

Stability of Aggression Over Time and Generations

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In a study spanning 22 years, data were collected on the aggressiveness of over 600 subjects, their parents, and their children. Subjects who were the more aggressive 8-year-olds at the beginning of the study were discovered to be the more aggressive 30-year-olds at the end of the study. The stability of aggressive behavior was shown to be very similar to the stability of intellectual competence, especially for males. Early aggressiveness was predictive of later serious antisocial behavior, including criminal behavior, spouse abuse, traffic violations, and self-reported physical aggression. Furthermore, the stability of aggression across generations within a family when measured at comparable ages was even higher than the within individual stability across ages. It is concluded that, whatever its causes, aggression can be viewed as a persistent trait that may be influenced by situational variables but possesses substantial cross-situational constancy.

Interpersonal aggression is a problem whose dimensions in terms of cost to life and property are obviously staggering. Decades of research into the root causes of aggression have yielded numerous models purporting to explain the ontogeny of different aspects of aggressive behavior. Yet, there is little sign that the responses of either the criminal justice or psychological establishments based on these theories have had much impact. It now seems clear that a major reason for such failures is that aggression is a relatively stable, self-perpetuating behavior that is not readily amenable to change by the time it usually comes to the attention of society.

Aggression as a characteristic way of solving

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social problems usually emerges early in life. Genetic, physiological, and other constitutional factors undoubtedly play a role in many cases, but the presence of the "appropriate learning conditions" is probably more important in most cases (Eron, Walder, & Lefkowitz, 1971; Lefkowitz, Eron, Walder, & Huesmann, 1977). The "appropriate learning conditions" 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. Nevertheless, in such situations only some children become seriously aggressive. Yet by themselves, simple observational learning and reinforcement models do not seem to be adequate explanations. An extensive array of environmental, familial, and child characteristics have been shown to be weakly predictive of which child will be more aggressive; yet, none could be called a sufficient or necessary condition for antisocial aggression. Severe antisocial, aggressive behavior seems to occur only when there is a convergence of a number of these factors during a child's development (Eron, 1982).

Despite the considerable evidence that severe, antisocial aggression is greatly affected by the environmental and learning conditions

to which the child is exposed, there is accumulating evidence that each individual develops a characteristic level of aggressiveness, which remains relatively stable across situations. The current study extends the investigation of this stability across decades and generations. However, the stability of aggressive behavior over shorter time periods has already been documented by Olweus (1979). In his review of 16 separate studies with lags ranging from 6 months to 21 years, Olweus has demonstrated the stability of aggressive behavior in males. The disattenuated stability coefficients ranged from .98 for Olweus' (1977) own study of eighty-five 13-year-olds in Sweden over a 1-year lag to .36 for Kagen and Moss's (1962) study of thirty-six 5-year-olds, who were followed for 18 years. Unfortunately, only one investigation with a lag of 5 years or more involved a substantial sample size—Eron, Huesmann, Lefkowitz, and Walders's (1972) study of 211 boys and 216 girls over a 10-year lag. Olweus (1978) found that stability coefficients generally decreased linearly with lag. However, his data also reveal that for the same length lag, stabilities are greater for older boys than younger boys. Thus, the decrease in stability with time is almost certainly nonlinear and approaches asymptote for longer lags.

In his 1979 review, Olweus reported little stability data for girls. However, limited data do exist. In their longitudinal study of children from age 8 to 19, Eron et al. (1972) found that the stability of aggression for girls was slightly higher than for boys. However, Olweus (1981) located five other longitudinal studies involving girls, and among these the stability of aggression for the girls was consistently lower than for comparable samples of boys. Nevertheless, aggression in girls has been reasonably stable in all of these investigations.

Two very recent reports have added to the evidence suggesting that aggression is a stable trait. Roff and Wirt (1984) followed a sample of over 500 low-peer-status boys and over 500 low-peer-status girls through archival record sources into young adulthood. They found that primary school measures of aggression were significantly related to later delinquency and criminal behavior for males but not for females. However, Moskowitz and Schwartzman (1983) followed a sample of 377 aggress-

sive or aggressive and withdrawn children for 3 years and found substantial stabilities for both boys and girls.

Although these existing studies seem to establish fairly clearly that aggressiveness is not a transient behavior for most children, they can be criticized on a number of grounds. In many of the studies, for example, Kagan and Moss (1962), the sample size was quite small, and the longitudinal correlations may therefore be inaccurate estimations of the population correlations. In several studies, for example, Roff and Wirt (1984), only a subsample of children who were initially at the extremes of the distribution were retested. Such a restriction in the range of the sample may yield stability coefficients that underestimate the population coefficients. Although Olweus (1979) eliminated from his review studies in which the primary measure of aggression at both times was self-report, communalities in other measurement procedures over time may have contributed to the apparent stability. Finally, although aggression has been measured in a variety of ways in the existing studies, only a few researchers have examined the extent to which their measures of childhood aggression relate to adult criminality and antisocial behavior in males and females.

The current study has overcome most of these problems. In it a substantial sample of males and females were examined at three times over the course of 22 years on multiple measures of aggression, including antisocial and criminal behavior. The stability of an hypothesized latent trait of aggression was then tested with linear structural models that allow the different measures of aggression to be integrated.

Method

Subjects

The subjects originally comprised the entire population of youngsters enrolled in the third grade in a semi-rural county in New York State (Columbia County). This included approximately 870 youngsters whose modal age at the time was 8 years. These youngsters were tested in their classrooms with a variety of procedures. We also interviewed personally approximately 75% of their mothers and fathers. Ten years later, we reinterviewed 427 of the original subjects (211 boys, 216 girls; modal age, 19). A small subsample was also interviewed at modal age 13, but these data reflect too limited and biased a sample to be considered in this article. However, the stability data

from both the 10-year lag and the two 5-year lags have been reported elsewhere (Eron et al., 1972; Lefkowitz, Eron, Walder, & Huesmann, 1972; Olweus, 1979).

