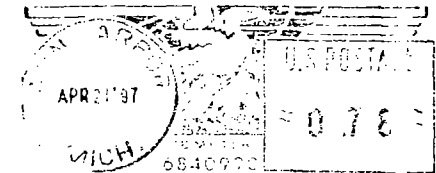


FIRST CLASS



78

FROM L R HUESMANN THE UNIVERSITY OF MICHIGAN ISR INSTITUTE FOR SOCIAL RESEARCH SURVEY RESEARCH CENTER RESEARCH CENTER FOR GROUP DYNAMICS CENTER FOR POLITICAL STUDIES 426 THOMPSON STREET BOX 1248, ANN ARBOR, MICHIGAN 48106-1248		PROJECT NO. 481480
☒ FIRST CLASS/PRIORITY ☐ THIRD CLASS/FOURTH CLASS ☐ LIBRARY RATE ☐ BOOK RATE		
☐ AIR MAIL BOOK RATE ☐ AIRMAIL PRINTED MATTER ☐ AIR MAIL		
TO	MS JENNIFER KLEIN SECOND FLOOR WEST WING THE WHITE HOUSE WASHINGTON D C 20502	313-764-3407 313-647-3662

PHOTOCOPY
PRESERVATION

**PHOTOCOPY
PRESERVATION**

**INSPECTED
BY USSS
X-RAY**

Rough TV tied to real-life violence

Kids' viewing affects adult behavior

By Marilyn Elias
USA TODAY

The more violent TV shows watched in childhood, the more aggressive adults may be by their early 20s, suggests a new 15-year study of Generation X kids.

"Serious adult aggression ... is influenced by what children watch in the mass media," says University of Michigan psychologist Rowell Huesmann. Starting in the '70s, his study tracked 331 Chicago children from age 6 to 8 until their 20s. Researchers surveyed their TV preferences and how much time they spent watching shows.

Asked to name their eight favorite programs, children in the top 25% for violence exposure were those who favored programs rated high in violent acts, and they watched these shows always or often. The bottom 25% of violence-exposed youngsters seldom or never watched more aggressive shows.

Kids in the top and bottom 25% for violence exposure had different aggression levels as adults in their 20s:

► 44% of men in the high-watching group said they'd pushed, grabbed or shoved wives in the last year vs. 21% of low watchers; 12% of high-viewing men had hit spouses vs. 3% of those who seldom watched such shows.

► For women, 37% of frequent violence viewers had thrown something at mates;

17% of the other women had.

► In the previous five years, adult women who favored aggressive shows had physically attacked a friend or close relative twice as often as women least exposed to violent TV as children.

► Men watching the most violent shows had about twice as many moving traffic violations in the last five years as those seeing the least violent TV as kids.

Huesmann adjusted for each child's intellectual functioning, aggression level in childhood and parents' socioeconomic status — all known to influence adult violence levels. The link between watching violent TV shows in childhood and adult aggression remained statistically significant, he says.

But ABC-TV spokeswoman Julie Hoover challenged the alleged link: "If somebody emerges as a young adult with truly antisocial tendencies, to blame it on television is so facile. ... You can be darn sure these kids also were watching more violent movies, they're hanging out with more violent friends and they have less impulse control. ... Genetics definitely plays a role too."

The new TV ratings system "permits parents to screen out programs inappropriate for children," adds Dennis Wharton of the National Association of Broadcasters. "Responsible parenting is the key to rearing healthy children."

USA TODAY 4-15-97

April 1, 1997

Longitudinal Relations between Early Exposure to Television Violence and Young Adult Aggression: 1977-1992

Rowell Huesmann, Jessica Moise, Cheryl-Lynn Podolski and Leonard Eron
The University of Michigan

Paper presented at the meetings of the *Society for Research on Child Development*, Washington, DC, April 1997. Darren Loomer assisted greatly in the analyses for this paper. Requests for reprints should be sent to Rowell Huesmann, Research Center for Group Dynamics, Institute for Social Research, University of Michigan, 426 Thompson Street, Ann Arbor, MI, 48106-1248. Tel: 313-647-3662, Fax: 313-763-1202, E-mail: huesmann@umich.edu

Acknowledgements for Television and Aggression Project

Len Eron
Monroe Lefkowitz
Leopold Walder

Drew Battiger
Jennifer Blom
Pat Brice (70s)
Marla Commons
Vicki Crawshaw
Julie Crews
Eric Dubow (70s)
Paulette Fischer (70s)
Kathryn Foley
Janet Garcia (70s)
Nancy Guerra
Sheree Hemphill
Gary Hudson (70s)
Rosmary Klein-Smith (70s)
Debbie Kopp
Darren Loomer
Cathy McGuire
Megan Malecek

The University of Illinois at Chicago

Kirsti Lagerspetz (Finland)
Vappu Viemero (Finland)
Adam Fraczek (Poland)
Peter Sheehan (Australia)
Riva Bachrach (Israel)
Simha Landau (Israel)

Rebecca Mermelstein (70s)
Laurie Miller
Jessica Moise
Patty Mullally
Cheryl-Lynn Podolski
Richard Romanoff (70s)
Erica Rosenfeld (70s)
Pam Sama
Evelyn Seebauer (70s)
Jean Shin
Jane Swanson
David Tulskey (70s)
Linda White (70s)
Joe Wisler
Patty Yarmel (70s)
Arnaldo Zelli
Lara Zuckert

Over the past 40 years a body of literature has emerged which strongly supports the notion that media violence viewing is one factor contributing to the development of aggression. The majority of studies have focused on the effects of watching dramatic violence on television and film. Experimental studies, static observational studies, longitudinal studies and meta-analyses all indicate that exposure to dramatic violence on television and in the movies is related to violent behavior (Huesmann & Miller, 1994; Huesmann, Moise & Podolski, in press). In contrived experimental studies, children (both boys and girls) exposed to violent behavior on film or television behave more aggressively immediately afterwards. Large numbers of laboratory and field experiments have demonstrated this fact (see reviews by Comstock, 1980; Geen, 1983, 1990; Geen and Thomas, 1986). The typical paradigm is that randomly selected children who are shown either a violent or non-violent short film are observed as they play with each other or with objects such as "Bobo" dolls (Bandura, Ross, & Ross, 1961, 1963a, 1963b). The consistent finding is that children who see the violent film clip behave more aggressively immediately afterwards. Just as children learn cognitive and social skills from watching people act out cognitive social skills, they learn violent behaviors from watching other people behave violently. Such results have been obtained both for aggression directed at inanimate objects (e.g., "Bobo" dolls) and for aggression directed at peers (Bjorkqvist, 1985; Josephson, 1987).

The demonstration of a relation between the observation of dramatic television/film violence and the commission of aggressive behavior has not been limited to the laboratory. Evidence from field studies over the past 20 years has led most reviewers to conclude that a child's current aggressiveness and the amount of television and film violence the child is regularly watching are positively related to some degree. Children who watch more violence on television and in the movies behave more violently and express beliefs more accepting of aggressive behavior (see reviews by Anderson, 1977; Chaffee, 1972; Comstock, 1980; Eysenck & Nias, 1978; Hearold, 1979; Huesmann, 1982; Huesmann & Miller, 1994; Paik & Comstock, 1994; Wood, Wong & Chachere, 1991). Clearly, this relation is robust, though the effect size is not large by standards used in the measurement of intellectual abilities, and varies as a function of environmental, familial, cognitive, and television programming variables. However, the relation is usually statistically significant and is substantial by the standards of personality measurements with children. Correlations of the magnitude usually obtained in the field can have real social significance (Rosenthal, 1986). Moreover, the relation is highly replicable even across researchers who disagree about the reasons (e.g., Huesmann, Lagerspetz, & Eron, 1984; Milavsky, Kessler, Stipp, & Rubens, 1982) and across countries (Huesmann & Eron, 1986).

Many of these early field studies only studied boys. Of those pre-1970 investigations that studied both genders, most reported finding significant relations between actual violence viewing and aggression among young girls as well as boys (e.g. Chaffee, 1972), but no study reported significant relations between a preference for violence viewing and aggressive behavior among girls. For example, Eron, Huesmann, Lefkowitz, & Walder (1972) report a significant correlation of .21 for a sample of 211 3rd grade boys in 1960 but a correlation of only .02 for a comparable sample of 216 girls. It may be that during the 1960s girls' preferences for TV shows were influenced by gender stereotypes; so that girls who watched more violent programs still 'preferred' other programs.

While these one-shot field studies showing a correlation between media violence viewing and aggression suggest that the causal conclusions of the experimental studies may well generalize to the real world, longitudinal studies can test the plausibility of causal hypotheses more directly. The data available from the few existing longitudinal studies, in fact, do provide additional support for the hypothesis that television violence viewing leads to the development of aggressive behavior. These longitudinal studies have employed a wide range of samples and methodologies, but all of the studies

done with children seem to reveal long term effects of exposure to television violence.

