

Individual differences and the trait of aggression

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Abstract

Aggression, as a variable of psychological study, has the hallmarks of a deeply ingrained personality trait. It is related to genetic and physiological factors; it emerges early in life but is influenced and shaped by a child's life experiences; it is consistently associated with gender and is stable or predictable over time and across situations. However, it does not follow that aggression must be viewed as a drive. On the contrary, in this article we argue that aggression is best represented internally as a collection of specific 'scripts' for social behaviour, emphasizing aggressive responding, and the associative structure relating these scripts to each other, to external cues, and to outcome expectancies. The construction and maintenance of these scripts obey well-understood principles of human information processing. Once established, these networks of scripts may be extremely resistant to change. The result is a set of cognitive structures that promote consistent forms of instrumental and hostile aggression over time and across situations.

INTRODUCTION

Amid all the debate and controversy over the illusion or actual existence of personality traits (e.g. Block, 1968; Epstein, 1977; Epstein and O'Brien, 1985; Hogan, DeSoto and Solano, 1977; Magnusson and Endler, 1977; Mischel, 1968, 1984), there has seldom been any doubt expressed that there are certain individuals who are predisposed to responding with aggression across a wide variety of interpersonal situations, especially when aggregated measures of aggression are examined. Mischel himself (1985) has reported moderately high correlations in children between single measures of aggression in different situations. Thus there can be little doubt that aggression is a trait. Aside from popular, common-sense notions, derived from personal experiences with persons who possess such a predisposition, aggression, as a variable of psychological study, has demonstrated the hallmarks of a deeply ingrained personality trait. It is related to genetic and physiological factors; it emerges early in life and is influenced and shaped by a child's life experiences; it is consistently associated with

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gender and is stable or predictable over time and across situations. However, aggressive responding, like other personality variables, can be mitigated by the application of principles designed to counteract earlier learning and previously formed attitudes, although this is not always easy to accomplish. In all of these ways, aggression appears and functions like a trait. We will briefly discuss each of these facets of aggression and then describe how internal, cognitive structures are affected by and, in turn, influence the expression of these factors in the learning and unlearning of aggression as a way of solving problems.

GENETIC AND PHYSIOLOGICAL BASIS

The heritability of personality traits as well as their malleability by experience has been demonstrated recently in a study of more than 14,000 twin pairs in Finland (Rose, Koskenvuo, Kaprio, Sarna and Langinvainio, 1988). There is accumulating evidence that genetic transmission of this magnitude and quality is also involved in the development and prediction of aggression. Studies with infra-human subjects document the heritability of aggression. For example, Lagerspetz (1981) has shown that the selective breeding of mice for aggressiveness or non-aggressiveness resulted in the development of high and low aggressive lines differing significantly from each other by the second generation and persisting for at least 35 generations.

While the studies with humans are not as striking, there is considerable evidence for the heritability of individual differences in human aggression as well. In a study by Rushton, Fulker, Neale, Nias and Eysenck (1986), questionnaire responses by approximately 1400 well-documented adult twin pairs yielded intra-class correlations of 0.40 for monozygotic twins and 0.04 for same sex dizygotic pairs. Further, analyses using maximum likelihood model fitting indicated that 50 per cent of the variance was associated with genetic effects and practically none with a common environment. Further, women consistently obtained lower scores than men (see section below on gender differences in aggression).

Similarly, a large genetic component was demonstrated by Mednick and his associates, in their Scandinavian adoption studies (Mednick, Gabrielli and Hutchings, 1984), to account for individual differences in crime and delinquency. These behaviours can be viewed as extreme manifestations of aggression. Our own studies (Eron, Huesmann, DuBow, Romanoff and Yarmel, 1987; Huesmann, Eron, Lefkowitz and Walder, 1984) showing predictability of aggressive behaviour over three generations are not inconsistent with genetic transmission, although the findings, of course, are also consistent with a learning interpretation.

Contributing to the plausibility of the genetic transmission of an aggressive trait have been the studies explicating the physiological mechanisms triggered by the genetic effects. For example, variations in certain physiological systems which trigger aggression have been demonstrated to be differentially distributed among delinquents and non-delinquents (Lidberg, Levander, Schalling and Lidberg, 1978; Magnusson, 1985) and to predict aggressive behaviour in a healthy group of adolescent boys and girls (Inoff-Germain, Arnold, Nottelman, Susman, Cutler and Chrousos, 1988). Moyer (1987) maintains that 'the sensitivity of the nervous systems for various types of aggression may be raised or lowered by specific blood components particularly from the endocrine system' (p. 39).

