

Media Violence and Youth Violence

A 2-Year Longitudinal Study

Werner H. Hopf¹, Günter L. Huber², and Rudolf H. Weiß³

¹Schulberatung Oberbayern-Ost, Munich, ²Universität Tübingen, ³Oberschulamt Stuttgart, all Germany

Abstract. The frequency of exposure to media violence and eight additional risk factors were path-analyzed in a 2-year longitudinal study. The exposure to media violence (total score) affected students' later violence ($\beta = .28$) and later violent delinquency ($\beta = .30$) more strongly than other risk factors. Direct effects were also caused by risk factors assessed at Time 1, which in turn were reinforced by the remaining risk factors on the second or third stratum of analysis. Of particular importance are the findings that (1) playing violent electronic games is the strongest risk factor of violent criminality and (2) both media-stimulated and real experiences of aggressive emotions associated with the motive of revenge are core risk factors of violence in school and violent criminality. The results of our study show that the more frequently children view horror and violence films during childhood and the more frequently they play violent electronic games at the beginning of adolescence the higher will these students' violence and delinquency be at the age of 14.

Keywords: media violence, youth violence, delinquency, longitudinal study

Introduction

As compared to cross-sectional and experimental studies, longitudinal studies on the effects of television and film violence are relatively rare "because of their expense, difficulty, and time frame" (Anderson, Gentile, & Buckley, 2007, p. 27). There is no similar study from German-speaking countries, while internationally a series of longitudinal studies are available (Eron, Huesmann, Lefkowitz, & Walder, 1972; Lefkowitz, Eron, Walder, & Huesmann, 1977; Milavsky, Kessler, Stipp, & Rubens, 1982; Joy, Kimball, & Zabrack, 1986; Sonesson, 1989; Johnson, Cohen, Smailes, Kasen, & Brook, 2002; Huesmann, Moise-Titus, Podolski, Eron, 2003). Longitudinal studies on the impact of media violence during childhood and adolescence allow investigations into the cumulative and long-term effects on young persons' later behavior and the development of personality characteristics within the context of their social environment. In addition, direction and causality of effects of viewing media violence can be determined (Anderson et al., 2007; Bushman & Huesmann, 2006; Lukesch, 2004). Generally we may contend that the results of effect studies on violence in television and film are consistent: "The research base is large; diverse in methods, samples, and media genres; and consistent in overall findings. The evidence is clearest within the most extensively researched domain, television and film violence" (Anderson et al., 2003, p. 81). While the scientific community no longer debates whether media violence has effects (Anderson, 2004, p. 114), this is still a question in the German and American mass media. Again and again these circles try to question the consistency of available scientific findings (Bushman & Anderson, 2001; Lukesch, 2004; Spitzer, 2005; Weiß, 2000). Howev-

er, a series of narrative reviews (Huesmann & Miller, 1994; Huesmann, Moise, & Podolski, 1997; Lukesch, 2004) and meta-analytic reviews (e.g., Anderson & Bushman, 2002b; Bushman & Huesmann, 2006; Hearold, 1986; Paik & Comstock, 1994) demonstrates the consistency of these research results. The effect hypothesis is substantiated without doubt: Frequent viewing of media violence in television and film causes an increase in aggressiveness and aggressive behavior. The selection hypothesis, on the other hand, suggests "... that aggressive behavior or a correlate of aggressive behavior stimulates exposure to violence..." (Huesmann et al., 2003, p. 202). This hypothesis was confirmed by two 1-year longitudinal studies in Germany (Kristen, 2006; Oppl, 2006). However, while longitudinal studies over longer periods demonstrate that aggressiveness stimulates interest in media violence (selection hypothesis), the amount of exposure to media violence predicts higher aggression (effect hypothesis) for girls and boys after 2 years (Joy et al., 1986), 10 years (Sonesson, 1989), 15 years (Huesmann et al., 2003), or 17 years (Johnson et al., 2002) *independent of the initial level of aggression* in earlier years. Anderson et al. (2007, p. 119) summarize:

"However, in the broader media violence literature, the evidence that early media violence exposure leads to later aggressive behavior is considerably stronger than evidence of early aggressiveness leading to later high levels of media violence exposure."

While sufficient findings exist for television and film, Anderson et al. (2007) found a lack of longitudinal studies on violent video games. In the United States, one longitudinal study focused on elementary school students' viewing TV and films as well as playing video games (Gentile, Walsh,

Ellison, Fox, & Cameron, 2004). Based on this study, later approaches analyzed specific effects of violent video games (Anderson et al., 2007). In Germany, Möller (2006) did a 6-month longitudinal study on aggressive norms and hostile attribution style as effects of violent video games.

Consequently, the longitudinal study presented here is the first national and international study covering a period of 2 years that investigates frequent viewing of media violence in three types of media (TV, film, and electronic games) and analyzes its effects on teenagers from 12 to 14 years of age.

Theoretical Background

While the results of effect studies on violence in television and film are consistent, various theories explain the effects of exposure to media violence (Anderson & Bushman, 2002a; Lukesch, 2002). The general aggression model (GAM) by Anderson and Bushman (2002a) is constructed as a unifying framework for the explanation of “human aggression.” It integrates Bandura’s (2001) social-cognitive learning theory, Berkowitz’s (1993) cognitive-neo-associationist theory, Huesmann’s (1988) script theory, Zillman’s (1983) theory of arousal transfer, and the theory of social interaction by Tedeschi and Felson (1994). The GAM relies on short-term affect, arousal, and cognition components, but includes long-term knowledge structures including aggressive beliefs and expectation schemata or behavior scripts. “In sum, the General Aggression Model accounts for the wide variety of effects seen in the media violence literature, including both short-term and long-term effects on aggressive thoughts, feelings, and behaviors, on emotional desensitization to violence and subsequent declines in pro-social behavior, and on changes in the social environment that occur as the developing child becomes more habitually aggressive” (Anderson et al., 2007, p. 57). Taking into consideration that “the development and expression of aggressive tendencies” in children is influenced not only by exposure to media violence but by “a wide variety of factors” (Anderson et al. 2007, p. 45), the GAM includes ecological and personal factors in addition to media violence. The present version of the GAM is “very similar” to “a risk and resilience perspective” (Anderson et al., 2007, p. 48). It “distinguishes between variables and processes that operate in the current situation (proximate causes and processes) and those that exert their influence over a long period of time (distal causes and processes)” (Anderson et al., 2007, p. 41). Proximate causes may be momentary emotional states such as frustration or bad mood, or they could be personal variables such as violence beliefs, aggressive scripts, or competencies of self-regulation. The GAM explains the increase in individual aggressiveness through a compound of risk factors integrating the cumulative risk model of Masten (2001). The cumulative risk model assumes that each additional risk factor, for instance, low social status, parental violence, poverty, or drug abuse

(Eron, Guerra, & Huesmann, 1997; Farrington, 1994; Lösel & Bliesener, 2003; Rutter, 2000), increases the probability of developmental problems. Anderson et al. (2007, p. 50) explicitly explain that a single risk factor such as media violence is not sufficient “to cause children to pick up guns and begin shooting people. However, each additional risk factor children have for aggressive behavior (e.g., being bullied, antisocial friends, gang membership, drug use, poverty, history of being abused, access to guns) adds to the risk of that child acting violently.”

The study presented here investigates the long-term effects of exposure to media violence at the age of 12 on antisocial behavior and violence beliefs 2 years later. Following the suggestions of the GAM, ecological (family, school, and peers) and personal factors were included as potential distal causes of aggressive tendencies. In our study we add the age at which students began to view film violence to ecological and personal risk factors. The risk factor, “long-term exposure to media violence,” was differentiated according to three types of violent media: TV, film, and electronic games. Knowledge structures about aggression (Huesmann & Miller, 1994) and aggressive emotions (Anderson, 2002; Hopf, 2004; Huber, 1983; Huesmann, 1998; Weiß, 2000) were included as personal factors. They stimulate exposure to media violence (selection hypothesis), while on the other hand media violence produces (effect hypothesis) learning processes of acquisition, training, automatization, and reinforcement of aggressive scripts, thoughts and aggressive emotional schemata like hostility, anger, hate, or even a generally negative world view (Gerbner, Gross, Morgan, & Signorelli, 1980; Huesmann et al., 1997; Huesmann 1998). Among the types of long-term viewing of violent media, we are particularly interested in violent electronic games. While the American literature, for example Anderson et al. (2007, p. 99), combines video and/or computer games under the term “video games,” we use “electronic games” for combined data about the consumption of violent video and computer games. In addition we will compare the influence of violent TV, film, and electronic games. Finally, we assume, according to the GAM, that long-term exposure to media violence is a direct cause of violence beliefs and antisocial behavior some years later.

Empirical Background

In our context, longitudinal studies on effects of media violence are of special interest. In these studies, the terms “aggression” and “aggressive behavior” are applied in the sense of behavior against other persons “with the proximate (immediate) intent to harm,” and violence is defined as “aggression that has extreme harm as its goal” (Anderson & Bushman, 2002a, p. 28). Anderson and Bushman (2002b) show, in their meta-analysis of 202 studies that were published between 1975 and 2000, that correlational relations between TV violence and aggressive behavior differed depending on the type of studies (longitudinal, cross-

sectional, field experiment, or laboratory experiment). The average correlations varied between $r = .17$ (for longitudinal studies) and $r = .25$ (for laboratory experiments). In their meta-analysis, Anderson and Bushman (2002b) included 46 long-term studies about the influence of TV violence on aggressive behavior. They referred in particular to a 17-year longitudinal study by Johnson et al. (2002), as it

1. Linked television exposure during adolescence and young adulthood to subsequent aggression,
2. Used a large sample, long timespan, and severe aggressive behaviors as criteria, and
3. Controlled for risk factors like parental education and neighborhood violence.

Thus, the authors found evidence "... contradicting the common assumption that media violence affects only children ..." and "... were able to rule out numerous alternative explanations" (Anderson & Bushman 2002b, p. 2377). In the 15-year longitudinal study by Huesmann et al. (2003, p. 215), three factors were linked significantly to later aggressive behavior of the adult subjects (average of 22):

1. The frequency of viewing media violence during childhood,
2. earlier identification with aggressive male or female TV heroes, and
3. children's conviction that TV violence is real.