In 1981 we again tracked down as many of the original subjects as possible. Their modal age was now 30. We were able to locate and interview 295 of the original subjects in person and another 114 by mail and telephone for a total of 409 (198 males, 211 females). We were also successful in obtaining interviews with the spouses of 165 of the interviewed subjects and with 82 of the subjects' own children who at the time were approximately the same age as the subjects when first seen in 1960. Children under 5 were not interviewed, and only one child (the oldest) from each family was interviewed. Nevertheless, the 82 children interviewed represent over half of those reinterviewed subjects who had children. Thus, there are substantial samples of data on aggression about and from three generations within the subject's family: the subject and the subject's spouse, the subject's parents, and the subject's child.

In addition to the interview, we obtained data from the New York State Divisions of Criminal Justice Services and Motor Vehicles about the subjects who were interviewed and any other subjects who were in the original sample but whom we did not see for follow-up interviews. We obtained at least some data from these archives on 542 of our original subjects. Coupled with the interview data, this gave us some 1981 follow-up data on 632 of our original subjects (358 males, 274 females). Of these, 366 had also been interviewed after the 10-year lag in 1970.

Early Measures

Beginning from a definition of aggression as "an act whose goal response is injury to an organism or organism surrogate (Dollard, Doob, Miller, Mower, & Sears, 1939, p. 11)," Eron and his colleagues developed in the 50s a technique for measuring a child's aggressiveness in everyday life (Eron et al., 1971; Walder, Abelson, Eron, Banta, & Laulich, 1971).

This technique, the peer-nomination index of aggression, was used as the primary measure of child aggression in 1960. With this procedure, each child's aggression score is derived from the responses of a sample of his or her peers—usually classmates. The procedure is to have all children in the sample name as many other children in the sample as they wish who behave in a certain way, for example, "Who pushes or shoves children?" The aggression score is the percentage of times a child is nominated on 10 aggression items out of the potential number of times he or she could have been nominated. The scale was established only after an extensive developmental period and possesses exceptional psychometric properties. In a recent sample of 748 children, the scale's internal consistency (coefficient alpha) was found to be .96 and its 1-month test-retest reliability was .91 (Huesmann, Lagerspetz, & Eron, 1984). Its criterion validity has been established by numerous studies relating children's peer nomination scores to their scores on other measures of aggression (Eron et al., 1971). Its construct validity has been established by its ability to predict the gender, age, and other differences that most theories of aggression predict (Eron et al., 1971; Lefkowitz, Eron, Walder, & Huesmann, 1977; Huesmann et al., 1984).

Over the course of 25 years, the peer-nomination measure has been used in at least 10 countries in over 50 different studies with consistent success (e.g., Feshbach & Singer, 1971; Olweus, 1979; Pitkanen-Pulkkinen, 1979; Sand et al., 1975).

Another variable recorded during the first wave that reflects primarily the subject's parents' aggression was the severity of punishment the parents reported they would use in response to specific misdeeds by the subject. The misdeeds were the same as those used in the peer-nomination questions. In addition to the aggression measures, we obtained an IQ score for each child during the first wave with the California Test of Mental Maturity (Sullivan, Clark, & Tiegs, 1957). The stability of intellectual competence over time will be reported for our sample to provide an anchor for the interpretation of the stability of aggression. Because IQ and aggression are usually negatively correlated, the effects of IQ also were partialled out from the stability coefficients for aggression.

Later Measures

Indications of the subjects' aggression 22 years later at age 30 were derived from self-ratings, ratings of the subject by the spouse, and citations of offenses by the New York State Divisions of Criminal Justice and Traffic. Self-ratings included the sum of Minnesota Multiphasic Personality Inventory (MMPI) scales F, 4 and 9, which previous research (Huesmann, Lefkowitz, & Eron, 1978) has indicated is a reliable and valid measure of overt aggression, and the subject's self-report of committing physical aggression against others. Ratings by the spouse of the subject's aggression included behavior directed toward him or her by the subject. The items came from the Straus Home Violence Questionnaire (Straus, Giles, & Steinmetz, 1979). The Criminal Justice scores were the total number of convictions in New York State in the previous 10 years and ratings of the seriousness of the corresponding offenses. The latter is a system used by the New York State Criminal Justice Division in which each type of offense is assigned a specific seriousness score (Rossi, Bose, & Berk, 1974). Two other measures of aggressiveness obtained from state records were each subject's total number of moving traffic violations and number of convictions for driving while intoxicated. For subjects who had children we also obtained ratings of how severely they would punish their children for specific misdeeds. This measure was the same one used with their own parents 22 years earlier. For the 82 children whom we were able to interview individually, we also obtained self-ratings of aggression on the same 10 items used in the peer-nomination questionnaire, as well as self-ratings of the extent to which they engaged in aggressive fantasy. Finally, all interviewed subjects and children were given the Wide Range Achievement Test (WRAT; Jastak & Jastak, 1978) to measure their intellectual competence.

On the subsample of 366 subjects who had been interviewed in 1970, three primary measures of aggression were obtained. These measures were peer-nominated aggression, the sum of MMPI scales F, 4 and 9, and their self-ratings of physical aggression. These measures have been described in other publications (e.g., Lefkowitz et al., 1977).

Procedure

The procedures used in the first and second waves of the study (1960, age 8; 1970, age 19) have been reported in detail elsewhere (Eron et al., 1971; Lefkowitz et al., 1977). Therefore, we will describe here only the procedures used during the last data collection in 1981.

Subjects were contacted by mail and telephone. Addresses were obtained from local directories, a network of informants, newspaper stories, and newspaper advertisements. Subjects were paid \$40.00 for an interview lasting 1 to 2 hr. The interview was administered in our field office on a microcomputer. The questions were displayed on a TV-type monitor and answered by the respondent typing into the computer keyboard. With this procedure, the subjects' responses were immediately punched into the computer and stored on floppy disks, which were then read by more powerful computers. This was an efficient, time-saving, relatively error-free procedure. Respondents learned the procedure quickly, enjoyed the novelty, and were reassured of the confidentiality of their responses. It is very likely that using the computerized interview added to the validity of information obtained.

At the close of the interview, the subject was asked for permission to contact the spouse for an interview, and if the subject had a child age 6 to 12, permission was sought to interview that child, or the oldest such child, if there were more than one. Spouses were also paid \$40.00 per interview and children were paid \$20.00. Subjects who were unable to come to the field office for interviews were interviewed by telephone and asked to fill out a mail questionnaire. They were paid \$40.00 if the interview was sent back within 2 weeks. Certain of the measures that required personal interaction, the WRAT for example, were eliminated for the postal and telephone sample. However, for those measures that could be obtained through the mail, the results were merged with those obtained in the regular procedure. Spouses and children were not interviewed by mail.