At any rate, the accumulating evidence for the heritability of aggression and the consistent physiological differences found between aggressive and non-aggressive subjects reinforce the concept of aggression as an individual difference variable which can be described as a personality trait.

AGGRESSION AND GENDER

One of the more consistent findings in the personality literature is the difference in level of aggression expressed by males and females. This is true for most infra-human species (Scott, 1958). In humans, no matter how aggression is expressed or measured, whether physically, verbally, acquisitively, or indirectly, males as a group always score higher than females as a group. However, there are some females who obtain scores just as high as the more aggressive males. These are usually females who have been socialized like males (Eron, 1980). Over and above whatever differential biological equipment males and females are endowed with, there is ample evidence that, at least in Western culture, differential socialization experiences which encourage or discourage aggressive behaviour are very important (White, 1983). Fagot and Hagan (1985) observed responses of peers and teachers to aggressive and assertive acts of 48 toddlers, aged 18 months to 3 years. While girls' aggressive acts tended to be ignored, boys' acts received a response 70 per cent of the time. Thus, girls' aggression tended to extinguish, while boys' aggressive responses were reinforced. Our own research (Eron, Walder and Lefkowitz, 1971; Lefkowitz, Eron, Walder and Huesmann, 1977; Huesmann and Eron, 1986) has demonstrated the differential response of parents, peers, and teachers to aggression in boys and girls and the subsequent variation between the sexes in the presence and extent of aggression.

EARLY EMERGENCE

Aggression as a characteristic way of interacting with others and solving interpersonal problems emerges early in life. Hamburg and Van Lawick-Goodall (1974), in their observational study of young chimpanzees, concluded

... it appears that the precursors of aggressive behavior are indeed present in infancy and early childhood, that some of them show considerable resemblance to rough and tumble play of higher nonhuman primates, and that they are present in both sexes though more preeminently in males. (p. 72.)

As for young humans, Holmberg (1980) has reported that children as young as 12 months interact aggressively with their peers. Radke-Yarrow and Zahn-Waxler (1984) found individual differences as early as 11/2 to 21/12 years of age which persisted until at least age 7. In our own studies in the Chicago area and four foreign countries (Australia, Finland, Israel, and Poland), we found consistent individual differences in aggression at age six which persisted at least over 3 years (Huesmann and Eron, 1986). Similar results for children of like ages attending French language schools in Montreal have been reported by Moskowitz, Schwartzman and Ledingham

(1985). When consistent individual differences appear this early in life and persist over time, and similar results are found in locations throughout the Western world, it is not unlikely that these individual differences represent the foundation of future individual differences in personality traits.

STABILITY OF AGGRESSION

Not only does aggression as a characteristic way of solving problems emerge early in life, but there is also accumulating evidence that each individual develops a characteristic level of aggressiveness in childhood and that this aggressiveness remains relatively stable across time and situations into adulthood (Huesmann *et al.*, 1984). This does not mean that situational factors are unimportant. Certain circumstances make aggression more likely for anyone, and at different ages, different forms of aggression become more likely. The stability is a stability of relative position in the populations. The more aggressive child very likely becomes the more aggressive adult. In his review of 16 separate studies with lags ranging from 6 months to 21 years, Olweus (1979) reported disattenuated stability coefficients ranging from 0.36 for Kagan and Moss's (1962) study of 36 five-year-olds who were followed for 18 years to 0.95 for his own (Olweus, 1977) study of 85 thirteen-year-olds followed for 1 year. More recently, we (Huesmann *et al.*, 1984) completed a 22-year longitudinal study in New York State that confirmed the predictability of adult aggression from childhood aggression. In this comprehensive study, 632 children were tested and interviewed at age 8 and again