The prediction of violence in adulthood is independent of the subjects' level of aggression in childhood. Structural equation models showed that viewing of TV violence increased later aggressive behavior but *not* vice versa. Bushman and Huesmann (2006) demonstrated that short-term effects of media violence are stronger for adults than for children. However, the opposite is true for children, that is, long-term effects (e.g., learning of aggressive scripts or habituation of emotional responses to observed violence) are stronger for children than for adults. The effect analysis in the longitudinal study by Gentile et al. (2004) included three types of media (TV, films, and video games). The authors asked 430 children between 7 and 11 years old about consumption of media violence (contents and time), demographic data, and hostility. At the same time, teachers estimated the aggressive behavior of the subjects, and peers rated aggressive and prosocial behavior. The results show that those children who view more media violence during the first months of the school year are less prosocial, more hostile (hostile attribution bias), and physically more violent about half a year later. In a later analysis of specific effects of viewing video game violence (Anderson et al., 2007), path analyses demonstrated a direct influence toward increased verbal aggression, increased physical aggression, and decreased prosocial behavior. Graber, Nichols, Lynn, Brooks-Gunn, and Botvin (2006) rated the exposure of young people to four types of violent media (TV, films, music, and video games) on a six-item scale. Their 2-year longitudinal study confirms that high consumption

of media violence and low educational engagement of parents are predictors of increased aggressive behavior and delinquency of young people.

In summary we can assert that

1. Longitudinal studies "are highly relevant to understanding and predicting the effects of repeated exposure to violent video games" (Anderson, 2004, p. 121);
2. On an international scale, there are few longitudinal studies covering a longer time period (more than 6 months) and comparing the effects of exposure to violence in three types of media (TV, films, and electronic games); and
3. On a national level, there are few longitudinal studies about differing effects of those three types of media and on their joint effect on violence beliefs and antisocial behavior.

The Current Study

The longitudinal study described here is based on a cross-sectional study by Hopf (2004). Those students who participated in a test session during the school year 1999/2000 were included in a repeated assessment after 2 years (2002/2003). While the cross-sectional study primarily investigated the influence of media violence, social environment, and personality characteristics on aggressiveness (readiness for violence) and peaceableness as disposition factors, the present longitudinal study focused on the analysis of causes of violent beliefs and behavior (exposure to media violence, violent behavior in school, and violent delinquency). The results of repeated assessments after 2 years were subjected to complex multi-factorial analyses of the effects of exposure to media violence (TV, films, and electronic games) in the context of social and individual factors. The selection of variables was based on the assumption of risk factors and protective factors in the development of children and adolescents. From this perspective, the influence of media is one risk factor among others (see above). In our study, we began with the assumption of five central areas of risk: media, family, school, peers, and the individual personality. In the instruments for assessment, we selected relevant variables for each of these risk areas (see Table 1 below).

From the point of view of developmental psychology, in the media data we include the age of first exposure to horror/violence films. The longitudinal study by Huesmann et al. (2003) substantiated that frequent consumption of media violence in childhood is a causal factor of later aggression. Gender, media violence exposure (differentiating three types), and aggressive emotional reactions in cases of real violence and media violence were also included. Data on emotion variables can give access to learning processes on an emotional level, which are highly important for an-

antisocial behavior, but they were not included in most of the studies on aggression and violence. Influence factors from family conditions (parents' physical violence and poverty) and the "warmth" factor from a school climate scale (see below) were included in the data base so as to take into account central risk factors in early adolescence. Likewise the data at Time 1 (age 12) for the three goal variables violence beliefs, students' violence, and delinquency were included as moderator variables.

After 2 years, the tests assessed the following variables as effects of *early* exposure to media violence (three types of media): exposure to media violence, violence beliefs, students' violence (violent behavior in school), and violent delinquency. Effects of the age (from 6 to 7 years old and older) at which children were exposed to horror/violence (H/V) films for the first time were hypothesized to confirm the cumulative nature of risks of media violence exposure. The general goal of our study was to understand the effects of consuming media violence in the context of relevant risk factors in the environment and personality of young people. The results should clarify cumulative influences on aggression and violence among young people ages 12–14 in Germany.

Hypotheses

Considering the multiple causation of aggression as well as the widespread and lasting exposure of children to violent electronic games, the following subhypotheses of the general effect hypothesis were tested:

1. Early exposure to media violence (total score) is the strongest predictor of later exposure to media violence, violence beliefs, violence of students, and delinquency.
2. Early use of violent electronic games is the strongest factor in causing violence of students and violent delinquency 2 years later.
3. Early exposure to media violence (total score) directly causes violence beliefs, violence of students and violent delinquency 2 years later.

Method

Participants

The participants investigated in this study belong to the approximately 40% of students in the public school system of Bavaria who attend *Hauptschule*, the most basic track of secondary education in Germany¹. Among the students of *Hauptschule* are problem groups characterized by violence problems, social discrimination, and low career perspectives. Several studies of violence among students (Ar-

Table 1. Variables

Influence	Variable
Media	TV violence
	Violent electronic games
	Horror-Violence-films (H-V-films)
	Aggressive emotions during H-V-films
	Exposure to media violence (total score)
Family	Acceptance
	Poverty
	Physical violence of parents
	Media education by parents
School	School climate: Warmth
	School climate: Well-being
	Classroom climate
	Students' violence: (Verbal aggression/Aggression against objects, deviancy/Aggression against persons/Verbal and physical mobbing)
Peers	Aggressive emotions during violence between peers
Personality	Delinquency
	Violence beliefs
	Aggressiveness
	Peaceableness
	Self-efficacy
	Self-regulation
	Materialistic value orientation
	Gender
	Age
	Nationality

beitsgruppe Schulevaluation, 1998; Fuchs, Lamnek & Luedtke, 2001; Holtappels, Heitmeyer, Melzer, & Tillmann, 1997; Tillmann, Holler-Novitzki, Holtappels, Meier, & Popp, 1999) confirm that *Hauptschule* is prone to student violence. The study presented here is relevant to society, in that the majority of at-risk youth and violent adolescent criminals remain at low educational levels. A survey of students run by the Hanover-based Criminological Research Institute of Lower Saxony (Kriminologisches Forschungsinstitut Niedersachsen e.V., KFN) in 1997 demonstrates that among ninth graders in special education schools, *Hauptschule*, and the basic classes of vocational school are three times as many at-risk youth than in *Gymnasium* (Pfeiffer & Wetzels, 2001). It being the goal of our study to examine the relationship between students' violence/delinquency at the age of 14 years and their former consumption of media violence, we preferred to investigate a subpopulation with higher probability of antisocial behavior than their peers, meaning a subpopulation in which violence and delinquency are less rare events than among students of *Realschule* and *Gymnasium*. If we want to find potential approaches to violence prevention, we should study areas where prevention is especially necessary.

The sample was composed of students from six *Hauptschulen* who were also included in the cross-sectional study

¹ While there are some exceptions, the German school system is basically three tiered: The second level is represented by *Realschule*, which leads to a higher qualification that is the basis for many professional qualifications. The highest level of secondary education is the *Gymnasium*, leading to university entrance qualification.

mentioned above (Hopf, 2004): One school was situated in Munich, three schools in the county of Munich, and two in nearby small towns. The first test session was administered to 653 students from 5th to 7th grades in 1999/2000. Of these students, 314 participated in the second assessment in 2002/2003 during grades seven through nine. The decreased number of student is the result of parents moving, absence during the days of test administration (the media questionnaire and the violence questionnaire were not administered on the same day), and missing data within the questionnaires. A comparison of the sample composition at Time 1 and Time 2 did not reveal any significant differences; at Time 2 the subjects form a representative sample of the initial sample. At Time 1 the subjects were, on average, 12 years old ($SD = 1.07$), while the average age at Time 2 was 14.7 years old ($SD = .82$). The following data refer to Time 2: 58% of the subjects were male and 42% female; 68% were Germans, while 14% had a Turkish background and 18% another national background. As for the family situation, 74% lived with both mother and father, 14% with one parent, and 12% in other social constellations.

Instruments

Violence and Climate Questionnaire

From a study by Tillmann et al. (1999) on students' violence in schools, we took the scale for violence beliefs (five items; Cronbach's $\alpha = .83$) as well as the scales for delinquency (seven items; Cronbach's $\alpha = .80$; examples: "I have taken part in a fight/I have beaten up somebody badly," "I have broken into a vending machine"), acceptance within the family (seven items; Cronbach's $\alpha = .86$), and verbal aggression, physical aggression, and deviance in school (20 items in total). A factor analysis of the latter 20 items resulted in three different dimensions: verbal aggression (nine items; Cronbach's $\alpha = .89$), aggression against objects and deviance in school (seven items; Cronbach's $\alpha = .80$), and aggression against persons (four items; Cronbach's $\alpha = .71$). Scores for the dimensions of "warmth" of the school climate (interaction style of teachers; nine items; Cronbach's $\alpha = .87$) and individual well-being in school (two items) were collected with scales from the *Linzer Fragebogen für Schul- und Klassenklima* (Linz Questionnaire of School and Classroom Climate; Eder & Mayr, 2000). Classroom climate was assessed with the scale of learning community (three items; Cronbach's $\alpha = .55$) from the same questionnaire. The scales for self-regulation (10 items; Cronbach's $\alpha = .82$) and self-efficacy in school (seven items; Cronbach's $\alpha = .73$) were taken from the *Skalen zur Erfassung von Schülermerkmalen* (Scales for Assessment of Student Characteristics; Schwarzer & Jerusalem, 1999). The dimension Verbal violence had a strong correlation with the factor of Violence against objects and deviance in school ($r = .61$; $p < .01$), an even stronger correlation with the factor of Violence against persons ($r = .64$; $p < .01$), and a somewhat weaker correlation with Verbal and physical

mobbing ($r = .46$; $p < .01$). Because of these interrelations we calculated a total factor of Students' violence.