Results

The effect of attrition over 22 years on the composition of the sample was evaluated by examining the mean 1960 peer-nominated aggression scores for subjects who were interviewed either personally or by mail with those who were not interviewed at all in 1981. Male subjects who were *not* interviewed in 1981 had a significantly higher mean aggression score in 1960 than male subjects who were interviewed (17.3 versus 12.9), $F(1, 294) = 6.6, p < .01$. However, there was no difference between the personal and postal interview groups. As for the female subjects, there were no significant differences in 1960 aggression score among any of the groups, whether interviewed by mail or in person. Male subjects, of course, had significantly higher aggression scores than females in each group.

Longitudinal Correlations of Aggression Within Individuals

Correlations between the early and later measures of aggression are shown in Table 1. It is apparent that over 22 years there is good predictability from early aggression to later aggression, especially in the case of males. Also in this table are the correlations between the early IQ measure, the California Test of Mental Maturity, and the Spelling, Reading, and Arithmetic scores of the WRAT 22 years later. It is apparent that the stability of aggression holds up across method, informant, and situation as well as time. Especially impressive is the correlation between aggression at age 8 and later encounters with the law, as indicated by driving and criminal offenses.

The correlations in Table 1 must be taken as lower bounds for the true stability of aggression (Block, 1963). There are at least four identifiable factors that would lead to an underestimation of the population true score correlations. First, of course, is the limited reliability of some of the measures. Although the peer-nominations and the standardized tests (MMPI and WRAT) have reasonably high reliabilities (.85 to .95), the data gathered from archival records have unknown reliabilities, and some of the other rating scales have only moderate reliabilities. Thus, the observed correlations will be attenuated from the true score correlations. Second, because a disproportionate number of the original subjects who were not interviewed were high-aggressive males, the range of aggression scores in the male sample has been truncated. This restriction in range would also be expected to bias the sample correlations below the population correlations. Third, the distributions of scores on several of the rating scale measures of aggression are highly positively skewed with standard deviations exceeding the mean. For example, for boys for the 1960 peer-nominated measure of aggression, skewness was 2.4 and for 1980 self-ratings of physical aggression skewness was 3.9. As a result, the correlation coefficient is theoretically limited to have a maximum of less than 1, and the correlation as a measure of stability underweights the concentration of scores at the low end of the scale and overweights extreme scores.

One can at least partially correct for the bias due to the skewed distributions by appropriate transformations of raw scores, for example, log, logit, or square root. In Table 1 the correlations that changed more than a few points following such transformations are indicated in parenthesis. In the remainder of this article all correlations will be based on scores that have been transformed to reduce their skewness. The last, but perhaps most important, reason why the correlations underestimate the stability of aggression is that the measures of aggression at ages 8 and 30 are not identical. Each may be measuring a slightly different aspect of aggressive behavior, and the correlations only measure the stability of the aspects common to the measures.

Adult Behaviors for High- and Low-Aggressive Children

A more representative demonstration of the stability of aggression that is less sensitive

to these biases can be obtained by comparing groups of high- and low-aggressive 8-year-olds on their later behaviors. These relations are shown graphically in Figures 1 to 4. The boys and girls were divided separately into high-, medium-, and low-aggressive groups according to whether they fell in the upper quartile, lower quartile or middle 50% for their gender on peer-nominated aggression at age 8. Then the groups' mean scores on aggressive behaviors at age 30 were compared. As these graphs show, the high group of aggressive eight-year-old males scored significantly higher 22 years later on the MMPI aggression measure, on the punishment of their children, on criminal convictions, on seriousness of criminal offenses, on moving traffic violations, and on drunk driving. They also scored higher on aggression toward their spouses although the difference was not significant due to the small number of highly aggressive male subjects whose spouses could

Table 1
Correlations of Peer-Nominated Aggression and IQ at Age 8 With Aggression and Intellectual Competence at Age 30

Age 30 measures	Males			Females		
	N	Age 8 aggression	Age 8 IQ	N	Age 8 aggression	Age 8 IQ
		r	r		r	r
Aggression						
MMPI Scales F + 4 + 9	190	.30****	-.19***	209	.16** (.20****)	—
Spouse abuse	88	.27***	—	74	—	—
Punishment of child by subject	63	.24*	—	96	.24**	-.21***
Criminal justice convictions	335	.24****	-.15***	207	— (.10)	—
Seriousness of criminal acts	332	.21****	-.14***	207	— (.15**)	—
Moving traffic violations	322	.21****	-.10*	201	—	—
Driving while intoxicated	322	.29**** (.24****)	—	201	—	—
Self-rating of physical aggression	193	.25**** (.29****)	—	209	—	—
Intellectual competence						
WRAT Spelling	136	-.30****	.54****	158	-.35****	.44****
Reading	136	-.20**	.56****	158	-.37****	.47****
Arithmetic	136	-.20**	.55****	158	-.35**** (-.43****)	.42****

Notes. The correlations shown in parentheses are those that changed .04 or more when skew-correcting transformations were applied. MMPI = Minnesota Multiphasic Personality Inventory; WRAT = Wide Range Achievement Test. Correlations under .10 are not shown. Significance tests are two-tailed.

* $p < .10$. ** $p < .05$. *** $p < .01$. **** $p < .001$.

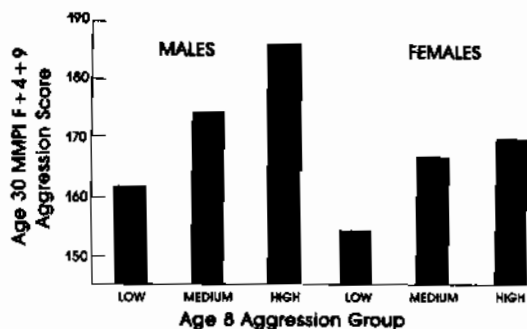


Figure 1. Mean aggression score on Minnesota Multiphasic Personality Inventory Scales F + 4 + 9 at age 30 according to a subject's peer-nominated aggression score at age 8. The group differences are significant for females, $F(2, 155) = 5.17, p < .007$, and for males, $F(2, 132) = 9.60, p < .0001$.

be interviewed ($N = 14$). The females classified in the high-aggression group at age 8 also scored significantly higher on the MMPI aggression scale, on punishment, and on criminality 22 years later, although the differences were less significant than for males. Unlike the males, moreover, the high-aggressive females did not differ from the other females in number of traffic violations by age 30.