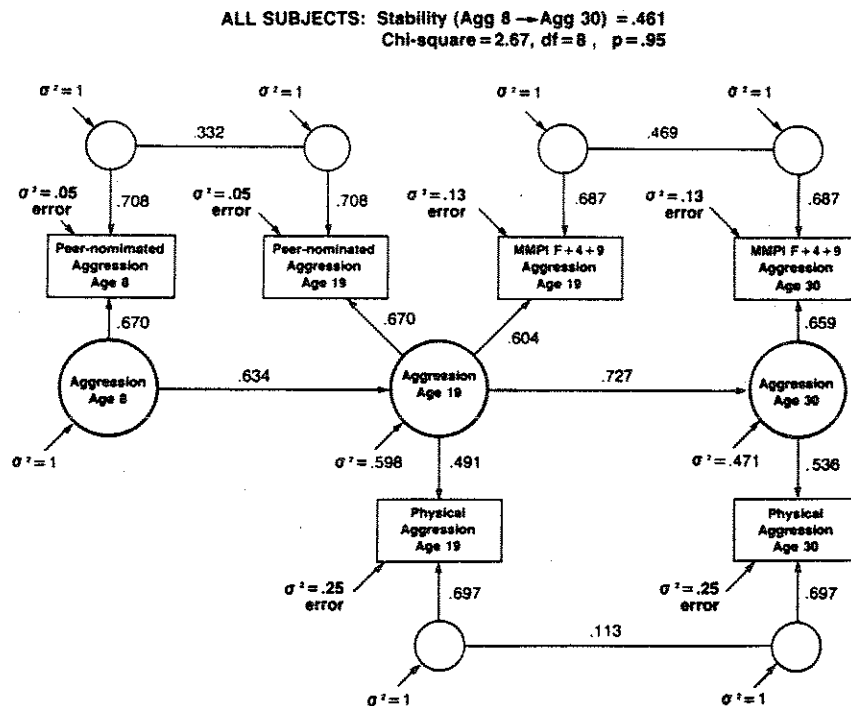


Figure 1. The structural model for estimating the stability of aggression over 22 years (Huesmann *et al.*, 1984)

at age 30. Many were also interviewed at age 19. Using structural modelling we have estimated the stability of aggression from these data to be about 0.46 over 22 years as shown in Figure 1. Moreover, early childhood aggression in school significantly predicted adult criminality and a variety of other adult antisocial behaviours. Such predictability is strong evidence for the presence of a trait of aggression which is present in greater or lesser degree in most persons.

THE LEARNING OF AGGRESSION

Despite the undeniable influence that genetic, hormonal, perinatal, and traumatic factors may have on the development of the trait of aggression, it is the view of these authors that a substantial portion of the individual differences in characteristic levels of aggressiveness among humans can be attributed to learning. The conditions most conducive to the learning of aggression seem to be those in which the child has many opportunities to observe aggression, in which the child is reinforced for his or her own aggression, and in which the child is the object of aggression (Eron, 1982). It is our hypothesis that the convergence of these learning conditions with the previously mentioned innate factors produces cognitive structures that predispose a child to habitual aggressive behaviour. These cognitive structures are the internal representation of the personality trait of aggressiveness.

How does a developing child learn aggressive habits that can persist throughout his or her entire life? What are the cognitive structures that control this habitual aggressiveness? A number of different learning theories have been proposed over the past three decades by Bandura (1973), Berkowitz (1974, 1984), Eron *et al.*, (1971) and others. More recently, Dodge, McClasky and Feldman (1985), Huesmann (1982, 1986, 1988) and Huesmann and Eron (1984) have introduced learning models based on recent thinking in cognitive psychology. The theories have differed in terms of exactly what is learned—specific behaviours, cue-behaviour connections, attitudes, perceptual biases, response biases, or scripts or programmes for behaviour. In our model though, learning is hypothesized to occur both as a result of one's own behaviours (enactive learning) and as a result of viewing others behave (observational learning). Under certain conditions, for example, a child's repeated exposure to others behaving aggressively will increase the chances that a child will respond to frustration and victimization with aggression. The transformation of the child's initial aggressive behaviour into habitual aggressive behaviour, however, may depend as much on the responses of the child's environment to the aggression, the continuance of precipitating factors, and the convergence of other causal factors as on the initial exposure to violence. It is hypothesized that the developing child's learning processes (both enactive and observational) and the developing child's response generation processes are influenced by the child's cognitive capacities and information processing procedures. Therefore, to understand the development of habitual (learned) aggressive behaviour, one needs to examine the operation of the child's information processing system in the presence of the environmental and characteristic factors that promote aggressive behaviour.

In the next sections we outline what we believe is a plausible process model to explain the development of aggression and some of its long-term consequences. We concede that in many respects this model is still speculative and several components

are untestable in our current longitudinal studies. However, this is inevitable with any longitudinal study spanning a number of years unless theorizing stands still (Eron, 1987). What is important is that the model provides a guide for empirical research and suggests a number of hypotheses which can be tested.