Media Questionnaire

One scale of the questionnaire by Tillmann et al. (1999), complemented by questions about additional types of films (altogether 16 items addressing various genres), was used to assess contents of TV viewed by the students. They were asked how frequently (five-point scale) they had watched TV during the preceding 2 weeks; this limitation was supposed to add to the validity of recollections. The frequencies of viewing horror/violence films and using violent electronic games were assessed without time limitations. The students were asked to mark the frequency of watching horror and violence films in a list of 19 well-known titles (for instance, *Scream* and *Friday, the 13th*) on a five-point frequency scale (0 times, 1–2 times, 3–10 times, 11–30 times, and more than 30 times). The same frequency scale was applied to assess the amount of exposure to violent electronic games (in a list of 16 titles including *Doom*, *Resident Evil*, and *Half Life*). In addition, the media questionnaire contained the following scales: physical violence of parents, composed of eight items (Cronbach's $\alpha = .80$) from the KFN study on violence among adolescents (Pfeifer, Wetzels, & Enzmann, 1999) and verbal and physical mobbing in schools with two items (Cronbach's $\alpha = .69$) by Hanewinkel and Knaack (1997). Emotional reaction to media violence was assessed with 10 items on five-point rating scales. A factor analysis extracted a dimension of Aggressive emotions (five items; Cronbach's $\alpha = .79$; examples: "I felt powerful" and "I felt hate and revenge"). The same 10 items were applied to assess emotions during experiences of real violence or rather violence between groups of peers. Again, a factor analysis isolated the dimension Aggressive emotions (five items; Cronbach's $\alpha = .88$). Two items were dedicated to measuring poverty (Cronbach's $\alpha = .49$; example: "My parents don't have much money"). Data on materialistic value orientations were gathered with four items (Cronbach's $\alpha = .75$; example: "For me it is most important to have money"). The scale for media education by parents contained six items (Cronbach's $\alpha = .63$). To construct scales measuring aggressiveness (12 items; Cronbach's $\alpha = .83$; example: "I start a fight without much pondering") and peaceableness (nine items; Cronbach's $\alpha = .77$; example: "If somebody is tormented in a movie, I suffer with the victim"), 14 items were taken from a study by Kleiter (1997). At Time 1, viewing of TV violence was strongly correlated with the frequency of exposure to horror/violence-films ($r = .53$; $p < .01$) and violent electronic games ($r = .59$; $p < .01$). Because of these intercorrelations of principally similar contents and effects (Anderson & Bushman, 2001; Trudewind & Steckel, 2003), we also calculated a total factor of Exposure to media violence (arithmetic mean of the different scores).

Table 2. Correlations (r) between Time 1 variables and media violence exposure, violence beliefs, and violent behavior (Time 2)

Time 1 Variables	Time 2 Variables (after 2 years)			
	Media violence exposure (total)	Violence beliefs	Students' violence	Delinquency
Media violence exposure (total)	.71**	.34**	.47**	.48**
TV violence exposure	.55**	.27**	.34**	.35**
Horror-Violence-films	.45**	.33**	.46**	.45**
Violent electronic games	.61**	.20**	.32**	.40**
Violence beliefs	.20**	.37**	.17**	.11*
Students' violence	.27**	.32**	.43**	.31**
Delinquency	.31**	.20**	.29**	.40**
Parents' physical violence	.21**	.08	.33**	.19**

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

Procedures

The questionnaires were filled in anonymously by the students in their classrooms (duration: 60–90 min). University students conducted the test administration, instructed the subjects, and assisted them in case of language difficulties (32% of the subjects had a non-German family background). Test Session 1 was administered during the fourth quarter of 1999 (Violence and Climate Questionnaire) and the first quarter of 2000 (Media Questionnaire), Test Session 2 during the third quarter of 2002 (Violence and Climate Questionnaire) and the first quarter of 2003 (Media Questionnaire). The time interval between filling in the Violence and Climate Questionnaire and the Media Questionnaire should help to minimize possible influences of the first self-report on the second one.

For a test of Hypothesis 1, multiple regression algorithms were used to analyze predictors and to develop models. However, regression analysis may increase or decrease (suppressor variables) the explanation power of predictors depending on the sequence in which they are entered into the equation. Based on theoretical considerations (viewing of media in the context of important variables), we, therefore, determined the following five predictor variables as the base structure: Gender, age, media violence exposure (total score), parents' violence, and students' violence. Ideally predictors should be independent of each other, but in this case cannot be achieved because of social and intrapersonal dynamics. In addition, the theoretical model implies connections between these predictors. Their interrelations varied between low ($r = .1$) and medium correlations ($r = .3$). We identified the strongest predictive factor in the multiple regression analysis calculated to analyze the predictors of the criterion variables of Hypothesis 1.

The direction of Hypotheses 2 and 3 was tested by means of path analyses, so that direct and indirect effects on the goal variable could be analyzed. This allows for comparing the effects of media with other main effects attributed to the students' social environment or their personality. Comparative models, which are rare in media research, make it possible to

evaluate more precisely the relevance of media effects on the development of adolescents. While cross-sectional analyses may produce artifacts in path models, this problem does not exist in time-based longitudinal studies since preceding conditions cause later behavior. Regression models lead to a first reduction of influencing variables relevant to a later path analysis. The addition of variables is based on theoretical considerations. To increase consistency, the reported path models contain only moderator variables from a coefficient $\beta \geq .15$. A total of eight variables are included in the tests of *Hypotheses 2 and 3*, which build the structure of influences in addition to the media variable. The crucial coefficient PGK (*Pfadgerüstkoeffizient*), expressing the stability of a path model, should be higher than 2.0 (Kleiter, 1997).

The path analyses were realized with AUTO-PFAD, an algorithm for automatic path analysis from the program package KMSS (Kleiter, 2000). It determines a hierarchical analytical model guided by an initial hypothesis. Kleiter (1997) describes "levels" in the model solutions, however, the analysis does not represent a traditional multilevel analysis but, rather, a hierarchical model. In other words, a path analysis, according to Kleiter, is a path-analytical search of structure, in which a goal variable is predetermined and the algorithm tries to find an optimal path structure explaining the effects of variables (Kleiter uses the terms "moderating" and "intervening" variables) influencing the goal variable. Unlike LISREL, which tries to confirm structures by simultaneous processing of variables, AUTO-PFAD constructs a path through stepwise operations. "The structure of the goal path is determined in the sense of creating a hypothesis, while the optimal structure of the other variables which may influence the goal path, has to be searched" (Kleiter, 1997, p. 397).

Kleiter's path analysis calculates the effects of a hypothetical pool of variables on a goal variable. The size of β -weights and their directions allow for conclusions concerning the relations between selected variables (predictors) and their directions, thus, variables within the context of the model can be interpreted as causes, for instance: "Frequent viewing of violent media influences delinquen-

Table 3. Prediction of media violence exposure, violence beliefs, students' violence and delinquency after 2 years (hierarchical regression analysis)

Time 1 Variables	Time 2 Variables (after 2 years)			
	Media violence exposure (total)	Violence beliefs	Students' violence	Delinquency
Gender	-.43**			
Age		.14*	.13**	.12*
Media violence exposure (total)	.50**	.19**	.19**	.29***
Parents' physical violence		-.19**	.32***	.14**
Poverty	-.13*			
Students' violence			.33***	
School climate: Warmth	-.18***		-.17**	
School climate Well-being	.18***			
Self-efficacy (school)			.15**	
Violence beliefs		.33***		
Aggressiveness		.28***		
Peaceableness				-.21***
Self-regulation		-.15*		
Aggressive emotions				.12*
Delinquency				.23***
Corrected R ² in%	65%	37.9%	47.3%	46.5%

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

cy more strongly than parents' physical violence" or – referring to a causal direction – "TV violence, horror/violence-films, and violent electronic games cause an increase of aggression – contrary to the assumption that aggression is the cause of preferences for violent media."

Results

For an overview on relations between the media variables and parents' physical violence (see Table 1) at Time 1 as well as the dependent variables (Time 2) of media violence exposure (total), violence beliefs, students' violence, and delinquency, we calculated intercorrelations. Most of the correlations found ranged between medium ($r = .3$) and strong ($r = .5$) interrelations (Cohen, 1988), and some were even stronger (see Table 2). Above all, early exposure to media violence is strongly linked to later media-relevant behavior, which is very stable between the ages of 12 and 14. Furthermore, the relevance of media influence is confirmed by remarkable interrelations between consumption of media violence, students' violence, and delinquency. The factor physical violence of parents is of lesser importance.

Hypothesis 1

In Hypothesis 1 it is assumed that early exposure to media violence (total score) is the strongest predictor of later me-

dia violence exposure, violence beliefs, violence of students, and delinquency.

Hypothesis 1 was tested by conducting four regression analyses, one for each of the dependent variables at Time 2: exposure to media violence (total score), violence beliefs, students' violence, and delinquency. From the list of variables (see Table 1), the following 15 variables at Time 1 were significant as predictors: gender, age, exposure to media violence (total score), parents' physical violence, poverty, students' violence, school climate: warmth/well-being, self-efficacy in school, violence beliefs, aggressiveness, peaceableness, self-regulation, aggressive emotions (during group violence), and delinquency.

The explanation of variance of the four predicted variables, as assessed after 2 years, was very satisfying in the cases of students' violence and delinquency, but less satisfying – as was to be expected – in the case of violence beliefs. Belonging to a particular nationality did not influence the predictions. For media behavior, we achieved a precise prognosis of exposure to violent media that was primarily valid for male adolescents. The model shows that earlier viewing of violent media is the main predictor, while poverty does not reduce the exposure to media violence. Lack of warmth in the school's social climate and well-being in school (meeting friends, etc.) promote exposure to media violence, most likely mediated by talking about exciting media content. Table 3 shows the regression models with maximal total variance.