Child Aggression and Adult Criminality

Perhaps the most impressive aspects of both the longitudinal correlations and the bar graphs is the relation between peer-nominated aggressive behavior at age 8 and adult crim-

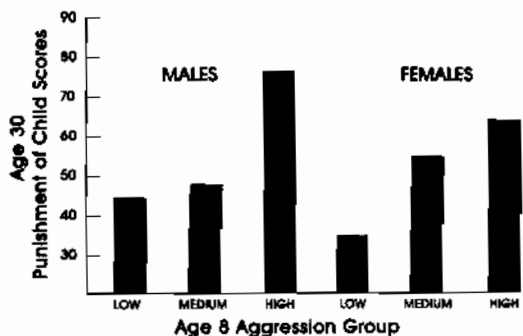


Figure 2. Mean score on punishment of child at age 30 according to a subject's peer-nominated aggression score at age 8. The group differences are marginally significant for females, $F(2, 93) = 2.33, p < .10$, and for males, $F(2, 60) = 2.94, p < .06$.

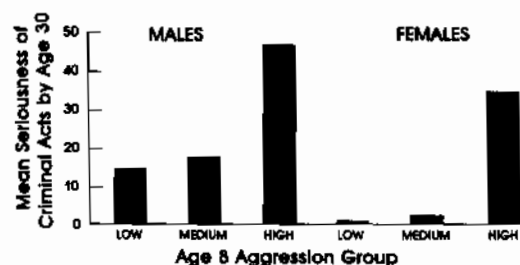
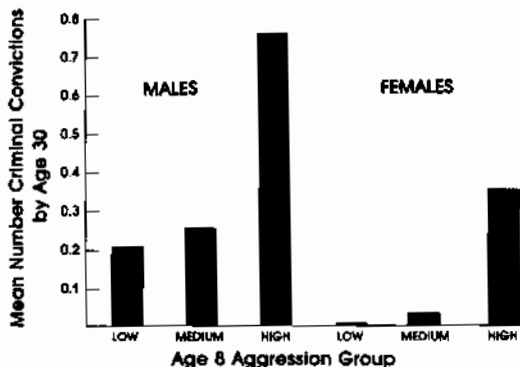


Figure 3. Mean criminal justice convictions and mean seriousness of crimes up to age 30 according to a subject's peer-nominated aggression score at age 8. The group differences are significant for males, $F(2, 319) = 4.87, p < .01$ and $F(2, 319) = 4.13, p < .02$.

inality. The children who are nominated as more aggressive by their third-grade classmates on the average commit more serious crimes as adults. In Table 2 the exact convic-

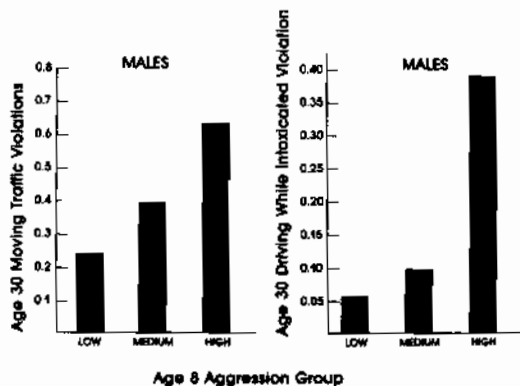


Figure 4. Mean traffic violations for male subjects up to age 30 according to their peer-nominated aggression score at age 8. The group differences are highly significant, $F(2, 319) = 4.23, p < .015$, for moving violations and $F(2, 319) = 10.4, p < .0001$ for intoxication.

Table 2
Proportion of Subjects Convicted for a Crime in New York State Before Age 30 According to Gender and Peer-Nominated Aggression at Age 8

Sex	Age 8 peer-nominated aggression		
	Low	Medium	High
Males	9/90 (10%)	25/163 (15%)	19/82 (23%)
Females	0/49 (0.0%)	2/110 (1.8%)	3/48 (6.3%)

tion rate is shown for each group of males and females. These data convincingly indicate that the peer nominations are measuring more than transient "boisterousness and incivility" (Cook, Kendzierski, & Thomas, 1983). These peer-nominations measure a characteristic aggressiveness in many children that evidences itself in severe antisocial behavior as a young adult.

Aggression, Intellectual Functioning, and Child Rearing

As has been demonstrated previously (Lefkowitz et al., 1977), aggression is significantly related to IQ; so it is fair to ask how much of the stability of aggression results from its correlation with intelligence. In this particular sample, IQ and aggression at age 8 were moderately correlated negatively ($-.27, p < .001$ for boys and $-.32, p < .001$ for girls). The relative contribution of the stability of IQ to the stability of aggression was evaluated by partial correlation analysis. These partial correlations of aggression over time with age 8 IQ partialled out are almost identical to the raw correlations. Thus, although IQ and aggression are related at age 8, the relation of early aggression to later aggression is independent of the relation between IQ and aggression. Whatever effect IQ has on aggression, it has already taken place before age 8 because subsequent change in aggression is no longer affected by IQ to any appreciable extent.

The overall predictability of adult aggression was evaluated with multiple regression equations using early aggression, birth factors, socioeconomic factors, intellectual factors and child-rearing styles as predictors. Multiple correlations of .37 to .45 were obtained in-

dicating that 15% to 20% of the variance in adult aggression is predictable over 22 years from these measures. As expected, by far the most significant regression coefficient belonged to early aggression for both boys and girls.