We have hypothesized (Huesmann, 1982; 1986; 1988; Huesmann and Eron, 1984) that social behaviour is controlled to a great extent by programmes for behaviour that have been learned during a person's early development. These programmes can be described as cognitive scripts that are stored in a person's memory and are used as guides for behaviour and social problem-solving. A script suggests what events are to happen in the environment, how the person should behave in response to these events, and what the likely outcome of those behaviours would be. According to our cognitive, information processing model of social behaviour, scripts are retrieved in response to environmental cues and then utilized to guide behaviour. A diagram of the overall process is shown in Figure 2.

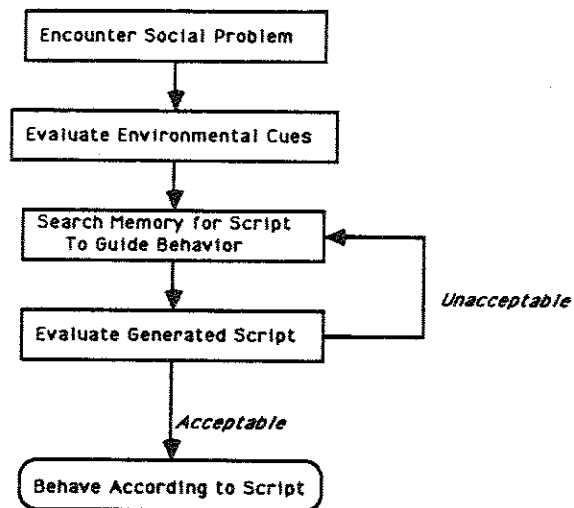


Figure 2. A diagram of the hypothesized decision-making processes

One can see that within this model there are three possible loci at which individual differences can influence behaviour. The objective situation is defined by the social problem and the environmental cues. However, the interpretation of those cues may vary from child to child and may depend on a child's previous learning history. For example, a child who interprets the environment as more hostile may behave more aggressively. Second, the contents of memory and the characteristics of the process used to search memory for a script may make aggressive behaviour more or less likely. Generally, less direct, more subtle approaches to solving social problems may require greater search. Third, the child evaluates each script that is retrieved to determine whether the suggested behaviours are socially appropriate and likely to achieve the desired goal. However, different children may evaluate the same script quite differently depending again on their previous learning histories.

HOW SCRIPTS ARE RETRIEVED FROM MEMORY

The subject's current emotional state, coupled with both the objective properties of the current stimulus situation and the evaluative cognitions cued by the stimulus

situation, determine which scripts for behaviour will be retrieved from memory. Not all scripts that are retrieved will be employed, however. Before acting out the script, the child re-evaluates the appropriateness of the script in light of existing internalized social norms and examines the likely consequences. There may be great individual differences in the extent of this evaluation. Some children may not have the cognitive capacity to engage in a thorough evaluation. Children may differ in their capacities to think about the future and in their concern with the future. Generally, the more a child focuses on immediate consequences and the less the child is concerned with the future, the more appropriate an aggressive solution to a social problem may seem. Children may also misperceive the likely consequences of an aggressive act because of a biased reinforcement history or a biased exposure to scenes of others behaving aggressively. A child with a low perceived self-efficacy for prosocial behaviours may turn to aggressive scripts by default. But perhaps the most important component of a script's evaluation is the extent to which it is perceived as congruent with the child's self-regulating internal standards. Scripts that violate the social norms that a child has internalized are unlikely to be encoded. A child with weak or non-existent internalized prohibitions against aggression or who believes that everyone behaves aggressively is much more likely to encode new aggressive scripts for behaviour. The problem is that, as Bandura (1986, p. 21) says, 'Forceful actions arising from erroneous beliefs often create social effects that confirm the misbeliefs.' The aggressive boy's belief that everyone behaves aggressively is likely to be confirmed by the behaviour of those around him.

ENCODING AND REHEARSAL OF SCRIPTS

So far, we have examined how existing scripts may be accessed and used to guide behaviour, and how certain individual and environmental factors could promote the use of aggressive scripts. Within this framework an habitually aggressive child is one who regularly retrieves and employs scripts for social behaviour that emphasize aggressive responding. We have noted a number of factors that might promote the retrieval and utilization of aggressive scripts. It may be, for example, that the cues present in the environment trigger the recall only of aggressive scripts. However, the regular retrieval and use of aggressive scripts would suggest above all that a large number of aggressive scripts have been stored in memory. Thus, we must examine the process through which scripts are learned.

