behavioural reactions. The alternative response tendencies are approach and avoidance (Miller, 1959; et al.). Through conditioning an individual may learn either one of them as a response prevailing in a stimulus situation. In connection with aggression the concept of approach is used to indicate an attempt to eliminate a thwarting stimulus by delivering noxious stimuli to another individual. If followed by reinforcement, such a response as well as the underlying emotional activation (anger) is conditioned to a thwarting stimulus situation and develops into a habit which manifests itself even under slight thwart. On the other hand, if approach is prevented by counter-aggression, the fear and anxiety caused by it are conditioned to thwarting stimulus situations in general. An individual finds such a stimulus harmful, but he cannot react against it, and, if anxiety is intense, he cannot even escape. The underlying emotional state may vary as combinations of anger and anxiety, depending on the relative strength of the approach and avoidance tendencies. Behaviour dominated by anger and fear can be considered primitive, since corresponding responses are frequent also in animals, particularly among lower species. The response can also be called drive-reaction, which refers to the S-R behaviour theories (Hull, 1943; et al.).

The habit types mentioned above do not cover all the variations characteristic of the responses of human beings to thwarting stimulus situations. In man the development of habits is complicated by cognitive processes, as a consequence of which certain emotional responses (e.g. anger or anxiety) are not necessarily conditioned to thwarting stimulus situations in a generalized form. An individual may be able to appraise the stimulus situations he encounters and to decide between alternatives; i.e., the emotional aspect can be neutralized by cognitive control. In spite of the neutralization of the intrinsic aspect the extrinsic aspect may be strong, which is revealed by responses designed to eliminate the thwart without aggression. It is assumed that this kind of behaviour is motivated by an attempt to behave in a

socially acceptable manner. The behavioural aspect is not strong when cognitive control is connected with appraisal of the situation, as a consequence of which an individual also avoids awareness of his emotional state, i.e. of anger and anxiety. Increasing attention has been paid in recent years to the importance of cognitive processes as determinants of emotional behaviour and the conditionability of emotional responses (Schachter & Singer, 1962; Peters, 1963; Kaufman, 1965; Lazarus, 1966; Berkowitz et al., 1969). Constitutional differences in arousal of activation (Duffy, 1962; Eysenck, 1967) obviously increase the acquisition of different forms of behaviour.

In Problem A of the present investigation the main emphasis was given to the question: what kind of interindividual differences are revealed in responses to thwarting stimuli in ratings of overt behaviour? It was assumed that the main patterns of behaviour occurring in thwarting situations consist of the combinations of the main dimensions defined above. Altogether *four individual patterns of behaviour* can be derived, of which the opposites (and also the most contrary to each other) are *uncontrolled expression of impulses/controlled inhibition of impulses,* and *controlled expression of impulses/uncontrolled inhibition of impulses* (Figure 3).

In an individual's behaviour there occur both variations due to transient external and internal stimuli, and changes in form due to factors acting upon social learning. Nevertheless, the assumption is made that interindividual differences in behaviour toward thwarting stimuli may be described in terms of the four patterns of behaviour defined above.

2. 1. 2. *Aggressive and nonaggressive patterns of behaviour*

In order to make the definition of the two main dimensions presented in the preceding chapter more complete, more specific assumptions are made below on each of the four individual patterns of behaviour.

Uncontrolled expression of impulses. The goal of action in a thwarting situation is to eliminate the thwart immediately. This is done by delivering noxious stimuli to another organism, for which reason the response is defined as aggressive.

The descriptive model of aggression presented in Part I was three-dimensional, which was proved by the projections of the variables on the basis of their loadings on the first three principal factors. The rotated factors revealed that interindividual differences in aggression

differentiated along three dimensions: (1) defensive aggression without offensive aggression, (2) offensive and intense defensive aggression, and (3) indirect aggression. In the second order factor configuration direct defensive aggression and indirect aggression were shown to be most independent, while the variance of offensive aggression was divided on to both of these second order factors.

Global rating of aggressiveness was determined most strongly by the form (2) of aggression, which also correlated most highly with uncontrolled general activity. In previous studies (cf. pp. 23—25) direct aggression has correlated mainly with extravert personality traits and indirect aggression with general maladjustment.

When the dimensions of aggression were incorporated in the two-dimensional descriptive model of behaviour, the assumption was made that offensive and intense defensive aggression (dimension 2) represents the combination of a great number of overt responses and weak control of behaviour. With a great number of overt responses and stronger control of behaviour an individual's aggression is assumed to be limited mainly to direct defensive behaviour. Direct defensive aggression is assumed to represent an intermediary type in the dimension uncontrolled/controlled expression of aggression. In indirect aggression observable (overt) behaviour is not so obvious. Indirect aggression is assumed to represent weak control of behaviour and an intermediary type in the dimension uncontrolled expression/uncontrolled inhibition of impulses.

Background factors in the acquirement of aggressive habits have been analysed in Part I.

Controlled expression of impulses. Activation aroused by aggression stimuli is kept under cognitive control and displayed in neutral forms. An individual's behaviour is motivated by a desire to behave in a socially acceptable manner, in accordance with prevailing norms. Therefore he considers alternative ways of coping with thwarting situations. The behavioural aspect manifests itself as efforts towards the peaceful settlement of controversies and attempts to influence the other person's behaviour. He may react also by refraining consciously from expressing aggression (e.g. by remaining silent deliberately). Aggressive behaviour occurs only in situations in which aggression is not strongly compatible with socially acceptable behaviour. As regards the amount of aggression, this pattern of behaviour represents the middle quartiles of the total distribution, yet it can still be labelled nonaggressive.

Controlled expression of impulses may require a certain level of cognitive capacity, and therefore this behaviour is gradually increased

as a child grows up. The development of response habits towards either aggressive or socially acceptable is, however, due to reinforcement, early conditioning, and identification models.

Uncontrolled inhibition of impulses. In thwarting stimulus situations an individual's responses are characterized by avoidance behaviour. He has no response habits enabling him to eliminate the thwart nonaggressively. Activation aroused by the stimulus is bound to emotions, fear of the thwarting stimulus, and anxiety about an inability to defend. He tries to eliminate the thwart by conciliatory gestures such as crying or withdrawal, and to control the anger instigated by the stimulus by negative labelling which manifests itself as verbal descriptions of emotions (I feel angry, annoyed), intentions to revenge, and generalized hostile attitudes. If aggression is aroused, e.g. because of continuous accumulation, it is assumed to have an indirect manifestation. As regards the total amount of overt aggression, this pattern of behaviour is assumed to represent the middle quartiles of the total distribution.

Uncontrolled inhibition of impulses is assumed to have, for example, the following causes: because of his own resources (physical weakness, lack of aggressive habits, etc.) or of the influence of his social environment an individual may be uncertain about his opportunities for being active, or his parents may encourage or even force him to produce simple avoidance responses without trying to approve of his spontaneous attempts to compromise.

Controlled inhibition of impulses. Avoidance behaviour differs from uncontrolled inhibition of impulses in that an individual tends to block awareness of his emotional state by cognitive appraisal of the situation. The appraisal process may even distort reality, in which case it can be called defensive. Action is motivated by the need for approval, a consequence of strong dependency on authority figures. Aggressive behaviour would threaten this relationship, and therefore an individual tends to submit and adjust. In order to succeed in adjustment and to be able to avoid anxiety aroused by the recognized impulse to aggression, he makes efficient use of the cognitive processes.

As a consequence of his deliberateness an individual has few conflicts with others, and his aggressive habits remain weak. Consequently, the development is contrary to that in the behaviour defined as aggressive: in uncontrolled expression of impulses aggressive behaviour creates new conflicts and tends to reinforce new aggression. Controlled inhibition of impulses is assumed to be learned as a result

of the same childhood experiences which develop dependency, and of nonaggressive identification models.

A comparison between the individual patterns of behaviour abstracted above and the previous classifications presented in Chapter 1 reveals that none of them is completely comparable with the classification given here, although correspondences can be found in separate categories. Uncontrolled expression of impulses (aggression) is included in the attack categories (Lazarus, McClelland, Apicella), and the corresponding category framed by Feshbach covers also indirect aggression. The concept of need for approval (Crowne & Marlowe) can be considered parallel to strong control of behaviour: approval-dependent behaviour includes both controlled expression and controlled inhibition of impulses, as a separation has not been made between these patterns of behaviour. Lazarus, however, has made one (categories of rational problem solving and defensive reappraisals). The nearest equivalent for uncontrolled inhibition of impulses which covers anxiety reactions can be found in the classification by Lazarus, although his classification is more concerned with the properties of stimulus situations than with the habitual reaction patterns.

The assumptions on the descriptive model of aggressive and nonaggressive behaviour are summarized as follows:

Hypothesis A. The habits of aggression and nonaggression adopted for coping with thwarting situations are diagrammatically describable in terms of the two orthogonal dimensions called number of overt responses and control of behaviour, as shown in Figure 4.

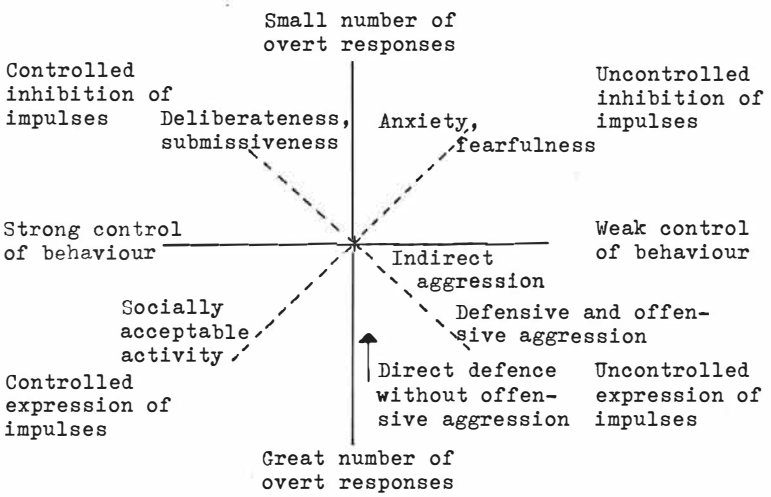

Figure 4. Hypothesis A. The individual patterns of behaviour in thwarting stimulus situations described in terms of the number of overt responses and control of behaviour.

2. 2. Individual patterns of behaviour as responses to symbolic aggression stimuli

The second problem of the present investigation deals with the differences in the verbal responses to verbally described thwarting stimulus situations between the four individual patterns of behaviour. *Symbolic aggression stimuli* consist of verbal descriptions of situations involving both categories of thwart presented in the theoretical frame of reference in Part I. The classification made was that the thwart which elicits primary defensive aggression is directed either toward an individual's goal-oriented activities or toward his actual well-being. The former implied various kinds of frustrations, the latter mainly attacks upon another person. An examination was made not only of the (defensive) responses to this kind of stimulus but also of the differences between the types of behaviour[1] according to whether they themselves tend to produce noxious stimuli to other individuals, i.e., of the differences in self-rated offensive aggression.

In addition to the average differences in responses the effects of external control on the responses of each of the types of behaviour were also analyzed. The term strength of *external control,* as distinct from internal control affecting the more general response style of each individual pattern of behaviour, was used to mean the amount of thwart in a stimulus situation which depends, in defensive aggression, on the power of the instigator and the properties of the noxious stimuli, and, in offensive aggression, on the power of the victim.

As shown in Part I, the effects of situational variables, and those of the targets of aggression in particular, on the structure of aggression were that in indirect aggression more differentiation took place in interindividual differences with strong than with weak situational control. The result suggested that the behaviour of an individual had been modified by stimulus factors regardless of his average response habits.

Various problems emerge in the prediction of an individual's aggressive behaviour by verbal tests. Generally the correlations between the scores in test aggression and the ratings in overt aggression have been very low. The assumption has been made (Edwards, 1957; et al.) that the responses in personality inventories (direct techniques) are affected by the social desirability set. As the correlation between

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[1] Groups of subjects who react in a consistent manner in thwarting situations by using individual patterns of behaviour, e.g. representatives of extreme groups, are called 'types of behaviour' or simply 'types'.

aggressive test responses and overt aggression has not, however, been negative, it is open to question which individual patterns of behaviour are represented by persons with high scores in aggression and those with a strong social desirability set.

The relationships between projective response data and overt aggression have been no less complicated. In numerous studies intervening or explanatory variables have been sought in different sources such as fear of punishment (Mussen & Naylor, 1954; Schaefer & Norman, 1967; et al.), tendency to put on a good or bad face (Lindzey & Goldwyn, 1954; Mitchell, 1967), mother's attitudes toward expressions of aggression (Lesser, 1957), interaction between aggressive and aggression inhibiting tendencies (Olweus, 1969; Shipman & Marquette, 1963; Megargee, 1966), hostile self-concept (Lindzey & Tejessey, 1956; Murstein, 1965; Kaplan, 1967), unambiguous/ambiguous nature of stimulus material (Kagan, 1956; Haskell, 1961; Epstein, 1966; Coleman, 1967; James & Mosher, 1967) and various interactions of guilt, inhibition, hostile self-concepts, and stimulus relevance for hostility (Saltz & Epstein, 1963; Megargee, 1967; James & Mosher, 1967).

In the above mentioned investigations the subjects' overt behaviour has not been classified on any basis other than the amount of aggression or a corresponding characteristic. Consequently, no conclusions can be drawn from the results concerning the distribution of aggressive responses among different individual patterns of behaviour. The absence of the presentation of this problem has been one of the characteristics of investigations in the psychology of personality. (1) Research problems have usually dealt with interindividual differences in undesirable personality traits, e.g. anxiety, neuroticism, aggressiveness, i.e., in weak control of behaviour (Figure 4), and even the sample of subjects has been drawn, compared with the mean of the dimension 'control of behaviour', from abnormal individuals (characterized by weak control of behaviour). Socially desirable response sets have been considered sources of error in measurement difficult to eliminate, rather than indicators of interindividual differences in behaviour. (2) The control variables in experimental studies and, correspondingly, the background variables in differential psychological investigations, have more seldom been real psychological personality variables than traditional sociological or organism variables such as socio-economical status, sex, age, or intelligence, whose relations to the behaviour under investigation may be very distant and complex. The personality variables possibly intervening in the correspondence between overt aggression and test aggression (inhibition of aggres-

sion, guilt, anxiety) have usually been derived from the same dependent or test variables as the variables for aggression under investigation. Such an explanation has been made, for example, by Olweus (1969) in the study of his analytic theoretical formulations of the relationships between overt aggression and projective test aggression. (3) The validity criterion often used for various aggression tests, showing low concurrent validity, has been overt aggression, which, when rated, is determined primarily by the habit strength of offensive aggression. It can be hypothesized that different techniques reveal different kinds of aggressive tendencies and other responses to symbolic aggression stimuli, depending on the individual patterns of behaviour.

The assumption has been studied exploratively by the writer (1968). The subjects were university students of psychology. Two orthogonal dimensions corresponding to those in the descriptive model (Figure 4) were obtained by factor analysis from the battery of such reference variables as number of overt responses and control of behaviour, observed from the subjects' behaviour in small groups, variables of personality inventories (The Eysenck Personality Inventory, The Taylor Manifest Anxiety Scale, The Marlowe-Crowne Social Desirability Scale, etc.), and the Id, Ego, and Superego variables of the Arrow-Dot test. Aggressiveness was operationalized by observation, personality inventories (The Buss-Durkee Inventory, The Siegel Manifest Hostility), projective tests (Rorschach, TAT, Rosenzweig), and self-ratings including a new test type called the SLEI test (cf. p. 143).

The variables for aggressiveness had many different locations in the two-dimensional frame of reference. The variable of observed aggression was located, as expected, in the quarter of the dimensions 'weak control of behaviour' and 'great number of overt responses', and it represented uncontrolled expression of impulses. The most indirect test variable, the Rorschach scale for aggression constructed by Murstein, correlated most highly with observed aggression, whereas the scores for aggression inventories were independent of the dimension 'number of overt responses' but correlated with 'weak control of behaviour'. Other variables correlating with weak control of behaviour were extrapunitivity (vs. impunitivity) in the Rosenzweig Picture Frustration Study, and self-rated aggression in the SLEI test. These relationships were interpretable through generalized hostile attitudes developed from inhibition of aggression in thwarting situations. One proportion of the variance of the personality inventories and the TAT scale for aggression constructed by Hafner and Kaplan was explained by the third dimension independent of the main dimensions. The third dimension was interpreted as suppression/recognization of non-acceptable impulses. Of the observed variables uncontrolled expression of aggression correlated with suppression, and socially acceptable behaviour with recognization. The relationships between test variables and overt aggression were thus rather complex.

Within the present investigation only one test type was chosen in order to obtain as direct information as possible about the subjects' self-rated behaviour in thwarting situations. The main emphasis was given to the question of whether the verbal responses of the different

types of behaviour correspond to predictions based on their overt behaviour.

The procedure was as follows.

— An extreme group was chosen for each individual pattern of behaviour, the behaviour of which differed as clearly as possible from the average.
— The test contained direct, concrete questions about the subjects' behaviour in different thwarting situations.
— To minimize the possibility of impertinent (e.g. bantering) answers the tests were administered as individual tests like interviews. In order to decrease the inhibition of aggression attempts were made to create an atmosphere in which the subject could produce all kinds of responses.

The basic idea was the assumption that in their verbal responses the subjects reveal their characteristic treatment of different situations, which correspond to their overt behaviour. More complicated hypotheses would also be possible, e.g. because of differences in the subjective meanings of test stimuli: although the aggressive stimulus presented to each subject is the same, its subjective meaning may differ, depending on the frequency of the real experiences of an individual in corresponding situations. The experiences have considerable influence on the relationship between the strength of the aggressive and aggression inhibitory tendencies arising in the stimulus situation. For the sake of simplicity and because the selection of the subject groups is determined ultimately by the result concerning Problem A, direct relationships are, however, hypothesized. Provided that more complicated relationships occur, the results are interpreted on the basis of the theoretical starting points and the intervening variables derived from them.

Hypothesis B. 1. The differences between the types of behaviour in the total magnitude of their aggressive verbal responses correspond to those in the amount of overt aggressive behaviour, both for defensive and offensive aggression.

Hypothesis B. 2. (a) Indirect aggression is characteristic of individuals who represent the dimension 'weak control of behaviour' but not that called 'great number of overt responses'. (b) Direct defensive aggression is characteristic of individuals who represent the dimension 'great number of overt responses'. (c) The intensity of aggressive responses (with the physical, verbal, or mimic mode) is assumed to be determined by the strength of the control of behaviour.

Hypothesis B. 3. The magnitude of the aggressive responses of all the types of behaviour is small with strong external control,[1] but the

[1] The strength of external control has been defined above as varying with the amount of thwart in a stimulus situation.

magnitude is increased monotonically when the thwart is weakened. The increase is, however, slightest in the most nonaggressive group and greatest in the most aggressive group, which leads to a simultaneous increase in the differences between the subject groups. The weaker the aggressive habits, the smaller the variations in responses due to stimulus situations. The premises of this hypothesis are: (1) The strength of aggression inhibitory habits depends inversely on the strength of aggressive habits. (2) There is a positive covariation between the strength of aggression inhibitory habits and the degree of stimulus generalization.

Hypothesis B. 4. As regards nonaggressive responses, there are differences between the types of behaviour due to the strength and quality of their aggression inhibitory habits. In analyses and categorizations of projective test responses aggression inhibitory tendencies have usually been thought to vary one-dimensionally. The assumption is made here in connection with Hypothesis A that aggression inhibitory tendencies may be described in terms of two dimensions (Figure 5) which can be called *suppression* of the extrinsic aspect of aggression (of the overt response) and *neutralization* of the intrinsic aspect of aggression (of the emotional reaction).

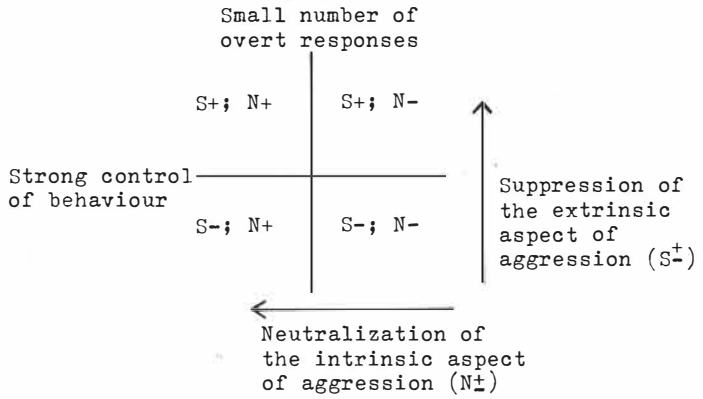

Figure 5. The quality of the aggression inhibitory tendencies of the individual patterns of behaviour (cf. Fig. 4).

The type of uncontrolled expression of impulses (aggressive) lacks both of the inhibitory tendencies, wherefore the number of nonaggressive responses is assumed to be the smallest.

The type of controlled expression of impulses is characterized by the tendency to neutralize the intrinsic aspect of aggression, as a con-

sequence of which the impulses to act are expected to manifest themselves in a socially acceptable way, as compromises and efforts towards peaceful settlement of controversies.

The type of uncontrolled inhibition of impulses tends to suppress the extrinsic aspect of aggression. The remaining emotional arousal is assumed to reveal itself in verbal responses, as descriptions of negative affects. In this type fear associated with aggression stimuli is assumed to arouse more escape responses than in the other types.

The type of controlled inhibition of impulses is characterized by both of the inhibitory tendencies, as a consequence of which an individual takes an indifferent stand in a thwarting situation or appraises the situation without negative affects or active responses.

In addition, these types are also assumed to prefer corresponding responses when they are asked to choose the one of the four alternatives based on the above hypotheses that most closely corresponds to their own behaviour.

Hypothesis B. 5. As a direct consequence of Hypothesis B. 3 it is assumed that when external control is strengthened, the total number of nonaggressive responses increases monotonically for all of the types of behaviour. The increase is, however, greatest in the most aggressive groups and slightest in the most nonaggressive groups.

The variation in the amount of each nonaggressive reaction due to that in external control is assumed to be slightest in the group of which the reaction in question is most typical. The premise of the hypothesis, derived from the S-R behaviour theory (Hull, 1943), is that there is a positive covariation between the habit strength and the degree of stimulus generalization.

3. A DESCRIPTIVE SYSTEM OF AGGRESSIVE AND NON-AGGRESSIVE BEHAVIOUR

3. 1. Execution of the investigation

3. 1. 1. *Methods*

For the same reason as in Part I (p. 46) the method chosen for gathering the material for the study of aggressive and nonaggressive behaviour was that of rating. As an investigation was preferred of somewhat older children than those (aged 5—6) studied in Part I, particularly on account of the analysis for verbal responses in Problem B, the rating method was to be adapted for a study of those of school age. The relationship between a child and his teacher changes as the child leaves the kindergarten and starts going to school. For this reason the situations become less frequent in which a teacher can make observations of a child's spontaneous behaviour.

In many cases peer ratings furnish more useful information than teachers' ratings (Cronbach, 1960). Although, according to the studies by Tuddenham (1952), Walker (1967), Werdelin (1966), et al., the intercorrelations of peer ratings and teachers' ratings of different personality traits are fairly high, the assumption can be made that particularly in ratings of aggressive behaviour peers' observations cover a greater variety of roles and stimulus conditions than teachers' ratings. In a school milieu it is difficult to obtain ratings of pupils from more than one teacher, and therefore the reliability of ratings often remains unestimated. The employment of peer rating eliminates this problem. And as Walker (1967) has proved that after one year's interval the scale scores for peer ratings are more stable than those for teachers' ratings, *peer rating* was the very method chosen in advance by which the subjects for the study of Problem B were to be selected. The peer rating method was modified from the Guess-who technique originally presented by Hartshorne & May (1929), the details of which are given in Chapter 3. 1. 3. *Teacher rating* was employed along with peer rating in order to find out the invariance of the descriptive system when the groups of raters and methods of rating are varied. As in Part I, the main emphasis was given to boys' aggressive behaviour, but since the school classes consisted of boys and girls, it was appropriate, for the practical adminis-

tration of the tests, to gather the material for Problem A so as to involve both sexes.

Variables for the main dimensions of the descriptive model (Figure 4, p. 107) were included both in peer ratings and in teachers' ratings. In addition, the subjects were given the *Junior Eysenck Personality Inventory* developed by Eysenck (1965) as the version (*Junior NESI*) translated and modified by Mäkinen in the Institute of Psychology of the University of Jyväskylä, and the *Personality Inventory for the Lower Forms of the Primary School (KTK 1)*[1] standardized by Ylinentalo (1965, 1967) from the personality questionnaire developed by Cattell and Coan (1959). Self-ratings have usually (Walker, 1967; Werdelin, 1966) correlated rather poorly with peer ratings and teachers' ratings, wherefore the value of the inventory scales as reference variables was not expected to be very high. But since the two-dimensional descriptive model is, on the basis of previous investigations (Eysenck, 1960, 1967; Kline, 1967; Gorsuch & Cattell, 1967; Konttinen, 1968) as useful in the description of common variance of questionnaire variables as in that of rating, this measurement technique was employed here along with the method of rating.

The methods of study for Problem B are given in Chapter 4. 1.

3. 1. 2. *Subjects*

The subjects were drawn from the second-grade pupils of the elementary schools in Jyväskylä as a sample of classes. The number of classes under investigation was 12 (out of 28). They represented three schools. One of them was located in the town center, and all of its six second-grade classes were included in the sample. The other two schools were located in the suburbs, and of them six classes were drawn at random. All of the classes were mixed. The subjects of the investigation comprised 183 boys and 169 girls.

The choice of the subjects from the above mentioned subject group for the examination of Problem B is explained in Chapter 4. 3. 1.

3. 1. 3. *Variables and procedures*

The ratings consisted of variables for aggressive and nonaggressive behaviour as well as reference variables concerning the main dimensions of the descriptive model.

The sampling of the aggression variables was performed by employing the descriptive model of aggression presented in Part I. The content categories were constructed by varying the direction, aim and mode of aggression, and twelve variables were chosen to represent them. The variables were formulated by applying some of the previous investigations in which the method of peer rating has been employed (Lesser, 1959; Walder et al., 1961; Banta & Walder, 1961; Wiggins & Winder, 1961; Takala et al., 1964; et al.).

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[1] KTK 1 is the only personality inventory standardized in Finland for subjects of this age.