Hypothesis 1 was partially confirmed: early exposure

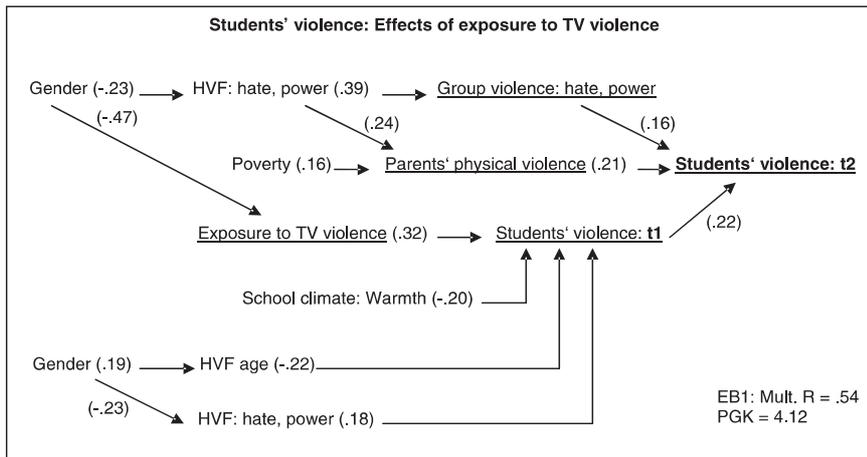
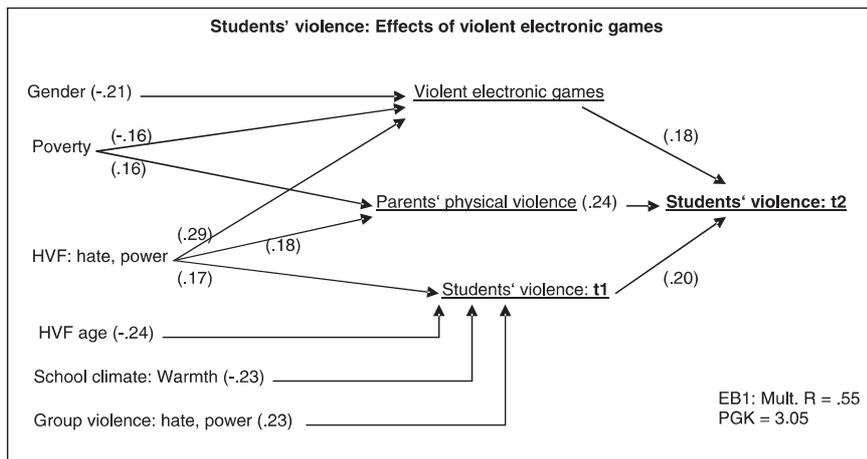
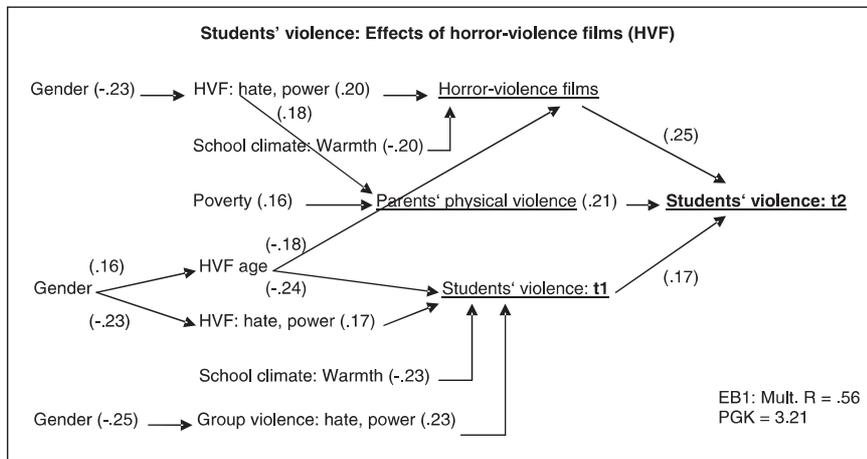


Figure 1a, b, c. Effects of three types of media on students' violence. Path coefficients according to KMSS-Version 7 (Kleiter, 2000).



to media violence (total score) predicts, as a most powerful factor, both later exposure to media violence ($\beta = .50$) and delinquency ($\beta = .29$) after 2 years. Not confirmed was the hypothesis regarding the criteria of violence beliefs and students' violence. In these areas, former violence beliefs are dominant ($\beta = .33$) as well as former violence of students ($\beta = .33$) and physical violence of parents ($\beta = .32$).

Hypothesis 2

Hypothesis 2 assumes that early consumption of violent electronic games is the strongest factor in causing violence of students and violent delinquency 2 years later.

Early media violence exposure was expressed in a total score composed of viewing TV violence, horror/violence-films, and violent electronic games. Hypothesis 2 looks for

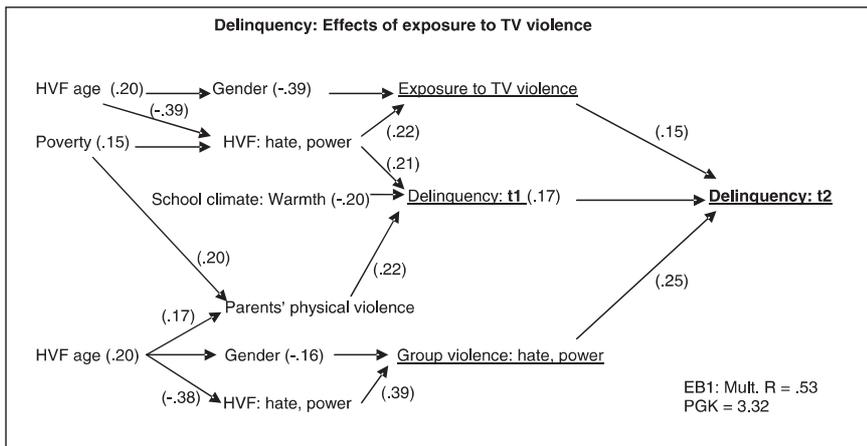
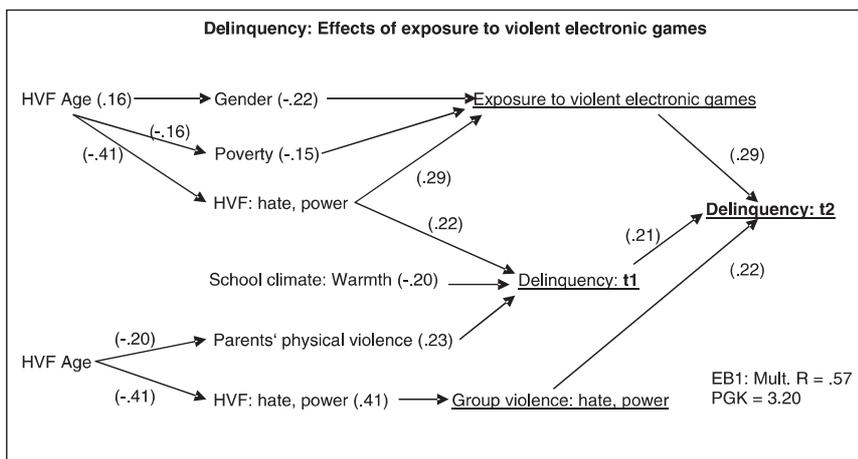
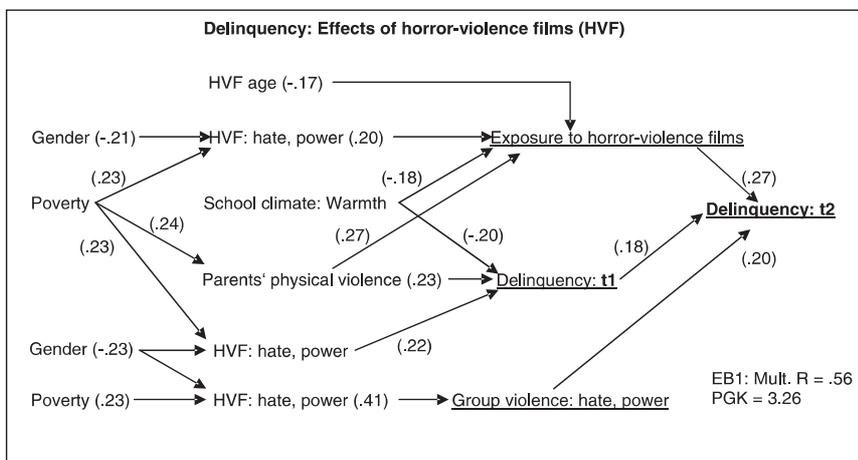


Figure 2a, b, c. Effects of three types of media on delinquency. Path coefficients according to KMSS-Version 7 (Kleiter, 2000).



possible differences in the effects of these three media types. Of particular interest are effects of violent electronic games, because until now there has been a lack of longitudinal data in this area (see above). Hypotheses 2 and 3 were tested with an algorithm for automatic path analysis, AUTO-PFAD, from the program package KMSS (Kleiter, 2000) (see above). The values of multiple correlations reported in these path models refer to the models' uppermost

hierarchical stratum (EB1), each of which is determined by three direct factors. The coefficient PGK shows the stability of the model (see above).

The β -scores in the described path models of the variable students' violence (see Figure 1a, b, c) express the degree and direction to which one variable influences the other one. Exposure to TV violence influences indirectly but strongly ($\beta = .32$), via students' violence at Time 1

(t1), their later violent behavior in school (students' violence at Time 2 [t2]) and students' violence at t1 shows the strongest effect as compared to both direct moderators, group violence: hate, power and parents' violence. On the second hierarchical stratum, the strongest path leads from experiences of media violence (horror/violence films: $\beta = .39$) to the experience of real violence and finally to students' later violence. In the same way, the exposure to media violence (H/V films) influences violent educational practices; here we may assume a process of mutual reinforcement, because parents' violence probably precedes, in individual biographies, experiences of media violence (from 6 years onward). If we compare the effects of H/V films and violent computer games, we find the same structure on stratum 1. Besides the particular media type under consideration, physical violence of parents and students' former violence (t1) have a direct effect on students' later violence (t2). Consumption of H/V films shows the strongest effect ($\beta = .25$) as compared to both context variables, while violent computer games ($\beta = .18$) have a somewhat lesser influence than parents' and students' violence. The strong effect of H/V films is because adolescents have already viewed H/V films during childhood and have accumulated long-term emotional consequences (emotions of hate and power). In contrast, consumption of violent electronic games starts intensively only *after* primary school years, most likely because members of this sample had only limited access to computers in earlier years. This assumption is further substantiated by the low age of initial exposure to H/V films ($\beta = -.24/-.18$), which again influences students' violence and consumption of H/V films. Experiences of hate and power when exposed to media violence and real violence influence the three main effects on a second hierarchical stratum; the same is true for lack of emotional warmth in school.

In the path models of the goal variable delinquency (see Figure 2a, b, c), all three types of media become direct factors. Consumption of TV violence has the lowest effect ($\beta = .15$) on delinquency, while use of violent electronic games has the highest effect ($\beta = .29$). The direct factors' structure of effects is identical in all of these path models: Type of media \rightarrow Delinquency \rightarrow Group violence (experience of real violence). Parents' violence indirectly influences delinquency in all models on a second hierarchical stratum; in one of the models (see Figure 2b), parents' violence additionally influences the consumption of H/V films. In all models, experiencing aggressive emotions while viewing violent media increases viewing of the current type of media, and it influences aggressive emotions during real violence most powerfully ($\beta = .39/.41$). These effects confirm that viewing media violence habituates emotional schemata of hate, rage, and feelings of power and dominance associated with the motive of revenge. In turn, experiences of real violence (between peer groups) increases exposure to media violence. On a third hierarchical stratum, the early age of initial

exposure to H/V films has almost the same powerful influence ($\beta = -.41/-.39$) on aggressive experiences of media violence: This is important for the development of aggressions from the viewpoint of developmental psychology. The first two models demonstrate the influence of poverty both on the experiences of hate and power during H/V films and on parents' violence (more specifically, parental violence caused by financial problems).