In perhaps the first longitudinal study on this topic, initiated in 1960 on 870 youth in New York State, this research team found that a boy's early childhood viewing of violence on TV was statistically related to his aggressive and antisocial behavior ten years later (after graduating from high school), even controlling for initial aggressiveness, social class, education, and other relevant variables (Eron et al., 1972; Lefkowitz, Eron, Walder, and Huesmann, 1977). Structural modeling analyses suggested that the most plausible model was that early exposure to media violence was stimulating later aggression. A 22-year follow-up of these same boys revealed that their early violence viewing also was weakly related to their adult criminality at age 30 (Huesmann, 1986; Huesmann, 1995). Consistent with the outcomes reported above for other early field studies of children growing up in the early 60's, these longitudinal results were obtained only for boys. No longitudinal relation between aggression and media violence viewing was found for girls.

A more representative longitudinal study was initiated by Huesmann and his colleagues in 1977 (Huesmann & Eron, 1986; Huesmann, Lagerspetz, & Eron, 1984). This three-year longitudinal study of children in five countries revealed that the television habits of children as young as first-graders also predicted subsequent childhood aggression even controlling for initial level of aggression. In contrast to earlier longitudinal studies, this effect was obtained for both boys and girls even in countries without large amounts of violent programming such as Israel, Finland, and Poland (Huesmann & Eron, 1986). In most countries the more aggressive children also watched more television, preferred more violent programs, identified more with aggressive characters, and perceived television violence as more like real life than did the less aggressive children. The combination of extensive exposure to violence coupled with identification with aggressive characters was a particularly potent predictor of subsequent aggression for many children. A field experiment conducted as part of this study also provided evidence that normative beliefs about what kinds of behaviors are acceptable can moderate the effect of observational learning. In this field experiment aggression in a randomly-selected experimental group of third-graders was reduced relative to a control group by changing their attitudes about the acceptability of the violence shown on television (Huesmann, Eron, Klein, Brice, & Fischer, 1983).

A few longitudinal studies have seemed to produce results at variance with the thesis that media violence causes aggression, but closer inspection of most of these studies reveals that their results are not discrepant, but simply not strongly supportive of the thesis. (For a review, see Huesmann & Miller, 1994). For example, while NBC's longitudinal study of middle-childhood youth conducted in the 1970's (Milavsky et al., 1982) only reports significant regression coefficients for 2 out of the 15 critical tests of the causal theory for boys, an additional 10 are in the predicted direction. Furthermore, for girls 3 out of the 15 critical tests were significant and an additional 7 were in the predicted direction.

What mediates these longitudinal effects? The most common explanation is that aggressive habits develop early in life and once these habits become firmly established they are resistant to change. The more aggressive child is likely to become the more aggressive adult (Huesmann et al, 1984; Olweus, 1979); so whatever influences childhood aggression is likely to be related to adult aggression through this continuity of aggression over time. Huesmann (1986) and others (Berkowitz, 1993; Dodge, Pettit, Bates, & Valente, 1995) have suggested that cognitions that develop early in life influence social information processing in later life. As a result cognitions about what is appropriate social behavior that are acquired through observing the mass media or by observing other people may also contribute to the longitudinal effect.

There is also evidence that a variety of individual factors and media format factors may exacerbate or mitigate the effect. Dorr & Kovacic (1980) and others have suggested that the effect is

strongest for children predisposed to behave aggressively, though Huesmann (Eron et al, 1972; Huesmann et al., 1984) has argued that the effect is detectable even among relatively non-aggressive children. Bandura (1969), Huesmann and Eron (1986; Huesmann, 1986), and others have also suggested that identification with the aggressive character in a violent scene and perceiving the violence as realistic are important moderators of the effects. That is, the more a child identifies with a model (eg. television characters), the more likely it is that the child will be influenced by the model. Likewise, the more realistic a child perceives the televised violence to be, the more likely it is that the child will be influenced by the violence (Huesmann & Eron, 1986).

In summary, it seems clear that exposure to more media violence in childhood is correlated with more aggressive behavior, and, at least in childhood, exposure to media violence seems to be stimulating an increase in aggressive behavior over time for many children regardless of initial aggressiveness. A number of theories suggest that this effect should extend into adulthood, though how strong the effect should be is difficult to estimate. It is one goal of the current study to provide a better estimate of the size of that effect.

Gender Differences

As the above review indicates, over the past several decades the relation between television violence viewing and aggression has been unambiguously demonstrated. However, the extent of gender differences in this relation has varied. A major meta-analysis aggregating data over the past 40 years concluded that the effects are slightly weaker for females than males (Paik & Comstock, 1994). However, the strength of the gender differences seems to have changed over time. Laboratory studies since the early 1960's have consistently shown short term effects for boys and girls. In contrast the early field studies of children growing up in the 1960's and the longitudinal studies following children growing up in the 1960's showed relations for boys between media violence and aggression that suggested causation but did not show any correlations for girls. But more recent survey studies of children and longitudinal studies of childhood years have shown effects for girls that are as strong as the relations for boys. No recent study has followed girls into young adulthood; so it has been difficult to know if the longitudinal effects from childhood to adulthood found earlier for boys now obtain for girls as well.

One possibility is that the change in social norms for appropriate female behavior that occurred with the feminist movement of the late 1960's and 1970's has disinhibited female aggression. In addition, the increase in aggressive female models in movies and TV would theoretically engender a stronger observational learning effect. The combination of these two factors may have lead to an increase in the size of the effect making detection easier. It is not that girls were not subject to the observational effect in earlier years. They were as the laboratory experiments showed. Rather it is that their use of the learned aggressive behaviors or aggressive scripts was inhibited by their existing normative beliefs about appropriate female roles. This explanation is consistent with the information processing perspectives on learning aggressive behavior that Huesmann (1986; 1988, in press) and Dodge (1980) have offered. According to Huesmann's model, learned scripts for aggressive behavior are not followed if they violate the individual's normative beliefs about what is appropriate for them. If this explanation is true, then given the continuing trend in changing social norms, it is clear that girls growing up in the 1970's who are now young women should evidence longitudinal effects from childhood to young adulthood that are just about as strong as boys. Therefore, a second goal of this study is to investigate if there now is a relation for females between media violence viewing in childhood and aggression in young adulthood.

Both of these goals -- 1) examining the extent to which early childhood exposure to media violence relates to adult aggression, and 2) examining gender differences in this effect -- will be addressed by examining the data collected in a follow-up study of 21- to 25-year-olds who grew up

in the USA in the 1970's who were originally studied by Huesmann and Eron's (1986) in 1977.

Method

Subjects and Procedure

The subjects for this study constituted the follow-up sample of a longitudinal study on television and behavior which began in 1977 (Huesmann & Eron, 1986). The longitudinal design is summarized in Table 1.

Insert Table 1 about here

In the original study 563 1st and 3rd graders from public schools in Oak Park, Illinois and two parochial schools in Chicago, Illinois were tested and interviewed twice, in the spring of their 1st and 2nd grade years (younger cohort) or in the spring of their 3rd and 4th grade years (older cohort). The children were interviewed in their classrooms and peer-nomination measures were obtained about observed behaviors including aggression. The children's scores over the two year period were averaged to provide more accurate single estimates of their TV viewing habits and aggressive behaviors during that period. In addition, most parents were interviewed once during this two year period, and achievement data on the older children were obtained from school records. The exact procedures for subject selection and testing are described in Huesmann & Eron (1986). Essentially all 1st and 3rd graders in Oak Park and all 1st and 3rd graders in the two Chicago schools formed the pool from which subjects were recruited. We obtained permission from 758 children or about 76% of the eligible children, and collected the initial two years of data on 563 or about 74% of the subjects.

Both the children and parents were then interviewed again in 1979 in the spring of the younger cohort's 3rd grade year and the older cohort's 5th grade year. At that time 505 children were reinterviewed, and their scores on peer-nominated aggression at that time served as a criterion measure for the longitudinal analyses of childhood effects reported in Huesmann & Eron (1986) and Huesmann, Lagerspetz, & Eron (1984) and summarized above.

Twelve years later, beginning in 1991, subjects were recontacted over the phone. Those subjects who were living in the Chicago area were asked to come to the University of Illinois, Chicago to complete the interview. Subjects sat a computer terminal and completed the questionnaire. In addition, subjects were asked to give the name of their three closest friends who were not family members and to rate how well that person knew the subject. The one with the highest rating was then contacted (if the subject gave us permission to contact the person) and asked to come in for an interview. The "second" person also completed a computer assisted interview. Subjects were paid \$50 to complete the 3 to 4 hour interview and the "second" persons were paid \$30 for completing a 1 to 1.5 hour interview.