Path Analyses for Stability of Aggression Within Individuals

In Table 3, the skew-corrected correlations are shown for the rating scale measures over all three waves of measurement. If one compares the correlations from age 8 to 19 on those waves' common measures (peer nominations) with the correlations from age 19 to age 30 on those waves' common measures (MMPI F + 4 + 9 and Self-Rated Physical Aggression), one must conclude that stability seems to increase with age. In addition, aggression seems to be more stable for males than for females. However, as mentioned above, even the skew-corrected correlations probably underestimate the stability of aggression because the aggression measures are not perfectly reliable and because different measures of aggression were used in the different waves. One way to surmount this problem is by estimating coefficients of a structural model involving a latent variable representing the "trait" of aggression. A reasonable model for estimating stability is shown in Figure 5. The latent variables are denoted by round nodes and the manifest variables by square nodes. The blank latent variables represent all determinants of the manifest variables other than aggression and random error. For the model in Figure 5, the error variance of each manifest variable was specified a priori on the basis of previous reliability analyses. In addition, the degree to which a manifest variable measured the latent trait of aggression over time was assumed to be invariant. This yielded a model with 13 parameters and 21 equations having 8 degrees of freedom. The model was identified, although equality constraints had to be relaxed slightly to achieve standardized parameters.

The parameters of the model were estimated with the LISREL program (Joreskog & Sorbom, 1978). From the chi-square statistic one can see that the model fits the data well with the parameter values shown. The 11-

Table 3
Intercorrelations of Skew-Corrected Scores on Rating Scale Measures of Aggression

Measure	Males						Females							
	Age 8		Age 19		Age 30		Age 8		Age 19		Age 30			
	PEER AGG	PEER AGG	MMPI F+4+9	PHYS AGG	MMPI F+4+9	PHYS AGG	SPOUS ABUSE	PEER AGG	PEER AGG	MMPI F+4+9	PHYS AGG	MMPI F+4+9	PHYS AGG	SPOUS ABUSE
Age 8 Aggression Peer-Agg														
Age 19 Aggression Peer-Agg	.44****						.36****							
MMPI-F+4+9	.28****	.40****					.13*	.34****						
Physical-Agg	.13*	.42****	.28****				.19***	.13*	.20****					
Age 30 Aggression MMPI-F+4+9	.32****	.35****	.55****	.23***			.20***	.22***	.45****	.11				
Physical-Agg	.29****	.41****	.22****	.27****	.33****		—	.14*	.28****	.18**	.45****			
Spouse-Abuse	.25**	.25**	—	.16	.19*	.46****	—	—	.30**	—	.34****	.34****		
Pun-Child	.26**	.40**	.24	—	.22	.18	.27***	—	—	.37***	.13	.24**	—	

Notes. A logit transformation was used with the peer-nominations, which are proportions, and a log transformation on the self-ratings. Correlations under .10 are not shown. Significance tests are two-tailed.

* $p < .10$. ** $p < .05$. *** $p < .01$. **** $p < .001$.

year stability coefficients for the latent trait of aggression are .634 and .727, respectively. To obtain the 22-year coefficient, we multiply these and obtain .461. In Figures 6 and 7, separate stability analyses are provided for males and females under the same model. Their 22-year stability coefficients are .50 and .34, respectively. Taken together, these stability analyses provide compelling evidence that aggressive behavior remains remarkably stable after a child is 8 years old. It appears substantially more stable for boys than for girls, but this depends upon the manifestation of aggression one chooses to analyze. For both genders stability increases with age.

Correlations of Aggression Across Generations

So far we have only discussed the stability of aggressive behavior within an individual's

own lifespan. However, as indicated above, data were collected in this study not only on the aggressiveness of the subject but also on the aggressiveness of the subjects' parents and the subjects' children. Because the sample of subjects for whom all such data are available is only 82 children, the data cannot be analyzed separately by subject's gender. In Table 4 the skew-corrected correlations between the major measures of parental, subject, and child aggression are shown. Parent-child communalities are revealed both by the parent-subject correlations and by the subject-child correlations. However, because the measure of the subject's parents' aggression was only indirect (via their punishment of their children), more emphasis should be placed on the subject-child correlations. It is clear from these data that aggressive parents have more aggressive children. Aggression appears to be not only a stable characteristic within

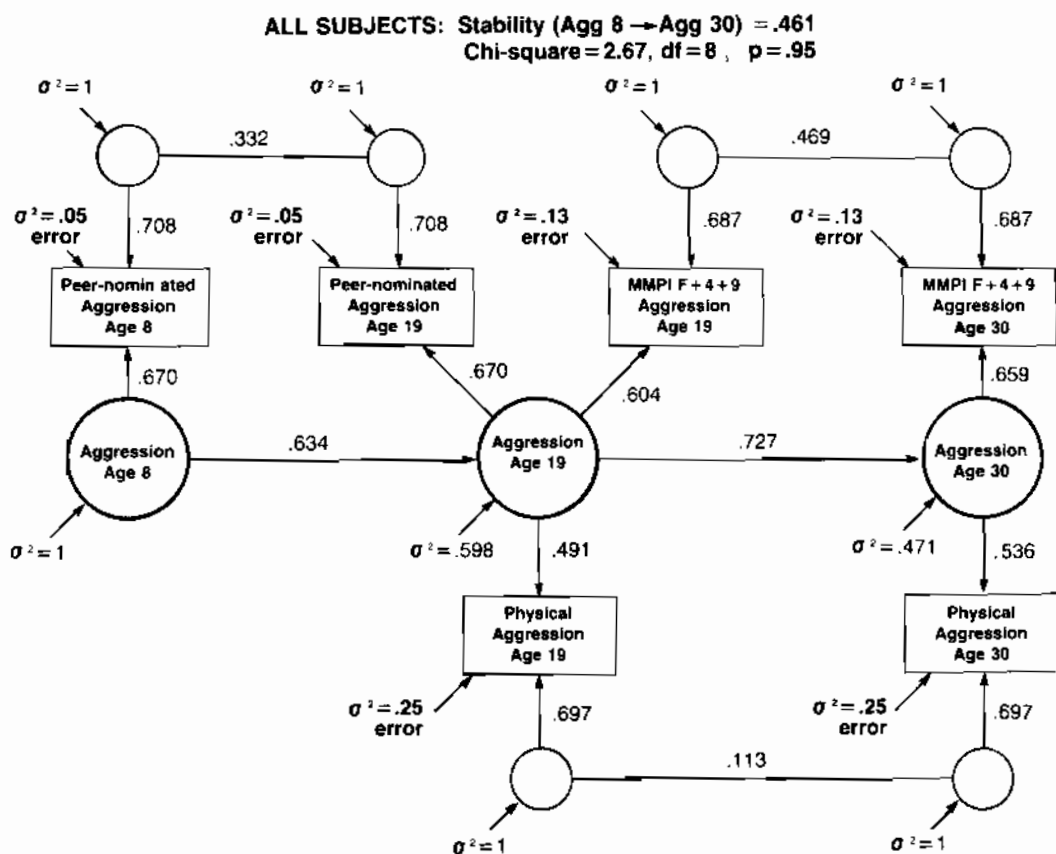


Figure 5. A structural model showing the stability of an hypothesized latent trait of aggression within all subjects over 22 years.

individuals but one that is transmitted across generations. One might wonder whether such cross-generational consistency could be explained by consistencies across generations in social class and intelligence. However, the correlations in Table 4 do not change substantially when the parents' social class and the child's IQ at age 8 are partialled out.