Summarizing, we see that in both goal variables (students' violence, delinquency) the effects of exposure to TV violence are lowest, H/V films most strongly cause students' violence, and violent electronic games most strongly cause delinquent behavior after 2 years. The path analyses confirm that the three types of media (with one exception), as compared to risk factors in social environment and personality, have direct, autonomous effects on the goal variables. Thus, electronic games and H/V films are also main risk factors for the development of aggression and violence of adolescents, not just social and personal factors. Hypothesis 2, which assumed that early exposure to violent electronic games is the strongest factor to cause violence of students and violent delinquency 2 years later, was not confirmed for students' violence, but was confirmed for violent delinquency.

Hypothesis 3

Early exposure to media violence (total score) directly causes violence beliefs, violence of students, and violent delinquency 2 years later.

We merged the consumption data of media violence (three types of media) into a single variable, exposure to media violence. The following path models (see Figure 3a, b, c) substantiate that early exposure to media violence (total score) as the cause for students' violence at the age of 14 is the strongest factor in the context of parents' physical violence and students' violence at t1. The explanation of delinquency is also supported most strongly by the effects of exposure to media violence as compared to the other two main effects in our study, i.e., delinquency at the age of 12 and experience of violence between peer groups. Marked differences in the effect sizes of viewing media violence and risk factors in the social environment contradict an overemphasis of social factors when explaining the development of violence and delinquent behavior for this age group. These strong effects of exposure to media violence also suggest cumulative effects among the three types of media, which could not be checked here. For instance, the effects of violent electronic games may be reinforced by the consumption of TV violence and horror films. The complexity within the field of influences is obvious on the second hierarchical stratum of the first two path models; here we see the influence of gender, negative school climate, initial age of exposure to H/V films, and aggressive emotions while viewing these films. Indirect influences on students' violence come from

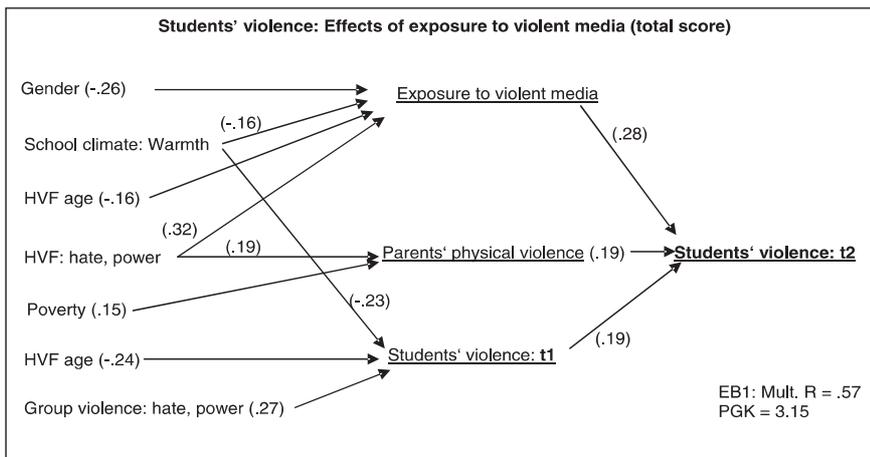
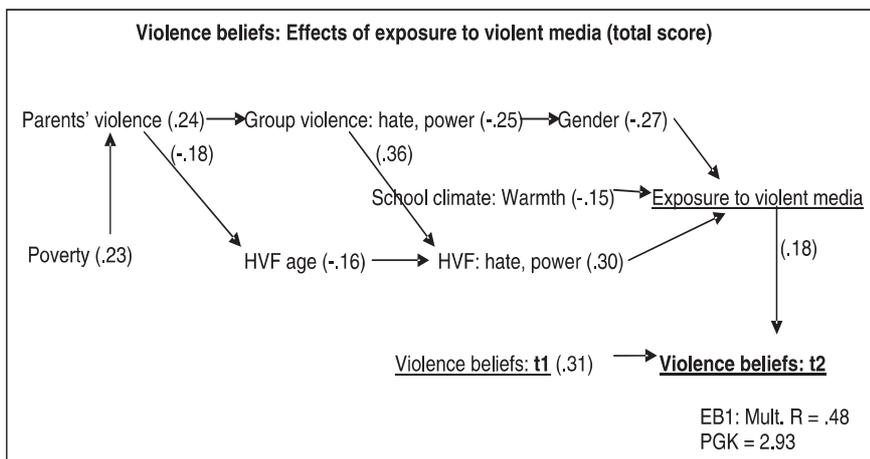
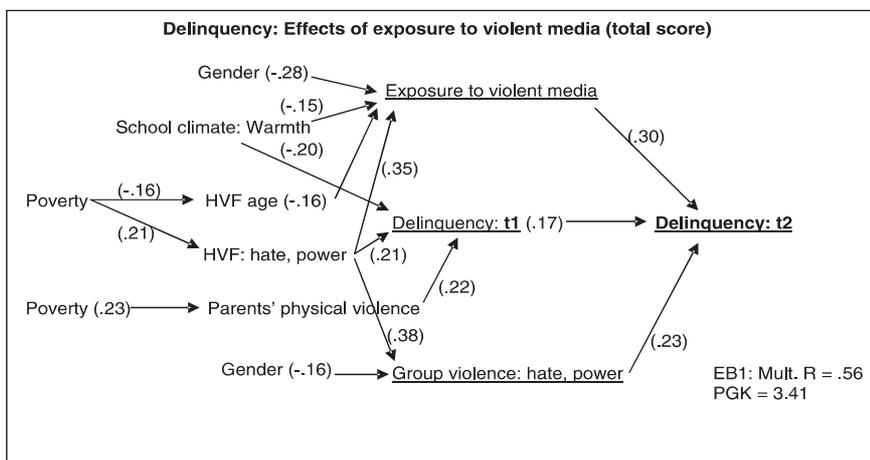


Figure 3a, b, c. Effects of exposure to media violence (total) on students' violence, delinquency, and violence beliefs. Path coefficients according to KMSS-Version 7 (Kleiter, 2000).



the factors of poverty and experiences of hate and power in situations of violence between peer groups.

Parents' violence has direct influence on students' violence but indirect influence on delinquency. Contrary to behavior, later violence beliefs are influenced primarily by violence beliefs at age 12; in addition, media violence exposure has autonomous and direct (although weaker) effects. On the second, third, and fourth hierarchical strata,

consumption of violent media is altogether influenced by seven variables, while former violence beliefs as a stable personality factor already show their effects at the age of 12. Thus, Hypothesis 3 is confirmed, which claims that media violence exposure (total score) directly causes violence beliefs, students' violence, and delinquency.

The direction of effects was checked longitudinally by cross-lagged correlations (see Figures 4a and b). The test

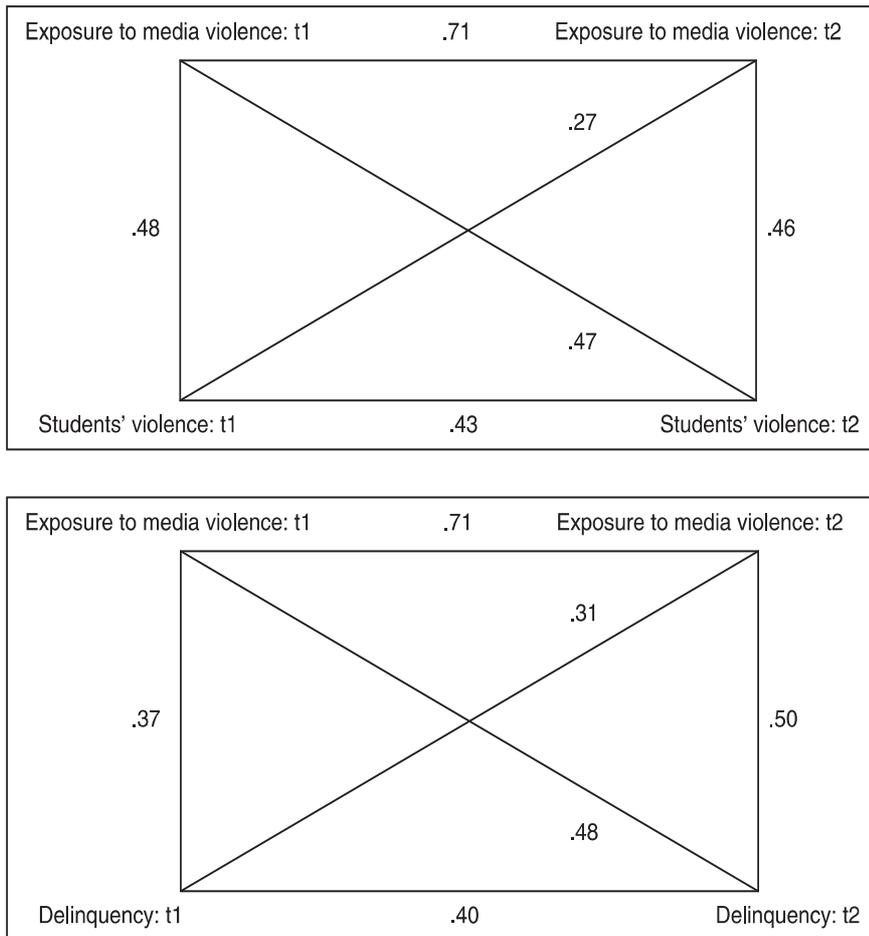


Figure 4a, b. Cross-lagged panel analysis: Exposure to media violence (total) and (a) students' violence, (b) delinquency.

of statistical significance by Kenny (1975; see also Kenny & Harackiewicz, 1979) showed that the interrelation between previous exposure to media violence and later students' violence ($r = .47$) differed highly significantly ($p < .002$) from the interrelation between former violence of students and their later exposure to media violence ($r = .27$). In other words, it is not true that students' violence led to increased exposure to media violence during the 2-year period but it is true that consumption of media violence led to more violence in school after 2 years. A highly significant difference ($p < .007$) is found when comparing the correlation between former exposure to media violence (t1) and later violent delinquency after 2 years ($r = .48$) to the correlation between earlier delinquency and later consumption of media violence ($r = .31$). These correlations can be interpreted in terms of causation.

In summary, several methodologically different checks of a cause-effect sequence between consumption of media violence and students' violence/delinquency confirm our hypotheses. In addition, more complex path analyses confirm the sequence of effects regarding the consumption of violent media and several intervening variables. Thus, Hypothesis 3 is confirmed; the sum of exposure to media vi-

olence causes violence beliefs, students' violence, and (with the strongest effect) delinquency after 2 years.