At the point when no additional subjects could be located who were available to do the interview in-person in Chicago the questionnaire was converted into a combination phone and mail interview. In this version subjects were again contacted initially by phone and asked to participate. If they agreed, a short 20-30 minute interview was conducted on the phone and the remainder of the interview was sent to the person. During the phone interview the subject was again asked to give the name of their three closest friends who are not family members and to rate how well that person knows the subjects. As with the Chicago subjects we contacted the friend with the highest rating (if the subject gave us permission to contact the person) and asked if they would be willing to participate in our study. If they agreed, they were sent a mail interview. Subjects and "second" persons who participated by phone and mail were paid the same amount for their participation as

those who completed the in-person interview.

Using these procedures, we were able to reinterview a total of 398 subjects -- 299 through personal interviews and 99 through phone mail interviews. In addition, we obtained a total of 356 "second" person interviews -- 181 in-person and 175 mail interviews, and we collected archival data on 554 of our original subjects. However, of the 398 reinterviewed subjects, only 331 had provided complete data during the first two waves of the study. Thus our final longitudinal sample size, as shown in Table 1, was 331 -- 153 males and 178 females -- or almost 60% of the original Wave 1-2 sample.

At the time of the follow-up the subjects ranged in age from 20 to 25 years old with a mean age of 22 years old. The lag since their initial 1st or 3rd grade interview ranged from 15 to 18 years. The reinterviewed sample is split fairly evenly by gender with 191 males and 207 females. While the majority of the reinterviewed sample is white about 7.5% are minorities and 23% are of unknown race. At the time of the interview the subject's level of education ranged from having completed 9th grade to having completed a graduate or profession degree with the average education level attained being having completed some college. Finally, in terms of SES, the reinterviewed sample is somewhat skewed toward the high end of the scale as measured by the Hollingshead status rating of the subject's father's most recent education with 65.3% having high status jobs, 26.9% having medium status jobs, 5.8% having low status jobs, and 2% having jobs with an unknown status.

One additional question of importance is how do the subjects we have resampled differ from those we have lost over 15 years? We can compare the two groups on their Wave 1-2 measures. As expected, and as illustrated in Figure 1, the resampled subjects were less aggressive, higher achieving, and of higher socio-economic status than those we lost. This is a typical pattern for longitudinal studies of antisocial and aggressive behavior. The more aggressive and antisocial subjects are underrepresented in the reinterview. Nevertheless, the reinterview process has not truncated the distribution of aggression though the range is somewhat reduced. Given these kinds of resampling differences, we must be somewhat judicious in not underestimating effects due to the loss of more aggressive subjects, but the distribution is not likely to bias us toward detecting effects that are not there.

Child Measures

The key child measures are listed in Table 2 with their reliability coefficients. Details of these measures and the procedures of administering these measures have been published in Huesmann, Lagerspetz and Eron (1984) and Huesmann and Eron (1986) and will only be summarized below. One-month test-retest reliabilities were based on the analysis of a subset of 93 children who were retested one-month after their initial interviews.

Insert Table 2 about here

Childhood Television Violence Viewing. Each year children were presented with 8 lists of 10 television programs each and asked to mark their favorite program on each list and how often they watched it -- "every time it's on," "a lot, but not always," or "once in a while." As described in Huesmann & Eron (1986), the 80 programs used were the most popular for 6 to 11 year-old-children. They were divided so that each list of 10 had several violent and several non-violent programs and was balanced for popularity and time shown. The amount of on-screen physical violence portrayed on each program was coded by two raters on a 5 point scale from "not violent" to "very violent". The interrater reliability was .75 (Huesmann & Eron, 1986). Some examples of shows rated as "very violent" are "Starsky and Hutch", the "Six Million Dollar Man", and "Road Runner Cartoon". A

child's overall violence score was computed by summing the violence scores for the favorite programs weighted by how often they were watched as described in Huesmann and Eron (1986). Shows that were watched only "once in a while" were weighted zero and did not contribute to the violence score. The one-month test-retest reliability of the TV violence viewing scores was .75.

Childhood Identification with Aggressive TV Characters. As described in Huesmann & Eron (1986), children were asked "How much do you act like or do things like" various aggressive characters, such as the Bionic Woman and the Six Million Dollar Man. In each year two aggressive male characters and two aggressive female characters were presented. The average identification with aggressive television characters was then calculated separately for the male and female characters. The coefficient alpha for the four aggressive characters was .71 and the test-retest reliability over 1 month was .60.

Childhood Judgements of Realism of TV Violence. As described in Huesmann & Eron (1986), children were asked to rate how realistic they judged various programs to be. They were given a list of violent television shows, including cartoons, and asked, "How true do you think these programs are in telling what life is really like: Just like it is in real life, A little like it is in real life, or Not at all like it is in real life." Ten violent programs were evaluated in this way each year. The coefficient alpha for this scale is .72 and the one month test-retest reliability was .74.

Childhood Aggressive Behavior. Aggressive behavior in the first three waves of the study was measured using a modified version of the Peer Rating Index of Aggression (Huesmann & Eron, 1986; Walder, Abelson, Eron, Banta & Laulicht, 1961). In this procedure, each child is asked to report which children in the class engage in ten different aggressive behaviors, such as "starts a fight over nothing" and "pushes and shoves children". A child's aggression score was then computed by adding up the number of times the child was named by his/her peers on all ten items divided by the number of students in the class doing the ratings. This scale is extremely reliable with an internal consistency of .97 and a one month test-retest reliability of .91.

Family Demographics. Among the many characteristics of the family that were assessed during the early parent interviews, two will be utilized in this article. The parents' educational levels were recorded from self-reports, and an average of the mother and fathers' levels was computed to be used as a measure of family education. Similarly, the father's occupation was recorded and coded according to Warner's scale for socioeconomic status. The scale scores were then reversed; so that a higher score indicates higher socio-economic status.

Adult Measures

Adult Television Violence Viewing. During the personal or phone interviews subjects were asked to report their three favorite regularly scheduled TV programs during the current year and how frequently they watched them. All three programs were then coded for their level of violence using a scale from 0 (no visible or invisible violence) to 4 (high visible violence). Raters were instructed to rate the shows on the basis of the frequency of both visible and invisible violence which is physical, intentional and interpersonal and to only rate those programs which they had viewed themselves. They were to ignore verbal, accidental violence and violence directed at or by a non-human. Twenty-seven different raters evaluated the 1272 programs that participants listed. The mean rating from all the raters who had viewed the show (two being the minimum acceptable) was then used. Two approaches to intercoder reliability were used: interrater correlations and the average discrepancy from the mean rating. The interrater correlations ranged from .39 to .96 with a mean of .78 (using Fishers' z), and the mean discrepancy was .34 with no discrepancy being greater than .61. Two scores were derived from these responses: 1) the average violence rating for the subject's 3 favorite regularly scheduled TV programs was calculated, 2) the average of these violence ratings weighted by the frequency of viewing each show as was done with the children's data (10=almost

every time it is on, 5=usually, 1=sometimes, 0=hardly ever).

Adult Aggressive Behavior. Data about the participants' aggressive behavior was obtained from three sources: self-reports, 'second-person'-reports, archival data. The measures used in the subject interview and the 'second person' interview are listed in Table 3 with their internal consistency reliability coefficients.

Insert Table 3 about here

Subjects were asked to report the frequency of engaging in indirect aggression, verbal aggression and mild physical aggression when the subject "had problems with or got very angry at another person" (Bjorkqvist, Osterman & Kaukiainen, 1992); general aggressive behavior (the peer nominated aggression scale used in the early waves adapted for adults, Huesmann & Eron, 1986); and severe physical aggression (Huesmann, Eron, Lefkowitz, & Walder, 1984). The indirect aggression scale included items such as how often the subject responded by "taking the person's things" and "trying to get others to dislike the person". The verbal aggression scale included items such as how often the subject responded by "calling the person names" and "belittling the person's physical abilities or looks". The mild physical aggression scale included items such as how often the subject responded by hitting, kicking or shoving the person. The severe physical aggression scale included items about how many times the subject had choked, punched, or beaten another adult; slapped or kicked another adult; or had "threatened or actually cut someone with a knife or threatened or shot at someone with a gun".

The subjects were also asked to report how frequently they aggressed against their 'spouse' (or significant other) using Straus's conflict tactics scale (Straus, Gelles, & Steinmetz, 1980), and they were assessed on the MMPI personality inventory with scales F, 4, and 9 being combined as a measure of aggressive personality (Huesmann, Lefkowitz & Eron, 1978). Finally, the subjects reported their frequency of arrests for different kinds of crimes using questions from the National Youth Survey (Elliott, Dunford & Huizinga, 1987). Coefficient alpha is not reported for this measure as it is not a 'scale.' The other coefficient alphas all are respectable as shown in Table 3.

As described above, a close friend or significant other of the subject was also asked to rate the subject's frequency of engaging in aggressive and antisocial behavior on the same scales as the subject minus the MMPI aggressive personality measure. This procedure has also been used successfully in past studies (Huesmann et al., 1984). The coefficient alphas for the "second" person aggression measures ranged from .53 to .91. The higher internal consistency reliability for the "Aggression at 'Spouse'" scale is probably due to the fact that many of the 'second' persons supplying the information were subjects' spouses.