It is hypothesized that scripts are stored in memory in much the same way as are programmes and strategies for intellectual behaviour—through a two-component process involving an initial encoding of observed behaviours followed by repeated rehearsals. By encoding is meant the 'formation of a representation of an external stimulus in the memory system' (Kintsch, 1977, p. 485). A script may be closely associated with specific cues in the encoding context, or may be an abstraction unconnected to specific cues. To encode an observed sequence of behaviours as a script, a child must first attend to the sequence. Thus, scripts with particularly salient cues for the child are more likely to be encoded. However, many observed sequences might never be encoded because the child perceives them as inappropriate. Here, again, the child's current emotional state and current memory contents may exert some influence. When highly aroused and angry, for example, children may view a physically

active sequence of behaviours as more appropriate than they would otherwise. A young boy who can only recall seeing aggressive behaviours is more likely to encode a newly observed aggressive behaviour than is a boy whose mind is filled with memories of prosocial solutions.

To maintain a script in memory, a child probably has to rehearse it from time to time. The rehearsal may take several different forms from simple recall of the original scene, to fantasizing about it, to play acting. The more elaborative, ruminative type of rehearsal characteristic of children's fantasizing is likely to generate greater connectedness for the script, thereby increasing its accessibility in memory. Also, through such elaborative rehearsal the child may abstract higher-order scripts representing more general strategies for behaviour than the ones initially stored. Of course, rehearsal also provides another opportunity for re-evaluation of any script. It may be that some scripts initially accepted as appropriate (under specific emotional and memory states) may be judged as inappropriate during rehearsal.

In order for a script to influence future behaviour, it not only must be encoded and maintained in memory, but it must also be retrieved and utilized when the child faces a social problem. Thus, for example, a script would be much more likely to be utilized if the same specific cues were present in the environment at retrieval time as were present at encoding time.

ENACTIVE LEARNING

As mentioned above, the transformation of a child's initial aggressive behaviour into habitual aggressive behaviour may depend as much on the responses of the child's environment to the aggression as on other causal factors. One of the puzzling aspects of habitual aggressive behaviour is why it persists in the face of so many apparently negative consequences. One possibility is that children might misperceive the consequences of their actions either because they focus on the wrong dimension of feedback or because they do not look far enough ahead. For example, a boy who knocks another child down in order to grab a ball that he wants may focus on the immediate fact that he has obtained the ball and not attend to the longer-term social ostracization that follows his act. By the time such ostracization becomes salient, the precipitating act may be so far removed in time that no connection can be made. However, even the child who perceives the immediate negative consequences of an aggressive act may fail to learn alternative scripts. Generally, prosocial solutions to social problems are less direct and more complex than aggressive solutions. If a child cannot think of any such solutions, as might be the case with a child of limited intellectual competence, the child may have no alternative to a direct aggressive solution. For the more intellectually able boy, another possibility exists, however, in addition to learning a new script. Rather than change his aggressive behaviours, which perhaps provide immediate gratification on some dimensions, the boy alters his internal self-regulatory standards to provide less negative feedback. One way to accomplish such a change is by incorporating some of the readily available aphorisms about aggression into one's regulatory schemata. The boy who is told that he is bad because he pushed others out of the way may shrug his shoulders and think, 'Nice guys finish last'. The boy who shoves a child who bumped into him may think, 'An eye for an eye'. Internalized norms against aggression may also be reduced when many others are observed

behaving aggressively, either in person or in the media.

Within this framework, what causes one child to learn more aggressive scripts than another? One possibility is that enactive learning plays the primary role. The aggressive child has tried various social strategies and only the aggressive ones have resulted in positive reinforcement. These strategies, therefore, have been rehearsed most and are the most readily accessible. Certainly if a specific aggressive response is reinforced, the script that suggested that response is more likely to be retrieved and to be employed in the future. Furthermore, the effect of the reinforcement may generalize to scripts that are abstractions of the specific script, promoting a generalized disinhibition of aggression. The boy who solves a social problem successfully by hitting will be more likely in the future not just to hit, but to kick, punch, or push. Nevertheless, it is difficult to believe that the complex scripts for social behaviour which children rapidly acquire are the result of random emission and selective reinforcement. The laboratory evidence suggests that, on the contrary, scripts for social behaviour are often encoded from patterns of behaviours observed in others. Just as a boy may encode a motor programme for throwing a football from observing others throw, a boy may encode a script for hitting those who victimize him from observing others hit those who victimize them.