In the sampling of the nonaggression variables an attempt was made to take into account, according to the hypotheses, controlled expression of impulses as well as controlled and uncontrolled inhibition of impulses. The total number of nonaggression variables was 12 (Appendix A. 2).

The reference variables were chosen for the dimensions 'number of overt responses' and 'control of behaviour'. In addition, two variables were selected on the basis of the results of the factor analysis carried out by the writer from the peer rating material gathered by Takala et al. (1964). One of them was thought to be a good measure of socially acceptable activity, and the other of anxiety. Two variables were chosen for secondary motivation of aggression. They were assumed to correlate positively with the habit of offensive aggression.

The above mentioned variables (33) were given as concrete a formulation as possible in order to make their meaning unambiguous. In the teachers' ratings the variables were exactly similar. In addition, the teachers were asked to rate the subjects' impulsiveness, anti-social behaviour, excessive withdrawal, and stable general impression. In order to obtain information about the subjects' school achievements the teachers were asked to rank their pupils, and for the rating of the social status the profession of each pupil's father (mother) was requested.

For *peer rating* a block was prepared for each subject with 35 similar pages numbered 1—35. Thus an answer was given to each question on a separate page (the two first tasks were exercises). The girls' blocks contained the first name and, if necessary, the first letter of the surname of each girl in the class, duplicated in capital letters. The boys' blocks contained the name of each boy in the class correspondingly.

In the instruction[1] the number of peers to be chosen for each question was left relatively undefined, although stress was laid on the importance of at least three names in each answer. According to Bjerstedt (1963), lower-grade pupils are usually capable of making at least three choices. A fixed number was not considered necessary, since (1) the aim was to separate in each question the potential extreme individuals from the whole sample, (2) the sizes of the groups varied 12—21 from class to class, and (3) some forms of aggression may, particularly in girls' behaviour, be so unusual that answering with a fixed number of choices would have proved difficult, and would consequently have strengthened the halo effect.

In order to motivate the subjects they were promised sweets after testing provided that they had performed their task carefully. In each class the material was gathered by the writer. The ratings took one lesson.

In *teacher rating* the questions as well as the response blocks were the same as in peer rating. The procedure was, however, different. Girls and boys were rated separately by writing number 3—0 after the name of each pupil. Number 3 was to be given to those pupils in whom the characteristic in question was very prominent, i.e., only to extreme individuals, and 0 to those pupils in whom the teacher had never observed the characteristic in question. The behaviour of the girls/boys was to be compared with that of girls/boys of the same age in general.

The time allowed for rating was two weeks at the teachers' wish, since in

[1] The instruction is obtainable mimeographed.

many cases rating required more accurate observations of the pupils' behaviour than the teachers had at the time of peer rating. To obtain more material the teachers made observations of their pupils voluntarily during breaks.

Personality inventories: Junior NESI. The original version of The Junior Eysenck Personality Inventory consists of 60 items, of which 24 measure neuroticism, 24 extraversion, and 12 constitute a lie scale. Mäkinen has prepared additional items to this inventory and divided the extraversion scale into two subscales called impulsive extraversion and social extraversion (Eysenck & Eysenck, 1963). Within the present investigation the total number of items was 94, of which 31 measured neuroticism, 20 social extraversion, 26 impulsive extraversion, and 17 constituted a lie scale.

The Personality Inventory for the Lower Forms of the Primary School *(KTK 1)* consists of 108 items divided into 12 scales so that each of them consists of 9 items. The scales are presented in Appendix A. 2.

The inventories were administered to the school classes orally by the writer. The answers were recorded by the subjects on separate answer sheets. The answers to Junior NESI are given on a yes-no basis. In KTK 1 there are two alternatives of which one (a or b) is chosen. Example: »Question 1, Which would you prefer, a) playing schools or b) playing cowboys and indians?» In the instructions special stress was laid on personal answers. Those who would concentrate on the task carefully were promised some sweets after the test.

Each inventory required one lesson. They were given at an interval of at least three days. The order in which they were given varied from class to class. On the first day peer rating was carried out after the presentation of the inventory and a break. The tests were performed during the first lessons of the day. The material was gathered in the middle of the spring term 1968.

3. 1. 4. *Reliability of the variables*

Reliability of the ratings. In order to estimate the reliability of the peer ratings both the girls and boys in each class were divided into two arbitrary subgroups. The distribution of choices was studied in each subgroup. The subjects' subscores, i.e. the number of choices given to them in each variable, were expressed in percentages of the maximum number of choices (of the number of subjects in subgroup —1). The correlation coefficients were calculated between the percentages in order to estimate the agreement of the subgroups in their choices. The reliabilities for the ratings were estimated by correcting the correlations according to the Spearman-Brown formula (McNemar, 1955).

The agreement of the teachers' ratings and peer ratings was estimated by correlating the scores for the teachers' ratings with the total scores for the peer ratings expressed in percentages. The boys' peer ratings, particularly those concerning aggressive behaviour, were on the average more reliable than the girls' ratings (Table 11). The median of the reliability coefficients for the boys was .75, which can be considered satisfactory as far as the interpretation of the results is concerned, and which corresponds to those obtained by Tuddenham (1952), Walker (1967), et al. The median for the girls was .66. The lowest reliability ($+.22$ — $+.30$) was that of variable 16 (find it a joke if somebody

Table 11. The reliabilities and means[1] for the ratings

Variables	Peer ratings				Teachers' ratings			
	Reliability		Mean %		r with peer ratings		Mean	
	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls
Aggression								
1. Hurt	.87	.68	20.1	18.0	.71	.23	0.78***	0.20
2. Wrangle	.69	.54	19.2	20.6	.46	.21	0.78***	0.46
3. Sulk	.72	.47	18.4	20.7	.26	.18	0.57	0.54
4. Tease smaller peers	.85	.67	19.7	16.6	.55	.34	0.77***	0.29
5. Displaced toward objects	.73	.64	16.2	16.2	.39	.15	0.46***	0.20
6. Tease behind smby's back	.82	.61	20.6	18.5	.46	.26	0.70***	0.29
7. Sneak	.70	.66	19.3	22.9	.46	.49	0.81	0.65
8. Attack	.83	.64	21.0	17.3	.57	.02	0.59***	0.14
9. Say naughty things	.76	.62	19.5	19.7	.68	.19	0.58***	0.26
10. Make faces	.80	.68	19.4	18.3	.50	.22	0.66***	0.24
11. Take possessions	.86	.61	15.6	16.0	.48	.15	0.27	0.11
12. Tell lies	.79	.69	20.4	21.4	.51	.26	0.63*	0.42
Nonaggression								
13. Act reasonably	.77	.69	20.5	24.5	.43	.40	1.27	1.58**
14. Negotiate	.45	.41	20.5	23.6	.34	.32	1.22	1.56**
15. Side with smaller	.77	.76	19.9	24.2	.47	.37	1.08	1.23
16. Find attack a joke	.30	.22	18.9	20.7	.03	.04	0.99	0.85
17. Peaceable	.71	.75	20.5	25.1	.59	.37	1.28	1.69***
18. Reliable	.75	.78	19.4	23.9	.52	.42	1.31	1.59**
19. Quit	.65	.60	20.7	27.0	.51	.24	1.25	1.54**
20. Never quarrel	.74	.77	19.2	24.7	.47	.26	1.28	1.63***
21. Cry if treated nastily	.80	.69	16.3	18.6	.40	.38	0.64	0.73
22. Afraid of others	.61	.47	16.5	16.7	.30	.24	0.53	0.49
23. Apologize	.52	.51	18.3	23.5	.21	.26	1.09	1.13
24. Plan revenge	.43	.53	20.4	22.2	.37	.20	0.66**	0.44
Reference variables								
25. Be busy and play	.50	.48	24.0	25.0	.35	.40	1.56	1.67
26. Silent	.75	.58	19.4	21.8	.26	.51	0.83	0.96
27. Labile	.73	.52	21.5	22.1	.34	.29	0.85**	0.65
28. Always friendly	.59	.56	20.4	26.4	.42	.37	1.38	1.54
29. Fit for leadership	.82	.75	21.7	23.2	.59	.58	0.89	0.97
30. Unfit for leadership	.82	.78	23.8	24.2	.31	.51	1.34	1.18
31. Cry at the dentist's	.75	.77	17.1	18.6	.44	.33	0.87	0.61
32. Disobey the teacher	.89	.73	18.1	18.1	.67	.45	0.69***	0.17
33. Make fun	.79	.42	20.4	20.4	.60	.27	0.85***	0.38
36. Anti-social symptoms							0.39*	0.19
37. Too withdrawn							0.36	0.61*
38. Unsteady							0.95***	0.54
39. Stable general impression							1.77	1.82

[1] There were few significant differences between the variances.
* The difference between the means for boys and girls significant at .05 level,
** at .01 level,
*** at .001 level.

Table 12. The reliabilities, means, and standard deviations for the scales of KTK 1 and Junior NESI

a) KTK 1	Reliability 1	Reliability 2		Ylinentalo Boys N=130	Ylinentalo Girls N=140	Pitkänen Boys N=183	Pitkänen Girls N=169
46. Masculinity vs. feminity (—)	.89	.91	M	2.77	7.34	2.35	6.64
			σ	1.90	1.24	1.76	1.66
47. Anxiety	.35	.56	M	4.36	5.10	4.54	5.71
			σ	1.77	1.48	1.91	1.50
48. Fearfulness	.37	.50	M	2.77	2.47	2.68	2.75
			σ	1.63	1.53	1.56	1.73
49. Attitude toward school	.69	.57	M	4.62	2.43	4.67	2.62
			σ	2.11	1.58	1.95	1.72
50. Dominance vs. submissiveness (—)	.68	.80	M	4.39	7.04	4.36	6.75
			σ	1.98	1.36	1.71	1.68
51. Self-confidence vs. inferiority feelings	.62	.49	M	4.85	5.04	4.63	4.59
			σ	1.94	2.04	1.89	2.00
52. Altruism vs. egoism	.69	.61	M	5.40	6.91	5.45	6.54
			σ	2.14	1.73	1.86	1.80
53. Emotionality	.67	.37	M	5.45	6.16	5.61	6.17
			σ	2.20	2.08	2.27	2.26
54. Restlessness	.73	.66	M	3.63	2.04	3.28	1.64
			σ	2.07	1.56	2.09	1.46
55. Sensitivity	.45	.49	M	7.00	5.65	7.28	5.85
			σ	1.50	1.64	1.47	1.69
56. Co-operativeness	.28	.26	M	5.59	6.14	5.58	5.56
			σ	1.69	1.66	1.72	1.89
57. Dependency	.65	.56	M	5.48	7.42	5.44	7.27
			σ	2.21	1.37	1.96	1.55

b) Junior NESI	Reliability Boys	Reliability Girls	Mean Boys	Mean Girls	Standard deviation Boys	Standard deviation Girls
42. Neuroticism	.83	.81	13.81	13.42	6.25	6.03
43. Lie scale	.71	.63	7.89	9.62	3.70	3.34
44. Impulsive extraversion	.33	.51	11.60	8.63	3.80	3.23
45. Social extraversion	.16	.24	11.84	11.73	2.35	2.67

1 = split-half reliabilities
2 = test/retest reliabilities

attacks), the peer ratings of which, likewise, did not correlate with the teachers' ratings.

The correlations between the teachers' ratings and the boys peer ratings were, on the average, higher than those between the teachers' ratings and the girls' peer ratings. The median of the correlations for the boys was +.46 and for the girls +.29. The girls' and teachers' ratings of the girls' aggressive behaviour correlated especially poorly with each other.

The differences between the means for the girls' scores and those for the boys' scores, obtained by teacher rating, were significant in several variables regardless of the instructions. The differences between the means for the boys' and girls' scores, obtained by peer rating, expressed in percentages, were not, however, significant. This could have been the case, because the number of choices was not strictly defined in the instructions.

Reliability of the personality inventories. The reliabilities for the scales included in *KTK 1* have been estimated by Ylinentalo (1967) for the corresponding age level in connection with the standardization of the inventory. The methods employed had been 'split half' and 'test/retest' (interval one year), and an analysis of the inner consistency of the scales had been made. The split half and test/retest reliabilities for the scales, as well as the means and standard deviations for the responses of the second-grade pupils obtained by Ylinentalo and those obtained by the writer, are presented in Table 12 a.

The means for the boys in each scale as well as the intercorrelations of the scales were very much the same in both investigations. More variation occurred in the means for the girls.

For *Junior NESI* the split half reliabilities were estimated as shown in Table 12 b. The reliability coefficients for the neuroticism and lie scales corresponded to those obtained by Eysenck (1965) for subjects aged 8 (neuroticism scale: boys .79, girls .80; L-scale: boys .64, girls .67), but the extraversion scales, the social extraversion scale in particular, proved to be more unreliable in the present investigation (in Eysenck's study: boys .58, girls .63), which may be due to the fact that the inventory is in Finland still under standardization, and the scales employed here were preliminary versions.

3. 1. 5. *Analysis of the results*

The first problem of the investigation dealt with the two-dimensional description of aggressive and nonaggressive behaviour. Four samples were gathered for the solution of the problem. The 55 × 55 intercorrelation matrices of the following variables were calculated as product moment coefficients:

a) The boys' peer ratings in the 33 variables (1—33, Appendix A. 2). The subjects' scores, i.e. the number of choices given to them in each variable, were expressed as percentages of the maximum number of choices (of the number of subjects in group —1). In addition, the battery included the 6 teachers' ratings of the boys (36—41) and the 16 scales of the personality inventories (inventory scales 42—57).
b) The corresponding variables for the girls' peer ratings, teachers' ratings of the girls, and inventory scales.
c) The teachers' ratings of the boys in the 39 variables, and the boys' scores for the 16 inventory scales.

d) The corresponding variables for the teachers' ratings of the girls and the girls' scores for the inventory scales.
e) The 55 × 55 matrix of the average intercorrelations was obtained from the matrices a—d through the r to z transformation developed by Fisher (McNemar, 1955).

The matrix of the average intercorrelations was factor analysed by the principal factor method. As the descriptive model being tested was two-dimensional an examination was first made into how the common variance of the variables can be described in terms of the first two factors (cf. p. 52). The loadings of the variables on the first principal factor were plotted graphically against those on the second principal factor. This figure was the starting point of the examination of Hypothesis A.

In order to study the invariance of the two-dimensional structure with different raters and subjects of different sexes, four factor analyses were carried out. All the analyses involved the 33 rating variables. The inventory variables were included in the same batteries as the peer ratings:

a^1) the boys' peer ratings and scores for the inventory scales (33 + 16),
b^1) the girls' peer ratings and scores for the inventory scales (33 + 16),
c^1) the teachers' ratings of the boys (33 + 6),
d^1) the teachers' ratings of the girls (33 + 6).

The factor structures of both the aggression and nonaggression variables were analysed separately from each sample (a—d). The purpose was to examine the proportion of the common variance of both the aggression and nonaggression variables explained by the two main dimensions of the descriptive model, i.e., to examine what other dimensions can be found to explain the interindividual differences.

The problem of explaining the common variance was also studied at a more general level of description, by rotating the factor matrix extracted from the average intercorrelations by the varimax method with different numbers of factors. An attempt was herewith made to take all the common factors into account.

In the research project peer rating was chosen as the very method by which to choose the subjects for the study of Problem B. In order to obtain information about the invariance of the factor structure of the 33 ratings with different raters and subjects of different sexes, the boys' and girls' peer ratings as well as the teachers' ratings of the boys and girls in the 33 variables were factor analysed separately. The invariance of the factor configurations was investigated through a symmetric transformation analysis model (Mustonen, 1966).

3. 2. Results

3. 2. 1. *Structure of the variables in terms of two main dimensions*

3. 2. 1. 1. The main dimensions

It was predicted in **Hypothesis A** (p. 107) that the habits of aggression and nonaggression adopted for coping with thwarting situa-

tions may be described in terms of two orthogonal dimensions called number of overt responses and control of behaviour.

In the factor analysis from the average intercorrelations (p. 121) eight factors were extracted. Their proportion of the total original (estimated) communality was 97.2 %. The corresponding percentage for the first two principal factors was 57.0. The first two factors extracted from the four samples (a^1—d^1, p. 121) accounted for larger percentages (60.8 %—71.5 %) of the total variances than those extracted from the average intercorrelations, particularly when the inventory scales were excluded from the battery (from the batteries c^1 and d^1 concerning teachers' ratings, p. 121).[1]

The eigenvalues of the factors were sharply reduced after the first factor. The differences between the eigenvalues of the second and third factor were not great. A similar reduction in the eigenvalues was found in the different samples. After the fourth factor the eigenvalue percentages of the number of variables remained altogether rather small, smaller than 3. 5.

For a study of the correspondences between the principal factors Tucker's coefficients of congruence (Harman, 1967, p. 270) were calculated between the corresponding factors extracted from the different samples (example: comparison between samples a^1 and b^1: I/I; II/II; . . . ; VII/VII) over the common variables of the samples under comparison.[2] The most stable factor was the first principal factor (.90 — .99); more variation could be found in the coefficients of congruence for the other factors. According to Tucker (Harman, 1967, p. 271), a value under .46 for a coefficient of congruence does not indicate similarity between a pair of factors. This criterion value was exceeded by the coefficients for the first five factors in the comparison between the teachers' ratings of the boys and girls, and also in that between the boys' and girls' peer ratings. In the comparisons between the peer ratings and the teachers' ratings the criterion value was exceeded only by the coefficients for the first three factors. The difference between the above results of the teachers' ratings and peer ratings was possibly due to the fact that the inventory scales were excluded from the batteries in which the teachers' ratings were included.

On the basis of the coefficients of congruence it can be expected that dimensions spanned by the inventory scales are not included in

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[1] The table presenting the eigenvalues of the factors is obtainable mimeographed.

[2] The table is obtainable mimeographed.

the structures of the rating variables. A detailed examination and interpretation of these dimensions is presented in Chapter 3. 2. 2.

A considerable proportion of the common variance was accounted for by the first two factors (57—72 %). The coefficients of congruence also indicated that the first two principal factors were very stable with different raters, methods, and subjects of different sexes. The variables were plotted on a plane on the basis of their loadings on the first two principal factors (Figure 6; average intercorrelations).

In Figure 6 the axes are rotated to a position in which the y-axis is parallel with the line which goes through the pair of reference variables (25, 26) representing the number of overt responses. The original position of the axes is shown by a dotted line.[1]

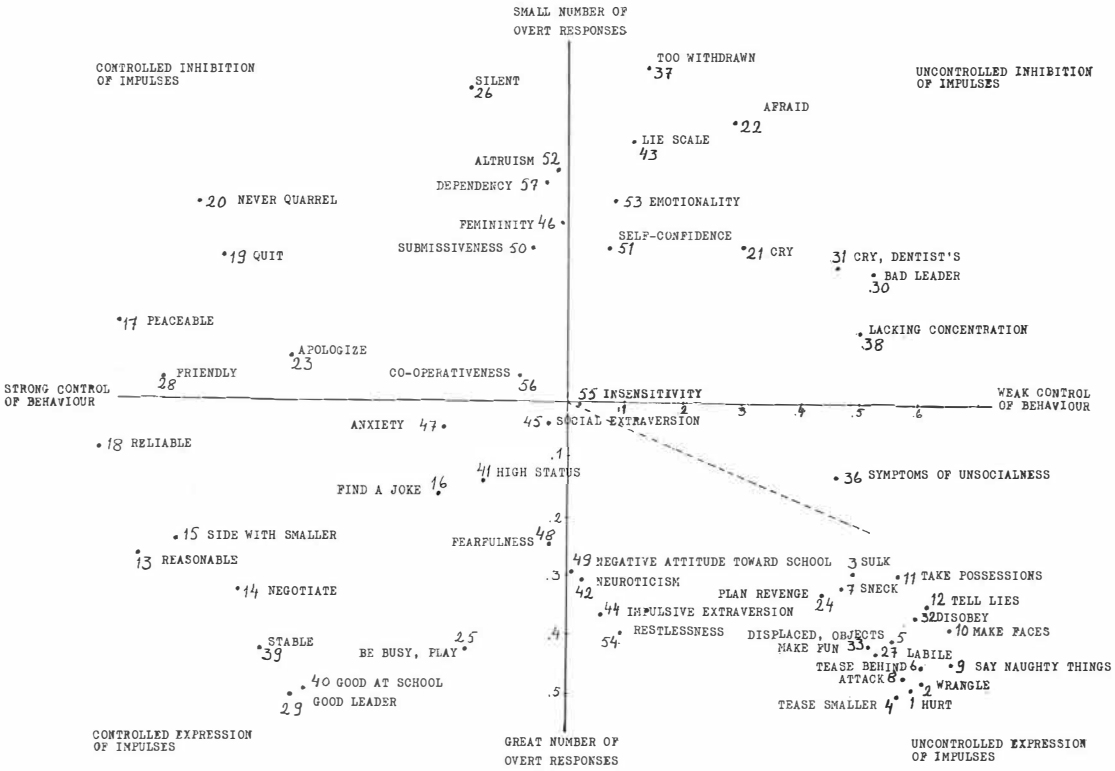

Figure 6. The variables plotted on a plane on the basis of the first two principal factors, average intercorrelations.

[1] The two-dimensional figures for the different samples (a^1—d^1) are obtainable mimeographed. Rotations of the same size are made in these figures.

The variables were divided among all the quadrants in Figure 6, which supports Hypothesis A. When rotated according to the variable pair (25, 26) representing the number of overt responses, the axes were interpretable on the basis of the highest loadings as the dimensions *'number of overt responses'* and *'control of behaviour'*.

A great number of overt responses was manifested both by the variables for socially acceptable behaviour and by those for less acceptable behaviour. This pool of the dimension was spanned not only by its reference variable (be busy and play with others), but also by the aggression variables, the reference variables for secondary motivation of behaviour, fitness for leadership, good school achievement, and negotiation in conflict situations. Of the inventory scales restlessness (KTK 1) and impulsive extraversion (Junior NESI) had the highest loadings.

The pool of the dimension *'small number of overt responses'* was spanned not only by its reference variable (be silent and not care to be busy) but also by excessive withdrawal rated by a teacher, fearfulness, and nonparticipation in quarrels. Of the inventory scales the highest loadings were found in the lie scale (Junior NESI), altruism, dependency, cheerfulness, and femininity (KTK 1).

The other axis constituted the dimension 'control of behaviour', as expected. One pool of it was loaded by the variables of disobedience to the teacher, making fun in order to attract attention, symptoms of antisocialness, unsteady attentiveness, unfitness for leadership, inclination to cry, and fearfulness. The axis connected the patterns of behaviour of uncontrolled expression and inhibition of impulses as expected. According to the hypothesis, the common components of the variables were interpretable as *weak control of behaviour*. The reference variable (27, labile) for weak control of behaviour did not prove independent of the number of overt responses. It is possible that the reference to occasional touchiness had directed the ratings toward aggressive behaviour more than intended. It is also probable that observable changes of mood generally correlate with an abundance of overt responses. Weak control of behaviour as a characteristic independent of the dimension 'number of overt responses' might be better operationalized by a more general rating variable for unreliability.

Strong control of behaviour independent of the number of overt responses was measured by reference variable 28 (try to be always friendly), and also by reliability, peacefulness, nonparticipation in quarrels, reasonableness of action, negotiation in conflict situations, and siding with smaller and weaker peers which represents socially

acceptable aggression. The inventory scales had no significant loadings on the dimension 'control of behaviour'.

As far as the interpretation of the axes is concerned, the results of the different samples corresponded to each other and also to the results based on the average intercorrelations, although differences could be found in the loadings of individual variables.

Of the reference variables it can be said that the teachers' ratings of the number of overt responses were more independent of the dimension 'control of behaviour' than the corresponding peer ratings. In the girls' ratings the variable of being busy and playing with others (25) was coloured by strong control of behaviour, whereas in the boys' ratings low activity (26) correlated with strong control of behaviour. In the teachers' ratings fitness and unfitness for leadership (29,30) correlated with the number of overt responses and were more independent of the dimension 'control of behaviour' than in the peer ratings. According to the peer ratings, unfitness for leadership (30) was very closely connected with weak control of behaviour.

A considerable proportion of the common variance of the variables could be described in terms of the dimensions 'number of overt responses' and 'control of behaviour', as hypothesized. The principal factors themselves could not be identified as the hypothesized main dimensions; they could be described in terms of combinations of these dimensions. The above interpretation was based on the orthogonal rotation of the axes.

3. 2. 1. 2. Structure of nonaggressive behaviour

It was predicted in **Hypothesis** A that the habits of aggression and nonaggression adopted for coping with thwarting situations can be classified into controlled expression, controlled inhibition, and uncontrolled inhibition of impulses.

Controlled expression of impulses was assumed to be the kind of behaviour characterized both by a great number of responses and by strong control of behaviour. As hypothesized, the variables in the quadrant of these reference axes were.

13. try to act reasonably even in annoying situations
14. think that if one negotiates, everything will be better
15. side with smaller and weaker peers (socially acceptable aggression)
16. think that it is just a joke if somebody attacks.

The lowest loading was that of variable 16, which was also the least reliable. The variable had more common variance with the other variables of the same group in the teachers' ratings than in the peer ratings.

Controlled expression of impulses was assumed to be motivated by an individual's desire to behave in a socially acceptable manner. Observations of overt behaviour can furnish information about an individual's motives only indirectly, but the study of Problem B is expected to give additional support to the assumption. The study also deals with the assumptions on the background factors of this pattern of behaviour.

There were differences between the samples in the division of the variance of variables 13—16 among the dimensions 'number of responses' and 'control of behaviour'. In general, strong control of behaviour accounted for a larger proportion of the variance than a great number of overt responses (particularly in the teachers' ratings of the boys). The distribution of the variance was most even in the teachers' ratings of the girls.

Controlled inhibition of impulses was assumed to represent the kind of behaviour most contrary to aggression, i.e. strong control of behaviour and a small number of overt responses. The variables chosen to measure this pattern of behaviour were

17. be peaceable and patient
18. be a reliable classmate
19. dislike squabbling company and leave it for something else
20. never quarrel with others.

All the forms of behaviour were emphasized more by strong control of behaviour than by a small number of overt responses, possibly because of the halo effect which had heightened the intercorrelations of favourable traits. With the exception of the variable of reliability (18) the cluster differed, however, from that of controlled expression of impulses and represented behaviour most contrary to aggression, as hypothesized.