Path Analysis of Stability of Aggression Across Generations

In Figure 8 a structural model for cross-generational stability is presented. A slightly different approach was adopted for the cross-generational structural model. Because reciprocal parent-child influences are certainly

feasible, the model does not include hypothesized causal directions. The stability coefficients represent simple correlations between the hypothesized latent variables. For this analysis, the within-subject stability and the measurement parameters relating the latent variables to the manifest were fixed at the values derived in Figure 5. Therefore, the model has 11 free parameters for 28 equations relating the manifest variables. The derived parameter values fit the data extremely well, yielding a chi-square of 17.4 with 17 degrees of freedom. All of the stability parameters are significantly different from zero.

Remarkably, the results indicate that stability across generations is not of a different order than stability within the subject's own

MALE SUBJECTS: Stability (Agg 8 → Agg 30) = .500
Chi-square = 1.68, df = 8, p = .99

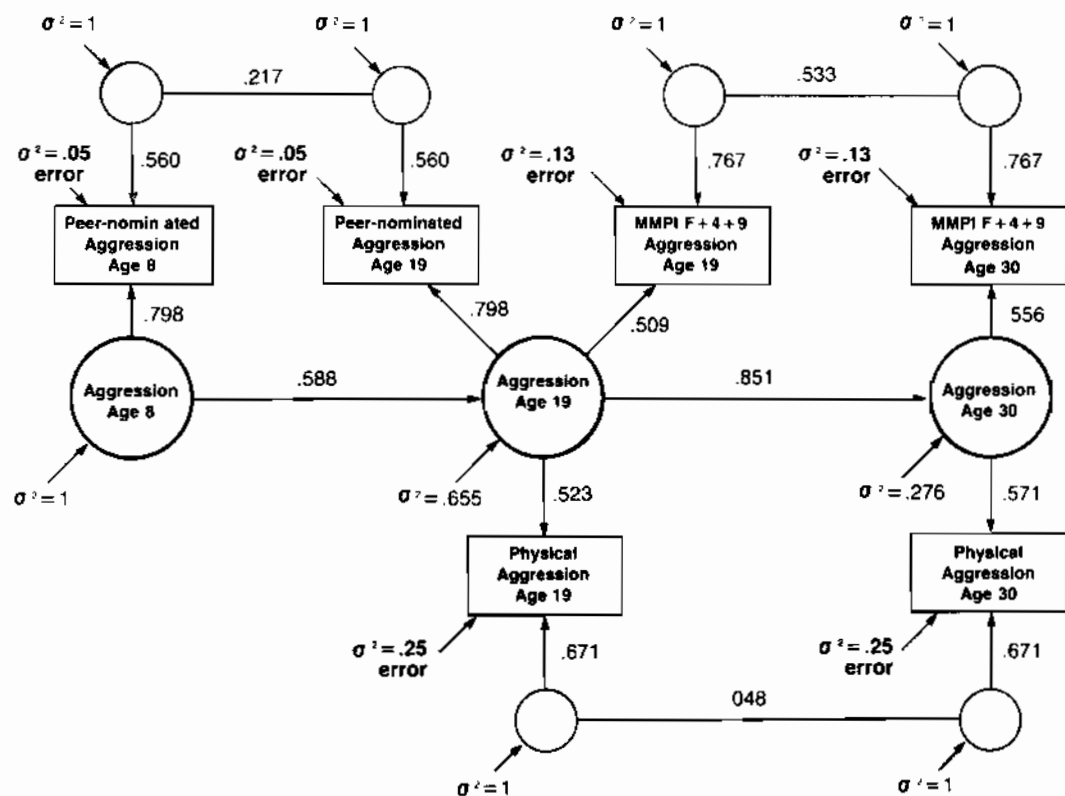


Figure 6. A structural model showing the stability of an hypothesized latent trait of aggression within male subjects over 22 years.

lifespan up to 22 years. Actually the subject's aggression relates even higher to the child's aggression 22 years later than to the subject's own aggression over that period. Grandparents' (subject's parents') aggression (as measured by punishment of the subject in 1960) also relates highly to the subject's aggression 22 years later and relates moderately to the grandchild's aggression. However, because only one measure of the grandparents' aggression was obtained (punishment style) and because this was a relatively poor measure of aggression (.436 weight in model), the coefficients from the grandparents' aggression may be overestimates.

The derived coefficients in Figure 8 suggest that age is an important situational variable

influencing the stability of aggressive behavior across generations. A child's aggression relates strongest to his or her parents' aggression when the parents were about the same age. Thus, the highest stability was found between a subject's aggression at age 8 and the subject's child's aggression 22 years later when that child was also about 8 years old. The contemporaneous aggression of the parent does not appear to be as important in determining a child's aggressiveness as was the parent's own aggressiveness as a child. This is particularly notable because the aggressiveness of the other parent (the subject's spouse) was not figured into the relation. Of course, the aggression of the spouse does correlate quite significantly with the subject's aggression as

FEMALE SUBJECTS: Stability (Agg 8 → Agg 30) = .347
Chi-square = 6.04, df = 8, p = .64

