

Theoretical and Methodological Considerations in Cross-Generational Research on Parenting and Child Aggressive Behavior

Eric F. Dubow,^{1,2,3} L. Rowell Huesmann,² and Paul Boxer²

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The four studies in this special issue represent important advances in research on the intergenerational transmission of aggressive behavior. In this commentary, we review the key features and findings of these studies, as well as our own cross-generational study of aggression, the Columbia County Longitudinal Study. Next, we consider important theoretical issues (e.g., defining and operationalizing “aggression” and “parenting”; assessing reciprocal effects of parenting and child aggression; identifying the ages at which aggression should be assessed across generations; broadening the investigation of contextual and individual factors). We then discuss several methodological issues (e.g., determining the most informative measurement intervals for assessing prospective effects; sampling considerations; measuring potential moderating and mediating variables that might explain cross-generational continuities and discontinuities in parenting and aggression). Finally, we raise implications of cross-generational research for designing interventions targeting the reduction and prevention of child aggression.

KEY WORDS: aggression; cross-generational; parenting.

The four studies presented in this special issue of the *Journal of Abnormal Child Psychology* represent a significant step forward in research on the cross-generational transmission of aggression because they (1) include prospective data on three generations; and (2) view parenting as playing a central role in the development of aggression, thus examining the cross-generational transmission of both parenting and aggressive behavior.

Several discussions of the intergenerational transmission of aggression have been published in the child development literature over the past decade (e.g., Constantino, 1996; MacEwen, 1994; Muller, Hunter, & Stollak, 1995). Those reviews indicated that most relevant studies have employed self-report, retrospective questionnaire data obtained from two generations. However, response bias prob-

lems cloud the interpretation of such findings. Three studies in a 1998 special issue of *Developmental Psychology* did use prospective methodology and multiple methods of measuring aggression (Cairns, Cairns, Xie, Leung, & Hearne, 1998; Capaldi & Clark, 1998; Serbin et al., 1998), and all reported modest to moderate cross-generational continuity. But, those studies included only two generations whereas the studies in the current issue involve three generations.

In this commentary, we review briefly the design characteristics and key findings of the four studies in this issue, plus the characteristics and preliminary findings of a fifth study currently in progress, the Columbia County Longitudinal Study (e.g., Eron, Lefkowitz, & Walder, 1971; Huesmann et al., 2002; Huesmann, Eron, Lefkowitz, & Walder, 1984; Lefkowitz, Eron, Walder, & Huesmann, 1977). We add this study because its similarity and large sample size allow us to illustrate better a number of important points. Then, we identify theoretical and methodological issues that need to be addressed to enhance our knowledge base regarding continuities and discontinuities in the cross-generational transmission of aggression.

¹Department of Psychology, Bowling Green State University, Bowling Green, Ohio.

²Research Center for Group Dynamics, The University of Michigan, Ann Arbor, Michigan.

³Address all correspondence to Eric F. Dubow, Department of Psychology, Bowling Green State University, Bowling Green, Ohio 43403; e-mail: edubow@bgsu.edu.

Finally, we discuss the implications of these studies for designing intervention programs to reduce and prevent youth aggression.

FEATURES AND FINDINGS FROM THE STUDIES

Table I presents a summary of the design characteristics and key findings of the four studies presented in this special issue along with our ongoing Columbia County study. All four studies in the issue and our own study measured parenting by two generations (G1 and G2) and aggressive behavior in two generations (G2 and G3). The studies assessed the effects of (a) G1's parenting on G2's childhood, adolescent, and/or adult aggressive behavior, and on G2's own parenting behavior; and, in turn, (b) the effects of G2's childhood, adolescent, and/or adult aggressive behavior and parenting on G3's early childhood, adolescent, or young adult aggressive behavior. However, in many other respects the studies differ. They vary greatly in sample size. Three investigate "high risk" samples whereas two investigate community samples. The ages at which assessments were made vary greatly across the studies, and the kinds of assessments and measures differ considerably. Nevertheless, in some sense the similarities of the findings across studies are more notable than are the differences.

Three of the five studies, including the two with the largest sample sizes, found significant intergenerational continuity of aggression. The two that did not report such continuity had the smallest sample sizes. All four studies in this issue and our own study have reported intergenerational continuity for some parenting factors, though there seems to be stronger evidence of it for females than for males. In the studies where gender differences could be tested, the intergenerational parenting correlations were higher for females. Additionally, Thornberry et al. found that longitudinal pathways from parenting by one generation to parenting in the next generation were more direct for females than for males. For females, there was a direct path between G1 parenting and G2 parenting. For males, G1 parenting predicted G2 parenting indirectly, through its effects on G2 aggression.