The hypotheses included the assumption that in an individual characterized by controlled inhibition of impulses awareness of the emotional state is blocked by cognitive appraisal of the situation. The observations of overt behaviour can support the assumption only indirectly; appreciable weakness of aggressive habits suggests that arousal of anger and the expressive responses connected with it have not been conditioned to thwarting situations, which in turn implies that an individual is capable of controlling his emotional arousal. Although the weakness of aggressive habits may reduce the frequency of conflict situations cumulatively, it is unlikely that any member of a group of children could completely avoid stimuli that instigate aggression. The study of Problem B is expected to give additional support to the above assumption.

As in controlled expression of impulses differences could be found between the samples in the amount of the variance of variables 17—20 accounted for by the main dimensions. The interindividual differences in the dimension 'number of overt responses' had been organized most clearly in the teachers' ratings of the boys. The slightest proportion of the variance explained by the dimension 'small number of overt responses' was found in the girls' peer ratings.

Uncontrolled inhibition of impulses was assumed to include avoidance responses with negative affects, anxiety, and intentions of revenge. Of the variables

21. start easily crying if others treat nastily
22. be afraid of other children
23. apologize readily even if have done nothing very wrong
24. think of revenge but never do anything

only the first two measured the characteristics of small number of overt responses and weak control of behaviour as expected. Contrary to expectations, variable 23, which had been assumed to measure aggression anxiety, correlated with strong control of behaviour. The relationship was interpretable either in terms of the habits of socially approved behaviour or by considering the aspect on the hypothesized psychic processes underlying overt behaviour. Readily arising feelings of guilt possibly ensue from intensive attempts to suppress (not only to inhibit) impulses of aggression. The latter interpretation was supported by the fact that variable 23 had more common variance with controlled inhibition than with controlled expression of impulses.

Variable 24, which had been assumed to describe the process of anger arousal but inhibition of aggressive expressions, correlated with the variables for aggressive behaviour in all of the samples, probably because it is difficult for an outsider to make valid observations of an individual's emotional reactions. An analysis of the subjects' verbal responses to thwarting stimuli, presented in the study of Problem B, is assumed to provide further information about inhibition of the extrinsic aspect of impulses.

In spite of the location of some individual variables in the *two-dimensional* figures contrary to assumptions, *the results supported Hypothesis A as regards the nonaggressive patterns of behaviour.*

As a considerable proportion of the common variance was ignored in the two-dimensional description, the question arose whether such further, possibly essential, interdependences of the variables occur which cannot be found if the number of factor analysed variables is

great. In order to solve the problem *the nonaggression variables (13—24) were factor analysed separately in each sample.*

The first two principal factors, whose proportion of the total original communality was, in the different samples, 79—89 %, could be given the same interpretation as those extracted from the average intercorrelations. The first factor could be identified as the dimension 'control of behaviour' (the variables for controlled expression and controlled inhibition of impulses had loadings of the same sign; the opposite sign was in the loadings of the variables for inclination to cry and fearfulness), and the second as the dimension 'number of overt responses' (controlled and uncontrolled inhibition of impulses had loadings of the same sign; the opposite sign was in the loadings of the variables for controlled expression of impulses and for intentions of revenge).

The total original communality was explained by four factors (Table 13). The first three factors extracted from the different samples corresponded to each other. The composition of the fourth factor varied according to the groups of raters.

Factor I was interpreted as *controlled expression of impulses.* The factor had common variance with controlled inhibition of impulses and with variable 18 in particular. The common variance could be interpreted as a consequence of strong control of behaviour.

Factor II represented *uncontrolled inhibition of impulses* and it was slightly bipolar with controlled expression of impulses. In the boys' peer ratings a proportion of the variance of variables 23 was explained by Factor II as expected.

Factor III contained *controlled inhibition of impulses.* A contrary variable was that of intentions of revenge, which behaved in the same way as the aggression variables in the factor analysis from the average intercorrelations.

Factor IV extracted from the peer ratings was spanned by variables 24 (think of revenge) and 16 (think it is just a joke if somebody attacks), and the factor extracted from the teachers' ratings by variables 16 and 23. Figure 7 suggests that Factor IV extracted from the peer ratings was coloured by aggression, and that extracted from the teachers' ratings by strong control of behaviour. A possible explanation of the specific Factor IV extracted from the peer ratings is the fact that in children's aggression intentions of revenge may be more transient and playful than in adult behaviour, for which reason variables 16 and 24 have had specific common variance.

The separate analysis for the nonaggression variables did not yield additional dimensions essential to the interpretation. The common variance was explained by the first three factors as the two-dimensional structure suggested. The dependences revealed by the fourth factor were rather specific.

Table 13. Rotated factor matrices, nonaggression and aggression variables

Variables	Boys										Girls									
	Peer ratings					Teachers' ratings					Peer ratings					Teachers' ratings				
Nonaggression	I	II	III	IV	h^2	I	II	III	IV	h^2	I	II	III	IV	h^2	I	II	III	IV	h^2
13. Act reasonably	70	—27	45	—01	76	67	—17	52	00	74	77	—09	43	00	76	74	—25	25	16	70
14. Negotiate	72	—04	18	15	58	68	—08	38	03	61	53	—21	32	33	52	69	—14	07	35	62
15. Side with smaller	56	—44	36	15	65	65	02	34	29	63	70	—22	51	02	79	72	—02	17	27	62
16. Find attack a joke	00	06	10	63	41	22	—12	52	35	45	19	—05	—04	40	20	24	—06	06	69	55
17. Peaceable	44	—04	77	—07	79	33	00	81	—03	74	51	—09	75	—13	84	36	—02	72	04	65
18. Reliable	58	—18	62	—05	76	59	—03	58	19	72	40	—12	83	05	85	71	—04	46	08	72
19. Quit	34	07	72	04	66	35	33	65	14	75	40	03	73	06	70	17	08	76	28	70
20. Never quarrel	18	17	86	—10	79	16	28	84	11	80	41	—15	75	—25	81	22	21	80	20	77
21. Cry if treated nastily	—09	74	00	08	56	02	66	—16	15	49	06	69	—01	01	48	—03	67	—07	07	47
22. Afraid of others	—06	80	09	04	65	—09	68	12	—06	49	—31	60	—08	—18	50	—21	61	17	—02	45
23. Apologize	49	31	40	—04	50	22	13	42	47	44	41	00	75	13	74	28	21	14	61	52
24. Plan revenge	14	03	—32	54	42	—04	16	—54	29	42	—03	—02	—49	50	49	—01	25	—42	16	26
Aggression																				
1. Hurt	82	35	19	10	84	72	23	36	21	75	74	41	16	11	75	51	11	34	47	61
2. Wrangle	62	40	35	35	79	57	51	31	32	78	53	43	41	22	68	41	32	47	35	61
3. Sulk	42	63	33	—01	68	24	53	10	19	38	41	58	31	00	60	36	49	14	—07	39
4. Tease smaller peers	90	20	09	04	86	79	—05	23	08	69	82	18	—04	12	72	61	35	34	—03	61
5. Displaced, objects	68	51	16	—05	75	56	56	00	—03	63	60	42	03	26	60	62	09	13	37	55
6. Tease behind back	85	25	17	13	83	85	03	06	02	73	77	15	13	18	66	65	42	24	21	70
7. Sneak	09	54	16	41	49	38	36	22	53	60	41	38	40	27	55	22	45	55	28	63
8. Attack	87	14	16	00	80	74	33	23	17	74	76	30	18	06	70	83	20	—10	06	74
9. Say naughty things	75	41	17	22	81	69	36	29	22	74	69	36	20	33	75	67	26	24	25	64
10. Make faces	58	50	16	32	71	58	45	26	14	63	71	42	18	24	77	55	41	29	12	57
11. Take possessions	78	26	09	20	72	76	—06	—07	13	60	39	39	02	52	58	75	33	—22	08	73
12. Tell lies about others	65	37	24	35	74	48	10	15	55	57	74	24	29	18	72	51	59	10	—04	62
25. Be busy and play	15	—11	47	—02	26	17	00	35	—17	18	13	—32	42	01	30	19	—31	37	—16	29
31. Cry at the dentist's	—09	63	—13	22	47	22	40	—35	13	35	—12	53	—22	—02	34	05	26	—17	45	30

3. 2. 1. 3. Structure of aggressive behaviour

It was predicted in **Hypothesis** A that the variance of the aggression variables is divided among the main dimensions as follows. (1) Indirect aggression is most independent of the dimension 'number of overt responses' but represents weak control of behaviour; (2) direct defensive aggression without offensive aggression represents a great number of overt responses but is relatively independent of the dimension 'control of behaviour'; and (3) offensive aggression and intense defensive aggression connected with it represent both a great number of overt responses and weak control of behaviour, i.e., most clearly: uncontrolled expression of impulses.

The aggression variables plotted on a plane on the basis of the first two principal factors (Figure 6) were located as expected in the quadrant of the dimensions 'weak control of behaviour' and 'great number of overt responses'. The common variance of the aggression variables was strong, and the figure indicated that only some of the assumed differentiation took place. The structure of the variables differentiated, however, when the aggression variables were factor analysed separately, as shown below.

There were slight differences between the aggression variables in the dimension 'number of overt responses': the variables closest to the axis of weak control of behaviour were 11 and 12 for indirect offensive aggression, 7 and 5 for indirect defensive aggression, and 3 and 10 for mimic aggression. The highest loadings on the dimension number of overt responses were found in the variables for direct physical and verbal defensive aggression (1 and 2), direct physical and verbal offensive aggression (8 and 9), and, contrary to the hypothesis, in variables 4 (tease smaller and weaker classmates when angry at something) and 6 (tease others when they do not notice). Variables 4 and 6 had been assumed to measure indirect defensive aggression, but they were probably more emphasized by offensive aggression. In the formulation of the variables (4,6) it would have been appropriate to lay stress on displacement of aggression (e.g., tease smaller peers when dare not be cross at the original instigator), but as complex formulations of the variables were avoided, this perhaps necessary epithet was excluded.

The location of the aggression variables in the two-dimensional figure was as a whole similar for the different samples, but some differences occurred between the individual variables. The greatest of them concerned the variable of sneaking (7): sneaking suggested uncontrolled inhibition of impulses more clearly in boys' than in girls' behaviour. It is possible that sneaking has a greater

component of prosocial aggression (worry about observance of directions) in girls' than in boys' behaviour, wherefore in girls' behaviour this form of aggression does not indicate general lack of behavioural control.

The structure of the aggression variables was studied also by carrying out a *separate factor analysis for variables 1—12 in each sample.* In order to make the relations of the factors to the reference axes interpretable, variables 25 (be busy and play eagerly during breaks and after school hours) and 31 (cry easily e.g. at the dentist's) were also included in the factor analyses. Of the variables common to all the samples 31 had the most stable location close to the axis of weak control of behaviour.[1]

The total original communality was explained by four factors (Table 13, p. 129). The rotated factors for the boys' peer ratings and the teachers' ratings of the boys corresponded well. The fourth factor extracted from the girls' peer ratings had no corresponding factor in the other samples.

Factor I was very general for all the samples. The order of the variables on the basis of the average loadings is given below.

	Average loadings
8. Attack without reason	.80
4. Tease smaller and weaker peers when angry	.78
6. Tease others when angry when they do not notice	.78
1. Hurt another child when angry	.70
9. Say naughty things to other children	.70
11. Take other children's possessions	.67
5. Displaced toward objects	.62
10. Keep sneering at others	.61
12. Exaggerate or tell lies about other children	.60
2. Quarrel with others for a slight reason	.53
3. Start sulking easily	.36
7. Sneak	.28

Compared with the aggression factors obtained in Part I, the largest proportion of the variance of the general aggression factor was explained by offensive aggression and intense defensive aggression connected with it. The loadings were, however, also high in most other variables, particularly in those for indirect aggression. In Part I global rating of the trait of aggressiveness was determined by the habit strength of both offensive and indirect aggression, which also had the highest loadings in the dimension of the intensity of aggression (Figure 2). Factor I was thus interpretable as a *general aggression factor.*

Factor II. The largest proportion of the variance of the reference variable 31 (cry easily e.g. at the dentist's) was explained by Factor II. Of the aggression variables the ones most closely connected with it were displacement of aggression toward objects in the environment, sulking, sneaking, and sneering. The other variables for verbal aggression also had relatively high loadings. Variables

[1] The mimeographed figures, see footnote p. 123.

4 and 6 for indirect defensive aggression were not included in the factor except in the teachers' ratings of the girls (see p. 130).

The variance of the aggression variables, revealed by Factor II and independent of the general aggression factor, contained both indirect display of aggression and attempts to inhibit aggression (sulk) so apparently that the factor could be considered as meeting the expectations concerning *indirect aggression* representing weak control of behaviour.

Factor III. The reference variable loaded on Factor III was 25 (be busy and play eagerly with other children). The factor accounted for a proportion of the communality of verbal defensive aggression. Other variables for direct defensive aggression loaded on the factor were sulk extracted from the peer ratings and physical defensive aggression on the factor extracted from the teachers' ratings. The factor extracted from the girls' peer ratings contained also sneaking (cf. the above interpretation of the component of prosocialness in girls' sneaking).

The fact that the contribution of the factor to the total variance was smaller than expected on the basis of Part I was probably due to the exclusion of the different degrees of intensity from the variables for defensive aggression that had been taken into account in Part I. The sampling of the variables was based on the descriptive model of aggression, but to keep the number of variables convenient for the peer ratings different degrees of intensity were not included in it. The extraction of Factor III in a separate analysis showed, however, that *direct defensive aggression* differentiated partly from offensive aggression as hypothesized.

Factor IV extracted from the boys' peer ratings and teachers' ratings of the boys could be interpreted as *verbal aggression.* It corresponded most closely to the verbal defensive aggression factor obtained in Part I which also accounted for a considerable proportion of the communality of sneaking. The regression analyses and canonical correlations revealed that this factor predicted the ratings of low frustration tolerance and was independent of the global ratings of aggressiveness vs. peacefulness.

Factor IV extracted from the teachers' ratings of the girls was also considered interpretable as an indicator of low frustration tolerance. The loaded variables were inclination to cry, displacement of aggression toward objects, and direct verbal and physical defensive aggression. On the basis of Part I the variance of low frustration tolerance, independent of the general halo dimension, was accounted for by the above mentioned forms of aggression in particular.

Factor IV extracted from the girls' peer ratings differed from the factors interpreted above: it was spanned mainly by one variable: offensive aggression displayed toward another person's possessions. The rating had slight common variance with verbal offensive aggression.

Aggressive behaviour was divided into three factors that could be given the same interpretation in the different samples. In addition to the general aggression factor, two other factors were obtained, of which one reflected weak control of behaviour and the other a great number of overt responses. The factor structure supported both the assumption and the earlier results concerning interindividual differences in aggressive behaviour attained in Part I.

3. 2. 2. *Further common factors of the variables*

The preceding chapter dealt with the description of the structure of the variables in terms of the two principal factors. The factor matrix extracted from the average intercorrelations was also rotated by the varimax method with different numbers of factors, starting with two. The interpretation was based on the six-factor rotation.[1] The eigenvalue of the seventh factor was only 1.16 and the percent of the total variance 2.11. Factor VII was spanned by the two variables for fitness for leadership, and thus it was not interpretationally essential.

As far as the ratings are concerned, an increase in the number of rotated factors revealed no such essential dimensions in the interdependences of the variables which the two-dimensional structure would not already have suggested. The inventory scales, however, divided into two factors (III, V) and were almost completely separated from the ratings. The separation was understandable: compared with the intercorrelations of each variable group the correlations between the inventory scales and the ratings were very low (average intercorrelations $\leqq \pm .25$).

In order to facilitate the treatment of the slight relationships between the inventory scales and the ratings, the factors spanned by the inventory scales and their relations to the ratings are discussed first. Factors III and V explained all of the communalities of the inventory scales with the exception of the slight loadings on the lie scale (43) and the anxiety scale (47) on Factor IV. The inventory variables were plotted on a plane (Figure 7) on the basis of their loadings on Factors III and V. As to three quadrants and the main dimensions, Figure 7 corresponds very well to the two-dimensional descriptive model (p. 107) summarizing Hypothesis A.

Factor III. The factor was bipolar and it could be interpreted as a dimension for subjective conception of the control of behaviour. One pool was spanned by the emotionality scale (cheerfulness vs. depression), the lie scale, and the scales of self-confidence vs. inferiority feelings, altruism vs. egoism, dependency (helpfulness), sensitivity (tough-mindedness vs. sensitiveness), and co-operativeness, the other by the scales of neuroticism, fearfulness, restlessness, impulsive extraversion, and anxiety. The factor divided the inventory scales very unambiguously, reflecting a *positive or a negative self-concept.* It was nearly independent of the ratings. The highest loadings (.12) were found in variables 31 (cry easily e.g. at the dentist's) and 38 (be unsteady and lack concentration in work and attentiveness), which had the same sign as the scale of neuroticism.

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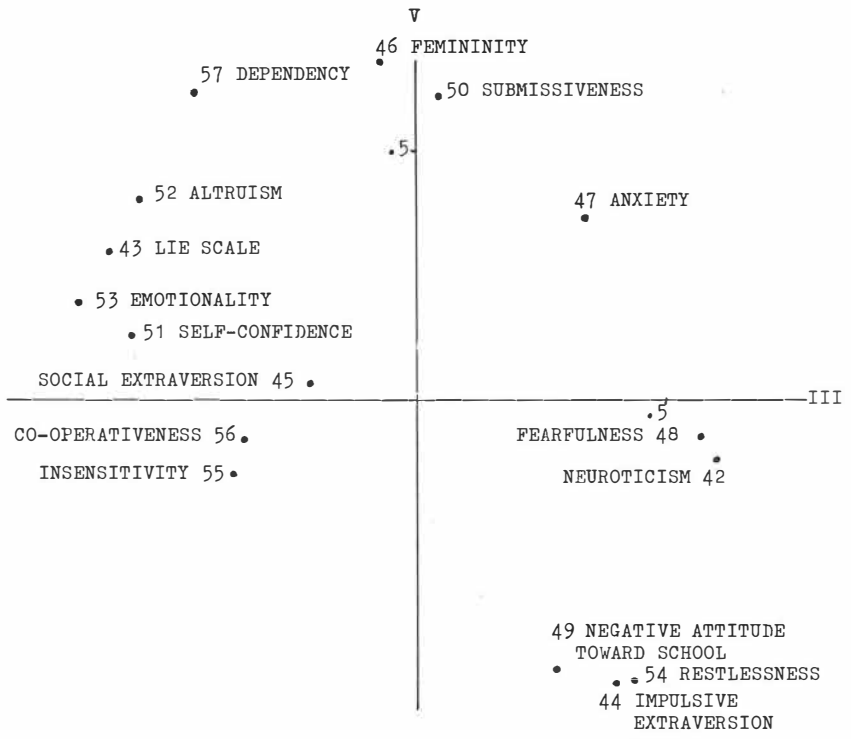
[1] The rotated factor matrix is obtainable mimeographed.



F i g u r e 7. The structure of the inventory scales in terms of Factors III and V.

Factor V. The factor was bipolar and it could be interpreted as a dimension for subjective conception of the number of overt responses, i.e., as *social cautiousness vs. impulsiveness.* The high scores opposite to those for the scales of femininity vs. masculinity, dependency, submissiveness vs. dominance, altruism, and anxiety were for the scales of impulsive extraversion, restlessness, and reluctant attendance at school. The factor was somewhat more closely related to the ratings than factor III, even though their loadings on it were but directive: the pool of femininity was loaded positively by variables 23 (apologize readily), 21 (start easily crying if others treat nastily), and 7 (sneak), and that of impulsive extraversion by variable 32 (tend to disobey the teacher) and by those for fitness for leadership.

The correlation coefficients between the inventory scales and the ratings[1] revealed some slight but consistent relationships. Factor V (social cautiousness vs. impulsiveness) differentiated, to some extent, the subjects in the behavioural dimension 'controlled inhibition/uncontrolled expression of impulses', whereas the relations of Factor III

[1] The correlation matrix is obtainable mimeographed.

(positive vs. negative self-concept) to overt behaviour were weaker and more complex. For example, the anxiety scale correlated positively ($p<.01$) with the ratings for controlled expression of impulses, and negatively with those for anxiety. The lie scale correlated with the same ratings inversely.

The inventory variables differentiated into a logical structure, but their relations to the ratings were very weak, particularly in the dimension positive vs. negative self-concept.

Four factors were composed of the *rating variables.*

Factor I: Aggression vs. controlled inhibition of impulses. An inspection of the changes in the factor following an increase in the number of rotated factors revealed that it adopted its final composition in the three-factor rotation, in which its common variance with the inventory scales, shown by the first principal factor, was explained by a separate factor. After this an increase in the number of factors did not change the loadings more than some hundredths. The order of size of the loadings of the aggression variables corresponded in general to that of the loadings of the general aggression factor; only the range was smaller ($+.62$ — $+.83$). The loadings of the ratings for controlled inhibition of impulses were negative, varying $-.52$ — $-.36$. The factor was identifiable as one of the diagonal axes in Figure 6 (p. 123).

Factor II: Strong control of behaviour. Like the other diagonal axis in Figure 6, Factor II yielded by the two-factor and three-factor rotations was a bipolar factor for controlled expression of impulses (socially approved activity) vs. uncontrolled inhibition of impulses (anxiety). In the four-factor rotation the common variance of the anxiety variables was explained by a separate factor. At the same time the loadings of the variables for controlled inhibition of impulses were strengthened on the factor for socially approved activity, and the factor was extended into a more general factor for strong vs. weak control of behaviour, on which the highest negative loadings were found in variables 38 (be unsteady and lack concentration in work and attentiveness) and 32 (tend to disobey the teacher). An increase in the number of factors did not change the loadings of Factor II yielded by the four-factor rotation more than $\pm .02$.

Factor IV: Uncontrolled inhibition of impulses (anxiety). The factor was a rather broad factor for small number of overt responses, yet coloured mainly by avoidance responses with negative affects. The highest loadings were found in variables 37 (excessive withdrawal), 22 (fearfulness), and 21, 31 (inclination to cry). The factor was to some extent bipolar with controlled expression of impulses. The highest negative loadings were found in school achievement, stable general impression, and fitness for leadership. The factor explained the low communality of the variable of socio-economical status of the family: it revealed that a low socio-economical status was related positively to anxiety in behaviour. An increase in the number of factors did not change the loadings of the anxiety factor yielded by the four-factor rotation more than $\pm .02$.

Factor VI: Lack of concentration. The sixth factor had a more narrow scope than the preceding factors. It accounted for the (largest) proportion of the

communality of variable 38 (be unsteady and lack concentration in work and attentiveness) that had not been explained by the preceding factors containing different kinds of weakness of behavioural control. The factor was also loaded by ratings 25 (be busy and play eagerly with others), and 30 (be unfit for leadership). The loadings with the opposite sign were found in ratings 39 (stable general impression), 40 (good school achievement), 32 (tend to disobey the teacher), 36 (symptoms of antisocialness), and 17 (be peaceable and patient). The proportion of the variance of variable 38 described by Factor VI is perhaps interpretable as some kind of infantile impulsiveness not connected with more serious weaknesses of behavioural control.

An inspection of the communalities of the variables after the two-factor and six-factor rotations revealed that the factors between them accounted for the variance of the aggression variables (1—12) an additional 6 %, and for the variance of the ratings for controlled expression of impulses (variables 13—16), controlled inhibition of impulses (17—20), and uncontrolled inhibition of impulses (21—22), 12.5 %, 17.3 %, and 25 %, respectively. The increase in the communalities of the anxiety variables and of the variables for small number of overt responses in general, involved especially Factor IV which could be considered the third dimension in the structure of the ratings. The anxiety variables had both common variance with the other ratings as expected, shown by projections on a plane (Figure 6), and also specific variance. At least one proportion of the specific variance may be related to scholastic abilities, as suggested by the high negative loading of the school achievement variable on Factor IV.

The two-dimensional description is simplifying and accounts for but a proportion of the common variance of the variables, but it facilitates the organization of the interrelations of complex phenomena, which was also the aim of the present investigation of the structure of variables. On the whole, the results supported the assumptions on the interrelationships of aggressive and nonaggressive habits.

3. 2. 3. *The invariance of the factor structures of the ratings*

According to the research project the subjects for the study of Problem B were to be chosen on the basis of the results yielded by the boys' peer ratings. The mentioned ratings in the 33 variables were factor analysed by the principal factor method. The eigenvalues of the factors reduced sharply: the contribution of Factor V to the total variance was only 1.7 %. The rotations of the factor matrix by the varimax method with 2—5 factors revealed that the interpretationally cssentiał proportion of the common variance was explained by

four factors. The specific fifth factor was spanned only by variables 16 (think it is just a joke if somebody attacks) and 24 (think of revenge but never do anything).

Of the first four factors the first two could be given the same interpretation as Factors I and II extracted from the average intercorrelations.

Factor I: Aggression vs. controlled inhibition of impulses

Factor II: Strong control of behaviour

Factor III: Anxiety vs. socially acceptable activity. The factor did not cover introvert behaviour as extensively as Factor IV, and it was also more apparently bipolar with controlled expression of impulses than Factor IV extracted from the average intercorrelations containing a greater number of variables (e.g. the six teacher rating variables). The teachers' ratings in the background variables had loaded rather heavily on Factor IV. A further difference between these factors was that Factor III for the boys' peer ratings was more coloured by weak control of behaviour: it was loaded by the variable of sneaking and by those for mimic aggression.

Factor IV: Number of overt responses independent of behavioural control. The factor contained both controlled aggression (think of revenge but never do anything; sulk; side with smaller and weaker peers) and socially acceptable activity (negotiate; be fit for leadership). The other pool of the factor was spanned by the variables for small number of overt responses.

The changes resulting from an increase in the number of rotated factors corresponded to those found in the analysis for the average intercorrelations. The first two factors were clearly bipolar and interpretable as uncontrolled expression/controlled inhibition of impulses, and controlled expression/uncontrolled inhibition of impulses. In the three-factor rotation the latter factor was extended into a more general factor of strong control of behaviour. At the same time the bipolarity of the aggression factor was slightly decreased. The variance of the anxiety variables was removed to the third factor, still to some extent bipolar with controlled expression of impulses. The fourth factor explained the proportion of the common variance of the variables most independent of the dimension 'control of behaviour'.