Discussion

Total Exposure to Media Violence: Main Predictor and Effects

Prognostic models of hierarchical regression analyses indicate that the total score of exposure to media violence is the main predictor of violent media consumption and delinquency 2 years later. Total consumption of violent media is very stable between 12 and 14 years of age. The prognostic model of delinquency confirms that early exposure to media violence (at age 12) provides important antisocial patterns of imitation and behavior (Bandura, 1977; Huesmann, 1988). The picture is more complex in regard to the influence of parents' violence as a risk factor; the path models for delinquency as the goal variable show only indirect influences of parents' violence, whereas students' violence as the goal variable is directly affected by parents' physical violence, although to a lesser degree. The regression analyses revealed that violent parental education practices at the age of 12 do not predict exposure to media violence at the age of 14 and

parents' violence negatively predicts later violence beliefs. The declining influence of parents' physical violence may be explained by changes of educational style. While authoritarian patterns of education are prevalent in early years of adolescence, parents modify their educational behavior during their children's years of puberty toward a more permissive or even laissez-faire style. Lack of parental monitoring together with frequent viewing of violent media promote a risky, delinquent development of young people, while parental engagement supports positive social development (Baumrind, 1991; Graber et al., 2006). The set of risk factors in our regression-analytic models demonstrates, however, that viewing violent media is a risk factor of central importance along with parents' violence (especially in the case of delinquency), school climate, personality characteristics, and antisocial behavior.

Total exposure to media violence (together with parents' physical violence and students' former violence in school) is the strongest factor in determining students' violence at the age of 14. Compared to the influence of delinquency at age 12 and the experience of violence between or in peer groups, the total consumption of violent media influences most strongly students' delinquency at the age of 14 years. Remarkable differences of effect sizes (path coefficients β) between total exposure to media violence and risk factors in the environment confirm the importance of media influence for the development of violent and delinquent behavior during this age period. Violence beliefs are mainly influenced by former violence beliefs, as opposed to antisocial behavior. Studies about the joint influences of various types of media also demonstrate their strong effects (Gentile et al., 2004; Graber et al., 2006; Hopf, 2004; Robinson, Wilde, Navracruz, Haydel, & Varady, 2001; Slater, Henry, Swaim, & Anderson, 2003). Cross-correlational analyses show that the relation between former (t1) total exposure to media violence and later students' violence and delinquency has a highly significant difference from the relation between former students' violence and delinquency and later (t2) total exposure to media violence. In other words, while it is not true that students' violence and delinquency lead to higher total exposure to media violence 2 years later, it is true that total consumption of violent media leads to statistically significant higher violent delinquency and violence in school 2 years later.

Aggressive Emotions

An important finding of our study was produced through path analyses of the effects of various types of media and total exposure to media violence. Experiencing aggressive emotions such as hate and rage, associated with feelings of power and dominance when viewing media violence, continues to affect aggressive experiences of real violence between or in peer groups. This sequence of effects is shown with high effect sizes (between .38 and .41) in the path models analyzing delinquency. In the remaining models of

students' violence, media-stimulated experiences of hate, rage, and the motive of revenge affect total exposure to media violence, consumption of H/V films and electronic games, parents' violence, and students' violence. Aggressive emotions during exposure to media violence also strongly depend on young people's experiences of real violence within their families. The path-analytical models of our study show that aggressive emotions are learned beginning in elementary school and advance toward long-term effects of violent media consumption. Therefore, we enriched the theoretical model of Anderson and Bushman (2002a) with the dimension of "long-term aggressive emotions," because the original model only included anger or other emotions as short-term effects of violent media exposure. Anderson and Dill (2000), as well as two meta-analytic reviews (Anderson & Bushman, 2001; Anderson, 2002), showed that violent electronic games stimulated aggressive emotions. Baumeister and Bushman (2002, p. 598) contend in their review that emotions "play an important role among the psychological causes of aggression and violence" but describe only frustration, rage, shame, humiliation, feelings of blame as reducing factors, and sadistic pleasure. Brutal criminal violence based on hate (hate crime) is committed, above all, by fascist and fundamentalist groups (Heitmeyer & Hagan, 2002; Wahl, Tramitz, & Blumtritt, 2001, p. 305), although individual cases are present as in the instance of school massacres. During the recent school shooting in Emsdetten, Germany (Nov. 20, 2006) the adolescent offender confessed on the Internet his motive of revenge and hatred toward school. Psychological functions of hate activate cognitions of strength and power (Eckert, Reis, & Wetzstein, 2000) which, in turn, "provide" the necessary energy for planning and realizing the intended assassinations. As evidence shows, the process of hate development begins in elementary school. This is also the age at which children are initially exposed to H/V films, which activate experiences of hate and power as shown through our path analyses. Kleiter (1997), Weiß (2000), and Mößle, Kleimann, Rehbein, and Pfeiffer (2006; Mößle, Kleimann & Rehbein, 2007) also confirm the exposure to extreme media violence during the elementary school years. Qualitative data from group discussions in the participating classes showed that most of the 12-year-old students received horror films and "forbidden" games from their parents, relatives, or older siblings. This fact explains why demanding media education in families as a measure of protecting children and young people is not very promising, particularly since between 40% and 60% of parents in Germany, depending upon age, neither regulate their children's exposure to media nor express interest in doing so (Hopf, 1998; Mößle et al., 2006; 2007).

The Effects of Three Media Types

The path analyses allow comparison of the effects of the three media types. Eight additional variables were included

in these analyses. These variables test whether, in their context, exposure to media violence still functions as a direct main effect. While fewer moderators lead to less complex path models, this set of direct and indirect factors represents the influences in an ecologically more valid way. We intended to draw a realistic (although complex) picture of the *causal structure*, because opponents of media effects research have formerly implied that these studies apply a mono-causal perspective. The strong effect of H/V films on students' violence may be caused by the extended time since elementary school years of H/V film viewing. Therefore, the actual discussion about media violence should not neglect H/V films as a risk factor. The path-analytical comparison of TV violence, horror films, and violent electronic games demonstrates that, between 12 and 14 years of age, students' violence is influenced more strongly by H/V films ($\beta = .25$) than by violent electronic games ($\beta = .18$), while delinquency shows a trend of stronger influence by electronic games ($\beta = .29$) than by H/V films ($\beta = .27$). In the 6-month longitudinal study by Anderson et al. (2007), the relation between playing violent electronic games and physical aggression was stronger in comparison to the influence of TV and film viewing. Our study confirms this finding in regards to delinquency, including physical violence.

The present discussion about the effects of media violence has concentrated on brutal electronic games. This is a result not only of content-based associations with school massacres and application for military purposes (for instance, *Marine Doom*) but, above all, of the abundant possibilities of committing virtually inhuman cruelties and killing, mutilating, and destroying human beings with relish. The media industry uses "fascination with evil," a concept of the enemy historically used by religious, military, and political institutions to mobilize the masses for active training and conditioning for violence readiness (Grossman & DeGaetano, 1999). Comparing the effects of three types of media on delinquency, we see an identical structure of direct influences: Media type \rightarrow Delinquency \rightarrow Violence between peer groups. Strongest are the effects of violent computer games ($\beta = .29$) on delinquency, followed by H/V films ($\beta = .27$), and TV violence ($\beta = .15$). These are, for the first time, longitudinal results that demonstrate a strong causal effect of violent electronic games on 12- to 14-year-old pupils. We assume that the effect on delinquency will be stronger in the future: The consumption of violent games is increasing among young people, and the games become increasingly more realistic and brutal. Empirical data from 2005 (Möbke et al., 2006; 2007) show an increase in playing violent games among 9- to 10-year-old pupils: 21.3% of boys played violent games permitted only for those aged 16 and older or those games not permitted at all for young persons. Despite the fact that the 10- to 12-year-old pupils had relatively low access to computers, our study showed that violent electronic games caused the strongest increase in delinquency, thus confirming their harmful social effect.

Summary

According to GAM (Anderson et al., 2007), including the perspectives of the cumulative risk model (Masten, 2001) and developmental psychology, a series of risk factors cause an increase in aggression and violence. Therefore, exposure to media violence is one risk factor among others (Anderson et al., 2007). Using path models, in addition to the frequency of media exposure, we analyzed eight more risk factors from family, school, peer group, and personality characteristics. The above mentioned longitudinal study of pupils in elementary school also showed that "each of these variables, hostile attribution bias, sex, video game violence exposure, and prior aggressive behavior, is related to future aggressive behavior" (Anderson et al., 2007, p. 127). Important to the relevancy of media effects is whether they influence the goal variable directly or indirectly. Only in the path model of effects of TV violence on students' violence did we find an indirect effect, while in all other path models the risk factors H/V films, violent electronic games, and total exposure to media violence directly influenced antisocial behavior and violence beliefs 2 years later. Direct influence also comes from, according to the model, varying the risk factors of parents' physical violence, experiencing aggressive emotions during group violence, violence beliefs, students' violence, and delinquency, which in turn are strengthened by the remaining risk factors on the second and third strata of the path model. Particularly important is the finding that experiencing aggressive emotions like hate, anger, feelings of power, and, additionally, the motive of revenge represent central risk factors for aggressiveness and violent crimes. The path coefficients demonstrate the power of these effects. Comparing the three media types we see that the violence of 14-year-old students is caused most strongly by early exposure to H/V films ($\beta = .25$), while their delinquency is influenced most strongly by violent electronic games ($\beta = .29$). Anderson's et al. (2007) longitudinal study of elementary school pupils reported lower coefficients for the path between video game violence and physical aggression ($\beta = .13$), while the coefficient for the path between former and later physical violence ($\beta = .59$) was higher (Anderson et al., 2007, p. 116). In our study, the total exposure to media violence is the strongest risk factor for students' violence ($\beta = .28$) and delinquency ($\beta = .30$). The results of our study show: The more frequently children ages 6 to 10 view H/V films and the more frequently they play violent video and computer games at the beginning of adolescence, the higher these students' violence and delinquency will be at the age of 14.