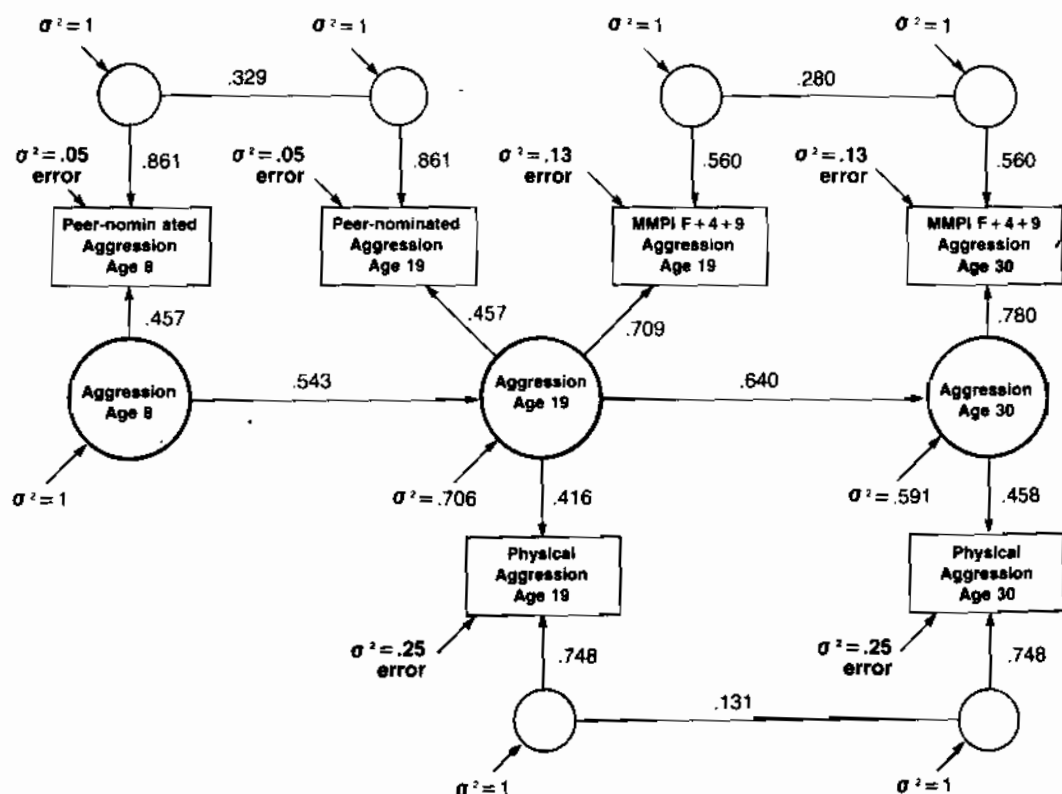


Figure 7. A structural model showing the stability of an hypothesized latent trait of aggression within female subjects over 22 years.

Table 4
Correlations of Skew-Corrected Measures of Aggression Across Generations

Measure	Parent's aggression	Subject's aggression				
	(When subject age 8)	Age 8	Age 19		Age 30	
	Punishment of subject	Peer-nominated	Peer-nominated	MMPI F + 4 + 9	MMPI F + 4 + 9	Punishment of child
Parents' aggression (when subject age 8)						
Punishment of subject	1.00	.25****	—	.13**	.14***	.25***
Child's aggression (when subject age 30)						
Self-rating	—	.31***	—	—	.26**	.31***
Aggressive fantasy	.17	.40****	.13	—	.27***	.34***

Note. A logit transformation was used with the peer-nominations, which are proportions, and a log transforms with the subject's self-ratings. MMPI = Minnesota Multiphasic Personality Inventory. Correlations under .10 are not shown. Significance tests are two-tailed.

** $p < .05$. *** $p < .01$. **** $p < .001$.

an adult (.20 to .30 depending on the measure); so the stability to some extent may be a function of both parents' aggressiveness. Finally, the higher stability for same-age aggression undoubtedly reflects the fact that the appropriateness of specific aggressive behaviors is age related.

Discussion

Severe antisocial aggressive behavior seems to occur most often when there is a convergence of predisposing and precipitating factors (Eron, 1982). However, once a characteristic style of aggressive responding develops, it seems to persist. On the basis of the current data on more than 600 subjects who were followed from age 8 to 30, we have estimated the stability of aggression over 22 years to be about .50 for boys and .35 for girls. These estimates are consistent with previous findings for shorter periods when one corrects for differing measurement techniques (Olweus, 1979). Moreover, we have shown that the early aggressiveness displayed in school has a reasonable chance of turning into severe antisocial aggressiveness in a young adult. Such aggressiveness may manifest itself in criminal behavior, physical aggression, and child abuse in both genders, and in spouse abuse and driving behaviors for males. We also dem-

onstrated that aggressiveness is transmitted across generations within families.

If aggression were mostly situationally determined, one would certainly not expect stability coefficients of the magnitude we have reported. At the same time, the stability described in this article is a stability of individual differences and of relative position in a population, not a stability of absolute level. Characteristic forms and amounts of aggression change dramatically with age (Eron, Huesmann, Brice, Fischer, & Mermelstein, 1983) and situation. Some situations are much more likely to elicit aggressive behaviors than others. What remains reasonably constant is the aggressiveness of an individual relative to the population. The child who is at the top of the distribution for 8-year-olds is likely to be near the top of the distribution for 30-year-olds two decades later.

It is apparent that many individuals are characterized by a propensity to respond in an aggressive manner to a variety of interpersonal situations. This propensity or disposition becomes apparent early on in their development and continues to characterize their behavior as they grow into adulthood. The development of aggressive behavior, at least in this large sample of subjects, is testimony more to constancy than change in human development (Brim & Kagan, 1980).

Where lie the roots of this consistency? How does the aggressive disposition take hold and persist across varied environmental conditions?