In order to obtain information about the invariance of the factor structure of the 33 variables with different raters, methods, and subjects of different sexes, the girls' peer ratings and the teachers' ratings of the boys and girls were also factor analysed separately. The invariance of the factor configurations was investigated through the symmetric transformation analysis model (Mustonen, 1966). The transformation matrices L (B, S_i) are presented in Table 14 a.

The structural invariance shown by the transformation matrix and the residuals (Table 14) proved to be good between the boys' and girls' peer ratings. Greater variability occurred in the transformation matrix coefficients for the teachers' ratings. Particularly the L-coeffi-

Table 14. Transformation matrices

(a) Matrices L (B, S_i), transformation matrices, and matrices Diag E (B, S_i)' E (B, S_i), residuals by factors

B = factors for the boys' peer ratings
S = factors for each of the other samples (i)

Boys' peer ratings	Girls' peer ratings				Teachers' ratings of boys				Teachers' ratings of girls			
	I	II	III	IV	I	II	III	IV	I	II	III	IV
I	1.00	01	—02	—10	90	—10	—17	40	99	01	—08	—13
II	—02	98	09	—16	07	99	—12	04	—03	99	—07	14
III	02	—09	1.00	—02	—12	08	76	63	13	12	89	43
IV	10	16	03	98	—42	—07	—61	66	08	09	—45	88
Residuals by factors	0.44	0.53	0.69	0.38	1.29	0.93	0.74	0.48	1.14	0.88	0.95	1.00
Total residual			2.04				3.44				3.97	

(b) Matrices L (S_i, S_j), transformation matrices, and matrices Diag E (S_i, S_j)' E (S_i, S_j), residuals by factors

$S_i \ldots j$ = factors for the other samples as for the boys' peer ratings

Girls' peer ratings	Teachers' ratings of girls				Teachers' ratings of boys				Teachers' ratings of girls	Teachers' ratings of boys			
	I	II	III	IV	I	II	III	IV		I	II	III	IV
I	99	00	—10	—03	85	—13	21	47	I	84	03	01	—55
II	—02	97	—22	—04	02	95	—30	09	II	—13	98	04	—15
III	10	22	86	45	—15	17	73	65	III	—12	—08	97	—18
IV	—02	—07	—45	89	—51	—22	—58	59	IV	52	19	22	80
Residuals													
j→i	0.94	0.81	1.01	0.93	1.29	0.90	0.64	0.81		0.68	0.49	0.22	0.97
i→j	0.92	0.88	1.02	0.87	0.91	1.10	1.03	0.60		0.67	0.51	0.22	0.69
Total residual		3.69				3.64					2.36		

cient of Factor IV extracted from the teachers' ratings of the boys indicated slight correspondence with the factors for the boys' peer ratings. The stated fourth factor was spanned by the variables for both aggression and anxiety. When the factor configurations for the teachers' ratings were represented in the factor space for the boys' peer ratings, the residual of Factor IV was, however, small, and the factor structures were in general much the same as the structure of the boys' peer ratings.[1]

The total residuals indicated that the correspondence between the factor structures of the boys' peer ratings and the teachers' ratings of the boys was somewhat better than between the former and the teachers' ratings of the girls. The greatest difference between the residuals of the factors was found in the fourth factors. Factor IV extracted from the teachers' ratings of the girls was loaded by the variables for direct verbal and indirect defensive aggression more highly than that extracted from the teachers' ratings of the boys.

Detailed information on divergent transformation is obtainable from the *residuals of individual variables.*[2] Each of the residuals can be broken down into two components: (1) the difference between the lengths of the counterpart vectors, and (2) the angle extended by these two.

An inspection of the residuals of individual variables yielded by the transformation analysis for the boys' and girls' peer ratings revealed that the greatest residuals were those of variables 7 (sneak) and 25, 26 (the reference variables of the dimension 'number of overt responses'). The residuals were due to the differences in direction rather than in length. The angular separation of the variables was shown already in the two-dimensional figures, and the interpretation of them has also been discussed earlier (p. 125 and 130).

The great residuals of individual variables, obtained in the transformation analyses for the boys' peer ratings and the teachers' ratings, were limited to some variables. They were mainly due to differences in direction. The angular separation was rather great for variables 26 (be silent) and 30 (be unfit for leadership), as the two-dimensional figures also indicated. The differences have been discussed earlier in connection with the interpretation of the main dimensions. Somewhat smaller residuals were found in the reference

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[1] The rotated factor matrix for the boys' peer ratings (B), and the matrices (S) L (S, B) are obtainable mimeographed.

[2] The table for the residuals of the individual variables is obtainable mimeographed.

variables 25 and 29, and in variable 16 (think it is just a joke if somebody attacks). Differences in length could be found in variables 32 (tend to disobey the teacher) and 1 (hurt another child), when the factor configuration for the teachers' ratings of the girls were represented in the factor space for the boys' peer ratings. The communalities of these variables were clearly smaller in the teachers' ratings of the girls than in the boys' peer ratings.

The factor structures obtained from the other samples were also compared with each other through transformation analysis. The transformation matrices and the residuals by factors are presented in Table 14 b.

In general, the results of the transformation analyses showed that the invariance of the factor structures was more dependent on raters and rating methods than on the sex of subjects: divergent transformation was smallest between the structures of the boys' and girls' peer ratings, and almost equally small between the structures of the teachers' ratings of the boys and girls.

When all the performed transformation analyses are taken into account it can be said that, with the exception of sneaking, there was but small structural variability in the rating variables for aggression. As far as the variables for nonaggressive behaviour are concerned, great residuals could be found in two variables (16, 23). Structural variability was greater in the reference variables particularly for the dimension 'number of overt responses' (25, 26) and for fitness for leadership (29, 30). According to the teachers' ratings, fitness for leadership depended on general activity/passiveness, whereas the peers had given more emphasis on behavioural control. Similarly, the variables for general activity/passiveness (number of overt responses) were more independent of behavioural control in the teachers' than in the peers' ratings.

The information provided by the transformation analyses on structural invariance can be utilized in further investigation. The factor structure of the rating variables, obtained from the boys' peer ratings, proved very similar to those obtained from the other samples irrespective of rater, rating method, and sex. The choice of subjects for the study of Problem B on the basis of the factor scores for the factors extracted from the boys' peer ratings can be considered to have structural validity.

4. RESPONSES OF THE AGGRESSIVE AND NONAGGRESSIVE EXTREME TYPES TO SYMBOLIC AGGRESSION STIMULI

4. 1. Methods

Symbolic aggression stimuli consisted of verbal descriptions of thwarting situations which the subjects were asked to solve according to their own judgments of how they would behave in such situations. In the present study the descriptions were administered as three series of questions[1] designed by the writer. Both the type of thwart and external or situational control were varied (p. 108).

The type of thwart was varied as follows. The aggression stimuli in the *first question series* (QS 1) consisted of active attacks involving direct physical, direct verbal, direct mimic, indirect physical, and indirect verbal offensive aggression. External control was varied so that for each form of aggression the attacker was a boy of the same size, a taller boy, a smaller boy, a girl, a teacher, and the parents. (Example: question 1 concerning direct, physical attack: What would you do if one of the boys in your class who is of the same size as you hurt you?) The number of questions was thus 5×6.

The aggression stimuli in the *second question series* (QS 2) consisted of frustrations in an individual's goal-oriented activities. The starting point for the preparation of the questions was a story completion test constructed by the writer (Pitkänen, 1963). Information had then been obtained through self-reports about what third-grade pupils found annoying. The new question series was different from the previous one in, for example, the formulation of the questions. They were now made as personal as possible, and each subject was asked to consider his own actual behaviour. An attempt was also made to vary the degree of goal-directness in the frustrated activities. In order to create situations which would be representative in regard to children's social conflicts, the instigator (brother or sister, peer, adult) and the scene (home, circle of friends, school or some other public situation) were varied systematically. (Example: question 1: Think of a situation in which you and your brother (sister)

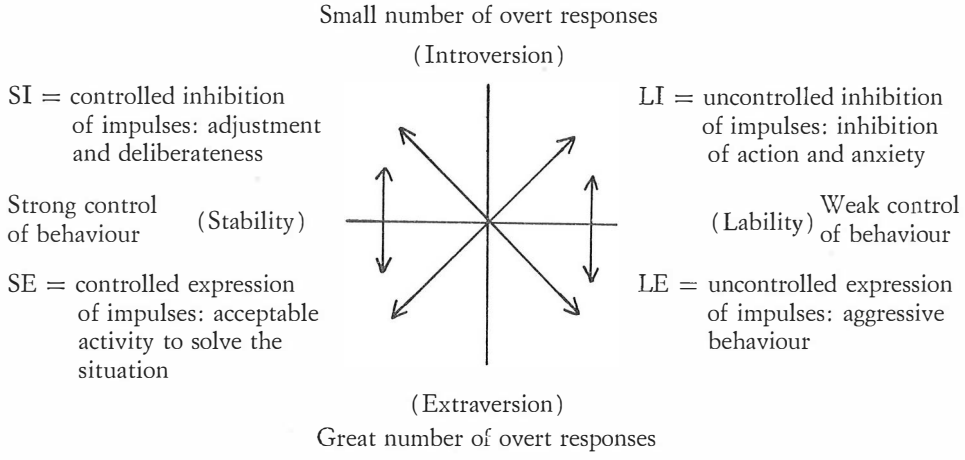
[1] The series of questions (QS 1—3) are obtainable mimeographed.

share a bike, and you are cycling in the yard with other boys. Then your brother (sister) comes and says that he (she) wants to have the bike. Try to think how you would feel and what you would do.) The number of different situations was 3 × 3. Three questions were made for each type of situation, which made a total of 27 questions.

The *third question series* (QS 3) was concerned with habits of offensive aggression. The form of offensive aggression (direct physical, verbal, and mimic; indirect physical and verbal) and the victim of attack (boy of the same size, taller boy, smaller boy, girl, teacher, parents) were varied. (Example: question 1 concerning direct, physical offensive response: Do you ever attack a boy of your size or try to hurt him in any way, even if he had done you no harm, just to tease him?) As in QS 1, the number of questions was 5 × 6.

The question series were administered as individual tests like interviews with oral responses.[1] The subjects were tested in a random order, but in such a way that in each class the pupil that was tested first represented some of the non-aggressive patterns of behaviour with strong control. The order of the question series was varied: half of the subjects answered QS 2 before, and half of them after QS 1 and QS 3, which were administered successively. The presentation of the three question series took approximately one hour.

Two or three weeks after its first presentation *QS 2* was administered again as a group test. Four alternative answers were given to each question on the basis of Hypothesis B. 4. They were assumed to represent the individual patterns of behaviour of the two-dimensional descriptive model: (1) uncontrolled expression of impulses: aggressive behaviour; (2) uncontrolled inhibition of impulses: inhibition of aggression but descriptions of negative affects; (3) controlled inhibition of impulses: adjustment to the situation; (4) controlled expression of impulses: acceptable activity to solve the situation, shown by the figure below.



[1] The instructions obtainable mimeographed are presented in connection with each series of questions.

When projecting the investigation the writer made preliminary studies with a population of university students, the result of which was the SLEI test for adults (S/table, L/abile, E/xtraversion, I/ntroversion). The items of the test consisted of descriptions of frustrating situations and the alternative answers as in QS 2 for children. The former measured the subjects' own judgments of the probabilities of their responses: they had to rank (1—4) the alternatives on the basis of how probable they considered the occurrence of the described responses in their own behaviour. As the ability of second-grade pupils to read is, on the average, still rather poor, the examiner read each description and the alternative answers in pairs. The subjects had to choose of each pair the alternative that best described their own behaviour. They wrote their choices on an answer sheet.

Of four alternatives six pairs can be made. To shorten the test (the number of items was 27) only four pairs were presented (in the figure connected by arrows).[1] The pairs SI-LI and SE-LE were excluded, because the tendency to choose a socially acceptable alternative was assumed to account for most of the variance of the choices.

The pairs composed of the four alternatives according to the figure were presented by items in a varying order of both pairs and mates. Example: pairs of alternatives in question 1 (see pp. 141—142).

LE: Would you shout at him nastily and go on cycling, or
SI: would you think that it is his (her) turn to cycle and give the bike?

LI: Would you feel annoyed because your brother (sister) always wants to have the bike when you would like to cycle, or
SE: would you suggest that it would be best to take turns?

LE: Would you shout at him nastily and go on cycling, or
LI: would you feel annoyed because your brother (sister) always wants to have the bike when you would like to cycle?

SI: Would you think that it is his (her) turn to cycle and give the bike, or
SE: would you suggest that it would be best to take turns?

The actual problems of the present investigation did not include any analytical examination of the *social backgrounds* of the subjects. In order to obtain some directive information the subjects were, however, asked

1. whether mother worked outside home,
2. how many children there were in the family,
3. which in order of birth the subject was,
4. how the parents behaved if the child had been disobedient.

Furthermore, differences between the groups were studied on the basis of the parents' profession, about which information had been obtained from the teachers.

For a study of the differences in the subjects' *school achievements* information was obtained about

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[1] The alternatives presented in each item are obtainable mimeographed in connection with QS 2.

1. mark averages of all school subjects at the end of the spring term,
2. mark averages of theoretical subjects,
3. marks in carefulness.

During the spring term the teachers of most classes had taken part in voluntary testing of their pupils, in which the school achievement tests standardized by Tasola (1967) of reading, writing, and arithmetic (*LUKILA I—II*) was administered. From this material the writer picked up the subjects' scores for variables

4. vocabulary
5. reading: result (speed)
6. reading: mistakes
7. arithmetic problems

4. 2. Test variables

In accordance with Hypothesis B. 4 the scoring categories of aggressive and nonaggressive responses were formulated as follows.

Question series 1,2:

Defensive aggression. When compared with the scorings of the Children's Form of the Rosenzweig Picture-Frustration Study (Takala, 1955; Rosenzweig & Rosenzweig, 1948; et al.), defensive aggression contains, of the extrapunitive direction, the ego-defence (a person or an object in the environment is accused or blamed) and need-persistence (another person is demanded to eliminate the frustrating stimulus) types of aggression. Within the present investigation the responses were, however, categorized according to the descriptive model of aggression (p. 29) with both the direction (direct/indirect) and mode (physical, verbal, mimic) taken into account.

a) *Direct physical aggression:* hit, push, throw something; retaliate (physical aggression); etc.
b) *Direct verbal aggression:* shout back, threaten, reproach aggressively, demand the other person to do something, etc.
c) *Direct mimic aggression:* look angrily, sneer back, start sulking, cry, etc.
d) *Indirect physical aggression:* damage or take another person's possessions, slam doors, etc., do something forbidden.
e) *Indirect verbal aggression:* sneak, speak ill, etc.

Nonaggression

a) *Description of negative affects without aggressive response.* The category corresponds most closely to the extrapunitive obstacle-dominance type of reaction (Rosenzweig: insistence upon the presence of obstacle; fretting and complaining on account of the situation), but it contained also the intropunitive ego-defence type (accusation, criticism, etc. directed toward one's own self), where the response remains a description of negative affects. If an aggressive response was connected with the description, an answer was scored as a defensive aggressive response, and the grounds for scoring an

answer as a nonaggressive response were efforts of peaceful adjustment. The most frequent answers were: I'd feel annoyed, miserable, angry.

b) *Escape.* An answer contains an avoidance response, most frequently in the form of running away or hiding oneself.

c) *Indifference.* The category corresponds to the intropunitive and impunitive obstacle-dominance type of reaction (Rosenzweig: a frustrating situation is denied completely, or it is not denied but considered less important). The most frequent answers were: I would not care, I would do nothing; submissiveness.

d) *Appraisal of the situation.* Responses were found only in the second question series. The answers implied deliberateness and conditions on defensive responses, concerning either another person (extenuating circumstances, rationalization, attempts to understand his behaviour) or personal behaviour (consent to take the blame).

e) *Conciliatory response.* Answers included in the category represent rational problem solving, the aim of which is to mitigate conflicts like impunitive ego-defence and need-persistence types of reaction (Rosenzweig). The answers varied according to the situation so as to contain compromises, warnings, initiative for clearing away obstacles, forgiveness.

The *intensity* of the responses was scored only for the categories of direct physical and verbal defence. For the other categories, the intensity hierarchy was not differentiable correspondingly, for which reason a response included in the category was marked 1, and one excluded from it 0.

The intensity was scored 2—1. Example: question 1 (QS 1): What would you do if one of the boys in your class who is of the same size as you hurt you?

Direct physical aggression

Score 2 I'd get furious and hurt him back.
I'd hit him.

Score 1 I could sometimes hit him.
I'd just push him off.
I'd chase him, sure he'd stop.

Direct verbal aggression

Score 2 I'd start quarrelling.
I'd shout back.

Score 1 I'd tell him to stop.
I'd say that I'd tell the teacher.

Reliability of the test variables. Split-half reliabilities for the categories of QS 2, corrected for length by the Spearman-Brown formula, are given in Table 15. For estimation of the reliability of QS 1 the correlations were calculated between the parallel categories of QS 1 and QS 2. Information about the reliability of the categories was also provided by their communalities obtained by a factor analysis[1] of the test variables.

[1] The variables included in the factor analysis consisted of the scores for the categories of QS 1 and QS 2, the sum score for offensive aggression (QS 3), the scores for both pairs of alternatives uncontrolled expression/controlled inhibition

Table 15. The reliability of the test variables, question series 1 and 2

Variables	Split-half reliability QS 2	Correlation QS 1/QS 2	Communality QS 1	Communality QS 2
Σ Defensive aggression	85	65		
Direct physical	67	60	65	75
Direct verbal	43	41	40	47
Direct mimic	46	27	44	29
Indirect physical	57	44	64	58
Indirect verbal	36	36	38	30
Description of negative affects	78	50	53	25
Escape	33	33	35	37
Indifference	75	50	55	58
Appraisal of situation	84			26
Conciliatory response	78	42	42	63

of impulses, and controlled expression/uncontrolled inhibition of impulses in the SLEI test (QS 2), the teachers' ratings for the number of overt responses (variables 25, 26) and control of behaviour (18, 38; chosen on the basis of the two-dimensional figure).

The total (estimated) communality was explained by six factors, and the communalities given in Table 15 were also based on six factors. The proportionally high correlations between the parallel categories affected the composition of the factors as expected.

Factor I accounted for the largest proportion of the communality of the variables for direct and indirect physical defence (QS 1, 2), offensive aggression (QS 3), and aggression in the SLEI test, and also for a proportion of escape (QS 2). The negative loadings were found in the variables for conciliation (QS 1, 2), and for teacher rating 18 (reliability).

Factor II was spanned bipolarly by the variables for indifference (QS 1, 2) vs. verbal and mimic defensive aggression.

Factor III was loaded positively by the variables for indirect verbal defence (QS 1, 2), uncontrolled inhibition of impulses in the SLEI test, and weak control of behaviour (teacher rating 38).

Factor IV contained the variables for description of negative affects (QS 1, 2) and indirect verbal defence (QS 1).

Factor V was spanned bipolarly by the variables for the number of overt responses (teacher ratings 25, 26).

Factor VI accounted for the largest proportion of the communality of the variables for escape (QS 1, 2). The loadings with the opposite sign were in the variables for direct, particularly verbal defensive aggression.

The lowest reliabilities were found for the categories of direct mimic and indirect verbal aggression, and escape. The reliability of the other variables could be considered satisfactory for the examination of the hypotheses by comparing the means for the subject groups.

Question series 3. The questions were concerned with habits of offensive aggression. Example: question 1: Do you ever attack a boy of your size or try to hurt him in any way, even if he had done you no harm, just to tease him? The answers were scored 0—2 depending on how ready the subject was to confess aggression of that kind.

Score 2 Well, sometimes.
Score 1 Pretty seldom.
Score 0 I won't attack without reason.

The sum score for offensive aggression (summed over all of the 30 items) correlated with that for QS 1 (.64) and for QS 2 (.51). Its communality obtained by the factor analysis was .70.

The responses to the *SLEI test* (QS 2) were scored for each pair of alternatives by giving score 1 for a response in a particular direction, and 0 for that in the opposite direction. Each variable can thus be considered bipolar and independent of the other variables in scoring. Split-half reliabilities for the variables were

uncontrolled expression/controlled inhibition of impulses	.87
controlled expression/uncontrolled inhibition of impulses	.45
uncontrolled expression/uncontrolled inhibition of impulses	.65
controlled expression/controlled inhibition of impulses	.20

The highest reliabilities were found for the pairs of alternatives in which one represented aggressive treatment. The most unreliable pair was that of which the both mates represented strong control of behaviour.

4. 3. Subjects

4. 3. 1. *Composition of the extreme groups*

The subjects were chosen from among the boys who had been the subjects in the study of Problem A. The factor scores for the four factors extracted from the boys' peer ratings were calculated for each of the boys used as subjects. The purpose was to compose the extreme groups for each factor and to use these groups as subjects for Problem B. An inspection of the distributions of the factor scores and their interdependences revealed, however, that dependences prevailed between the factor scores so that some subjects had high scores for two factors. Of these subjects two groups were composed. The total number of groups was 6, of which each consisted of 10 boys.

A leading principle in the composition of the extreme groups was that the

Table 16. Means and standard deviations of the factor scores for the extreme groups.

Group (N = 10)	Factor I M	Factor I σ	Factor II M	Factor II σ	Factor III M	Factor III σ	Factor IV M	Factor IV σ
F I: Aggressive	2.65	0.40	—0.21	0.51	—0.51	0.69	—0.26	0.60
F II: Stable	—0.10	0.26	2.82	0.71	—0.31	0.53	—0.03	0.80
F III: Anxious	—0.52	0.42	—0.03	0.53	2.19	0.45	0.08	0.75
F IV: Controlled extraverts	—0.01	0.35	0.53	0.44	—0.30	0.59	1.57	0.26
I+III: Aggressive anxious	1.42	0.59	—0.22	0.28	1.59	0.50	0.67	0.48
II+IV (—): Stable introverts	—0.64	0.17	1.04	0.53	0.66	0.59	—1.62	0.60
Population (N = 183)	0.02	0.97	0.04	0.97	0.01	0.95	0.02	0.82

F-ratios: Factor I: 91.58 ($p<.001$); F II: 45.17 ($p<.001$); F III: 36.22 ($p<.001$); F IV: 20.74 ($p<.001$)
The significance of the differences between the groups in the factor scores for each factor: *aggressive*/others, F I: $p<.001$; *stable*/others, F II: $p<.001$; *anxious*/others, F III : $p<.001$, except anx./aggr.-anx. $p<.02$; *controlled extraverts*/others, F IV: $p<.001$; *aggressive-anxious*/others, F I: $p<.001$, except aggr.anx./aggr. $p<—.001$, F III: $p<.001$, except aggr.-anx./anx. $p<—.02$ and anx./stab. intr. $p<.01$; *stable introverts*/others, F II: $p<.001$, except stab. intr./ contr. extr., $p<.05$, and stab. intr./stab., $p<—.001$, F IV: $p<.001$.

subjects' scores for a particular factor were to deviate from the mean at least one standard deviation, and that the scores for the other factors were to be as near the mean as possible, yet not to deviate from it in the same direction. The means and standard deviations of the factor scores for the groups are given in Table 16.

4. 3. 2. *Differences between the extreme groups in rated aggressive and nonaggressive behaviour*

The overt behaviour characteristic of each extreme group is describable in terms of the means of the rating variables for aggression and nonaggression.[1] The correspondences between the means of the scores obtained by peer rating and teacher rating were very good, with the exception of the variables that had behaved differently in the factor analyses (7 and 16 in particular): this suggested that *the choice of the extreme groups from the sample on the basis of the peer ratings had considerable concurrent validity on the teachers' ratings.*

[1] The tables representing the means of the scores obtained by peer rating and teacher rating are available mimeographed.

The differences between the extreme groups in the peer ratings for aggression (variables 1—12), controlled expression (13—15), controlled inhibition (17—20), and uncontrolled inhibition (21—22) of impulses are summarized in Figure 8.

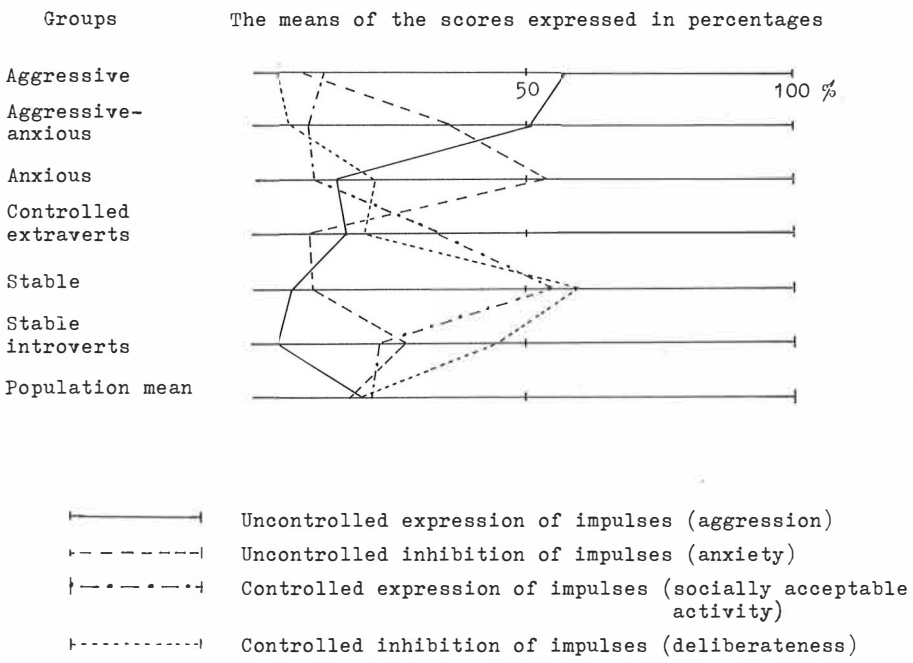

Figure 8. The differences between the extreme groups in aggressive and nonaggressive behaviour, boys' peer ratings.

The population mean of *uncontrolled inhibition* of impulses (anxiety; N = 183, all the boys used as subjects in the study of Problem A) was exceeded by the means for the anxious, aggressive anxious, and also for the other group of introverts (stable introverts).