According to this model, children are constantly observing others, encoding what they see that seems salient, and integrating these observations into encoded scripts for behaviour. Not every aggressive behaviour they observe is encoded or stimulates the encoding of an aggressive script. Not every aggressive script is retained or remains accessible for long. The more salient an observed aggressive scene is to the child initially, and the more the child ruminates upon, fantasizes about, and rehearses the observed scene, the more likely it is that an aggressive script based on that scene is recalled and followed in a social problem-solving situation. The more the aggressive scene is consistent with the scripts for behaviour that the child has already acquired, the more easily it is integrated into memory. The more the aggressive scene is perceived as realistic and the more the child can identify with an aggressive actor in the scene, the more salient the scene seems to the child. The child constructs scripts for behaviour that have subjective utility as potential strategies for social problem-solving. Aggressive acts perceived as unreal and performed by actors with whom the child cannot identify do not fulfil this requirement.

PARENTAL INFLUENCES

While the proposed model emphasizes the role of the child's cognitive processes, the role of the parents cannot be ignored. Parents may provide critical input into both the enactive and the observational learning processes. The parents' aggressiveness, punitiveness, and lack of nurturance serve as models of behaviour for the children to observe and incorporate into their own behavioural repertoires, especially when they see the rewards such behaviours provide. Furthermore, the child's cognitive processes may well be influenced by the parent's own cognitive processes. For instance, a parent who views the world as hostile is apt to have a child who views the world as hostile. In addition, parents can intervene to reinforce differentially their children's aggressive and prosocial responses, to moderate their children's exposure to aggressive scripts, and to convince their children that the violent solutions to social problems which they

are observing or utilizing are not realistic or adaptive. Such interventions would reduce the likelihood that the children would encode the aggressive scripts they see or utilize the aggressive scripts that are encoded. Equally important, parents can intervene to help their children learn prosocial scripts which will compete with aggressive scripts as guides for behaviour (Eron, 1986; Eron and Huesmann, 1984).

THE TRAIT OF AGGRESSION

It is our assertion that severe, antisocial aggression usually emerges early in life. Clearly, certain genetic characteristics and perinatal or traumatic events predispose a child to develop aggressive habits. However, it is the convergence of these factors with conditions conducive to the learning of aggressive behaviour that engenders the development of a lasting trait of aggressiveness. Internally, this trait can be viewed as a collection of 'scripts' for social behaviour emphasizing aggressive responding and the associative structure relating these scripts to each other, to external cues, and to outcome expectancies. In this article we have argued that the construction and maintenance of these scripts obey well understood principles of human information processing. Once established, these cognitive structures may be extremely resistant to change. Through elaborative rehearsal of specific scripts, more general abstract scripts for social behaviour are formed which are equally resistant to change. The result is a set of cognitive structures that promote consistent forms of social behaviour over time and across situations. If the behaviours are aggressive, then the cognitive structures can be said to represent a trait of aggressiveness.

REFERENCES

- Bandura, A. (1973). *Aggression: A Social Learning Analysis*, Prentice-Hall, Englewood Cliffs, NJ.
- Bandura, A. (1986). *Social Foundations of Thought and Action: A Social Cognitive Theory*, Prentice-Hall, Englewood Cliffs, NJ.
- Berkowitz, L. (1974). 'Some determinants of impulsive aggression: The role of mediated associations with reinforcements for aggression', *Psychological Review*, **81**: 165-176.
- Berkowitz, L. (1984). 'Some effects of thought and anti- and prosocial influences of media events: A cognitive-neoassociation analysis', *Psychological Bulletin*, **95**: 410-427.
- Block, J. (1968). 'Some reasons for the apparent inconsistency of personality', *Psychological Bulletin*, **70**: 210-212.
- Dodge, K. A., McClasky, C. L. and Feldman, E. (1985). 'A situational approach to the assessment of social comprehension in children', *Journal of Consulting and Clinical Psychology*, **53**: 344-353.
- Epstein, S. (1977). 'Traits are alive and well'. In: Magnusson, D. and Endler, N. S. (Eds), *Personality at the Crossroads: Current Issues in Interactional Psychology*, pp. 83-98, Erlbaum, Hillsdale, NJ.
- Epstein, S. and O'Brien, E. J. (1985). 'The person-situation debate in historical and current perspective', *Psychological Bulletin*, **98**: 513-537.
- Eron, L. D. (1980). 'Prescription for the reduction of aggression', *American Psychologist*, **35**: 244-252.
- Eron, L. D. (1982). 'Parent-child interaction, television violence, and aggression of children', *American Psychologist*, **37**: 197-211.
- Eron, L. D. (1986). 'Interventions to mitigate the psychological effects of media violence on aggressive behavior', *Journal of Social Issues*, **42**: 155-170.