Finally, archival data including criminal conviction records and moving traffic violation records were obtained for each subject from state records. We used the existence of a drivers license record as the mechanism for defining the sample on whom the state had records. In other words, if someone with a drivers license did not appear in the criminal conviction registry, they were coded as having no convictions.

Results

One of the first questions to resolve in our analyses is whether the multiple adult interview measures of aggression represent a single construct of aggressive behavior that we can use in our major analyses. A key question in constructing such a composite is whether to measure aggression differently for males and females. Over the past decade substantial evidence has accumulated suggesting that females are more likely to engage in indirect forms of aggression, males are more likely to engage in direct physical aggression, and both genders are about equally likely to engage in

verbal aggression (Bjorkqvist, Lagerspetz, and Kaukiainen, 1992; Lagerspetz, Bjorkqvist & Peltonen, 1988; Lagerspetz & Bjorkqvist, 1992)¹. Because we wish to compare relations in males and females, we did not want to construct different measures of aggression for the two genders, but we also did not want to construct one measure that was biased toward assessing aggression in males. Our solution was to construct a composite measure out of multiple indicators of aggression that assessed both direct and indirect forms of aggression.

We constructed a structural model, displayed in Figure 2, for such a composite and estimated its parameters from our follow-up data. As shown in Figure 2, the structural measurement model fits the adult aggression data well (Chi Sq.=28.88, df=26, N=325, p=.32, RMSE=.0183) and weights both typically male and typically female behaviors. We used the coefficients of this model to combine our multiple measures of self-report and other-report adult aggression into a single composite that we could use in our subsequent analyses. For subjects, who only had self-reports or only had other reports, we used a regression prediction of the composite to estimate their composite score.

 Insert Figure 2 about here

In Table 4 the mean scores on the composite, its major components, and other measures of aggressive behavior are displayed for the male and female subjects. While males and females scored significantly differently in the predicted directions on the components, their mean scores on the composite were not significantly different suggesting that the composite is measuring both male and female dimensions of aggression.

 Insert Table 4 about here

In Table 5 the correlations are displayed between this composite measure of aggression, the self-report and other-report components of the composite, and additional measures of aggression not included in the composite. As one can see, our composite measure of aggression significantly correlates with the majority of these other measures of aggression for both males and females, indicating that it accurately represents these measures. In addition, one can see that those males and females who scored higher on our composite measure of aggression were more likely to report having engaged in criminal behavior and having been arrested. The more aggressive males also reported having been arrested for crimes which we classified as more violent. Archival state records also indicated that males and females who scored higher on our composite measure of aggression had committed more moving traffic violations while males who scored higher had also been convicted of more crimes. Finally, the 'other informants' reported significantly more 'aggression at spouse' from both male and female subjects who scored higher on the composite. In summary, the composite measure seems to be a valid measure of aggressive adult behavior for both males and females. Consequently, the composite measure will be the adult criterion measure of aggression used in all subsequent analyses.

 Insert Table 5 about here

¹ Crick & Grotpeter (1995) have renamed the indirect aggression construct developed by Lagerspetz and Bjorkqvist as "relational aggression." However, we prefer to stick with the original label which seems to reflect the kind of aggression more accurately.

In Table 6 the correlations between aggression and the early television viewing variables are shown. As has been reported previously (Huesmann, Lagerspetz, & Eron, 1984), childhood television violence viewing correlated with childhood aggression for both boys and girls in this sample. The longitudinal correlations, on the other hand, are new. For both males and females, childhood television violence viewing correlates significantly with adult aggression 15 years later. In addition, childhood perceptions that TV violence reflects real life and childhood identification with same-sex aggressive characters significantly predict adult aggression 15 years later.

Insert Table 6 about here

These correlations, while significant, are not large in magnitude. In Figures 3, 4, and 5 the meaning of these correlations is illustrated with a series of bar graphs. For each childhood television variable, the subjects are partitioned into three categories: those scoring in the upper quartile, those scoring in the middle 50% and those scoring in the lower quartile of all children surveyed. Then the mean adult aggression score is plotted for the subjects in each category. One can see that in each case the correlations primarily reflect the higher scores on aggression obtained by the highest quartile of TV violence viewers during childhood. In fact, in all three of these figures the high female childhood TV group scores significantly higher on adult aggression than the other two groups. For males, the high childhood TV realism group also scores significantly higher than the other two groups on adult aggression and the high TV violence groups scores marginally higher than the other two groups, but the high childhood identification with aggressive characters group does not.

Insert Figures 3, 4, and 5 about here

Of course these correlations and their representations as bar graphs, only illustrate bivariate relations. To gain a better understanding of the meaning of these longitudinal relations, we have computed multiple regressions in which we examine the effect of early violence viewing on later aggression after partialing out early aggressive behavior and cohort. Effectively these regressions examine the effect of early TV violence viewing on change in aggression. The regression for girls is shown in Table 7 and the regression for boys in Table 8.

Insert Table 7 and 8 about here

One can see from these regressions that for both males and females early exposure to TV violence has a significant positive relation to adult aggression even when childhood aggression is partialled out of the relation. For females identification with same-sex character also has a significant relation as does a belief that violent programs tell about life just like it is. For males the coefficients for these two variables were positive but not significant.

One might ask the extent to which these relations might be explained by demographic characteristics such as the educational level of the family or social class. Using parents' education or family social class as covariates in these models essentially left the males' coefficients for all three predictors -- TV violence viewing, identification with same-sex character, and perception of TV violence as realistic -- unchanged. The positive effects remained just as strong. For females, however, the positive regression coefficients were reduced in magnitude about 22% on the average when parents' education was partialled out and about 12% on the average when family social class was partialled out. For females parents' education was a strong inverse predictor of change in aggression over time ($B = -.248$, $N=95$, $P<.01$) but was not significantly correlated with female

children's early violence viewing suggesting that in less educated families female aggression is determined more by other factors than TV violence.

We next examined whether identification with same-sex characters or perception that TV violence is realistic was exacerbating the effects of viewing TV violence. We had found such an effect for boys during childhood in the early waves of this study (Huesmann, et al., 1984). To test for such effects, we expanded the regressions in Tables 7 and 8 that predict adult aggression to include the interactive effect of childhood TV violence viewing with identification with same-sex characters and with perception that TV violence is realistic. For males we found a significant effect for both interactions. Identifying with aggressive TV characters exacerbated the effect of TV violence viewing ($B=.17$, $t=1.98$, $df=141$, $p<.05$) as did a belief that TV violence viewing was realistic ($B=.16$, $t=2.03$, $df=147$, $p<.05$). For females we found a significant interaction only for perception that TV was realistic ($B=.17$, $t=2.19$, $df=170$, $p<.03$). Girls who believed that TV was realistic were more likely to be affected by early exposure to TV violence.

Given that the pattern of longitudinal relations for males and females were very similar, that our adult aggression measure assessed both male and female aggression, and that the mean scores on the composite adult measure were not significantly different for males and females, we next combined males and females to achieve greater power in a longitudinal structural modeling analysis. In this analysis, shown in Figure 6, we predict adult aggression from early TV violence viewing and simultaneously predict adult TV violence viewing from childhood aggression. The estimated parameters of the model provide a good fit as indicated by the non-significant Chi-Square statistic and low root mean squared error. The model reveals a significant effect from early TV violence viewing to adult aggression ($B = .16$, $p < .005$) but not from early aggression to adult TV violence viewing. Such a finding is more consistent with the model that early violence viewing is stimulating later aggression than with the model that early aggressive behavior stimulates later aggression.

 Insert Figure 6 about here

Discussion

In this 15 year longitudinal study of 331 youth, we found that children's television violence viewing between ages 6 and 9, children's identification with aggressive same-sex characters, and children's perceptions that TV violence is real were significantly correlated with their adult aggression. For both boys and girls more exposure to TV violence during these ages predicted more aggression as an adult. These relations primarily reflected the behavior of the highest violence viewing children. Regression analyses that partialled out the effects of early aggression showed that early exposure to TV violence was not just correlated with aggression but predicted increases in aggressive behavior. In addition, the perception that TV was realistic and identification with aggressive TV characters seemed to exacerbate the effects. A longitudinal analysis of the directionality of the effects suggested that it is more plausible that exposure to TV violence is increasing aggression than that aggression is increasing TV violence viewing.

It is particularly interesting that we found longitudinal results that were of about the same magnitude for females as for males. In the 1960 to 1982 Huesmann and Eron (Huesmann, 1986) study of New York Children, longitudinal effects were only found for boys. It may be that recent increases in violence in the media and in societal acceptance of aggression for girls are changing the magnitude of the effect for females.