Controlled expression of impulses (socially acceptable activity) was most characteristic of the stable and the controlled extraverts, and least characteristic of the anxious and aggressive-anxious, which, according to the two-dimensional descriptive model, were the groups opposite to the former.

Controlled inhibition of impulses (deliberateness) was slightest in the behaviour of both aggressive groups, and strongest in that of the stable groups.

The differences between the groups in the amount of *aggression* were distinct. The opposite groups were the stable introverts and the aggressive, whereas the means for the controlled extraverts and the anxious were much the same as the population mean. There were also differences between the groups in the order of size of the means of individual aggression variables. The forms of aggression most characteristic of the aggressive were offensive aggression and physical defence. Both of them had loaded heavily on the general aggression factor obtained by the factor analyses for the aggression variables (Table 13,

p. 129). The rank-difference correlation coefficient between the means of the aggression variables for the aggressive and the loadings of these variables on Factor I extracted from the boys' peer ratings was .96. The aggressive behaviour of the aggressive-anxious was describable in terms of the second aggression factor (indirect aggression). The rank correlation between the means and loadings of the aggression variables was .71. Contrary to the assumption that direct aggression is characteristic of controlled extraverts and indirect aggression of the anxious, no considerable qualitative differences could be found in their aggressive behaviour. It could be seen, however, that sneaking had been more frequent among anxious boys than among controlled extraverts. The aggression factor in terms of which the behaviour of these groups could be primarily described was Factor III (defensive aggression independent of offensive aggression).

4. 3. 3. *Differences between the extreme groups described in terms of the reference and background variables*

The ratings. For a description of the differences between the subject groups in terms of the main dimensions of the descriptive model (Hypothesis A, p. 107) the means of the reference variables rated by the peers and teachers were calculated.[1] As the reference dimensions 'number of overt responses' and 'control of behaviour' had been rated to be more independent of each other by the teachers than by the peers, an inspection of the differences was based primarily on the teachers' ratings.

The number of overt responses (variable 25) was great in the behaviour of the controlled extraverts and the aggressive, and small (variable 26) in that of the stable introverts and the anxious. The middle area of the dimension was represented in the behaviour of the stable and aggressive-anxious.

The best measure of weak control of behaviour was in the teachers' ratings variable 38 (be unsteady and lack concentration in work and attentiveness), and in the peer ratings variable 30 (be unfit for leadership). The means of both variables for the aggressive, aggressive-anxious, and anxious exceeded significantly the means of variable 28 (be always friendly to others) for strong control of behaviour, although the mean for the controlled extraverts was but approximately the same as the population mean.

On the basis of the means of the aggression, nonaggression, and reference variables the aggressive group could be considered as representing uncontrolled expression of impulses, and the anxious uncontrolled inhibition of impulses, expressed in terms of the two-dimensional descriptive model. These two patterns of behaviour had combined in the behaviour of the aggressive-anxious, which was characterized by weak control of behaviour and indirect aggression, and constituted an intermediary type in the dimension 'number of overt responses'.

Of the groups characterized by strong control of behaviour the one most contrary to the aggressive was stable introverts representing controlled inhibition of impulses. The stable did not clearly represent any hypothesized pattern of behaviour; the behaviour typical of them contained both controlled expression

[1] The table is obtainable mimeographed.

and inhibition of impulses. On the basis of the teachers' ratings the behaviour of the stable was, however, characterized more by a great than a small number of overt responses. This was also the case in the behaviour of the aggressive-anxious. (The stable and the aggressive-anxious could be considered opposite in the dimension 'control of behaviour'.) In the ratings made of the stable subjects favourable personality traits had accumulated. The behaviour of the controlled extraverts was characterized by a great number of overt responses involving controlled expression of impulses rather than aggressive behaviour. Controlled expression of impulses was thus typical of two groups: controlled extraverts and the stable, the only difference being that the behaviour of the stable was more coloured by strong control of behaviour than that of the controlled extraverts. The group of controlled extraverts did not represent the pattern of behaviour of direct aggression independent of offensive aggression as obviously as expected, which may have been partly due to the exclusion of different degrees of intensity from the sampling of the aggression variables, as discussed earlier (p. 132). Most contrary to the behaviour of the controlled extraverts was that of the anxious.

Although the groups were composed on the basis of four factors (p. 137), *their characteristics and relations to each other could be described in terms of the two main dimensions of the descriptive model.* An explanation of the result is that the different variable groups were bound together by strong common variance which could be described in terms of two orthogonal axes identifiable as the dimensions of the descriptive model.

The inventory scales. In spite of the fact that, according to the teachers' and peers' ratings, the differences between the groups were very distinct, the scores for the inventory scales separated the groups from each other in a significant way only in some cases.[1]

As far as overt behaviour is concerned, the contrary groups separated from each other by the inventory variables most distinctly and according to expectations were the stable introverts and the aggressive: the scores for restlessness and insensitivity were significantly higher for the aggressive, whereas the scores for dependency, altruism, and the lie scale[2] were higher for the stable introverts. No significant difference could be found between the controlled extraverts and the anxious, nor between the stable and the aggressive-anxious, in spite of the considerable differences in their overt behaviour. Contrary to the simplified hypothesis (p. 111) both the stable and the aggressive-anxious had high scores for the neuroticism scale, which indicated low correspondence between self-ratings and the ratings made by other persons in the dimension 'control of behaviour'.

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[1] The table presenting the means of the groups is obtainable mimeographed. The inventory scales are grouped and ordered on the basis of Figure 7 (p. 134).

[2] Eysenck, Syed & Eysenck (1966) compared girls' and boys' scale scores and found that a high score for the lie scale correlated positively with femininity. Of the extreme groups the stable introverts could be considered the most feminine in behaviour.

School achievement.[1] The superiority of the school achievements of the stable could be clearly seen both in the LUKILA test and school marks. The second best group was that of the controlled extraverts. In the peer ratings, completely independent of ratings of school achievement, favourable traits had accumulated in the best pupils of the class. The same phenomenon in teachers' ratings has usually been considered a consequence of the halo effect. The result can also be interpreted as an indicator of an actual relationship between controlled expression of impulses and cognitive capacity, as assumed earlier (p. 106). It is possible that these connections are relatively strong in the case of lower-grade pupils, but that they weaken with age.[2] According to the school marks and the school achievement test, the achievements of the groups representing weak control of behaviour were significantly poorer than those of the groups characterized by strong control of behaviour. Those with the poorest achievements were the anxious instead of the aggressive, as shown by the scheme in Figure 9. The aggressive were, however, the most careless group in their work, which could be seen both in the means for their marks in carefulness and in the number of mistakes in the reading tests.

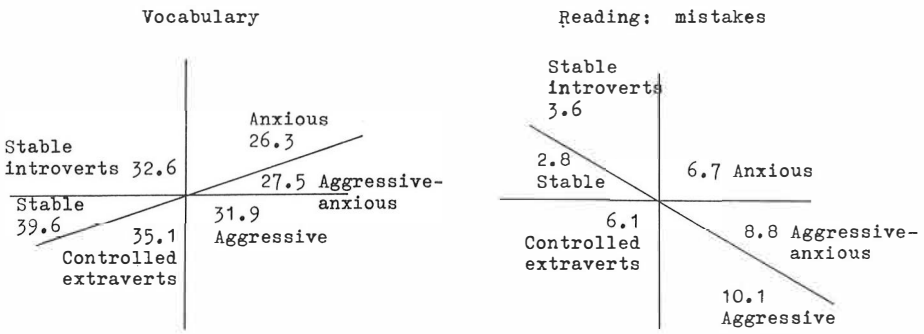

Figure 9. The differences between the extreme groups in school achievement, presented schematically.

There were differences between the groups in school achievement within the dimension 'strong control of behaviour characterized by socially acceptable reactivity/weak control of behaviour characterized by anxiety', and in carefulness within the dimension of aggression, i.e. uncontrolled expression of impulses/ controlled inhibition of impulses.

[1] The table presenting the means of the groups is obtainable mimeographed.

[2] Savage (1966) studied children aged 7—8 and 11 and found out that a high score for extraversion (measured by EPI and C.P.Q. of Cattell) is related to brighter intellectual level and high academic attainment (correlating +.19 — +.27). In university students the relationship was in the opposite direction (Savage, 1962). The relationships are probably still stronger when rating variables are used for extraversion.

Background factors. The social status of the family was scored 1—3 according to the level of education that the parents' profession required.[1] The parents of the controlled extraverts and the stable had received significantly higher education than those of the anxious. The differences between the groups could be described in terms of the dimension 'control of behaviour' corresponding to that presented in connection with school achievements (Figure 9).

The mothers of the aggressive and aggressive-anxious boys worked outside home in more cases than those of the stable introverts.[1,2] The differences between the groups could be described in the aggression dimension like those of carefulness (Figure 9).

The number of children in the family did not separate the groups in a significant way. The aggressive were, however, the eldest or middle-born children in the family more often than the anxious, stable, or stable introverts.[1]

When presented the question series the subjects were asked how their parents behaved when they had been disobedient. The aggressive, aggressive-anxious, and anxious told that they were often given corporal punishment (beaten, shaken by the hair). The controlled extraverts said that such punishment was possible for something very serious, but only one of them said that he had been thrashed during that school year. The controlled introverts reported that they were only shaken by the hair, while in the experience of the stable corporal punishment belonged to infancy. The subjects characterized by strong control of behaviour said that their parents usually reproached them or discussed the matter with them. It is generally recognized that these responses appeal to a child's own cognitive appraisal more than corporal punishment. The assumption has been made earlier that cognitive appraisal is connected with neutralization of the emotional aspect of aggression impulses, and, through it, with controlled expression of impulses. The differences in the parents' child-rearing practices accorded with the hypothesis.

The family member who carried out the punishment was not said to be the same in the different groups. The aggressive were punished mostly by their mothers (70 %), who also displayed a great amount of direct verbal aggression toward them. The fathers of these families were indifferent and their role as educators was vague. The parents acted inconsistently so that the child could evade punishment by escape or dishonesty. The controlled extraverts believed that father would be the person to punish them (80 %). The parents' role as educators probably affects the masculine identification of boys and, through it, internalization of norms for aggressive expression, which partly accounts for the differences in the behaviour of the aggressive and the controlled extraverts in this study. The anxious and aggressive-anxious said that they were given corporal punishment by both parents (60 %). Here the groups differed from the aggressive: the former were capable of more efficient inhibition of the behavioural aspect of impulses.

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[1] The table presenting the means of the groups is obtainable mimeographed.

[2] The results obtained by McCord et al. (1963) showed that if the home is stable, the fact that mother works outside home decreases competition between the children and »produces no indication of peer aggressiveness. In unstable homes such absence is more frequently perceived as rejection, and at later stages the boys tend to show a higher delinquency rate.»

The severity of the causes of corporal punishment varied from one group to another. The aggressive were most often (50 %) punished because of conflicts with the other children of the family, and they revealed that they were openly jealous of their younger sisters and brothers. There were two more frequent causes connected with aggressive behaviour: fighting with playmates and breaking objects. The aggressive-anxious disobeyed mainly by doing something forbidden or resisting their parents. These were also the most usual causes of corporal punishment in the group of the anxious, yet with the hypothesized qualitative differences that the causes were, from a more general point of view, less severe (climbing into trees, making a mess at home, etc.). The subjects characterized by strong control of behaviour were punished for a great variety of reasons, which cannot be put into one single category. The causes were mainly concerned with breaking the norms of the family, such as neglecting one's duties, watching TV, eating, and also teasing a sister or brother (only the controlled extraverts).

The background variables of the extreme groups in the aggression dimension (the aggressive and the stable introverts) indicated that there were no differences in the social status, but in most cases the mothers of the aggressive worked outside the home, and these were the eldest or middle-born in the family. The differences were probably related to the quality and quantity of frustrations, the evidence for which was open jealousy toward a younger sister or brother (the aggressive), conflicts with mother, and inconsistency in the parents' child-rearing practices. These findings possibly reflected indifference toward the child, which, at the $p<.05$ level of significance, was related to offensive aggression and defensive aggression connected with it, as shown in Part I. The social background of the stable introverts favoured the development of dependency especially on the mother, which was reflected in, for example, the group answers in the inventory.

Some differences were thus found in the social backgrounds of the groups, although, on the basis of the characteristics of the variables, the results can be considered only explorative.

4. 4. Differences between the extreme groups in their aggressive responses to symbolic aggression stimuli

4. 4. 1. *Analysis of the results*

The chapter deals with the subjects' verbal responses to question series 1—3. The aggression stimuli of

QS 1 were attacks of other persons, and those of
QS 2 were more general frustrating situations.
QS 3 was concerned with habits of offensive aggression.

In the testing of Hypotheses B. 1 and B. 3 the groups were compared on the basis of the sum scores for defensive (QS 1, 2; categories a-e, p. 144) and offen-

sive (QS 3; questions 1—30) aggression. The testing of Hypothesis B. 2 was based on these five categories of aggression, of which three involved direct, and two indirect defensive (QS 1, 2) or on offensive (QS 3) aggression.

The hypotheses were tested by using a single-factor and three-factor design of analysis of variance, of which the latter was a special case of a $6 \times 5 \times 6$ factorial experiment with repeated measures on the last two factors (Winer, 1962). A three-factor analysis of variance was performed for each of the following dependent variables: QS 1, the sum score and the scores for the five categories of defensive aggression; QS 3, the sum score for offensive aggression. The first factor consisted of six groups of 10 subjects. For QS 1 there were five independent variables (types of aggression stimuli or attack: direct physical, verbal, mimic, and indirect physical and verbal attack) and six conditions (attackers: boy of the same size, taller boy, smaller boy, girl, teacher, parents) in each variable. For QS 3 the five independent variables consisted of forms of offensive aggression (parallel to the types of attack in QS 1), and the six conditions consisted of victims (parallel to the attackers in QS 1).[1]

Due to rather large differences between the groups in the means for offensive aggression, the variances were not completely homogeneous. According to Winer, »moderate departures do not, however, seriously affect the sampling distribution of the resulting F statistic . . . [there] is a small positive bias, since relatively more significant results will be obtained than the exact sampling distribution warrants» (p. 92). In order to avoid the error of rejecting the null hypothesis the $p = .01$ level of significance was adopted for calling a finding statistically significant.

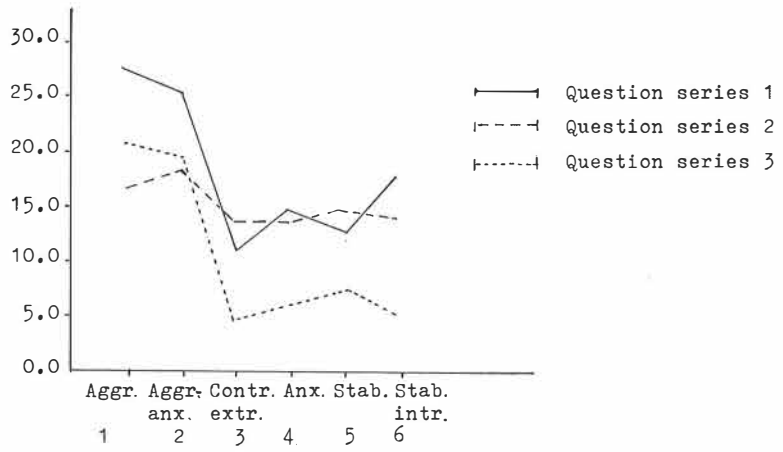
4. 4. 2. *Relationships between the magnitudes of aggressive verbal responses and overt aggression*

It was predicted in **Hypothesis B. 1** (p. 111) that the differences between the extreme groups in the magnitude of their aggressive verbal responses to symbolic aggression stimuli correspond to their differences in the amount of overt aggression. The means of the sum scores for aggressive responses (QS 1, 2, 3) are presented graphically in Figure 10. The groups were ordered on the x-axis according to their overt aggressiveness; as shown in Figure 8 (p. 149), the most aggressive group was that of the aggressive, and the least aggressive that of the stable introverts.

The differences between the means for the groups showed the following.

(1) The differences between the aggressive and nonaggressive groups were significant for QS 1 and 3, as expected. Both of the series consisted of very direct questions about aggressive habits. For QS 2 the

[1] The tables summarizing the results are obtainable mimeographed.



The significances of the main effects of the groups (F-ratio) and the differences between the means for the groups (t-test): p<

	F	1/2	1/3	1/4	1/5	1/6	2/3	2/4	2/5	2/6	6/3	Other differences
QS 1	.01	n.s.	.001	.01	.01	.05	.002	.02	.01	.05	.1	n.s.
QS 2	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	.1	.1	n.s.	.1	n.s.	n.s.
QS 3	.01	n.s.	.001	.002	.01	.001	.01	.05	.05	.02	n.s.	n.s.

Figure 10. The means of the sum scores for aggression, QS 1, 2 and 3.

differences between the groups were parallel but not statistically significant.

(2) None of the question series separated the nonaggressive groups as expected. In particular, the magnitude of the aggressive responses of the controlled extraverts was smaller and that of the stable introverts greater than expected.

(3) The assumption on a direct relationship between aggressive verbal responses and overt aggression was only partly supported.

4. 4. 3. *Direction of aggression*

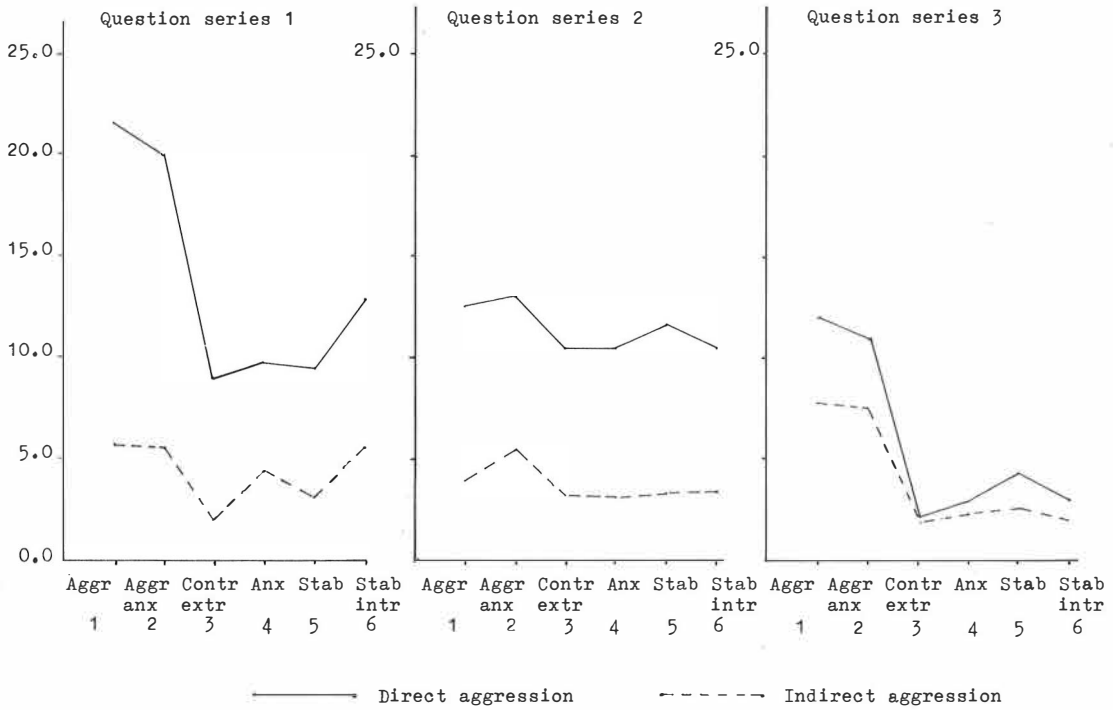
It was predicted in **Hypothesis B. 2** that indirect aggression is characteristic of individuals with weak control of behaviour but not with a great number of overt responses, i.e., of the aggressive-anxious and the anxious.

The group means of the sum scores (categories d, e) for indirect

aggression are presented graphically in Figure 11. The means indicated that the hypothesis was only partly supported.

(1) In general, the magnitude of indirect aggression in the responses of the *aggressive-anxious* was greater than in those of the groups with strong control of behaviour, particularly in those of the controlled extraverts, but differed from the responses of the aggressive only for QS 2.

(2) For the *anxious* the only finding that accorded with the hypothesis was a slight difference between them and the controlled extraverts in the amount of indirect aggression for QS 1.



The significances of the main effects of the groups (F-ratio) and the differences between the means for the groups (t-test):

QS 1; direct a: F ($p<.01$), groups 1—2/3—6 $p<.01$—.05
indirect a: F (n.s.), 1/3 $p<.01$; 1/5 $p<.02$; 2, 4/3 $p<.1$; 6/3 $p<.1$
QS 2; direct a: F (n.s.), no significant difference between the means
indirect a: F (n.s.), 2/3—6 $p<.01$; 2/1 $p<.05$
QS 3; direct a: F ($p<.01$), 1—2/3—6 $p<.002$—.05, except 2/5 $p<.1$
indirect a: F ($p<.01$), 1—2/3—6 $p<.002$—.05

Figure 11. The means of the sum scores for direct and indirect aggression, QS 1, 2 and 3.

The further prediction was made in **Hypothesis B. 2** that direct defensive aggression is characteristic of individuals with a great number of overt responses, i.e., of the aggressive and the controlled extraverts. As shown in Figure 11,

(3) as for the *aggressive* the hypothesis was supported only for QS 1. The significant differences between the aggressive and the other groups were mainly due to their differences in the amount of physical defensive aggression. (The means for the individual aggression categories are given in Table 17.) No significant differences could be found between the aggressive and the other groups in the sum scores for direct defensive aggression in QS 2, but for physical defensive aggression, however, some slightly significant differences appeared between them. In mimic and verbal aggression the differences between the aggressive and the other groups were smaller than in physical aggression, both for QS 1 and QS 2.

Table 17. Means of the scores for the individual aggression categories, extreme groups

Variables	Aggressive 1	Aggressive anxious 2	Controlled extraverts 3	Anxious 4	Stable 5	Stable introverts 6	F p<
QS 1: defensive aggr.							
Direct physical	11.4***	10.7*	*3.2*	*4.1*	*3.6*	*3.1*	.01
Direct verbal	7.8[a]	5.7[a3]	*3.2*	*3.1*	3.8	5.7	n.s.
Direct mimic	2.3	3.6	2.6	2.7	2.3	3.1	n.s.
Indirect physical	1.3*	1.1[a3]	*0.1*	0.8	0.3	0.6	n.s.
Indirect verbal	4.5*	4.3	*1.9*	3.7	2.8	4.8	n.s.
QS 2: defensive aggr.							
Direct physical	5.4[a3-6]	4.1[a3]	*2.4*	*2.8*	2.6	2.9	.1
Direct verbal	6.9	8.4	7.1	7.1	7.8	7.2	n.s.
Direct mimic	0.5	0.5	0.8	0.4	1.0	0.5	n.s.
Indirect physical	1.8	2.2*	*1.0*	1.6	1.5	1.2	n.s.
Indirect verbal	2.0	3.1[a]	*2.3*	*1.4*	1.8	2.1	n.s.
QS 3: offensive aggr.							
Direct physical	3.2**	3.6**	*0.7*	*0.8*	*1.1*	*0.8*	.01
Direct verbal	4.6**	4.0*	*0.8*	*1.3*	*1.6*	*0.9*	.01
Direct mimic	4.0***	3.4*[3, 4]	*0.8*	*0.7*	*1.7*	*1.4*	.01
Indirect physical	5.1**	4.4*	*1.2*	*1.6*	*1.6*	*0.9*	.01
Indirect verbal	3.7*	4.0*	*0.8*	*1.0*	*0.7*	*1.0*	.01

* significant at .05 level, ** at .01 level, *** at .001 level, [a]at .1 level compared with the mean printed in italics.

*[n], [an] the difference is significant only in comparison with the group n.

The aggressive and aggressive-anxious were not significantly different from each other in the amount of direct aggression, which contradicted the hypothesis. It seemed to be the tendency, however, that while physical defence was typical of the aggressive, proportionally more verbal and mimic aggression appeared in the responses of the aggressive-anxious.

(4) As far as the *controlled extraverts* are concerned, the hypothesis was not confirmed. In their responses direct defensive aggression was as infrequent as in those of the other nonaggressive groups.

(5) Hypothesis B. 2 was concerned with defensive aggression. For the sake of comparison the inter-group differences in offensive aggression were also studied. The aggressive groups differed significantly from the nonaggressive ones in all forms of offensive aggression, which met the expectations.

4. 4. 4. *Effects of external control on aggressive responses*

It was predicted in **Hypothesis B. 3** that external or situational control has the effect on an individual's aggressive responses that with strong external control the magnitude of the responses of all the types of behaviour is small, but that it increases monotonically when the thwart is weakened. The differences between the groups were assumed to increase simultaneously.

External control was varied in QS 1 and QS 3 by varying the target of aggression (attacker and victim, p. 141). The concept of situational control had been defined in Part I by using the criterion of how condemnable direct, defensive, physical aggression is. According to the teachers' ratings this form of aggression had been most frequently directed toward boys of the same size, next most frequently toward smaller boys, taller boys, and girls, and least frequently toward teachers. The instigators and victims in the question series also included the parents, which in the scale would probably be located between teachers and girls.

The distribution of aggressive responses (sum scores; QS 1, 3) to the different targets is presented graphically in Figure 12.

(1) In accordance with the hypothesis, the differences between the groups both in defensive and offensive aggression were smallest when the target of aggression was said to be the teacher, and greatest when it was said to be a boy of the same size.