- Eron, L. D. (1987). 'The development of aggressive behavior from the perspective of a developing behaviorism', *American Psychologist*, **42**: 435-442.
- Eron, L. D. and Huesmann, L. R. (1984). 'Relation of prosocial behavior to the development of aggression and psychopathology', *Aggressive Behavior*, **10**: 201-211.
- Eron, L. D., Huesmann, L. R., DuBow, E., Romanoff, R. and Yarmel, P. W. (1987). 'Aggression and its correlates over 22 years'. In: Crowell, D. H., Evans, I. M. and O'Donnell, C. R. (Eds), *Childhood Aggression and Violence*, Plenum Press, New York.
- Eron, L. D., Walder, L. O. and Lefkowitz, M. M. (1971). *The Learning of Aggression in Children*, Little Brown, Boston, MA.
- Fagot, B. and Hagan, R. (1985). 'Aggression in toddlers: Responses to the assertive acts of boys and girls', *Sex Roles*, **12**: 341-351.
- Hamburg, D. A. and Van Lawick-Goodall, J. (1974). 'Factors facilitating development of aggressive behavior in chimpanzees and humans' In: DeWit, J. and Hartup, W. W. (Eds), *Determinants and Origins of Aggressive Behavior*, Mouton, The Hague, The Netherlands.
- Hogan, R., DeSoto, C. B. and Solano, C. (1977). 'Traits, tests and personality research', *American Psychologist*, **32**: 256-264.
- Holmberg, M. C. (1980). 'The development of social interchange patterns from 12 to 42 months', *Child Development*, **51**: 448-456.
- Huesmann, L. R. (1982). 'Television violence and aggressive behavior'. In: Pearl, D., Bouthilet, L. and Lazar, J. (Eds), *Television and Behavior: Ten Years of Programs and Implications for the 80's*, pp. 126-137, U.S. Government Printing Office, Washington, DC.
- Huesmann, L. R. (1986). 'Psychological processes promoting the relation between exposure to media violence and aggressive behavior by the viewer', *Journal of Social Issues*, **42**: 125-139.
- Huesman, L. R. (1988). 'An information processing model for the development of aggression', *Aggressive Behavior*, **14**: 13-24.
- Huesmann, L. R. and Eron, L. D. (1984). 'Cognitive processes and the persistence of aggressive behavior', *Aggressive Behavior*, **10**: 243-251.
- Huesmann, L. R. and Eron, L. D. (1986). *Television and the Aggressive Child: A Cross-National Comparison*, Erlbaum, Hillsdale, NJ.
- Huesmann, L. R., Eron, L. D., Lefkowitz, M. M. and Walder, L. O. (1984). 'The stability of aggression over time and generations', *Developmental Psychology*, **20**: 1120-1134.
- Inoff-Germain, G., Arnold, G. S., Nottelman, E. D., Susman, E., Cutler, G. B., Jr. and Chrousos, G. P. (1988). 'Relations between hormone levels and observational measures of aggressive behavior of young adolescents in family interactions', *Developmental Psychology*, **24**: 129-139.
- Kagan, J. and Moss, H. G. (1962). *Birth to Maturity: A Study of Psychological Development*, Wiley, New York.
- Kintsch, W. (1977). *Memory and Cognition*, Wiley, New York.
- Lagerspetz, K. M. J. (1981). 'Combining aggressive studies in infra-humans and man'. In: Brain, P. F. and Benton, D. (Eds), *Multidisciplinary Approaches to Aggression Research*, pp. 390-400, Elsevier, Amsterdam.
- Lefkowitz, M. M., Eron, L. D., Walder, L. O. and Huesmann, L. R. (1977). *Growing Up to Be Violent*, Pergamon Press, New York.
- Lidberg, L. S., Levander, D., Schalling, F. and Lidberg, Y. (1978). 'Urinary catecholamines, stress and psychopathy: A study of arrested men awaiting trial', *Psychosomatic Medicine*, **40**: 116-125.
- Magnusson, D. (1985). 'Adult delinquency in the light of conduct and physiology at an early age'. Reports from the Department of Psychology, pp. 1-18, University of Stockholm, Stockholm, Sweden.
- Magnusson, D. and Endler, N. S. (Eds) (1977). *Personality at the Crossroads: Current Issues in Interactive Psychology*, Erlbaum, Hillsdale, NJ.
- Mednick, S. A., Gabrielli, W. F. and Hutchings, B. (1984). 'Genetic influences in criminal convictions: Evidence from an adoption cohort', *Science*, **224**: 891-894.
- Mischel, W. (1968). *Personality and Assessment*, Wiley, New York.
- Mischel, W. (1984). 'Convergences and challenges in the search for consistency', *American Psychologist*, **39**: 351-364.