Although this article was not directed at elaborating the causes of aggression, one cannot discuss the stability of aggression without some attention to the issues. The data reported here, showing predictability of aggression across three generations as well as from childhood to adulthood within a single life span, cannot discriminate between genetic, constitutional, and/or environmental explanations. Unfortunately, this particular research program was not originally designed to investigate genetic and constitutional precursors (Eron, Laulicht, Walder, Farber, & Spiegel, 1961), and the opportunity to collect data relevant to a biological hypothesis was lost during the first wave of the study. In the

second and third waves, an attempt was made to collect some such measures. For example, during the second wave, current height and weight of the subjects were recorded, but no relation was found to current or previous aggression for either males or females. At that time we also collected birth record information for all those subjects born in New York State. A significant relation was found for boys between birth weight and peer-nominated aggression at age 8, with birth weights in the middle range related to the highest aggression (Lefkowitz et al., 1977). Although there was no relation between birth weight and aggression at age 19, there were positive relations between current weight and aggression for females at age 30. Another indicator that early physiological development may affect later aggression was the finding that mother's age at time of birth was significantly

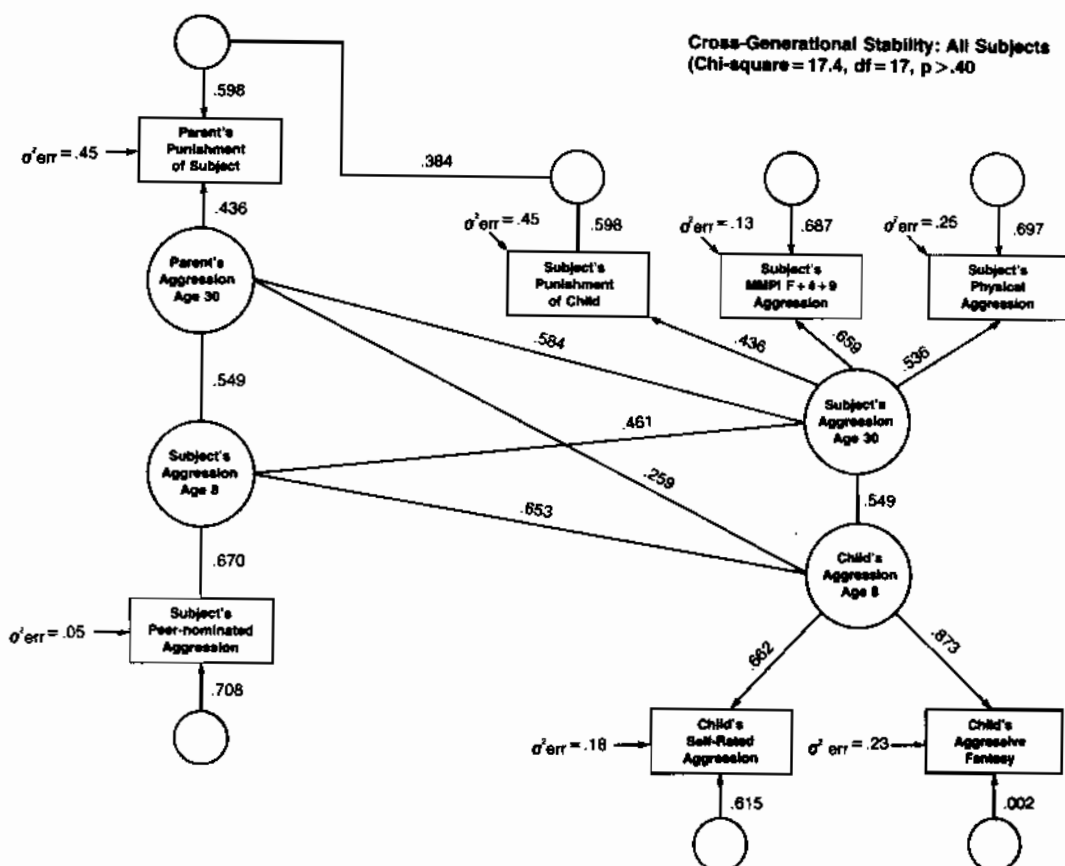


Figure 8. A correlational model showing the stability of a latent trait of aggression across three generations within a family.

related to boy's aggression at age 19. Those male subjects whose mothers were over 35 at the time of their boy's birth were most aggressive as measured both by self-ratings and peer nominations (Lefkowitz et al., 1977). Although neurological damage during birth that might lead to heightened aggressive behavior is more frequent among children born to older mothers, there are equally plausible psychological explanations for the heightened aggression of such offspring. Finally, in the last wave of the study, we also collected blood samples from our male subjects in order to determine level of testosterone and to relate those results to level of aggression. For the 60 male subjects who complied with the request, there was no significant relation between testosterone level and aggression.

Although much of these data are suggestive of a role for constitutional, physiological, or genetic factors in stability, all of the data also can be incorporated into an environmental or learning explanation. Reports of our previous findings (e.g., Eron et al., 1972; Lefkowitz et al., 1977) have stressed the importance of the learning conditions for aggression in a child's development. Our current results are not inconsistent with such a view. Aggressive dispositions can be learned. Youngsters are often directly reinforced for acting aggressively by increased attention as well as by the material and psychological rewards that are often the consequents of such behavior. Examples of aggressive behavior are abundantly available in the media as well as at home, at school, and in the neighborhood. The learning of aggressive attitudes is facilitated when respected and glorified figures, for example, professional athletes, movie stars, and political figures, engage in various kinds of aggressive behavior for which they reap many rewards. It is easy for a youngster to justify aggressive solutions to problems by referring to norms for such behavior promulgated by the media and others (Huesmann et al., 1984). Aggression can be learned early in life (Eron et al., 1983) and may be learned very well, generalizing to many situations. Aggressive individuals actively seek out and create situations in which they can often be observed (Bowers, 1973; Olweus, 1978), and due to their past conditioning histories, they may be exquisitely sensitive to aggressive cues

in the environment (Berkowitz, 1978). Thus, though the individual's environment and learning conditions may change radically, aggression can persist.

Quite probably the impressive stability of aggressive behavior across time and generations is a product both of the continuity of constitutional factors and the continuity of environmental factors. Certainly constitutional characteristics including genetic factors (Lagerspetz & Lagerspetz, 1974; Christiansen, 1977), hormonal factors (Kreuz & Rose, 1972; Rada, Kellner, & Winslow, 1976), and neurological trauma (Mark & Ervin, 1970) play some role in aggressive behavior. Just as certainly, a person's environment and learning history strongly influence his or her aggressive tendencies (Bandura, 1973; Berkowitz, 1962; Eron et al., 1971; Huesmann et al., 1984). The relative importance of these factors is arguable. What is not arguable is that aggressive behavior, however engendered, once established, remains remarkably stable across time, situation, and even generations within a family.

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