Cross-lagged correlations also confirm the causal nature of exposure to media violence. These findings confirm the effect hypothesis and reinforce the consistency of the analyses on effects of three types of media. Anderson et al. (2007) try to compare "old versus new violent media" and raise a number of difficult questions such as

whether these media differ between their short-term and long-term effects. One possibility would be “to compare the average effect size of violent video games to the average of violent television and film effects” (Anderson et al., 2007, p. 136). However, a simpler comparison is possible based on the effect sizes of old and new media within a single study as realized by means of path analyses in our longitudinal investigation. We distinguished two forms of antisocial behavior, specifically violent delinquency and students’ violence (a total factor composed of five types of school violence). From the viewpoint of an educational application of findings, this approach appears more relevant than an overly differentiated comparison of old and new media.

Based on theoretical considerations, we expected that aggressive emotions and aggressive knowledge structures are learned, trained, automatized, and reinforced by long-term exposure to media violence in three types of media (TV, H/V films, and electronic games). The causal sequence of exposure to media violence → aggression begins in elementary school. Our study confirms that this learning process leads to an increase in violence beliefs, students’ violence, delinquency, and, therefore, to a more aggressive personality and antisocial behavior.

Political and Educational Consequences

How can the effects of violent media on children and youth be reduced or prevented? On the political level, the discussion in Germany aims at prohibiting extremely violent electronic games (“killer games”) (Lukesch, Hopf, Huber, & Weiß, 2006). On the societal level, prohibitions of drugs and pornography are accepted. Regarding media violence, political and educational opponents of prohibitions claim again and again that these measures are ineffective despite evidence in other domains of social life that prohibitions create an effective (although not absolute) protection. Furthermore, since 1990 opponents of prohibition have demanded the promoting of media competence among children and young people; families and schools should realize this goal. While 30–40% of all families feel responsible for regulating and reducing their children’s consumption of media, no media education occurs in about 40–60% of families for whatever reason. Neither public appeals nor measures of media education can reach these parents. Until now the public has remained unaware of the illusory nature of protecting millions of children and young people through media education only; consumption of media violence is left to the dynamics of the free market and the media industry. As long as no effective political steps are initiated and responsibility remains just with parents and schools, psychological and social damage to children caused by exposure to media violence represent a serious threat to society.

References

- Anderson, C.A. (2002). Violent video games and aggressive thoughts, feelings, and behaviors. In S.L. Calvert, A.B. Jordan, & R.R. Cocking (Eds.), *Children in the digital age: Electronic media and children’s development* (pp. 101–119). Westport, CT: Praeger.
- Anderson, C.A. (2004). An update on the effects of playing violent video games. *Journal of Adolescence*, 27, 113–122.
- Anderson, C.A., & Bushman, B.J. (2001). Effects of violent video games on aggressive behavior, aggressive cognition, aggressive affect, physiological arousal, and pro social behavior: A meta-analytic review of the scientific literature. *Psychological Science*, 12, 353–359.
- Anderson, C.A., & Bushman, B.J. (2002a). Human aggression. *Annual Review of Psychology*, 53, 27–51.
- Anderson, C.A., & Bushman, B.J. (2002b). The effects of media violence on society. *Science*, 295, 2377–2379.
- Anderson, C.A., & Dill, K.E. (2000). Video games and aggressive thoughts, feelings and behavior in the laboratory and in life. *Journal of Personality and Social Psychology*, 78, 772–790.
- Anderson, C.A., Berkowitz, L., Donnerstein, E., Huesmann, R.L., Johnson, J., Linz, D. et al. (2003). The influence of media violence on youth. *Psychological Science in the Public Interest*, 4, 81–110.
- Anderson, C.A., Gentile, D.A., & Buckley, K.E. (2007). *Violent video game effects on children and adolescents*. Oxford: Oxford University Press.
- Arbeitsgruppe Schulevaluation. (1998). *Gewalt als soziales Problem in Schulen* [Violence as social problem in schools]. Opladen, Germany: Leske + Budrich.
- Bandura, A. (1977). *Social learning theory*. Englewood Cliffs, NJ: Prentice-Hall.
- Bandura, A. (2001). Social cognitive theory: An agentic perspective. *Annual Review of Psychology*, 52, 1–26.
- Baumeister, R.F., & Bushman, B.J. (2002). Emotion und Aggressivität [Emotion and aggressiveness]. In W. Heitmeyer & J. Hagan (Eds.), *Internationales Handbuch der Gewaltforschung* [International handbook of violence research] (pp. 598–618). Wiesbaden, Germany: Westdeutscher Verlag.
- Baumrind, D. (1991). Parenting styles and adolescent development. In R.M. Lerner, A.C. Peterson, & J. Brooks-Gunn (Eds.), *The encyclopedia of adolescence* (pp. 746–758). New York: Garland.
- Berkowitz, L. (1993). *Aggression. Its causes, consequences, and control*. Philadelphia, PA: Temple University Press.
- Bushman, B.J., & Anderson, C.A. (2001). Media violence and the American public. *American Psychologist*, 56, 477–489.
- Bushman, B.J., & Huesmann, L.R. (2006). Short-term and long-term effects of violent media on aggression in children and adults. *Archives of Pediatrics and Adolescent Medicine*, 160, 348–352.
- Cohen, J. (1988). *Statistical power analysis for the behavioral sciences*. Hillsdale, NJ: Erlbaum.
- Eckert, R., Reis, C., & Wetzstein, T. (2000). *Ich will halt anders sein wie die anderen* [I’d like to be different from the others]. Opladen, Germany: Leske + Budrich.
- Eder, F., & Mayr, J. (2000). *Linzer Fragebogen zum Schul- und Klassenklima für die 4.–8. Klassenstufe* [The Linz question-

- naire about school and classroom climate for grades 4–8]. Göttingen, Germany: Hogrefe.
- Eron, L.D., Huesmann, L.R., Lefkowitz, M.M., & Walder, L.O. (1972). Does television violence cause aggression? *American Psychologist*, 27, 253–263.
- Eron, L.D., Guerra, N., & Huesmann, L.R. (1997). Poverty and violence. In S. Feshbach & J. Zagrodzka (Eds.), *Aggression: Biological, developmental, and social perspectives* (pp. 139–154.). New York: Plenum.
- Farrington, D.P. (1994). Childhood, adolescent, and adult features of violent males. In L.R. Huesmann (Ed.), *Aggressive behavior* (pp. 215–240). New York: Plenum.
- Fuchs, M., Lamnek, S., & Luedtke, J. (2001). *Tatort Schule: Gewalt an Schulen 1994–1999* [Schools as crime scenes: Violence in schools 1994–1999]. Opladen, Germany: Leske + Budrich.
- Gentile, D.A., Walsh, D.A., Ellison, P.R., Fox, M., & Cameron, J. (2004). *Media violence as a risk for children: A longitudinal study*. Retrieved January 2, 2007, from http://www.psychology.iastate.edu/faculty/dgentile/pdfs/Gentile_et_al_APS_2004.pdf
- Gerbner, G., Gross, L., Morgan, M., & Signorelli, N. (1980). The “mainstreaming” of America: Violence profile No. 11. *Journal of Communication*, 30(3), 19–29.
- Graber, J.A., Nichols, R., Lynne, S.D., Brooks-Gunn, J., & Botvin, G.J. (2006). A longitudinal examination of family, friend, and media influences on competent versus problem behaviors among urban minority youth. *Applied Development Science*, 10, 75–85.
- Grossman, D., & DeGaetano, G. (1999). *Stop teaching our kids to kill*. New York: Crown.
- Hanewinkel, R., & Knaack, R. (1997). *Mobbing: Gewaltprävention in Schulen in Schleswig-Holstein* [Mobbing: Prevention of violence in schools in Schleswig-Holstein]. Kiel, Germany: Gemeindeunfallversicherungsverband.
- Hearold, S. (1986). A synthesis of 1043 effects of television on social behavior. In G. Comstock (Ed.), *Public communication and behavior* (pp. 65–133). New York: Academic Press.
- Heitmeyer, W., & Hagan, J. (Eds.) (2002). *Internationales Handbuch der Gewaltforschung* [International handbook of violence research]. Wiesbaden, Germany: Westdeutscher Verlag.
- Holtappels, H.G., Heitmeyer, W., Melzer, W., & Tillmann, K.-J. (1997). *Forschung über Gewalt an Schulen* [Research about violence in schools]. Weinheim, Germany: Juventa.
- Hopf, W.H. (1998). Die Problematik des Fernsehkonsums von Schülern in drei Schularten [Problems of TV consumption by students in three types of schools]. *Schulverwaltung BY*, 2, 65–72.
- Hopf, W.H. (2004). Mediengewalt, Lebenswelt und Persönlichkeit – eine Problemgruppenanalyse bei Jugendlichen [Media violence, social context, and personality – An analysis of juvenile problems]. *Zeitschrift für Medienpsychologie*, 3, 99–115.
- Huber, G.L. (1983). Erziehung und Emotion [Education and emotion]. In H.A. Euler & H. Mandl (Eds.), *Emotionspsychologie. Ein Handbuch in Schlüsselbegriffen* [Psychology of emotion. A handbook of key concepts] (pp. 313–320). Munich, Germany: Urban & Schwarzenberg.
- Huesmann, L.R. (1988). An information processing model for the development of aggression. *Aggressive Behavior*, 14, 13–24.
- Huesmann, L.R. (1998). The role of social information processing and cognitive schemas in the acquisition and maintenance of habitual aggressive behavior. In R.G. Geen & E. Donnerstein (Eds.), *Human aggression: Theories, research, and implications for policy* (pp. 73–109). New York: Academic Press.
- 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* (pp. 153–186). New York: Plenum.
- Huesmann, L.R., Moise, J.F., & Podolski, C.-L. (1997). The effects of media violence on the development of antisocial behavior. In D.M. Stoff, J. Breiling, & J.D. Maser (Eds.), *Handbook of antisocial behavior* (pp. 181–193). New York: Wiley.
- Huesmann, L.R., Moise-Titus, J., Podolski, C.-L., & Eron, L.D. (2003). Longitudinal relations between children’s exposure to TV violence and their aggressive and violent behavior in young adulthood: 1977–1992. *Developmental Psychology*, 39, 201–221.
- Johnson, D.J., Cohen, P., Smailes, E.M., Kasen, S., & Brook, J.S. (2002). Television viewing and aggressive behavior during adolescence and adulthood. *Science*, 295, 2468–2471.
- Joy, A.L., Kimball, M.M., & Zabrack, M.L. (1986). Television and children’s aggressive behavior. In T.M. Williams (Ed.), *The impact of television. A natural experiment in three communities* (pp. 303–360). Orlando, FL: Academic Press.
- Kenny, D.A. (1975). Cross-lagged panel correlation: A test for spuriousness. *Psychological Bulletin*, 82, 887–903.
- Kenny, D.A., & Harackiewicz, J.M. (1979). Cross-lagged panel correlation: Practice and promise. *Journal of Applied Psychology*, 64, 372–379.
- Kleiter, E.F. (1997). *Film und Aggression – Aggressionspsychologie* [Film and aggression – Psychology of aggression]. Weinheim, Germany: Beltz.
- Kleiter, E.F. (2000). KMSS-7. *Kleiter-Multi-Statistik-System* [On-line]. Retrieved January 19, 2004, from <http://www.Kleiter-E.de>
- Kristen, A. (2006). *Aggressive Jungen und gewalthaltige Computerspiele* [Playing violent video games and aggressive behavior among boys]. Freie Universität Berlin. Retrieved January 1, 2007, from <http://www.diss.fu-berlin.de/2006/108/index.html>
- 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.
- Lösel, F., & Bliesener, T. (2003). *Aggression und Delinquenz unter Jugendlichen* [Aggression and delinquency among youth]. Munich, Germany: Luchterhand.
- Lukesch, H. (2002). Gewalt und Medien [Violence and media]. In W. Heitmeyer & J. Hagan (Eds.), *Internationales Handbuch der Gewaltforschung* [International handbook of violence research] (pp. 639–675). Wiesbaden, Germany: Westdeutscher Verlag.
- Lukesch, H. (2004). Expertise über die Gewaltwirkungen des Fernsehens und von Computerspielen [Expert’s report about effects of violence in TV and computer games]. In H. Lukesch, C. Bauer, R. Eisenhauer, & R. Schneider (Eds.), *Das Weltbild des Fernsehens* [The world view of TV] (Vol. 1, pp. 111–282). Regensburg, Germany: Roderer.
- Lukesch, H., Hopf, W.H., Huber, G.L., & Weiß, R.H. (2006). *Verbot von “Killerspielen.” Recherche: Jugendmedienschutz und die Unterhaltungssoftware Selbstkontrolle (USK)* [Prohibition of “killer” games. Enquiry on protection of youth against media and the self-control of entertainment software]. Unpublished manuscript.