Some gender differences were found. While identification with same-sex characters exacerbated the effect of violence viewing for males, it did not for females. It may be that aggressive male characters have as much effect on females as identification with male characters. Also, parental education seemed to account for some of the effect in females while it did not in males. It may be that social norms related to educational status that affect the modeling of media violence are more influential for females than males.

Overall, however, these results suggest that both males and females from all social strata and all levels of initial aggressiveness may be influenced by early exposure to media violence. The next step is to better understand the variables that mediate these relations over time.

References

- Andison, F. S. (1977). TV violence and viewer aggression: A cumulation of study results 1956-1976. Public Opinion Quarterly, 41, 314-331.
- Bandura, A., Ross, D., & Ross, S.A. (1961). Transmission of aggression through imitation of aggressive models. Journal of Abnormal Social Psychology, 63, 575-582.
- Bandura, A., Ross, D., & Ross, S.A. (1963a). Imitation of film-mediated aggressive models. Journal of Abnormal and Social Psychology, 66, 3-11.
- Bandura, A., Ross, D., & Ross, S.A. (1963b). Vicarious reinforcement and imitative learning. Journal of Abnormal and Social Psychology, 67, 601-607.
- Bandura, A. (1969). Social learning theory of identificatory processes. In D. Goslin (Ed.) Handbook of Socialization Theory and Research. Chicago: Rand McNally.
- Berkowitz, L. (1993). Aggression: Its Causes, Consequences, and Control. New York: MacGraw Hill.
- Bjorkqvist, K. (1985). Violent films, anxiety and aggression. Helsinki: Finnish Society of Sciences and Letters.
- Bjorkqvist, K., Osterman, K. & Kaukiainen, A. (1992). The development of direct and indirect aggressive strategies in males and females. In K. Bjorkqvist and P. Niemela (Eds.), Of Mice and Women: Aspects of Female Aggression (pp. 51-64). New York: Academic Press.
- Bjorkqvist, K., Lagerspetz, K., & Kaukiainen, A. (1992). Do girls manipulate and boys fight? Developmental trends in regard to direct and indirect aggression. Aggressive Behavior, 18, 117-127.
- Chaffee, S. H. (1972). Television and adolescent aggressiveness (overview). In G. A. Comstock & E. A. Rubinstein (Eds.), Television and social behavior: Vol. 3. Television and adolescent aggressiveness (pp. 1-34). Washington, D.C.: U.S. Government Printing Office.
- Comstock, G. A. (1980). New emphases in research on the effects of television and film violence. In E. L. Paler & A. Dorr (Eds.), Children and the faces of television: Teaching, violence, selling. New York: Academic Press.
- Crick, N. R., & Grotpeter, J. K. (1995). Relational aggression, gender, and social-psychological adjustment. Child Development, 66, 710-722.
- Dodge, K.A. (1980). Social cognition and children's aggressive behavior. Child Development, 51(1), 162-170.
- Dodge, K. A., Pettit, G. S., Bates, J. E., & Valente, E. (1995). Social information processing patterns partially mediate the effect of early physical abuse on later conduct problems. Journal of Abnormal Psychology, 104, 632-643.
- Dorr, A. & Kovaric, P. (1980). Some of the people some of the time - but which people? Televised violence and its effects. In E. L. Palmer & A. Dorr (Eds.), Children and the Faces of Television. New York: Academic Press.
- Elliott, D.S., Dunford, F.W., & Huizinga, D.H. (1987). The identification and prediction of career offenders utilizing self-reported and official data. In J.D. Burchard & S.N. Burchard (Eds.), Prevention of Delinquent Behavior. Sage.
- Eron, L.D., Huesmann, L.R., Lefkowitz, M.M. & Walder, O. (1972). Does television violence cause aggression? American Psychologist, 27, 253-263.
- Eysenck, H. J., & Nias, D. K. (1978). Sex, violence, and the media. London: Maurice Temple Smith.
- Geen, R. G. (1983). Aggression and television violence. In R.G. Geen and E.I. Donnerstein (Eds.) Aggression: Theoretical and empirical reviews, Vol. 2: Issues and research, (pp. 103-125). New York: Academic Press.
- Geen, R. G. (1990). Human Aggression. Pacific Grove, CA: Brooks Cole Publishing.

- Geen, R. G. & Thomas, S. L. (1986). The immediate effects of media violence on behavior, Journal of Social Issues, 42, 7-28.
- Hearold, S. L. (1979). Meta-analysis of the effects of television on social behavior. Unpublished doctoral dissertation, University of Colorado.
- Huesmann, L. R. (1982). Television violence and aggressive behavior. In D. Pearl, L. Bouthilet & J. Lazar (Eds.), Television and behavior: Ten years of programs and implications for the 80's (pp.126-137). Washington, D.C.: U.S. Government Printing Office.
- 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, 3, 125-139.
- Huesmann, L. R. (1988). An information processing model for the development of aggression. Aggressive Behavior, 14, 13-24.
- Huesmann, L. R. (1995). Screen violence and real violence: Understanding the link [Brochure]. Auckland, NZ: Media Aware.
- Huesmann, L. R., & Eron, L. D. (1986). Television and the Aggressive Child: A Cross-National Comparison. Hillsdale, N.J.: Erlbaum.
- Huesmann, L. R., Eron, L. D., Klein, R., Brice, P., & Fischer, P. (1983). Mitigating the imitation of aggressive behaviors by children's attitudes about media violence. Journal of Personality and Social Psychology, 44, 899-910.
- Huesmann, L. R., Eron, L. D., Lefkowitz, M. M., & Walder, L. O. (1984). Stability of aggression over time and generations. Developmental Psychology, 20, 1120-1134.
- Huesmann, L. R., Lagerspetz, K. & Eron, L. D. (1984). Intervening variables in the TV violence-aggression relation: Evidence from two countries. Developmental Psychology, 20, 746-775.
- Huesmann, L.R., Lefkowitz, M.M., & Eron, L.D. (1978). Sum of MMPI scales F, 4, and 9 as a measure of aggression. Journal of Consulting and Clinical Psychology, 46, 1071-1078.
- Huesmann, L. R., & Miller, L. S. (1994). Long-term effects of repeated exposure to media violence in childhood. In L. R. Huesmann (Ed.), Aggressive Behavior: Current Perspectives, New York: Plenum.
- Huesmann, L. R., Moise, J. F. & Podolski, C. P. (in press). The effects of media violence on the development of antisocial behavior. In D. Stoff, J. Breiling, & J. Masser (Eds.) Handbook of Antisocial Behavior. John Wiley & Sons.
- Josephson, W.L. (1987). Television violence and children's aggression: Testing the priming, social script, and disinhibition predictions. Journal of Personality and Social Psychology, 53(5), 882-890.
- Lagerspetz, K. M. & Bjorkqvist, K. (1992). Indirect aggression in girls and boys. In L. R. Huesmann (Ed.), Aggressive Behavior: Current Perspectives (pp.). New York: Plenum.
- Lagerspetz, K. M., Bjorkqvist, K., & Peltonen, T. (1988). Is indirect aggression typical of females? Gender differences in aggressiveness in 11- to 12-year-old children. Aggressive Behavior, 14, 403-414.
- Lefkowitz, M. M., Eron, L. D., Walder, L. O., & Huesmann, L. R. (1977). Growing up to be violent: A longitudinal study of the development of aggression. New York: Pergamon.
- Milavsky, J. R., Kessler, R., Stipp, H., & Rubens, W. S. (1982). Television and aggression: Results of a panel study. In D. Pearl, L. Bouthilet, & J. Lazar (Eds.), Television and behavior: Ten years of scientific progress and implications for the 80's: Vol.2. Technical reviews. Washington, D.C.: Government Printing Office.
- Olweus, D. (1979). Stability of aggressive reaction patterns in human males: A review. Psychological Bulletin, 85, 852-875.

- Paik, H. & Comstock, G. A. (1994). The effects of television violence on antisocial behavior: A meta-analysis. Communication Research, 21, 516-546.
- Rosenthal, R. (1986). Media violence, antisocial behavior, and the social consequences of small effects. Journal of Social Issues, 42, 141-154.
- Straus, M. A., Gelles, R. J., & Steinmetz, S. K. (1980). Behind closed doors. Violence in the american family (Appendix B). New York: Anchor Press.
- Walder, L.O., Abelson, R., Eron, L.D., Banta, T.J. & Laulicht, J.H. (1961). Development of a peer rating measure of aggression. Psychological Reports, 9, 497-556, (monograph supplement 4-19).
- Wood, W., Wong, F.Y. & Chachere, G. (1991). Effects of media violence on viewers' aggression in unconstrained social interaction. Psychological Bulletin, 109(3), 371-383.