(2) The hypothesis according to which there is an increase in the magnitude of aggressive responses when the thwart is weakened was

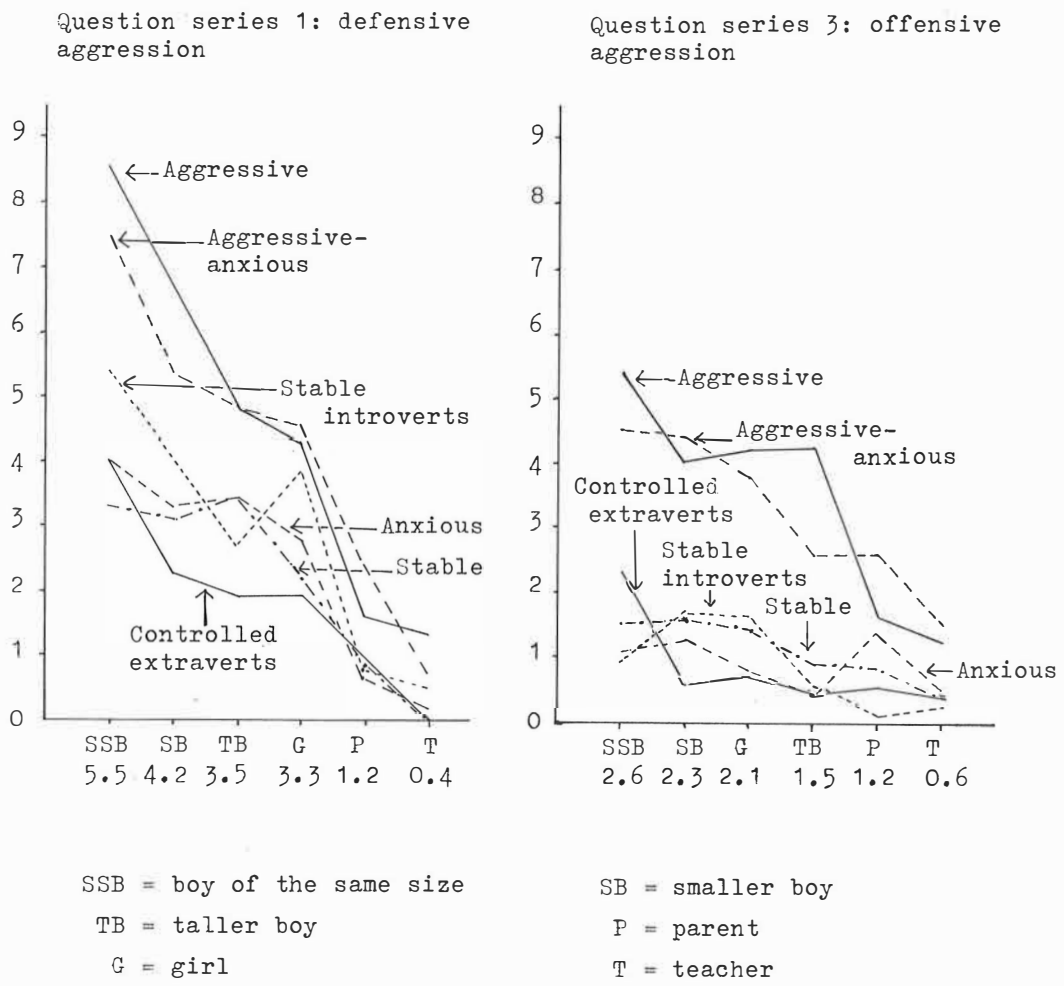


Figure 12. The distribution of aggressive responses among the targets.

supported by the sum scores for aggression (Figure 12): the main effects of C (targets) were significant ($p<.01$) both for defensive (QS 1) and offensive (QS 3) aggression.[1] The order of the targets was as expected, except that offensive aggression was more frequent toward girls than taller boys.

The analyses of variance for *each category of defensive aggression* revealed that the main effects of the *attackers* were significant ($p<.01$) on all the forms

[1] The mimeographed tables.

of defensive aggression. In each case the magnitude of defensive aggression was distributed among the different attackers in much the same way as shown by the target dimension in Figure 12. Some specific dependence on the attackers could, however, be found (Table 18): direct physical defensive aggression was directed particularly toward boys of the same size and smaller boys, and indirect aggression (sneaking) both toward the former and toward taller boys. The differences between the targets were not so apparent for direct verbal defensive aggression also directed toward authority figures.

Table 18. Dependences of the different forms of defensive aggression on the attackers, means for the subjects

Variables	SSB	SB	G	TB	P	T
Direct physical	1.98	1.88	1.27	0.70	0.18	0.00
verbal	1.10	1.28	1.05	0.78	0.48	0.22
mimic	0.88	0.47	0.53	0.38	0.37	0.13
Indirect physical	0.23	0.05	0.12	0.07	0.17	0.05
verbal	1.27	0.50	0.30	1.57	0.00	0.03

SSB = boy of the same size
SB = smaller boy
G = girl
TB = taller boy
P = parent
T = teacher

The significant B × C (*form of offensive aggression x victim*) interaction ($p<.01$) for offensive aggression was a finding parallel to those concerning the effects of the attackers on the different forms of defensive aggression. The distribution of offensive aggression among the victims is shown in Table 19.

Table 19. Interaction between the forms of offensive aggression and the victims, mean for the subjects

Variables	SSB[1]	SB	G	TB	P	T
Direct physical	0.57	0.48	0.25	0.30	0.10	0.00
verbal	0.55	0.47	0.45	0.38	0.30	0.05
mimic	0.57	0.47	0.42	0.35	0.18	0.02
Indirect physical	0.42	0.37	0.57	0.15	0.50	0.47
verbal	0.45	0.45	0.40	0.33	0.13	0.10

[1] See table 18.

The number of different forms of offensive aggression toward boys of the same size, smaller boys, and taller boys was almost the same, although direct aggression was slightly more frequent than indirect aggression. Girls were least frequent targets of direct physical offensive aggression, and taller boys of indirect physical offensive aggression. In the latter there were considerable differences between girls and taller boys: boys teased girls quite frequently by disturbing them or by handling their possessions without permission. Indirect physical aggression was also the most frequent form of offensive aggression toward authority figures. Furthermore, parents were targets of direct verbal aggression.

(3) The hypothesis that there is a parallel but quantitatively different increase in the magnitude of the aggressive responses of the different groups was supported for defensive aggression, even though the group x attacker interaction was slightly significant ($p<.05$). The group x victim interaction for offensive aggression was still more significant ($p<.01$).

For defensive aggression (QS 1) the greatest exception to the monotonic increase in the magnitude of aggression was

— the great amount of aggression displayed by the stable introverts toward girls.

The exceptions for offensive aggression were

— the great amount of aggression displayed by the aggressive toward taller boys,
— the great amount of aggression displayed by the anxious and aggressive-anxious toward parents, and
— the great amount of aggression displayed by the stable introverts toward smaller boys.

Of the nonaggressive groups the clearest discriminations between the targets had been made in the responses of the controlled extraverts. Offensive aggression was directed mainly toward boys of the same size, defensive aggression also, and proportionally slightly more, toward the other peers.

The magnitude of aggressive responses toward boys of the same size separated the groups much in the same way as the habit strength of overt aggression, with the exception that the defensive aggression of the stable introverts was more frequent and intense than expected. The result could be considered as supporting **Hypothesis B. 1** (the magnitude of aggressive responses and overt aggression are positively related to each other), as it is probable that the inter-group differences in the amount of overt aggression in general were parallel to those in the amount of aggression toward boys of the same size.

The dependence of *each form of defensive aggression* on the attacker in the responses of each group was illustrated by the *group x attacker* interactions, which, with the exception of indirect verbal aggression, were significant.

In all the groups p h y s i c a l defence was most infrequent toward teachers and parents, but differences could be found in aggression toward peers. The aggressive and aggressive-anxious defended themselves physically against all the peer groups (the distribution of aggression among the targets was proportionally similar to that presented in Figure 12), the controlled extraverts almost exclusively against boys of the same size, the anxious and the stable against smaller boys, and the stable introverts against girls.

Direct v e r b a l defensive aggression was directed toward the same targets as physical defensive aggression, with the exception that verbal defence was extended to the targets with stronger external control. The same appeared for m i m i c aggression.

The dependence of the form of offensive aggression on the victim in each extreme group was illustrated by a triple interaction (*group x form of offensive aggression x victim*), which was significant ($p<.01$). It was interpreted in the following way. In all the groups p h y s i c a l offensive aggression, like defensive aggression, was most infrequent toward teachers and parents, but intergroup differences were found in attacks upon peers. For the aggressive, aggressive-anxious, and stable, the distribution of physical offence among the victims was rather parallel to that of the sum scores for offensive aggression (Figure 12). The controlled extraverts attacked physically only boys of the same size, the stable introverts and the anxious girls and smaller boys.

The distributions of v e r b a l and m i m i c offensive aggression was not comparable with the total distribution (Figure 12); their frequencies toward all the targets except teachers were relatively even. (The only exception was the group of controlled extraverts who also displayed these forms of offensive aggression mostly toward boys of the same size.)

As shown in Table 19, i n d i r e c t physical offensive aggression was relatively frequent toward teachers. An inspection of the inter-group differences revealed that indirect physical offensive aggression toward teachers was displayed only by the aggressive and aggressive-anxious, toward parents also by the other groups except the stable introverts. The small amount of aggression displayed by the latter toward parents possibly indicated the hypothesized dependency upon them and other authority figures. The findings concerning their home conditions as well as their scores for the inventory scale also accorded with the assumption. Both of the anxious groups, however, were relatively often found to attack their parents: the aggressive-anxious with all the forms of offensive aggression, the anxious with mimic and indirect physical aggression. The response was possibly due to the parents' punitive child-rearing practices.

(4) Another phenomenon interpretable as an effect of external control was the finding for QS 1 that physical attack did not elicit counter-aggression as frequently as direct verbal attack. The main effect of B (type of attack) on the total magnitude of defensive aggression was significant ($p<.01$). The means of the sum scores for defensive aggression in the different types of attack were: direct verbal attack

4.50, indirect physical 4.15, direct mimic 4.00, direct physical 2.98, and indirect verbal 2.38. The small amount of counter-aggression to indirect verbal attack was possibly due to a lack of immediate information of attack.

The group x type of attack (AB) interaction was not significant. The differences between the groups in the magnitude of defensive aggression toward the different types of attack were parallel and supported **Hypothesis B. 3.**

An analysis of the effect of the type of attack on each form of defensive aggression revealed that the main effects of the types of attack were significant ($p<.01$), with the exception of indirect verbal defensive aggression. The means indicated that *in defensive aggression there was a tendency to repeat the stimulus:* physical attack caused either direct or indirect physical defence, verbal attack verbal defence, etc.

Stimulus repetition occurred similarly in all groups, for which reason the group x type of attack (AB) interactions were not significant.

All the attacker x type of attack (BC) interactions were, however, significant ($p<.01$), which meant that *a particular form of defensive aggression did not reappear as stimulus repetition independently of the attacker (instigator).* For example, direct physical aggression was not displayed toward a teacher, even though the type of attack of the teacher had been direct physical. On the other hand, smaller peers were targets of physical aggression even though their type of attack had been only verbal or mimic. The result indicated that the subjects tended to adjust their defensive responses to stimulus situations and take into account especially the strength of external control.

4. 4. 5. *Interpretation of the results*

The hypotheses on the correspondences between verbal responses and overt behaviour were formulated as simply as possible with expectations of direct relationships. Since the obtained relationships differed, however, from simple correspondences in some respects, another frame of reference, based on a more complicated dependence, was adopted, with application of the concepts presented in the theory of achievement motivation by Atkinson (1964).

Prior to the presentation of the hypotheses, it seemed possible that the subjective meanings of aggression stimuli might vary according to the habit strength of aggression. The subjective meanings can be understood to suggest the relative strength of approach (aggression) and avoidance (aggression inhibitory) tendencies aroused in a stimulus situation. If the assumption is made that the strength of the aggression tendency (T_A) activated by an aggressive provocation is relatively constant, interindividual differences in verbal responses are interpretable on the basis of inhibitory tendencies.

The assumption can be made that the strength of the aggression inhibitory tendencies activated by an aggressive provocation is determined both by the strength of aggression inhibitory habits (which depend inversely on the strength of aggressive habits) and by subjective probabilities of failure, in the same way as assumed in the theory of achievement motivation by Atkinson (1964; 244) on the tendency to avoid failure: $T_{-f} = M_{AF} \times P_f \times I_f$. ($T_{-f}$ = tendency to avoid failure; M_{AF} = motive to avoid failure; P_f = expectancy of failure; I_f = negative incentive value of failure = $-P_s$). In connection with aggressive behaviour M_{AF} can be assumed to refer to the strength of aggression inhibitory habits. P_f is determined by the strength of aggressive habits: if these are strong, the individual estimates the probability of failure to be averagely smaller than if they are weak. I_f refers to shame (and embarrassment) of failure: when a task appears to be easy, the shame of failure is greater than when a task appears to be difficult. On the basis of their aggressive and aggression inhibitory habits the groups can be given the following fictitious indices characterizing the inter-group differences in the strength of the aggression inhibitory tendency activated by an aggressive provocation. For example,

	M_{AF}	P_f	I_f	T_{-f}
Aggressive	1	.10	—.90	—.09
Controlled extraverts	3	.50	—.50	—.75
Stable introverts	5	.90	—.10	—.45

When aggressive habits are of an average strength, aggression inhibitory habits (M_{AF}) as well as the probabilities of failure are average, which has the consequence that aggression inhibitory tendencies activated by an aggressive provocation are stronger than when aggressive habits are extremely strong or weak.

In addition to the aggression and aggression inhibitory tendencies activated by an aggression stimulus an individual's responses are probably accounted for by tendencies which may be described in terms of other motives, as assumed by Feather (1961) in an application of the theory of achievement motivation, who presented the concept of Extrinsic Motivation ($T = (T_s + T_{-f}) + T_{Extr}$). In aggressive behaviour Extrinsic Motivation can, for example, involve e.g. an individual's tendency to behave in a socially acceptable manner, in which case the direction of the tendency is the same as that of the aggression inhibitory tendency, or a tendency to attract attention at least negatively, in which case the direction supports the aggression tendency. Feather's formula was applied to aggressive behaviour as follows:

$$R_{Aggr} = (T_A + T_{-f}) \pm M_{Extr}$$

R_{Aggr} = the magnitude of an aggressive responses to a symbolic aggression stimulus. T_A = aggression tendency activated by the stimulus. T_{-f} = aggression inhibitory tendency. M_{Extr} = other motives directing action, supporting either the aggression or aggression inhibitory tendency.

The frame of reference was especially applicable to the results concerning QS 1 both for the inter-group differences in the sum scores for defensive aggression (Figure 10) and for those in the magnitude of aggression toward boys of the same size (Figure 12). In both cases the magnitude of counter-aggression in the responses of the stable introverts was greater, and in those of the controlled extraverts smaller than expected. The direct questions of the first series were concerned with a person's behaviour when somebody attacks. If the answer revealed that there occurred counter-aggression, the additional question was made casually, »Does it often happen that way?» The answers of the stable introverts were unexceptionally negative. They implied that for these subjects the stimulus situations did not have such subjective reality and they did not activate such aggression inhibitory tendencies as for those subjects whose aggressive habits were stronger and the number of experienced conflicts greater.

An increase in external control reduced, on the average, the magnitude of aggressive responses. The reduction can be interpreted as a consequence of an increase in either T_{-f} or M_{Extr} supporting the inhibitory tendency. The strengthening of T_{-f} is connected with aggression inhibitory habits which have probably been different for different attackers in each group. The strengthening of M_{Extr} supporting the aggression inhibitory tendency is a possible consequence of the fact that the relationship between attacker and victim has become complicated and implies dependences concerning a greater number of motive areas.

As the distribution of overt aggressive responses to the different targets was not examined together with the rating of aggressive behaviour, the interpretation remained open concerning when the exceptions of the monotonic increase in aggressive responses with strengthened external control are directly interpretable in terms of the strength of the aggressive and aggression inhibitory habits, and when it is necessary to employ some other explanatory variable. The assumption can, however, be made that, due to the weakness of the aggressive habits of the stable introverts, a relatively great magnitude of aggression was displayed verbally by them toward girls and smaller boys, the probability of success being then high and the aggression inhibitory tendencies weak.

The clearest discriminations between the targets were made in the answers of the controlled extraverts, whose aggressive responses were directed mainly toward boys of the same size. The result can be given the following alternative interpretations: either the habits of overt aggression of the controlled extraverts are generally limited mainly to boys of the same size, (also in overt behaviour), or the result indicates that aggression impulses activated by a stimulus are, at the symbolic level, under strong control which is determined by M_{Extr} (e.g. a tendency to behave in a socially acceptable manner).

A methodical finding was that the dichotomic separation of the aggressive and nonaggressive groups on the basis of the sum scores for the aggressive responses given to question series 1—3 was the more valid the more uncomplicated the stimulus material was. The groups were separated most clearly by the questions about habits of offensive aggression (QS 3). The direct and uncomplicated questions about the habits of defensive aggression (QS 1) also separated the groups as expected. The stimulus material was most complex in QS 2, in which the frustrating situations were described as brief stories: the inter-group differences in the magnitude of aggressive responses were relatively small, and the test did not separate the aggressive and nonaggressive groups from each other significantly.

The differences in the results obtained by the different question series were interpretable by the employment of the above mentioned formula of $R_{Aggr.}$ A more detailed description of the context had strengthened an individual's tendency to take the other party into account and to behave in a socially acceptable manner, i.e., it had strengthened the extrinsic motivation supporting the aggression inhibitory tendency, which was reflected in the relatively small magnitude of aggressive responses from the overtly aggressive groups. Allison & Hunt (1959) have made the corresponding observation that »when responding to frustrating situations in which the intention of the frustrating source was not specified, Ss high on the Edward's Social Desirability Scale express significantly less aggression than Ss low on the SDS». But when an event was explained more accurately, i.e., the motives of the frustrator were presented, »the effect of the SD factor was no longer present».

4. 5. Differences between the extreme groups in their nonaggressive responses to symbolic aggression stimuli

The chapter deals with the subjects' verbal responses to QS 1 and QS 2 on the basis of both the sum scores for the nonaggressive responses and each scored nonaggression category (pp. 144—145), and with their choices of the pairs of alternatives given to QS 2 on the second presentation (SLEI test, p. 143).

Hypothesis B. 4 was tested by comparing the group means for both question series in each nonaggression category. Hypothesis B. 5 was tested on the basis of QS 1. The dependence of nonaggressive responses on the attackers was studied

by a two-factor design of analysis of variance (Winer, 1962; 302), in addition to which a three-factor analysis of variance was performed for each nonaggression variable by using the same special case of $6 \times 5 \times 6$ factorial experiment as in the analysis of the aggressive responses (p. 155).[1]

4. 5. 1. *Differences between the groups in the types of nonaggressive responses*

It was predicted in **Hypothesis B. 4** that the number of nonaggressive forms of treatment of thwarting situations is smallest in the responses of the aggressive, and that there are qualitative differences between the nonaggressive groups: the treatment assumed to be most typical of the controlled extraverts was conciliatory response, of the stable introverts indifference or appraisal of the situation, and of the anxious description of negative affects without an aggressive response, or escape.

The group means of the scores for each nonaggression category are presented graphically in Figure 13.

The group means indicated the following.

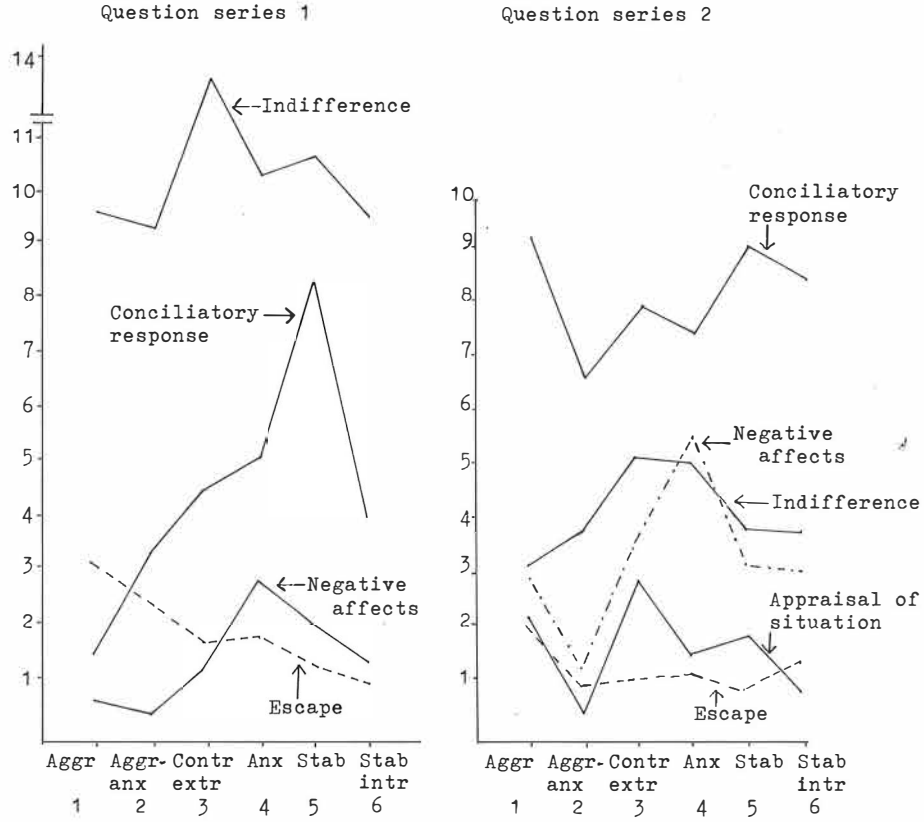
(1) There were significant differences between the nonaggressive and aggressive groups in the sum scores for nonaggressive responses to QS 1, as expected, with the exception of the stable introverts who had answered the questions with more counter-aggression than expected. The main effect of the groups was significant ($p<.05$).

The nonaggressive responses of the aggressive-anxious to QS 2 were significantly more infrequent than those of the nonaggressive groups (3—5), which supported the hypothesis. The aggressive did not, however, differ from the nonaggressive groups. On the whole the differences between the groups remained small, and the main effect of the groups was not significant.

(2) There were differences between the groups in the types of nonaggressive responses, but only for description of negative affects in the hypothesized way. The main effects of the groups were not significant with the exception of the category of conciliatory response for QS 1. There were, however, significant inter-group differences or parallel results for QS 1 and 2, an inspection of which revealed the following d i r e c t i v e findings.

The greatest number of *descriptions of negative affects* without aggressive responses, aroused by the stimulus situations of both question series, was found

[1] The tables summarizing the results are obtainable mimeographed.



	Aggr	Aggr-anx	Contr extr	Anx	Stab	Stab intr
$M_{Nonaggr.}$	14.9	15.5	21.5	20.1	22.4	16.1
	19.6	13.4	20.8	20.9	18.9	17.7

The significances of the main effects of the groups (F-ratio) and the differences between the means of the groups (t-test):

QS 1; $M_{Nonaggr.}$ F ($p<.05$); 3/1, 2, 6 ja 5/1, 2, 6 $p<.01$—.05; 4/1 $p<.05$
Indifference: F (n.s.); 3/1—2 $p<.05$; 3/4, 6 $p<.1$
Conciliatory response: F ($p<.01$); 5/1 $p<.001$, 5/2 $p<.02$, 5/3, 6 $p<.05$, 5/4 $p<.1$, 3/1 $p<.05$, 4/1 $p<.01$, 6/1 $p<.1$
Description of negative affects: F ($p<.1$); 4—5/1 $p<.1$, 4—5/2 $p<.05$
Escape: F (n.s.); 1/5—6 $p<.05$, 2/6 $p<.1$
QS 2; $M_{Nonaggr.}$ F (n.s.); 1, 4/2 $p<.05$, 3/2 $p<.01$, 5/2 $p<.1$
Indifference: F (n.s.); 3/1 $p<.05$
Description of negative affects: F (n.s.); 4/2 $p<.05$, 3/2 $p<.1$, 5/2 $p<.01$
Escape: F (n.s.); 1/2 $p<.1$, 1/3 $p<.1$, 1/5 $p<.05$

F i g u r e 13. The means of the scores for the individual non-aggression categories, the extreme groups.

for the *anxious*. The other type of treatment assumed to be characteristic of the anxious was *escape* from the situation. For both question series the group most inclined to it was, however, the *aggressive*. Escape could be considered as

representing the kind of treatment contrary to aggression whose habit strength proved dependent on the strength of aggressive habits. The amount of escape was dependent on the strength of external control, as shown in greater detail in Chapter 4. 5. 2.

The assumption was made that the *controlled extraverts* would respond particularly with conciliation. Compared with the other groups, however, the treatment more typical of them in both question series was *indifference*. Strong control of aggression impulses, interpreted earlier as characterizing the verbal responses of the controlled extraverts, had the result that the thwart was denied or considered less important, as was assumed typical of the stable introverts. *Appraisal of the situation* (QS 2), which was also assumed typical of the stable introverts, was also slightly more typical of the controlled extraverts.

None of the scored nonaggression categories was conspicuous in the responses of the *stable introverts*. Like the other nonaggressive groups, they differed from the aggressive significantly only in the category of conciliatory responding.

The considerable amount of *conciliatory response* (QS 1) separated the *stable* from the other nonaggressive groups. In QS 2 the result was parallel. Like that of the controlled extraverts, the overt behaviour of the stable was characterized by controlled expression of impulses, so the assumption on conciliatory response was partly supported.

The difference between the two question series in their stimulus material was a possible reason for the average differences in the types of nonaggressive responses to them. When the stimulus situations had been described as attacks of another person, all the groups had responded most frequently with indifference (QS 1). More complex frustrating situations (QS 2) had activated conciliatory response.

The further prediction was made in Hypothesis B. 4 that when asked to choose one of the alternatives constructed according to Hypothesis A and B. 4 as a response to each stimulus situation of QS 2 (the SLEI test), the subjects prefer the treatment which most closely corresponds to their overt behaviour.

The group means of the scores for each pair of alternatives described p. 147 are presented in Table 20.

It was expected that the first pair of alternatives (*aggression vs. controlled inhibition*) would separate both of the aggressive groups from both of the stable groups. The group means showed that the mentioned pair of alternatives separated the actual stable group from the groups characterized by weak control of behaviour. The number of aggressive choices was greater than expected in the responses of the stable introverts in QS 2 in the same way as in QS 1.

The second pair of alternatives (*anxiety vs. controlled expression*) was assumed to separate both of the anxious groups from the stable and the controlled extraverts. The hypothesis was supported. In ad-

Table 20. Means of the scores for the SLEI test, extreme groups

Pair of alternatives	Aggressive 1	Aggressive-anxious 2	Anxious 3	Controlled extraverts 4	Stable 5	Stable introverts 6	F p<
1. LE—SI, Aggression (vs. controlled inhibition)	9.2	10.7	9.5	6.9	4.0	7.3	.1
2. LI—SE, Anxiety (vs. controlled expression)	8.7	9.3	9.5	7.0	5.4	6.9	.01
3. LE—LI, Aggression (vs. anxiety)	12.5	12.0	13.2	10.9	8.8	11.1	n.s.
4. SE—SI, Controlled expression (vs. controlled inhibition)	13.9	15.0	13.4	12.4	12.0	13.1	n.s.
1+2, Weak (vs. strong) control of behaviour	17.9	20.0	19.0	13.2	8.4	13.2	.01
3+4, Great (vs. small) number of overt responses	26.4	27.0	26.6	23.3	20.8	24.2	n.s.