- Mischel, W. (1985). 'Diagnosticity of situations', Paper presented at the meeting of the Society for Experimental Social Psychology, Evanston, IL.
- Moskowitz, D. S., Schwartzman, A. E. and Ledingham, J. E. (1985). 'Stability and change in aggression and withdrawal in middle childhood and early adolescence', *Journal of Abnormal Psychology*, **94**: 30-41.
- Moyer, K. E. (1987). *Violence and Aggression: A Physiological Perspective*, Paragon House, New York.
- Olweus, D. (1977). 'Aggression and peer acceptance in adolescent boys: Two short-term longitudinal studies of ratings', *Child Development*, **48**: 1301-1313.
- Olweus, D. (1979). 'The stability of aggression patterns in human males: A review', *Psychological Bulletin*, **85**: 852-875.
- Radke-Yarrow, M. and Zahn-Waxler, L. (1984). 'Roots, motives, and patterns in children's prosocial behavior'. In: Staub, E., Bur-Tal, D., Karylowski, J. and Reykowski, J. (Eds), *Development and Maintenance of Prosocial Behavior*, pp. 81-99, Plenum Press, New York.
- Rose, R. J., Koskenvuo, M., Kaprio, J., Sarna, S. and Langinvainio, H. (1988). 'Shared genes, shared experiences and similarity of personality: Data from 14,288 adult Finnish co-twins', *Journal of Personality and Social Psychology*, **54**: 161-171.
- Rushton, J. P., Fulker, D. W., Neale, M. C., Nias, D. K. and Eysenck, H. J. (1986). 'Altruism and aggression: The heritability of individual differences', *Journal of Personality and Social Psychology*, **50**: 1192-1198.
- Scott, J. P. (1958). *Aggression*, University of Chicago Press, Chicago, IL.
- White, J. W. (1983). 'Sex and gender issues in aggression research'. In: Geen, R. G. and Donnerstein, E. I. (Eds), *Aggression*, Vol. 2, pp. 1-26, Academic Press, New York.

RÉSUMÉ

L'agression, en tant que variable d'une recherche psychologique, a les caractéristiques d'un trait de personnalité profondément enraciné. L'agression est relié à des facteurs génétiques et physiologiques. Elle apparaît tôt dans la vie mais est influencée et formée par les expériences vécues d'un enfant; elle est associée de façon consistante au sexe, est stable et prédictible dans le temps et les situations. Il n'en découle pourtant pas que l'agression doive être considérée comme une 'conduite' ('drive'). Nous affirmons, au contraire, dans cet article que l'agression est représentée de manière interne par (a) un ensemble de 'scripts' spécifiques du comportement social à l'intérieur desquels une réaction agressive est accentuée et (b) la structure associative qui relie ces scripts entre eux, à des éléments excitants externes et aux conséquences attendues du comportement montré. Le développement et le maintien de ces scripts obéissent à des principes bien connus du traitement de l'information humain. Une fois établi, ces réseaux de scripts sont extrêmement résistants au changement. Le résultat en est un ensemble de structures cognitives qui activent des formes consistantes de comportement instrumental et hostile dans le temps et les situations.

ZUSAMMENFASSUNG

Aggression als Gegenstand psychologischer Forschung weist die Kennzeichen eines tief eingewurzelten Persönlichkeitsmerkmals auf: Sie hat Beziehungen zu genetischen und physiologischen Faktoren; sie entsteht früh im Leben, wird jedoch durch die Lebenserfahrungen eines Kindes beeinflusst und geformt; sie weist konsistente Beziehungen zum Geschlecht auf und ist über Zeit und Situationen hinweg stabil und vorhersagbar. Daraus folgt jedoch nicht, daß Aggression als Trieb konzipiert werden muß. Vielmehr argumentieren wir in diesem Artikel, daß Aggression am besten repräsentiert wird als eine Konfiguration spezifischer 'Scripts' für Sozialverhalten, welche aggressives Reagieren betonen. Die Konstruktion und Aufrechterhaltung dieser 'Scripts' folgt gut erforschten Prinzipien menschlicher Informationsverarbeitung. Einmal etabliert, können diese Netzwerke von 'Scripts' extrem resistent gegenüber Veränderungen sein. Das Resultat ist eine kognitive Struktur, welche über Zeit und Situationen hinweg konsistente Formen instrumenteller und feindseliger Aggression fördert.