Table 1

Data Collection Summary

	Childhood	Adult	Childhood -> Adult
Wave	1+2	4	1+2 -> 4
Year	1977-78	1992	
Older Cohort	Age 8-9	Age 23	Age 8-9 -> 23
Males	125	93	71
Females	133	98	83
Younger Cohort	Age 6-7	Age 21	Age 6-7 -> 21
Males	147	98	82
Females	158	109	95
Total	563	398	331

Table 2

Reliability of Childhood Measures

	Coefficient Alpha (N=748)	Test-Retest (N=73-93)
Peer Nominated Aggression	.97	.91
TV Violence Viewing	---	.75
ID with Aggressive TV Characters	.71	.60
Perceived Realism of TV Violence	.72	.74

Table 3

Reliability of Adult Measures: Coefficient Alphas

	Self-Reported (N=398)	Other-Reported (N=356)
Indirect Aggression	.66	.75
Verbal Aggression	.75	.80
Mild Physical Aggression	.69	.78
General Aggression	.82	.84
Severe Physical Aggression	.59	.53
Aggression at 'Spouse'	.78	.91
Aggressive Personality	.78	---

Table 4

Mean Differences in Major Individual Aggression Variables by Gender

Variable	Female (N=207)	Male (N=191)	p-value
Self-Reported:			
Verbal Aggression	1.02	1.14	n.s.
Indirect Aggression	.85	.72	< .05
Severe Physical Aggression	.19	.47	< .01
General Aggression	1.95	1.96	n.s.
Aggressive Personality	178.03	185.04	< .01
Aggression at 'Spouse'	.28	.13	< .05
Frequency of Arrests	.11	.90	< .001
Violence of Arrests	.01	.06	< .05
Frequency of Criminal Behavior	4.90	15.10	< .001
Other Reported:			
Verbal Aggression	1.04	1.05	n.s.
Indirect Aggression	.87	.68	< .001
Severe Physical Aggression	.11	.27	< .02
General Aggression	1.86	1.85	n.s.
Aggression at 'Spouse'	.20	.14	n.s.
Archival Measures:			
Ever Convicted	.01	.07	< .01
Frequency of all Traffic Violations	.42	.94	< .001
Composite Aggression	-.02	.02	n.s.

Table 5

Correlations of Adult Composite Aggression Score with Other Adult Measures

Adult Measures	Composite Aggression	
	Females	Males
Measures in Composite:		
Self-Reported Composite Aggression	.75*** (N=205)	.82*** (N=188)
Other-Reported Composite Aggression	.84*** (N=188)	.91*** (N=166)
Measures not in Composite:		
Self-Reported Frequency of Arrests	.11 (N=207)	.34*** (N=190)
Self-Reported Violence of Arrests	---	.15* (N=188)
Self-Reported Frequency of Criminal Behavior	.39*** (N=205)	.36*** (N=187)
State Records: Ever Convicted	---	.18* (N=191)
State Records: Frequency of all Traffic Violations	.15* (N=199)	.15* (N=190)
Other Reported Aggression at 'Spouse'	.47*** (N=78)	.69*** (N=69)

Note. Correlations less than .10 are not reported here.

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

Table 6

Correlations of Child Aggression and TV Variables with Child and Adult Aggression

Child Measures	Childhood Peer-Nominated Aggression (N=563)		Adult Composite Aggression (N=331)	
	Females	Males	Females	Males
Peer-Nominated Aggression	1.00	1.00	---	.17* (N=153)
TV Violence Viewing	.25*** (N=288)	.23*** (N=269)	.18* (N=176)	.16* (N=153)
ID with Aggressive Male TV Characters	---	.21*** (N=258)	.21** (N=157)	.19* (N=147)
ID with Aggressive Female TV Characters	---	.19** (N=240)	.25*** (N=165)	---
Perceived Realism of TV Violence	---	.24*** (N=268)	.27*** (N=176)	.16* (N=153)

Note. Correlations less than .10 are not reported here.

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

**Table 7: Predicting Adult Composite Aggression from Childhood Television Variables:
Females (N=165)**

PREDICTOR	Standardized Regression Coefficients			
	Reg 1	Reg 2	Reg 3	Reg 4
Initial Grade	-.171*	-.178*	-.100	-.080
Childhood Aggression	.129	.089	.081	.091
TV Violence Viewing		.162*		
ID w/ Same-Sex Agg. TV Characters			.214**	
Television Realism				.262**
R ² Increase over Reg 1	---	.024*	.040**	.060**
R ²	.035	.059	.075	.095

**Table 8: Predicting Adult Composite Aggression from Childhood Television Variables:
Males (N = 147)**

PREDICTOR	Standardized Regression Coefficients			
	Reg 1	Reg 2	Reg 3	Reg 4
Initial Grade	-.118	-.117	-.093	-.092
Childhood Aggression	.190*	.160*	.158*	.168*
TV Violence Viewing		.171*		
ID w/ Same-Sex Agg. TV Characters			.153*	
Television Realism				.114
R ² Increase over Step 1	---	.028*	.022*	.012
R ²	.043	.071	.065	.055

Note. R² Increase is in relation to Step 1 R². +p<.10. *p<.05. **p<.01. ***p<.001.

Table 7

Predicting Adult Composite Aggression from Childhood Television Variables:
Females (N=165)

PREDICTOR	Standardized Regression Coefficients			
	Reg 1	Reg 2	Reg 3	Reg 4
Initial Grade	-.171*	-.178*	-.100	-.080
Childhood Aggression	.129	.089	.081	.091
TV Violence Viewing		.162*		
ID w/ Same-Sex Agg. TV Characters			.214**	
Television Realism				.262**
R ² Increase over Reg 1	---	.024*	.040**	.060**
R ²	.035	.059	.075	.095

Note. R² Increase is in relation to Reg 1 R².

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

Table 8

Predicting Adult Composite Aggression from Childhood Television Variables:
Males (N = 147)

PREDICTOR	Standardized Regression Coefficients			
	Reg 1	Reg 2	Reg 3	Reg 4
Initial Grade	-.118	-.117	-.093	-.092
Childhood Aggression	.190*	.160 ⁺	.158 ⁺	.168*
TV Violence Viewing		.171*		
ID w/ Same-Sex Agg. TV Characters			.153 ⁺	
Television Realism				.114
R ² Increase over Step 1	---	.028*	.022 ⁺	.012
R ²	.043	.071	.065	.055

Note. R² Increase is in relation to Reg 1 R².

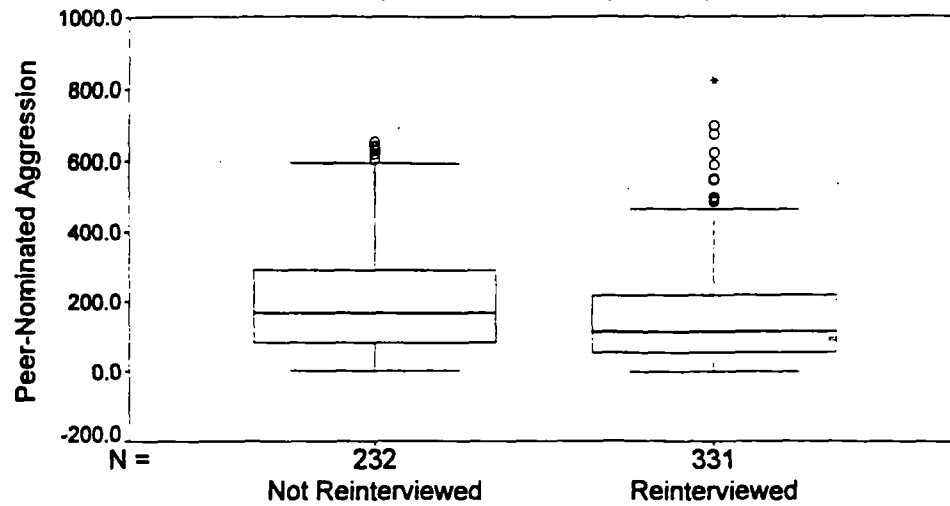
+p<.10. *p<.05. **p<.01. ***p<.001.

Figure Captions

- Figure 1. Box plots showing the differences in childhood aggression, family educational status, and achievement for children who were reinterviewed as young adults and those who were not reinterviewed.
- Figure 2. A structural model showing the parameters used to estimate the adult composite aggression score for each participant.
- Figure 3. A box plot illustrating the relation between childhood TV violence viewing and adult aggression for 153 males and 176 females. The high, medium and low groups represent the upper quartile, the middle 50% and the lower quartile respectively. The high group is significantly larger than the other two groups for females ($t=2.24$, $p=.03$), but not for males ($t=1.56$, $p=.125$).
- Figure 4. A box plot illustrating the relation between childhood identification with same sex aggressive TV characters and adult aggression for 153 males and 178 females. The high, medium and low groups represent the upper quartile, the middle 50% and the lower quartile respectively. The high group is significantly larger than the other two groups for females ($t=2.48$, $p=.015$), but not for males ($t=1.47$, $p=.146$).
- Figure 5. A box plot illustrating the relation between childhood judgements of realism of TV violence and adult aggression for 153 males and 176 females. The high, medium and low groups represent the upper quartile, the middle 50% and the lower quartile respectively. The high group is significantly larger than the other two groups for females ($t=2.57$, $p=.004$) and males ($t=2.75$, $p=.009$).
- Figure 6. A structural model showing the effects of TV violence viewing and aggression in childhood on TV violence viewing and aggression in adulthood, controlling for cohort.