The significance of the inter-group differences:
1: 1/5 $p<.02$, 2/5 $p<.01$, 3/5 $p<.01$, 6/5 $p<.1$
2: 1/5 $p<.02$, 2/4 $p<.1$, 2/5 $p<.002$, 2/6 $p<.02$, 3/4 $p<.1$, 3/5 $p<.002$, 3/6 $p<.02$
3: 1/5 $p<.02$, 2/5 $p<.1$, 3/5 $p<.02$
4: 1/5 $p<.05$, 2/4 $p<.1$, 2/5 $p<.02$, 3/5 $p<.1$
1+2: 1/5 $p<.01$, 2/4 $p<.1$, 2/5 $p<.001$, 2/6 $p<.05$, 3/4 $p<.1$, 3/5 $p<.001$, 3/6 $p<.05$, 4/5 $p<.1$, 6/5 $p<.01$
3+4: 1/5 $p<.01$, 2/5 $p<.05$, 3/5 $p<.01$

dition, the pair of alternatives separated the stable introverts from both of the anxious groups.

The third and fourth pair of alternatives were expected to separate the groups in the dimension *'number of overt responses'*. The hypothesis was not, however, supported, as both of the pairs of alternatives only separated the stable from the groups representing weak control of behaviour; contrary to expectations, the stable preferred introvert responses most consistently. The same was revealed by the combined variable 3 + 4.

In the dimension *'control of behaviour'* (1 + 2) the mean for the aggressive-anxious indicated weakest control of behaviour, and that for the stable strongest, which supported the hypothesis. The aggressive-anxious and the anxious differed significantly from all the groups

representing strong control of behaviour, the aggressive only from the stable.

Although the verbal responses to QS 2 did not separate the aggressive groups significantly from the nonaggressive ones, and although the hypothesis was not clearly supported for the nonaggressive responses, the finding could be made concerning QS 2 that with the employment of the alternative answers there appeared significant differences between the groups. The result was interpretable in the following way.

The interpretation was made earlier (p. 167) that a more detailed description of the context strengthen M_{Extr} supporting the aggression inhibitory tendency. The great number of the nonaggressive responses of the aggressive to QS 2 (Figure 13) accorded with the interpretation. The number of the nonaggressive responses of the aggressive-anxious was, however, very small. With both the aggressive and nonaggressive responses to QS 1 and QS 2 taken into account, the interpretation was also applicable to the responses of the aggressive-anxious; M_{Extr} only manifested itself in different ways for the aggressive and the aggressive-anxious.

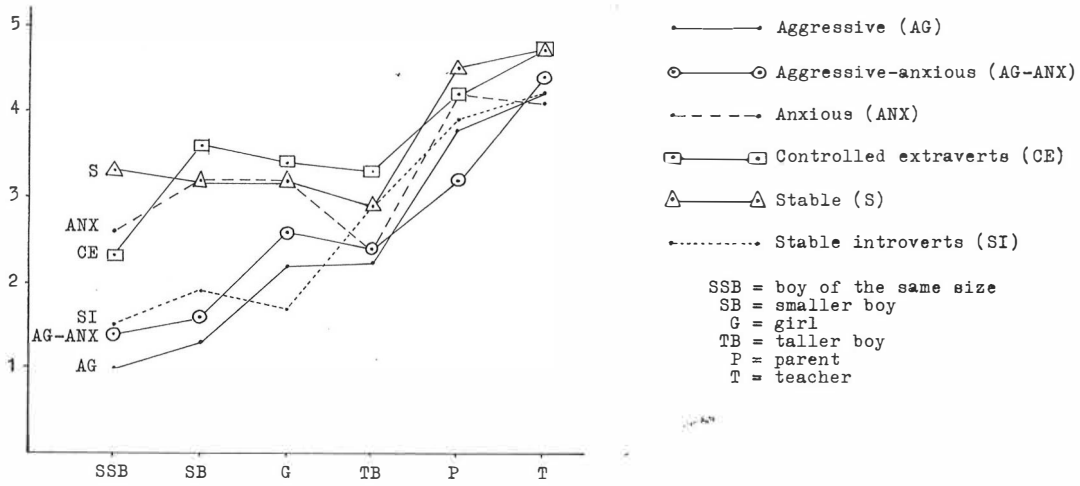
— From QS 1 to QS 2 there was a qualitative change in the responses of the aggressive in the direction of stronger control of impulses (socially acceptable activity).
— From QS 1 to QS 2 there was a reduction in the intensity of aggression and, proportionally, a slight increase in the number of indirectly aggressive responses in the responses of the aggressive-anxious.

The pairs of alternatives did not include the pair LE-SE (aggression vs. controlled expression of impulses) which could have revealed the kind of strong extrinsic motivation of the aggressive that the verbal responses indicated. On the other hand, in the pair of alternatives LE-SI the mates of controlled inhibition of impulses described treatment so contrary to the aggressive that the aggressive subjects did not prefer them to the aggressive alternatives. In the pair of alternatives LE-LI (aggression vs. anxiety) anxiety represented weak control of behaviour and was thus more similar to aggressive treatment than controlled inhibition of impulses: the aggressive preferred the alternatives of anxiety more than expected, which also supported the interpretation of extrinsic motivation.

In the construction of the alternative answers the intensity and direction of aggression were not taken into account systematically, for which reason the possible preferences of the aggressive-anxious to indirect and more attenuated aggression were not revealed.

4. 5. 2. *Effects of external control on nonaggressive responses*

It was predicted in **Hypothesis B. 5** that when external control is strengthened, there is an increase in the number of nonaggressive responses of all the extreme groups so that the increase is greatest in the most aggressive groups. The hypothesis was tested on the basis of the responses given to QS 1 (Figure 14). Naturally, the amount of nonaggressive responses was dependent on the amount of aggressive responses, whose relations to the attackers was dealt with in Chapter 4. 4. 4. The dependence was not, however, quite symmetrical, since in the scoring of the aggressive responses the intensity of aggression was also taken into account.



F i g u r e 14. The distribution of nonaggressive responses among the targets, QS 1.

(1) The hypothesis that there is an increase in the amount of nonaggressive responses due to strengthened external control was supported by the means of the sum scores for the nonaggressive responses. The main effect of the attackers was significant ($p<.01$).

The analyses of variance for *each nonaggression category* revealed that the main effects of the attackers were significant ($p<.01$). All of the nonaggressive responses did not, however, increase monotonically with strengthened external control. They were dependent on the attackers as shown in Table 21.

Table 21. Dependences of the different forms of nonaggressive treatment on the attackers, means for the subjects

Variable	SSB[1]	SB	TB	G	P	T
Description of negative affects	0.20	0.03	0.10	0.07	0.48	0.53
Escape	0.23	0.15	0.85	0.22	0.25	0.22
Indifference	0.75	1.63	1.35	1.93	1.98	3.00
Conciliatory response	0.83	0.65	0.48	0.55	1.25	0.75

[1] See Table 18.

The greatest exceptions to the expected distribution were found for escape, which was frequent especially when the attacker was a taller boy, and for conciliatory response, which was most frequent when the attacker was a parent or a boy of the same size.

(2) The hypothesis that there is a parallel but quantitatively different increase in the amount of nonaggressive responses of the different groups could be considered as having been supported (Figure 14). The group x attacker (AB) interaction was significant only at the $p<.1$ level.

The amount of nonaggressive responses concerning boys of the same size separated the groups much in the same way as the habit strength of overt aggression, as found also for the magnitude of aggressive responses concerning boys of the same size, with the exception of the stable introverts. (The dotted line describing the means for the stable introverts in Figure 14 was expected to be located at the top in a slightly ascending direction. The interpretation of the result was directly derivable from that concerned with aggressive responses, pp. 165—166).

(3) Variation in the amount of each nonaggressive treatment, due to external control, was assumed to be slightest in the group of which the treatment in question was most typical. Contrary to expectations, the differences between the groups in their nonaggressive responses (Figure 13), with the exception of conciliatory response, were not so great that a particular treatment could be considered significantly typical of a particular group. Since the group x attacker (AC) interactions, apart from that for description of negative affects, were, however, significant ($p<.01$), a preliminary inspection was performed to test the hypothesis.

The means for QS 1 and QS 2 indicated that conciliatory response was most typical of the stable, indifference was most typical of the controlled extraverts, and escape was most typical of the aggressive.

The distributions of the nonaggressive responses of the above groups among the targets, as well as the corresponding means for the other groups as two combinations, one for weak and the other for strong control of behaviour, are presented in Figure 15.

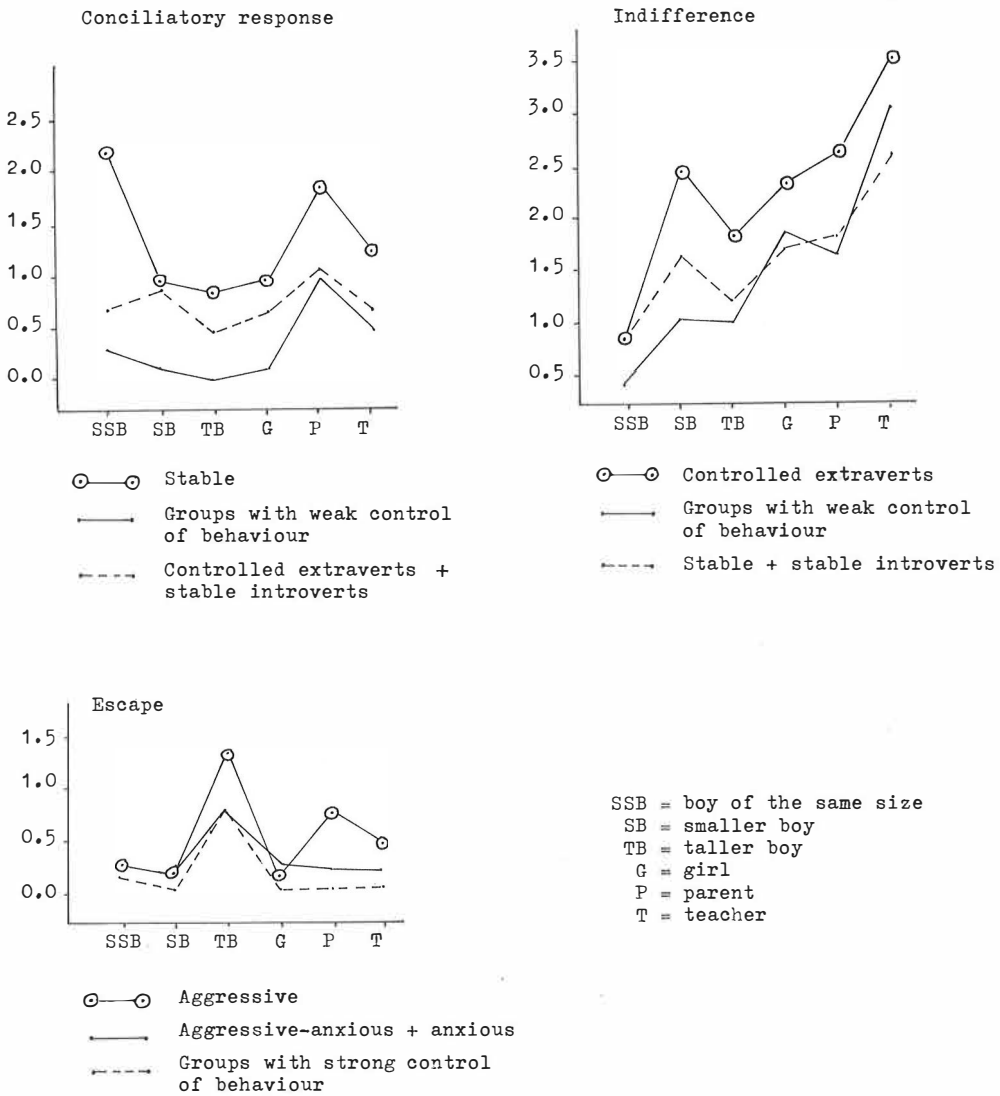


Figure 15. The distribution of nonaggressive responses among the targets, different categories of nonaggression.

As for the conciliatory response of the stable, the hypothesis was not supported: this type of treatment was most frequent when the target was a parent or a boy of the same size. Similarly, in the indifferent response of the controlled extraverts there appeared variation that was greater than expected: this type of treatment hardly occurred when the instigator was a boy of the same size. The escape responses of the aggressive boys were connected with conflicts with taller boys and authority figures, and negative affects were also less typical of the anxious when the attacker was a smaller boy or a girl.

(4) Variation in the type of aggression stimuli (types of attack) had many significant effects on nonaggressive responses. The findings were logically interpretable and shed light on the *content validity* of QS 1. The main effects of the types of attack were significant on all the types of nonaggressive treatment. The most frequent cause of descriptions of negative affects and indifference was indirect verbal aggression (speaking ill of somebody behind his back). Escape was more frequently due to direct than to indirect aggression, a consequence of the experienced strength of thwart, while for conciliatory responding the case was the opposite.

The group x type of attack (AB) interaction was significant only for indifference. All of the groups were most frequently indifferent toward indirect verbal attack but differed from each other for direct physical and mimic aggression. Indifference toward physical attack correlated positively with a great number of responses in overt behaviour independently of the strength of the control of behaviour (the more active, the more indifferent). Indifference toward mimic attack was typical of the introvert groups.

The attacker x type of attack (BC) interactions were significant ($p<.01$) except for conciliatory response.

The cause of descriptions of negative affects was most frequently the verbal and mimic aggression of authority figures, and least frequently the direct aggression of smaller boys and girls.

The number of escape responses was directly proportional to the directness of the attack of a taller boy. Similarly, the mimic aggression of authority figures caused a desire to escape, especially in the aggressive.

Indifference occurred only toward authority figures, if the attack was indirectly physical, and also toward girls and smaller boys, if the type of attack was direct physical. The distribution of indifference among the targets was more even in the other types of attack.

5. SUMMARY AND DISCUSSION

Part II was concerned with aggressive and nonaggressive response habits adopted for coping with thwarting situations. A two-dimensional descriptive model was constructed, on the basis of which predictions were made of aggressive and nonaggressive patterns of behaviour. The two approaches for the testing of the hypotheses were:
(1) The structure of aggressive and nonaggressive habits was analyzed from the ratings made by the subjects' teachers and peers.
(2) Different types of treatment of thwarting situations were examined on the basis of the verbal responses of the extreme groups of each type of behaviour to aggression stimuli.

5. 1. Correspondence between the two-dimensional descriptive model and the empirical findings

In the explication of the hypotheses on aggressive and nonaggressive patterns of behaviour in thwarting situations two viewpoints were employed as guidelines. Firstly, previous investigations (Eysenck, 1960; Peterson, 1965; et al.) have proved that observations of the interdependences of personality traits tend to differentiate in two bipolar dimensions independent of each other. In the descriptive interpretations of these dimensions different researchers have preferred different terms. Eysenck has called them Extraversion/Introversion and Neuroticism (Lability)/Stability. Secondly, thwarting stimulus situations are so frequent in social interaction that an individual's habitual treatment of these situations is likely to be closely connected with his total personality; if total behaviour can be described two-

dimensionally, it is likely that a considerable part of aggressive behaviour and of the alternative of it can also be described in terms of the corresponding dimensions. The hypotheses on the patterns of behaviour were not based on constitutional differences; in accordance with the procedure followed in Part I, social learning was considered essential in the development of response habits.

Within the present investigation aggression was defined as basically reactive. In a thwarting situation there arises an impulse for the elimination of the unpleasant stimulus. Until an individual is able to inhibit his aggression in a thwarting stimulus situation, he delivers noxious stimuli to the instigator, for which reason his way of responding is defined as aggressive. Direct aggression is generally not considered an acceptable way of solving conflicts. In previous studies inhibition of aggression has often been regarded as the reaction opposite to aggression. An attempt was made in the present investigation to differentiate the concept of inhibition by distinguishing in it suppression of the extrinsic aspect and neutralization of the emotional or intrinsic aspect. Responding in a thwarting stimulus situation may thus be characterized by either uncontrolled or controlled expression of impulses. The former refers to overt aggression, the latter to negotiation and efforts towards peaceful settlement of controversies. Correspondingly, passiveness in such situations may be due to either uncontrolled or controlled inhibition of impulses. Uncontrolled inhibition refers to avoidance responses motivated by fear and anxiety, whereas controlled inhibition suggests appraisal of the situation and avoidance of the resulting aggression. The dimension 'expression/inhibition of impulses', defined more generally as the dimension 'number of overt responses', is, as far as the descriptive model of behaviour is concerned, comparable with the dimension 'Extraversion/Introversion' (Eysenck), and the dimension 'weak/strong control of behaviour' with the dimension 'Lability/Stability'. More accurate definitions of these dimensions and of the patterns of behaviour derived from the main dimensions by combining them have been given in the text (pp. 102—107).

The original construction of the descriptive model of aggression presented in Part I (p. 29) was three-dimensional. Empirical findings of interindividual differences showed that a two-dimensional description was sufficient at the most general level (second order factor structure). The model of aggression was incorporated in the two-dimensional descriptive model of behaviour in thwarting stimulus situations, where it was located in the quadrant termed uncontrolled expression of impulses. The assumption was made that in a combination of the characteristics of 'great number of overt responses' and

'weak control of behaviour' the habits of defensive aggression and also those of offensive aggression acquired through conditioning are the strongest, whereas the habits of direct defensive aggression are typical of individuals characterized by a great number of overt responses, and those of indirect aggression of individuals characterized by weak control of behaviour.

The variables for the empirical examination were chosen as representing the hypothesized types of behaviour. In order to connect them with behavioural traits independent of aggression they were also taken to include some reference variables.

For the study of the hypotheses on the two-dimensional descriptive model a factor analysis was carried out, and the proportion of the common variance explained by the two principal factors was examined. The result showed, *supporting Hypothesis A,* that a description of the common variance in terms of two dimensions was pertinent, and that only the location of some individual variables was contrary to expectations. Even then the results were interpretable. The aggression variables had strong common variance, which was probably due to the method of rating, and direct and indirect defensive aggression were not differentiated in the two-dimensional description as clearly as expected. The result might have been partly due to the exclusion of different degrees of intensity from the sampling of the aggression variables, a procedure aimed at reducing the number of variables, as a consequence of which interindividual differences could not emerge in as many aspects as those in Part I.

A comparison of the results concerning the two-dimensional description with previous results revealed the following. The general aggression factor extracted by means of the method of rating both in Part I and in the studies by Mandel (1959), Banta & Walder (1961), Walder et al. (1961), et al. corresponded to the pattern of behaviour termed here uncontrolled expression of impulses. The degree of the lack of control in aggressive expressions was positively related to the degree of their intensity. The dimension of intensity in the descriptive model of aggression was thus comparable with the dimension 'uncontrolled expression/controlled inhibition of impulses' describing the strength of aggressive habits or the magnitude of aggression.

The emergence of additional components of aggressive behaviour depends essentially on the sample of variables. The common variance of aggression variables is emphasized if the variables included in a factor analysis are heterogeneous, and especially if some of them measure controlled behaviour. If the structure is analyzed from variables limited to weak control of behaviour, the aggression variables

divide at a general descriptive level into two factors interpretable, depending on the rotation of the axes, either as uncontrolled expression and uncontrolled inhibition of impulses (conduct problems and personality problems: Peterson, 1961; Eysenck & Rachman, 1965; et al.) or as great number of overt responses and weak control of behaviour (extraversion and neuroticism: Peterson, 1961; dominance or aggression and hostility: Digman, 1965; Magee, 1964).

If the variables included in a factor analysis are very homogeneous containing only uncontrolled expression of impulses, three main components of aggressive behaviour can be distinguished, as shown both in Part I and II: (1) offensive aggression and defensive aggression connected with it, corresponding to the general aggression factor; (2) direct defensive aggression without offensive aggression, which can be anchored in the dimension 'number of overt responses'; and (3) indirect aggression, which can be anchored correspondingly in the dimension 'control of behaviour'.

As far as nonaggressive behaviour is concerned, interindividual differences were describable in terms of three patterns of behaviour: controlled expression, controlled inhibition, and uncontrolled inhibition of impulses. In the writer's opinion one of the main points of the present study was an attempt to describe the empirical variables as treatment of situations generally instigating aggression, and to seek connections between types of treatment and more general personality traits. The closest analogy to this approach can be found in the classifications presented by McClelland & Apicella (1945) and Lazarus (1966); yet no attempt has been made in them to connect coping-reaction patterns with other personality traits. Lazarus has distinguished three types of direct actions (cf. p. 98). On the basis of the results of the present investigation those individuals who are characterized by a great number of overt responses and, at the same time, by strong control of behaviour, prefer the response type categorized by Lazarus »actions aimed at strengthening the individual's resources against harm,» and those with uncontrolled expression of impulses prefer »attack patterns». The third category for direct actions, »avoidance patterns,» are not completely comparable with any of the factors in the present study: the latter did not include variables for escape habits. Anxiety reaction patterns together with avoidance responses would constitute the nearest equivalent to uncontrolled inhibition of impulses. The assumption can also be made that avoidance patterns are very typical of those who behave aggressively when the thwart in a situation is found to be great. A result according with the assumption suggested that aggressive individuals, more frequently than those

representing the other types of behaviour, responded to verbal descriptions of situations inducing aggression by escape, especially when the instigator was a taller boy or a figure of authority. The reaction pattern categorized by Lazarus as »defensive reappraisal» is probably most typical of individuals whose habits are most nonaggressive, i.e. of those characterized by controlled inhibition of impulses. The interpretation was supported, for example, by the high score for the extreme group of the type 'controlled inhibition of impulses' in the lie scale of the inventory originally constructed by Eysenck (1965).

Lazarus has hypothesized that coping strategy is always based on the process of cognitive evaluation called secondary appraisal, whereas the assumption was made in the present investigation that cognitive appraisal intervenes between stimulus and response the more strongly the more controlled behaviour is concerned. The assumption was supported indirectly by the finding parallel with the hypothesis that, on the basis of school achievement, the level of the intellectual development of children characterized by strong control of behaviour was higher than that of children characterized by weak control of behaviour, and that, as far as appeal to children's own judgment is concerned, such differences could also be found in parents' child-rearing practices. Further investigations would, however, be necessary to solve this problem: for example, the decision-making processes of different individuals in thwarting situations could be analyzed in the conceptual framework of the Expectancy x Value theory of motivation. An examination of the dimension 'control of behaviour' could also be connected with the study of moral development (Piaget, 1948; Cowan, Langer, Heavenrich, & Nathanson, 1969; Bandura, 1969; et al.).

As regards the main dimensions, the results were comparable with earlier results concerning the two-dimensional descriptive system (cf. p. 100). The types of personality, or clusters of personality traits, outlined previously by means of these main dimensions are probably comparable with the individual patterns of behaviour in thwarting situations found in the present investigation, although, on account of the scarcity of the reference variables, the relationship cannot be generalized very far. The circular scheme presented by Eysenck & Eysenck (1964) relates the two main dimensions and more specific personality traits to the Galen-Kant-Wundt scheme of the four temperaments. Provided that such vague comparisons are allowed, the temperament type Choleric and such personality traits as impulsive and excitable can be taken to correspond to the 'type' of 'uncontrolled expression of impulses', Melancholic to 'uncontrolled inhibition',

Phlegmatic to 'controlled inhibition', and Sanguine to 'controlled expression of impulses'.

It is not possible to describe all the common variance of the variables for personality traits, or that for behaviour in thwarting situations in terms of two dimensions. From the 33 rating variables four interpretationally relevant factors could be extracted: aggression vs. controlled inhibition of impulses, strong control of behaviour, anxiety vs. socially approved activeness, and number of overt responses independent of control of behaviour. The results of transformation analyses showed that this structure had considerable invariance irrespective of rater, rating method, and sex. In spite of more specific common variance the variables were bound together by strong, two-dimensionally describable common variance.

On the basis of the results the number of rating variables can be reduced for a two-dimensional description to ten classes of behaviour containing both the main dimensions and the aggressive and nonaggressive patterns of behaviour.

Main dimensions

Number of overt responses

Great: Keep moving and running, play with others, have a great deal of energy. (An attempt was made to avoid in the description cues of socially approved activity probably included in variables 25 and 26. A somewhat similar definition of the dimension of activity is that by Walker, 1967.)
Small: Not move much, walk, not run, be standing alone, silent.

Control of behaviour

Strong: Reliable, keep a promise, not get excited or enthusiastic, friendly.
Weak: Unreliable, lacking concentration, the teacher feels concerned about the development of the child's personality because of ensuing anti-socialness; unfriendly. (Variable 27 of lability stressing the changeability of moods did not prove to be a good definition of the control of behaviour.)

Patterns of behaviour

Aggressive behaviour

Defensive and offensive aggression: Attack without reason, tease others, say naughty things, defend oneself readily if teased.
Direct defensive aggression independent of offensive aggression: Defend oneself if teased, but not tease others or attack without reason.
Indirect aggression: Try to restrain one's aggressiveness, which, however, often bursts out as aggression toward innocent persons, or as kicking at objects, sneaking, touchiness, etc.

Nonaggressive behaviour

Controlled expression of impulses: Try to solve annoying situations reasonably, negotiate, conciliate, side with smaller and weaker peers.

Controlled inhibition of impulses: Peaceable, patient, never quarrel, adjustable, submissive.
Uncontrolled inhibition of impulses: Fearful, cry easily when teased, unable to do anything to improve a situation either aggressively or nonaggressively.