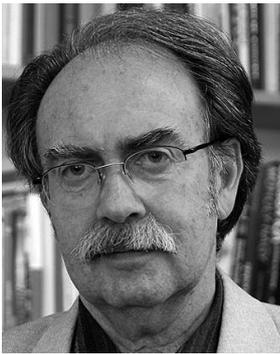
- Masten, A.S. (2001). Ordinary magic: Resilience process in development. *American Psychologist*, 56, 227–238.
- Milavsky, J.R., Kessler, R., Stipp, H., & Rubens, W.S. (1982). Television and aggression: Results of a panel study. In D. Pearl, L. Bouthilet, & J. Lazar (Eds.), *Television and behavior: Ten years of scientific progress and implications for the eighties: Vol. 2. Technical reviews* (pp. 138–157). DHHS Publication No. Adm 82 1195 Adm 82 1196). Washington, DC: U.S. Government Printing Office.
- Möller, I. (2006). *Mediengewalt und Aggression. Eine längsschnittliche Betrachtung des Zusammenhangs am Beispiel des Konsums gewalthaltiger Bildschirmspiele* [Media violence and aggression: A longitudinal analysis of the link between exposure to violent video games and aggressive cognitions]. Universität Potsdam.
- Möble, T., Kleimann, M., Rehbein, F., & Pfeiffer, C. (2006). Mediennutzung, Schulerfolg, Jugendgewalt und die Krise der Jungen [Media use, academic success, youth violence, and the crisis of the boys]. *Zeitschrift für Jugendkriminalrecht und Jugendhilfe*, 3, 295–309.
- Möble, T., Kleimann, M., & Rehbein, F. (2007). *Bildschirmmedien im Alltag von Kindern und Jugendlichen* [Screen media in children's and young persons' everyday life]. Baden-Baden, Germany: Nomos.
- Oppl, C. (2006). *Lara Crofts Töchter? Eine Längsschnittstudie zu Computerspielen und aggressivem Verhalten von Mädchen* [Lara Croft's daughters? A longitudinal study on female pre-adolescents' computer game play and aggressive behavior]. Freie Universität Berlin. Retrieved January 1, 2007, from <http://www.diss.fu-berlin.de/2006/107/>
- Paik, H., & Comstock, G. (1994). The effects of television violence on antisocial behavior: A meta-analysis. *Communication Research*, 21, 516–546.
- Pfeiffer, Ch., & Wetzels, P. (2001). Zur Struktur und Entwicklung der Jugendgewalt in Deutschland: Ein Thesenpapier auf Basis aktueller Forschungsbefunde [About the structure and development of youth violence in Germany: A paper of hypotheses based on actual research results]. In R. Oerter & S. Höfling (Eds.), *Mitwirkung und Teilhabe von Kindern und Jugendlichen* [Collaboration and participation of children and youth] (Vol. 83, pp. 108–141). Munich, Germany: Hans-Seidel-Stiftung.
- Pfeiffer, Ch., Wetzels, P., & Enzmann, D. (1999). *Innerfamiliäre Gewalt gegen Kinder und Jugendliche und ihre Auswirkungen* [Violence in families against children and youth and its effects]. Hannover, Germany: Kriminologisches Forschungsinstitut Niedersachsen.
- Robinson, T.N., Wilde, M.L., Navracruz, L.C., Haydel, K.F., & Varady, A. (2001). Effects of reducing children's television and video game use on aggressive behavior: A randomized controlled trial. *Archives of Pediatric Adolescent Medicine*, 155, 17–23.
- Rutter, M. (2000). Resilience reconsidered: Conceptual consideration, empirical findings, and policy implications. In J.P. Shonkoff & S.J. Meisels (Eds.), *Handbook of early childhood intervention* (2nd ed., pp. 651–682). Cambridge: Cambridge University Press.
- Schwarzer, R., & Jerusalem, M. (Eds.). (1999). *Skalen zur Erfassung von Lehrer- und Schülermerkmalen* [Scales for the assessment of teachers' and students' characteristics]. Retrieved July 1, 1999, from <http://userpage.fu-berlin.de/~baessler/skalen/doku.pdf>
- Slater, M.D., Henry, K.L., Swaim, R., & Anderson, L. (2003). Violent media content and aggression in adolescents: A downward-spiral model. *Communication Research*, 30, 713–736.
- Sonesson, I. (1989). *Vem fostrar vara barn – videon eller vi?* [Who raises our children – video films or we?]. Stockholm, Sweden: Esselte Studium AB.
- Spitzer, M. (2005). *Vorsicht Bildschirm. Elektronische Medien, Gehirnentwicklung, Gesundheit und Gesellschaft* [Attention screen. Electronic media, brain development, health, and society]. Stuttgart, Germany: Klett.
- Tedeschi, J.T., & Felson, R.B. (1994). *Violence, aggression, and coercive actions*. Washington, DC: American Psychological Association.
- Tillmann, K.-J., Holler-Novitzki, B., Holtappels, H.G., Meier, U., & Popp, U. (1999). *Schülergewalt als Schulproblem* [Students' violence as a problem of schools]. Munich, Germany: Juventa.
- Trudewind, C., & Steckel, R. (2003). Effekte gewaltorientierter Computerspiele bei Kindern: Wirkmechanismen, Moderatoren und Entwicklungsfolgen [Effects of violence-oriented computer games on children: Mechanisms of effect, moderators, and developmental consequences]. *Zeitschrift für Familienforschung*, 15, 238–271.
- Wahl, K., Tramitz, C., & Blumtritt, J. (2001). *Fremdenfeindlichkeit. Auf den Spuren extremer Emotionen* [Xenophobia. Tracking down extreme emotions]. Opladen, Germany: Leske + Budrich.
- Weiß, R.H. (2000). *Gewalt, Medien und Aggressivität bei Schülern* [Violence, media, and aggressiveness among pupils]. Göttingen, Germany: Hogrefe.
- Zillmann, D. (1983). Arousal and aggression. In R.G. Geen & E. Donnerstein (Eds.), *Aggression: Theoretical and empirical reviews* (Vol. 1, pp. 75–102). New York: Academic Press.

Date of acceptance: January 24, 2008



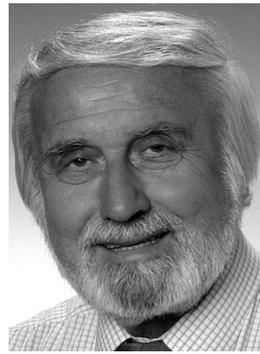
Werner H. Hopf studied pedagogics, psychology, and political science, and received his PhD in 1979 from Munich University, Germany. From 1972 to 1985, he was a co-research scientist in the Department of Pedagogical Psychology and Developmental Psychology at the University of Augsburg, Germany. Currently, he is a school psychologist with the school system advisory board in Munich East-Oberbayern. Primary research fields include effect of the media, prevention of violence, and continued development of the public school system.

Werner H. Hopf
Schulberatung Oberbayern Ost
Beetzstraße 4
D-81679 München
Germany
Tel. +49 89 9829-55110
Fax +49 89 9829-5533
E-mail w.hopf@sbost.de



Günter L. Huber, PhD, Prof. emer., is the retired Chair of Educational Psychology at the Department of Educational Psychology, Institute of Educational Sciences, University of Tübingen, Germany. Among his publications are books and training materials on cooperative learning and teaching/learning problems, on interindividual differences, and on software for the analysis of qualitative data.

Günter L. Huber
 Institut für Erziehungswissenschaft
 Münzgasse 22–30
 D-72070 Tübingen
 Germany
 Tel. +49 7071 29-74117
 Fax +49 7071 29-5805
 E-mail huber.paedpsy@uni-tuebingen.de



Rudolf H. Weiß received his diploma in psychology at the University of Würzburg (Germany) in 1963 and his PhD at the University of Würzburg's Department of Psychology in 1970. He has worked as a school psychologist in the public schools of the German state of Baden-Württemberg; as study professor for the Institution of Counseling, Planning, and Study Information in Stuttgart; and as chief psychologist for the public school system in Oberschulamt Stuttgart, Germany. His research, publications, and teaching topics include addiction prevention, culture counseling, education and disease, instructional materials in intelligence diagnosis, violence in mass media and among students, and IQ testing procedures.

Rudolf H. Weiß
 Medienpsychologie und Intelligenzdiagnostik
 Drosselweg 13
 D-71549 Auenwald
 Germany
 Tel. +49 7191 52384
 Fax +49 7191 58615
 E-mail rhweiss@t-online.de