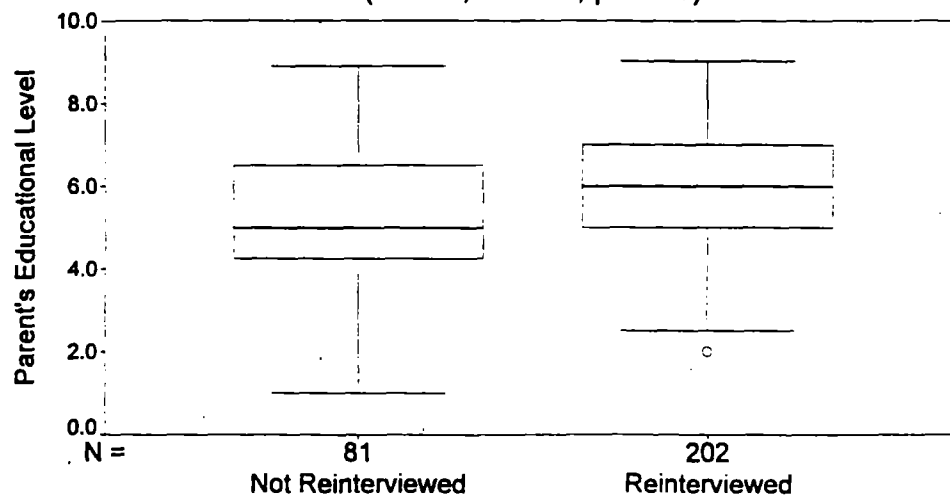
Sample Attrition and Early Aggression

($t=4.32$, $df=436$, $p<.001$)



Sample Attrition and Parent's Educational Level

($t=4.15$, $df=281$, $p<.001$)



Sample Attrition and Early Achievement for Older Cohort

($t=2.89$, $df=226$, $p<.01$)