5. 2. Value of the inventory scales as reference variables in the description of behaviour

The variables for the main dimensions of the descriptive model were supplemented by two personality inventories: a version (Junior NESI) of the Junior Eysenck Personality Inventory (Eysenck, 1965), and the Personality Inventory for the Lower Forms of the Primary School (KTK 1) standardized from the questionnaire developed by Cattell and Coan (1959). The inventories included altogether 16 scales. The correlations between the inventory scales and the rating variables were very low, which corresponded to the e.g. recent findings by Walker (1967) and Werdelin (1966) that there are but slight connections between self-ratings and teachers' ratings or peer ratings. When both the rating variables and the inventory scales were included in a factor analysis, the inventory variables divided into two factors independent of the rating variables. One of them was interpreted as a subjective conception of the control of behaviour (positive vs. negative self-concept), the other as a subjective conception of the number of overt responses (social cautiousness vs. impulsiveness). An inspection of the intercorrelation matrix revealed that only the variables spanning the latter factor had slight positive connections with the corresponding rating variables. Positive vs. negative self-concept was independent of the ratings of overt behaviour, and the few significant connections obtained indicated unexpected rather than expected connections. For example, the high scores for the anxiety scale correlated positively with socially acceptable activity.

Consequently, the scores for inventory scales obtained for children do not admit of direct generalizations concerning behaviour. The conceptual interpretation of the two-dimensional structures of the inventory and rating variables was the same, but their correlational correspondences were very slight. The weak relationships between the inventory variables and overt behaviour could also be seen when a comparison was made of the means of the extreme groups chosen on the basis of the peer ratings. In 10 of the 16 scales no significant intergroup differences could be found. The scales separating the extreme

groups most as expected were those of restlessness, dependency, altruism, and tough-mindedness. The scores for the neuroticism scale of Junior NESI were found to be related to the ratings concerning the dimension 'control of behaviour' in the shape of a U-curve. A possible interpretation of the relation is that both strong and weak control of behaviour result in a greater amount of experience of environmental pressures than average control of behaviour. In a school milieu individuals characterized by strong control of behaviour and, according to the present study, also by high intellectual capacity, may have feelings of tension and anxiety e.g. because of a high level of aspiration.

According to Rushton (1966), some 70 % of the previous studies have shown that children's scholastic success is positively connected with stability or adjustment, while the rest have indicated that it is connected with anxiety (neuroticism), when neuroticism vs. stability is measured by standardized questionnaires. The inconsistency of the results can be understood when the findings of the present investigation are taken into account: the direction of the relationship may depend on, for example, the composition of subject groups, especially on the types and proportional number of extreme individuals in the dimension 'control of behaviour'. If the control of behaviour is measured by ratings, school achievement correlates very significantly with stability (in which strong control of behaviour and a relatively great amount of overt responses are combined). The above was found not only for the teachers' ratings but also for the peer ratings, in which a knowledge of school achievements was hardly included as a halo factor.

The reliability of the inventory scales was satisfactory, and their interdependences differentiated into a logical structure; yet the answers were but slightly anchored in overt behaviour. A choice of the extreme groups on the basis of the factor scores for the factors of the inventory scales and a study of their overt behaviour might furnish additional information about the relationships among these variable groups.

5. 3. The aggressive and nonaggressive responses of the extreme types of behaviour to symbolic aggression stimuli

The extreme groups were chosen on the basis of peer ratings. Six groups were composed by employing the factor scores of four factors. A comparison of the inter-group differences in the peer ratings and

teachers' ratings indicated that although the groups were composed on the basis of four factors, their characteristics and interrelations could be described in terms of the two main dimensions of the descriptive model.

The symbolic aggression stimuli were administered as three series of questions (QS), the stimulus properties of which were varied. The aggression stimuli of QS 1 were attacks of other persons, those of QS 2 were more general frustrating situations, and QS 3 was concerned with habits of offensive aggression.

The results of the analyses of variance were presented in Chapters 4. 4. and 4. 5. for each hypothesis as a list, and the frame of reference of the interpretation was given in Chapter 4. 4. 5. The main results were the following.

Hypothesis B. 1 on a direct relationship between the magnitudes of overt aggression and aggressive test responses *was supported* for QS 1 and QS 3, when the aggressive and nonaggressive groups were treated dichotomically. QS 2 did not separate the aggressive and nonaggressive groups from each other. The fact that the results were not the same for QS 1 and QS 2 was interpreted as a consequence of the difference in their stimulus material: QS 1 consisted of direct questions about an individual's defensive habits without presenting any motives of the attacker, while the stimulus material of QS 2 included more specified descriptions of situations. It is possible that a more detailed description of the context strengthens the tendency to take the other party into account, i.e. the extrinsic motivation supporting the aggression inhibitory tendency. Allison & Hunt (1959) have made a corresponding finding concerning the connections between the scores for aggression and Edward's Social Desirability Scale (cf. p. 167).

The magnitude of aggressive responses towards boys of the same size separated the groups in the same way as the habit strength of overt aggression, with the exception of the stable introverts. The result was considered to support Hypothesis B. 1: it is probable that the inter-group differences in the amount of overt aggression in general are parallel to those in the amount of aggression toward boys of the same size. The finding could be taken into account in the construction of aggression tests. For example, the pictures of projective tests often include conflict situations between an adult and a child. Nevertheless, according to the present investigation, the inter-group differences in the magnitude of aggressive treatment were considerably smaller when the target was a figure of authority than when it was a boy of the same size.

Differences between the nonaggressive groups were not found in the total magnitude of aggressive responses that would have supported the hypothesis. The number of the aggressive responses of the controlled extraverts especially was smaller and that of the stable introverts greater than expected. An inspection of the distributions of aggressive responses among the targets revealed that the clearest discriminations between the targets were made by the controlled extraverts: they displayed direct aggression mainly toward boys of the same size (in the other nonaggressive groups direct aggression was also rather frequent toward girls and smaller boys).

For an interpretation of the results the formula presented was derived from the theory of achievement motivation by Atkinson:

$$R_{Aggr} = (T_A + T_{-f}) \pm M_{Extr}$$

The magnitude of aggressive test responses (R_{Aggr}) was assumed to depend especially on the strength of the inhibitory tendency (T_{-f}), which is a function of aggression inhibitory habits and the probability of failure. If aggression inhibitory (and aggressive) habits are of an average strength, the probability of failure is also average, and consequently (as shown p. 165) aggression inhibitory tendencies activated by an aggressive provocation are stronger than if the aggression inhibitory tendency is very strong or weak. The variation of aggression inhibitory tendencies and subjective probabilities of failure according to the targets, and the effects of it on the magnitude of aggressive test responses were discussed p. 166. A further investigation would be necessary to test the applicability of the interpretational frame of reference to this kind of detailed finding, and at the same time it would be necessary to examine the inter-group differences in the distribution of overt aggression among the different targets.

In connection with projective tests for different motive areas it has been discussed (Epstein, 1962; Feshbach, 1961; Olweus, 1969) how, in the case of subjects with low scores for a particular motive area, those with a so-called weak drive could be distinguished from those with a strong but inhibited drive. If the strength of drive for aggression is defined on the basis of the habit strength of overt aggression, it seems probable that in individuals with average aggressive habits, particularly in those whose behaviour is motivated by a tendency to respond in a socially acceptable way, aggression impulses activated by a stimulus are, at the symbolic level, under stronger control than in those with very weak aggressive habits. The result is that regardless of the differences in overt aggression the magnitudes of aggressive test responses are either equally great or correlate even negatively with the habit strength of overt aggression.

The interpretation was supported also by the results obtained by Olweus (1969). In his study the number of the projective aggressive test responses of those subjects who were more aggressive than the average correlated positively with aggressive behaviour, whereas in the case of boys who were more nonaggressive than the average the correlation was negative. As the ratings of overt behaviour were concerned only with the amount of aggression, it is not possible on the basis of the presented material to analyze whether those responding most nonaggressively correspond to the controlled extraverts of the present investigation. Olweus interpreted his results in terms of a modification of the model of approach-avoidance conflict. Olweus' analytic assumptions can be simplified by stating that the habitual aggression inhibitory tendencies of individuals with moderate habitual aggressive tendencies are higher than those of individuals with weak habitual aggressive tendencies, as a consequence of which the activated aggressive tendencies of the latter manifest themselves more strongly.

The assumption made in *Hypothesis B. 2* (p. 111) that there are differences between the groups (controlled extraverts & aggressive/aggressive-anxious & anxious) in the magnitude of direct and indirect aggressive responses was *not supported* to a statistically significant extent (the main effects of the groups were not significant), although some inter-group differences according with the hypothesis could be found. Consequently, the verbal responses of the groups to symbolic aggression stimuli did not provide the expected information on the effects of the inhibition of aggression impulses on the direction of aggression.

The total magnitude of direct aggressive (verbal) responses separated the aggressive and nonaggressive groups from each other in defensive behaviour (QS 1) more clearly than that of indirect aggressive responses. As to offensive behaviour (QS 3), both direct and indirect aggressive responses separated the mentioned groups to an equally significant extent.

Hypothesis B. 3 on the effects of external control on the magnitude of aggressive responses *was supported* by the significant main effects of the targets (attackers and victims). The hypothesis on a parallel increase in the aggressive responses of the different groups was also partly supported, although the significant group x target interactions indicated that aggressive responses tended, to some extent, also to accumulate in some particular targets in the different groups (p. 162).

Besides the attackers, the type of attack was also varied in QS 1. As far as defensive responses are concerned, the way in which another person attacked proved to be very significant. It seemed to be a gener-

al tendency to deliver noxious stimuli to the attacker in the same form as he had delivered them. The significant attacker x type of attack interactions revealed, however, that in spite of the general tendency the subjects were inclined to adjust their responses to stimulus situations and especially to take the strength of external control into account.

The results concerning aggressive verbal responses indicated that significant analytical findings can be obtained by direct, uncomplicated questions about an individual's own behaviour, at least in a comparison of extreme groups. With the employment of projective test responses it has been found out in recent investigations (Murstein, 1965; Coleman, 1967; Olweus, 1969; et al.) that aggressive responses to stimuli having »high or medium relevance for hostility» correlate with the habit strength of overt aggression more highly than those given to very ambiguous stimuli.

The scoring of the responses given to the question series could be made still more accurate by additional questions. As for defensive aggression (QS 1), for example, after given the answer »I'd hit back» the experimenter could ask, »Would you hit harder, as hard, or less hard?» When presented occasionally, this additional question seemed to separate the aggressive and the stable introverts. For offensive aggression a possible question would be, »When did you last behave like that?» The question would probably facilitate the rating of the strength of this particular aggressive habit.

Hypothesis B. 4 on the qualitative inter-group differences in nonaggressive responses *was not very strongly supported.* In general, the main effects of the groups were not significant. Several significant inter-group differences could, however, be found. The following directive findings deserve mention: (1) description of negative affects (e.g., I'd feel annoyed) was most typical of the anxious and (2) indifference of the controlled extraverts; (3) the stable preferred conciliatory response, which was in all groups most frequent when the aggression stimuli consisted of complex frustrating situations (QS 2; in QS 1 the most frequent responses of the different groups was indifference); and (4) in the responses of the stable introverts none of the scored categories was conspicuous. Thus the verbal responses to the different aggression stimuli did not support the assumption that the stable introverts take an indifferent stand in a thwarting situation or appraise such a situation on account of their strong aggression inhibitory tendencies.

The nonaggressive verbal responses did not furnish much information concerning the interpretation of aggression stimuli. For QS 2 this might be partly due to the form of the question repeated in every

item, »What would you then think and do?» To make the scoring of the responses clearer it would have been better to ask both what the subjects would think and what they would do. Boys aged 8—9 answered the second part of the question spontaneously, so information about thinking processes remained too scanty for reliable scoring.

When QS 2 was presented to the subjects by giving pairs of alternative answers formulated on the basis of the hypotheses it could be seen that the question series separated the groups very significantly in the dimension 'control of behaviour'. The aggressive, aggressive-anxious, and anxious had, more often than the groups characterized by strong control of behaviour, chosen alternatives representing uncontrolled expression and inhibition of impulses (weak control of behaviour). The result corresponded to the writer's earlier (1968) finding concerning the responses of university students, in which the subjects had to rank (1—4) four alternatives according to how probable they considered the occurrence of the described responses in their own behaviour. Due to the alternative answers QS 2 was more like a questionnaire for aggression. In previous investigations the scores for hostility have been found to correlate more highly with anxiety and neuroticism than with extravert personality traits.

The assumption was made in *Hypothesis B. 5,* based on a positive covariation between a habit strength and the degree of stimulus generalization, that the effects of variation in stimulus material on nonaggressive responses are slightest for the group of whom the type of nonaggression in question is most typical. The hypothesis was *not supported.* The stable preferred conciliatory response significantly more often than the other groups; yet the distribution of it among the different targets was no more even than for the other groups.

Both the aggressive and nonaggressive responses varied readily according to the target (attacker). Endler & Hunt (1968) compared the proportions of variance from individual differences, modes of responses, and situations for hostility and anxiousness measured by inventories. They found a lower level of interaction with situations for hostility than for anxiousness. They interpreted the difference as a consequence of the sampling of situations, which cannot be considered very systematic. In their study the situations were varied mainly by varying the general setting of the situation. With regard to aggression, it would be more relevant to vary the targets (instigators, attackers, or victims) than the scenes; for anxiety, variation of the scenes would be more relevant. In the present investigation variation of situational factors was limited mainly to the targets of aggression.

The procedure was based both on the results of the first part of the report and on the interpersonal characteristic of aggression.

5. 4. Possibilities of further investigation

The investigation showed clearly the importance of some general experimental problems:

— the dimension 'control of behaviour' (p. 181),
— the relationships between personality traits and the individual patterns of aggression and nonaggression (p. 181),
— the relationships between the scores for a particular characteristic obtained by different test methods (e.g. personality inventories, p. 184) and characteristics of overt behaviour, corresponding to that carried out exploratively by the writer (1968),
— testing of the model of interpretation for inter-group differences (p. 186).

The study of inter-group differences could be extended:

What kind of inter-group differences emerge when verbal stimuli are replaced by visual ones, and verbal responding by motor. To study this problem the writer constructed a set of equipments for measuring physical defensive aggression. The extreme groups were retested by employing this »quarrel machine,» but the results are not yet available.

The overt aggression of the extreme groups could be studied e.g. by arranging real situations instigating aggression, both in individual tests and in deliberately combined small groups, and by observing different types of expression and inhibition of aggression impulses.

Furthermore, physiological reactions in connection with different aggressive and nonaggressive verbal responses could be studied e.g. in whether autonomic reactions are activated by verbal description of negative affects, or whether they are more closely connected with indifference or some other kind of treatment.

A longitudinal study would make it possible to examine the stability of the individual patterns of behaviour. Another interesting question would be in which pathological syndroms the different 'types of behaviour' may occur when extremely prominent in adolescents or adults. The preliminary assumption could be made that offensive (impulsive) aggression is an indication of psychopathy, which is char-

acterized by a lack of internalized norms of behaviour. Another form of psychopathy has been distinguished, which is hostile psychopathy, possibly related to behaviour termed aggressive-anxious. As is generally known, anxiety is included in many clinical syndroms. The strong tendency of controlled inhibition of impulses may result in the development of defence mechanisms or obsessions. Psychosomatic reactions may emerge in several extreme types of behaviour, e.g. in those characterized by strong control.

A further far-reaching problem is concerned with the goals and methods of therapeutic treatment of the different types. If behavioural characteristics can be understood mainly as response habits, the principles of therapeutic methods may be derived from the theories of learning and motivation.

Problems can also be explicated so as to concern either the reinforcement history or the actual social psychological background of the individual patterns of behaviour (cf. p. 89, Part I).

One of the central theoretical problems is to study the reinforcers of offensive aggression.

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APPENDIX A. VARIABLES[1]

1. PART I

Problem A

I *Direct defensive aggression*

a) *Physical mode of aggression*

1. He resists X by using lenient physical means (e.g. by pushing off). (22)[2]
2. He behaves defiantly against X, e.g. opposes when asked or told to do something; disobeys intentionally. (19)
3. He tries to hurt X, e.g. by hitting, kicking, or throwing something. (7)
4. He starts fighting with X. (15)

b) *Verbal mode of aggression*

5. He resists X by saying, go away, get out, don't, etc. (9)
6. He opposes X's suggestions; e.g. I won't go, I won't give it. (17)
7. He threatens revenge; e.g. I'll tell the teacher, I won't let you play any more. (11)
8. He makes a scornful remark to X; e.g. you're mad, naughty; calls names. (14)

c) *Mimic mode of aggression*

9. He resents X, expressing it with an angry look or expression. (16)
10. He starts sulking, does not answer, withdraws. (10)
11. He starts crying in a situation caused by X. (12)
12. He threatens X by making gestures. (13)

II *Indirect defensive aggression*

a) *Stimulus generalization*

13. When a child dare not be cross with X, he displays aggression toward some object. (26)
14. When a child dare not be cross with X, he displays aggression toward some other person (Y). (23)
15. When a child gets very angry, he displays aggression toward X and also

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[1] Appendices B (Tables and figures) and C (Question Series 1—3 and instructions) are obtainable mimeographed, address: Department of Psychology, University of Jyväskylä, Finland.

[2] The rank of the variables in the rating list.

toward some objects around him, without being concerned about the person they belong to. (24)

b) *Response generalization*

17. He swears at X on account of a situation caused by him. (21)
18. He damages X's possessions, productions, etc. intentionally. (8)
19. He sneaks about X to the teacher or an older peer. (18)
20. He tries to hurt a person who is close to X and whom X tries to protect (little sister, smaller peer). (20)

c) *Projected aggression*

21. When a child feels his own inability or some obstacle due to circumstances preventing him from doing something, he tries to damage objects in his environment, e.g. any material at hand. (28)
22. When a child feels his own inability or some obstacle due to circumstances preventing him from doing something (e.g., there are not enough tools for everybody; he breaks something accidentally), he tries to make somebody else (Y) the scapegoat. (25)

III *Direct offensive aggression*

a) *Physical mode of aggression*

23. He irritates somebody (Y) causing trouble in co-operation, e.g. by breaking the rules of a game, refusing to take turns, or intruding. (39)
24. He disturbs somebody (Y) e.g. by grabbing a tool, interfering with a game, or grasping him by the neck. (36)
25. He hurts somebody (Y) without any reason, e.g. by tripping, pulling hair, pinching, striking in passing, or slingshooting. (33)

b) *Verbal mode of aggression*

26. He tries to prevent somebody's (Y) activities, e.g. by saying, don't come here, don't touch it, that's not yours, we won't let you in. (38)
27. He teases and vexes somebody (Y), e.g. gibes, makes malicious remarks, or calls names. (32)
28. He makes scornful remarks to somebody (Y), e.g. about what he has made, about his clothes, or home. (35)

IV *Indirect offensive aggression*

a) *Physical mode of aggression*

29. He vexes somebody (Y) by doing secretly something he knows to be forbidden. (41)
30. He teases somebody (Y) by intentionally handling and damaging his possessions or something he has made. (34)

b) *Verbal mode of aggression*

31. He teases a person whom he knows to be close to or in the protection of somebody (Y), e.g. little sister or a smaller peer. (31)

32. He gossips and tells something awkward or false about somebody (Y) behind his back in order to bring discredit on him. (40)

Problem B

Personality variables

1. General activity vs. passiveness. The trait manifests itself as an abundance or lack of (either acceptable or nonacceptable) behaviour. (2)
2. A child's behaviour is usually uncontrolled and impulsive (e.g., when seeing in somebody's possession an object he likes, he wants to get it; he becomes easily enthusiastic and forgets his task; he seems to forget directions and orders). (40)
3. A child's behaviour among his peers: leader type — withdrawing. (4)
4. A child's position among his peers: popular — despised. (6)
5. General level of intellectual development, reflected in the child's resourcefulness, insightfulness, and ability to perform tasks. (1)
6. Level of verbal development, reflected in the child's verbal ability, extensiveness of his vocabulary, etc. (5)
7. Stature compared with the other boys of the group.
   Information about this was obtained by means of the preliminary inquiry form. The teachers were asked the heights and weights of all their boy pupils (also those of the boys excluded from the sample later on). Both variables were normalized in groups. The normalized scores were summed up for each subject. This sum score indicated the stature of each boy compared with the other boys in his group.

Background variables

1. Date of birth
2. Do parents live with the child? (d) Yes No
   If the answer is No: Are they divorced? Yes No
   Is the child illegitimate? Yes No
   Is one of them dead? Yes No
3. Number of children in the family.
   Which in order of birth is the ratee? (e)
4. Does the child attend the whole-day or half-day course of the kindergarten? (a)
5. Mother's attitude toward the child (h)
   concerned irregularly concerned indifferent
6. Mother attends different occasions organized by the kindergarten (i)
   whenever possible sometimes never
7. The child's needs for food and sleep are satisfied at home (j)
   normally often remain unsatisfied
8. Estimated use of alcohol in the family (g)
   frequently sometimes never not known
9. Father's degree or occupation Place of employment (b)
10. Mother's degree or occupation Place of employment (c)
11. Estimated economical status of the family (f)
    very low low average high

12. General estimation of the child's home conditions
excellent good average poor very poor

Problem C

1. Aggressiveness vs. peacefulness (3)
2. The child tends to display aggression: for a very slight reason — only after severely provoked (31)
3. The child is teased by others or his activities are interfered with, compared with the other boys: often — seldom (29)
4. On account of his behaviour the child is feared or his company is shunned, compared with the other boys: very much — not at all (42)
5. By means of his aggressive behaviour the child attempts to satisfy his needs which have remained unsatisfied (tries to be leader of his group, attract attention, etc.): seems likely seems unlikely (44)

Problem D

Targets of aggression

1. Teacher
2. Taller boy
3. Boy of the same size
4. Smaller boy
5. Girl

Scenes of aggression

1. Free play period outdoors
2. Free play period indoors
3. Periods of directed activity or formal group work, e.g. meals, periods of creative expressions, play and music.

2. PART II

Problem A

Variables of peer and teacher ratings

Aggressive behaviour

I *Direct defensive aggression*

a) *Physical mode of aggression*

1. Which of your classmates may hurt another child when angry, e.g. by hitting, kicking, or throwing something? (26)[1]

[1] The items were administered to the subjects in a random order. Half of the subjects gave their answers in reverse order, with the exception of the first two items which were given first in both cases.

b) *Verbal mode of aggression*
2. Who quarrel with other children even for a slight reason? (30)
c) *Mimic mode of aggression*
3. Who easily start sulking (their look reveals that they are angry although they do not say a word)? (21)

II *Indirect defensive aggression*

a) *Stimulus generalization*
4. Who tease smaller and weaker peers when angry at something? (9)
5. Who kick pieces of furniture or other objects when angry at something? (16)
b) *Response generalization*
6. Who tease others when angry when they do not notice? (12)
7. Which of your classmates are sneaks? (34)

III *Direct offensive aggression*

a) *Physical mode of aggression*
8. Who may attack somebody without any reason? (18)
b) *Verbal mode of aggression*
9. Who say naughty things to other children even if these had done nothing wrong to him? (24)
c) *Mimic mode of aggression*
10. Who keep sneering and making faces at other children? (28)

IV *Indirect offensive aggression*

a) *Physical mode of aggression*
11. Who may take other children's possessions? (33)
b) *Verbal mode of aggression*
12. Who sometimes exaggerate or tell lies about other children? (10)

Nonaggressive behaviour

Controlled expression of impulses
13. Who try to act reasonably even in annoying situations? (25)
14. Who think that if one negotiates, everything will be better? (13)
15. Who side with smaller and weaker peers? (32)
16. Who think that it is just a joke if somebody attacks them? (20)

Controlled inhibition of impulses
17. Which of your classmates are peaceable and patient? (29)
18. Who are considered reliable classmates? (23)
19. Who dislike squabbling company and leave it for something else? (17)
20. Who never quarrel with others? (35)

Uncontrolled inhibition of impulses
21. Who easily start crying if others treat them nastily? (27)
22. Which of your classmates are afraid of other children? (11)
23. Who readily apologize even if they had done nothing very wrong? (14)
24. Who think that they will certainly get revenge but never do anything? (19)

Reference variables

Number of overt responses

25. Which of your classmates are always busy and play eagerly with other children during breaks and after school hours? (5)
26. Who are always silent and do not care to be busy? (6)

Strength of control of behaviour

27. Which of your classmates are sometimes very touchy and sometimes really nice chums? (7)
28. Who always try to be friendly to others? (8)

Socially approved activity

29. (The item was presented as the first variable to be rated in the following way.) Let us imagine that one spring day the lower classes make an excursion. The teacher tells you to name the classmate who would be a good leader. A girl leader should be chosen for the girls and a boy leader for the boys. Who do you think would be good leaders? (3)
30. Whom would you never choose as leader of the excursion? (4)

Anxiety

31. Who do you think easily cry, say, at the dentist's? (31)

Secondary motivation of behaviour

32. Who tend to disobey the teacher? (22)
33. Who try to attract attention by making fun? (15)

Additional variables rated by teachers

Anti-social behaviour

34.[1] Which of the pupils of the class have been caught filching?
35.[1] Which pupils are inclined to truancy?
36. Which pupils does the teacher feel concerned about because of ensuing anti-social behaviour?

Withdrawal

37. Which pupils are too withdrawn and timid?

Impulsiveness

38. Which pupils are unsteady and lack concentration in their work and attentiveness?

Stable general impression

39. Of which pupils does the teacher think that they will certainly be successful in later life?

School achievement

40. Rank the pupils on the basis of their school achievements (latest reports). The best pupil is numbered (1), the next (2), etc., boys and girls separately.

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[1] Excluded from the analysis of results because of their low frequency. Information furnished by them included in variable 36.

Socio-economical status of the family

41. Father's (mother's) profession (written after the pupil's name).

Personality inventories

Junior NESI

44. Impulsive extraversion
45. Social extraversion
42. Neuroticism
43. Lie scale

KTK 1

46. Masculinity vs. femininity (—)
    + girlish
    — boyish, frisky
47. Anxiety
    + easily anxious, resentful
    — not anxious, relaxed
48. Fearfulness
    + fearful, suspicious
    — fearless, trustful
49. Attitude toward school
    + attend reluctantly
    — attend willingly
50. Dominance vs. submissiveness
    + submissive, adaptable
    — domineering, commanding
51. Self-confidence vs. inferiority feelings
    + self-confident, self-sufficient
    — uncertain, feel inferior
52. Altruism, egoism
    + benevolent
    — egocentric, resistant
53. Emotionality
    + cheerful, jovial
    — worried, depressed
54. Restlessness
    + clamorous, noisy
    — peaceful, silent
55. Sensitivity
    + insensitive, tough-minded
    — sensitive, dreamy
56. Co-operativeness
    + social, trustful
    — like to be alone
57. Dependency
    + seek parents' protection, helpful
    — unconcerned, not helpful