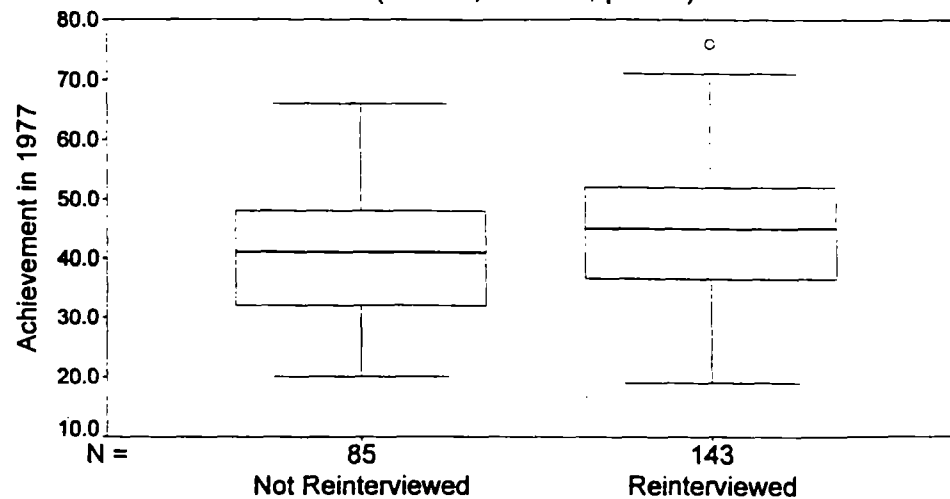
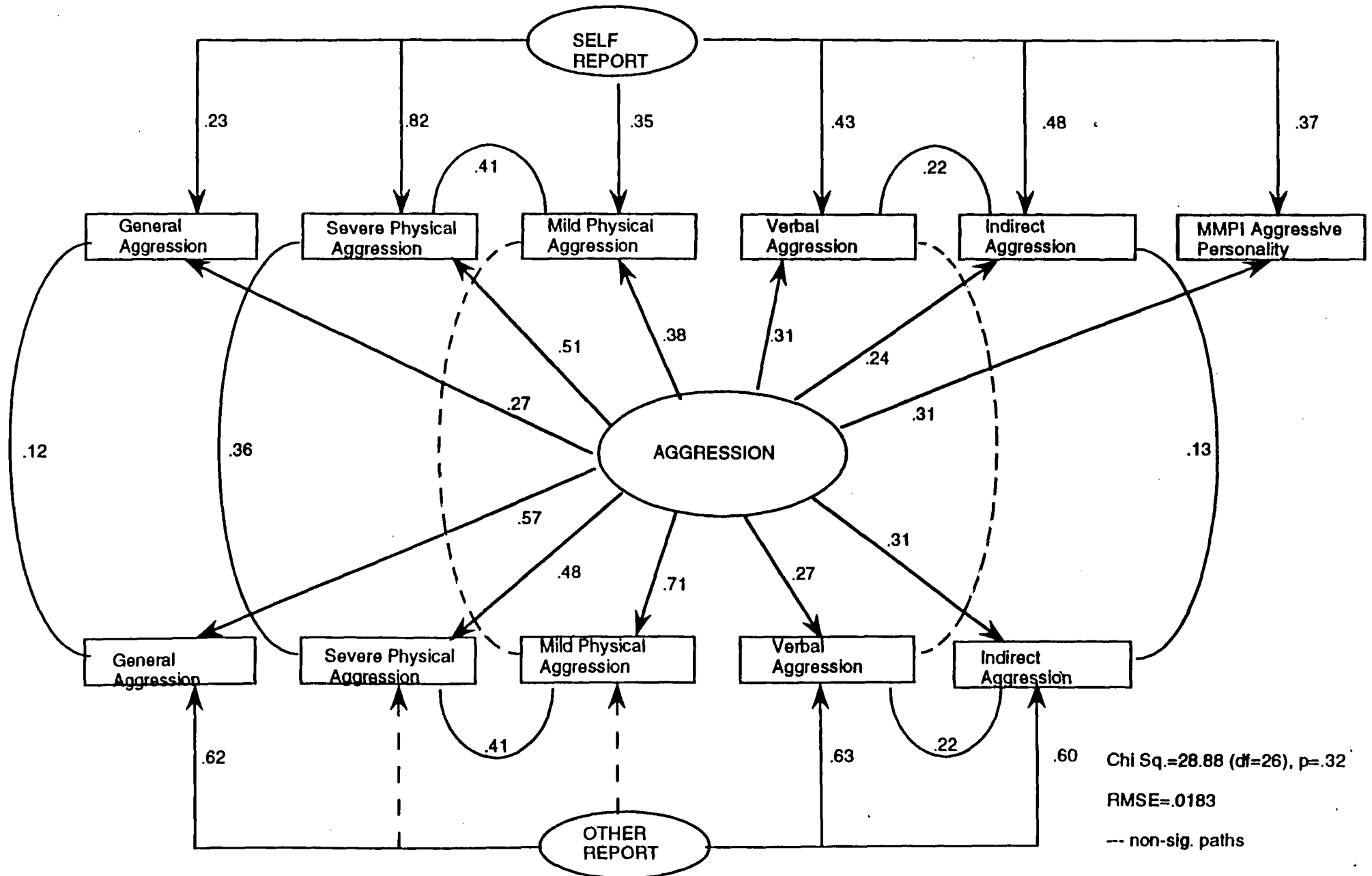
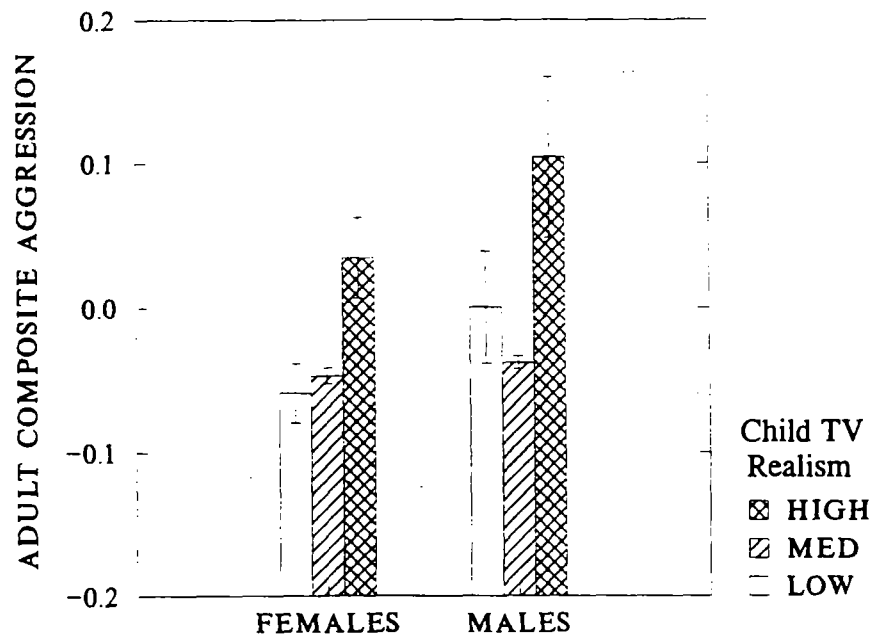
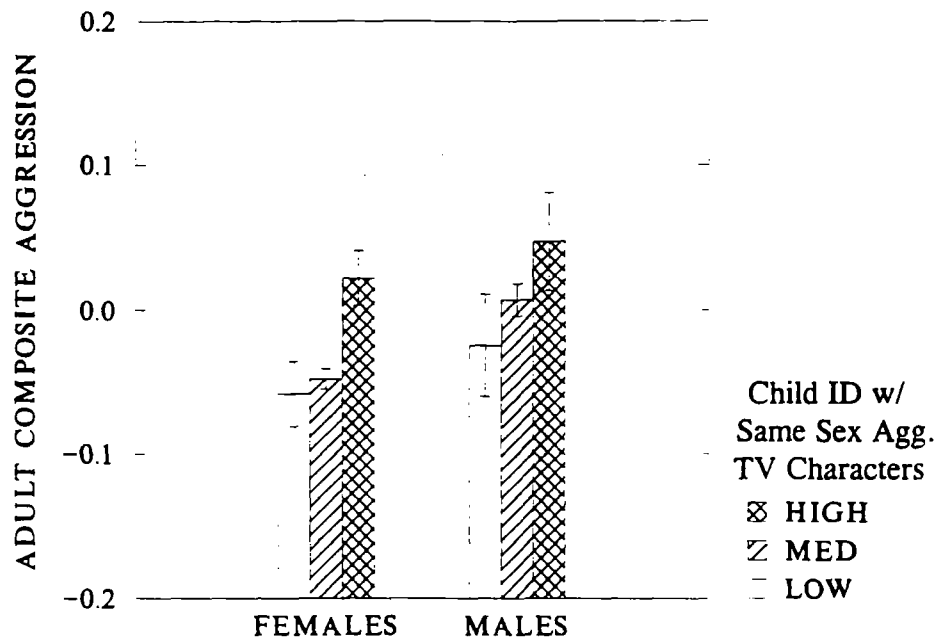
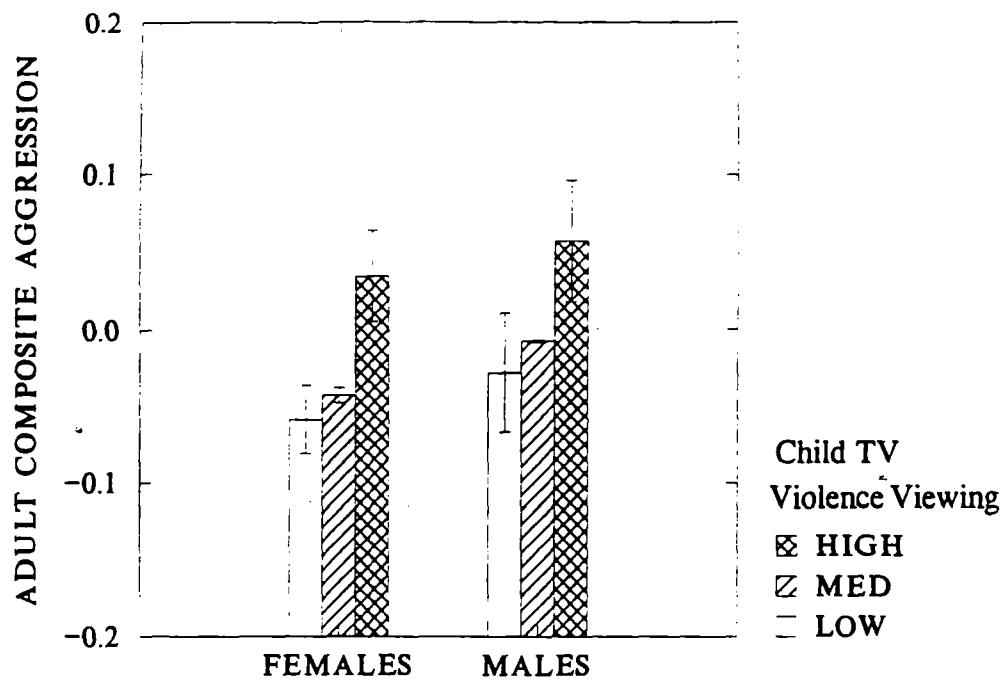
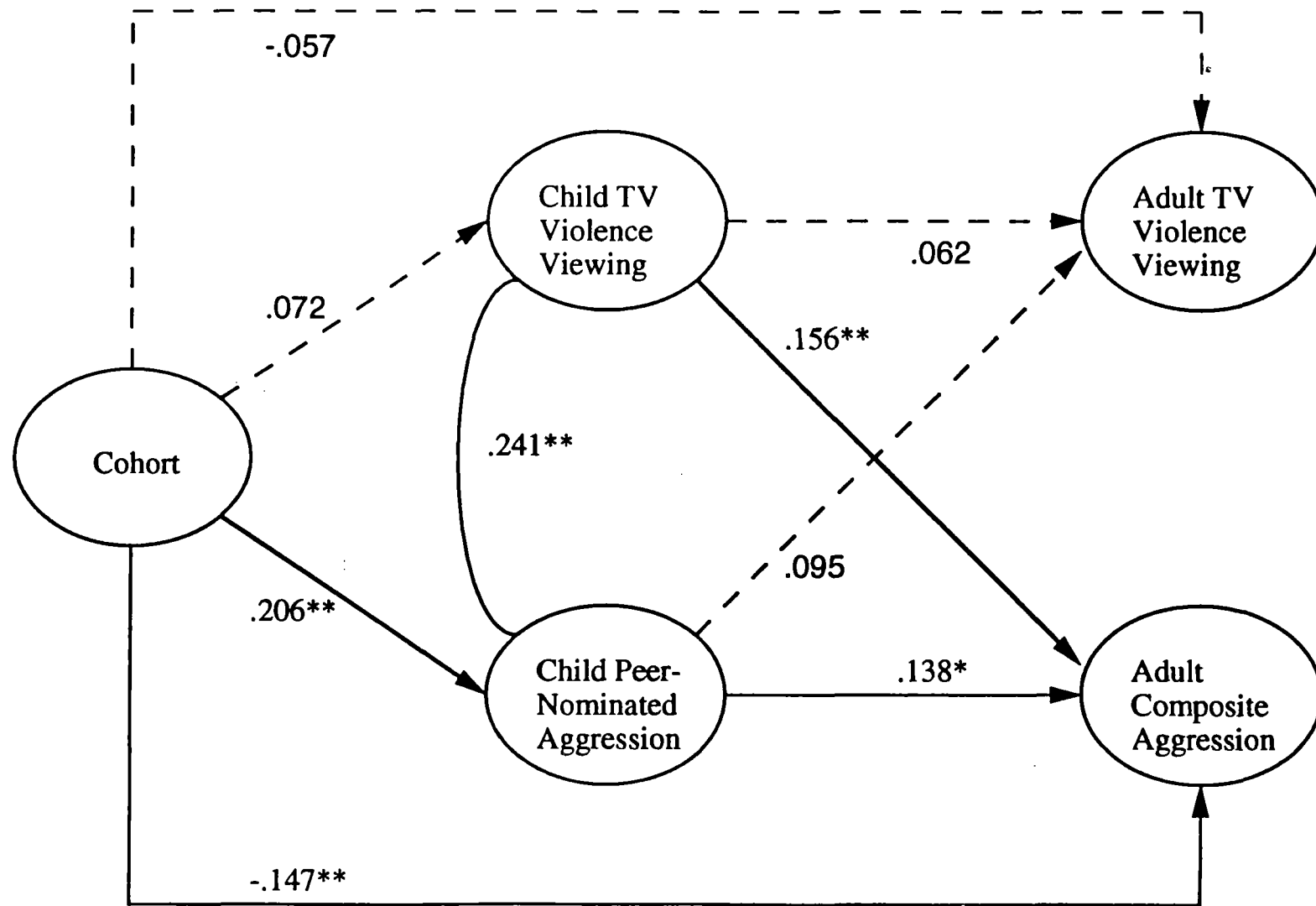


Figure 2: Measurement Model of Aggression
USA Subjects (N=325)





325 Subjects with 15 year data
Chi Sq. (2) = 4.26, $p=.12$; RMS = .0283



* $p<.05$, ** $p<.01$