There were significant effects from parenting in one generation to aggression in the next generation in all the studies, though some of the specific G1 to G2 or G2 to G3 effects were not significant. At the same time, in most of the studies aggressive behavior in one generation was related to later parenting by that same generation. Taken together, these results suggest possible reciprocal mediation of parenting and aggression within and across generations. For example, Thornberry et al., using self-report question-

naire data, found a chain of relations for males from G1 parenting to G2 aggression to G2 parenting to G3 aggression. For females the pattern was similar though the link from G1 parenting to G2 aggression was not significant. Conger et al., using observational data, found both that G1 observed parenting had direct effects on G2 observed aggression and that G2 observed parenting had direct effects on G3 observed aggression. Hops et al., also using observations of parenting, obtained a fully mediated path from G1 parenting, to G2 aggression, to G2 parenting, and finally to G3 aggression. Capaldi et al. reported findings similar to those of the other three studies, with an important methodological distinction: the use of multiple informants and sources of data, moving beyond the parent and child observational and questionnaire data employed in the other studies to include teacher reports and archival records. In our own Columbia County Study, with a large community sample, we also fit a fully mediated model showing that G1 parenting influences G2 aggression which influences G2 parenting which influences G3 aggression.

A plausible conclusion that can be drawn from these similar results in the five studies is that parenting behavior and aggressive behavior seem to have reciprocal influences on each other. Within generations, aggression in youth is often followed by aggression-promoting parenting. Aggression-promoting parenting, in turn, seems to contribute to aggression in offspring. However, this conclusion might be attenuated by important considerations related to the theory and methodology upon which these cross-generational investigations are based.

THEORETICAL AND METHODOLOGICAL ISSUES IN CROSS-GENERATIONAL RESEARCH ON AGGRESSION

Theoretical Issues

The first theoretical issue concerns the constructs of aggressive behavior and parenting. Table I shows that the four studies in the special issue considered differing manifestations of aggression across generations. Thornberry et al. studied G2 adolescent delinquent behavior (e.g., vandalism, aggravated assault) and G3 child externalizing behavior (e.g., physical attack of others, screaming, disobedience). Conger et al. considered angry and aggressive behavior in G2 adolescents (e.g., coercion, physical aggression) and G3 children (e.g., whining, avoidance), as well as conduct problems in G2 adolescents (fighting, arguing, not cooperating) and G3 children (fighting, hitting, stubbornness). Hops et al. measured G2 adolescent aggressive behavior (e.g., verbal attacks on others,

Table 1. Design Characteristics and Findings of the Four Intergenerational Transmission Studies

	Study			
	Rochester Youth Development Study (Thornberry et al.)	Family Transitions Project (Conger et al.)	Family and Youth Interactions Study (Hops et al.)	Oregon Youth Study (Capaldi et al.)
Design characteristics				
Description of G2 targets	High-risk due to high crime neighborhoods; males and females	High-risk due to depressed economic conditions; males and females	Community sample; males and females	High-risk due to early age when G2 became parents; males only
Ages of G2 and G3 at parenting and aggression assessments	G1 parenting when G2 is 14–15.5; G2 agg. at 14.5–17.5 G2 parenting when G3 is 6; G3 agg. also at age 6	G1 parenting when G2 is 14–15; G2 agg. also at 14–15 G2 parenting when G3 is 2.4; G3 agg. also at age 2.4	G1 parenting when G2 is 16.7; G2 agg. also at 16.7 G2 parenting when G3 is 2.6; G3 agg. also at age 2.6	G1 parenting when G2 is 9–12; G2 agg. at 13–16 G2 parenting when G3 is 22 months; G3 agg. also at 22 months
Intergenerational N	N = 296	N = 75	N = 39	N = 99
Data sources	Parent and child surveys	Parent and child behavior observations and surveys	Parent and child behavior observations and surveys	Parent and child behavior observations; parent, child, and teacher surveys; arrest records
Measurement of G1/G2 parenting	G1 (mostly mothers): Self-reported affective ties to G2 and consistency of discipline of G2, 4 time points	G1 (mothers): Observer ratings of hostile, angry, and antisocial behavior during parent-adolescent problem-solving interaction, 1 time point	G1 (1 or 2 parents): Observer ratings of verbal aggressive behavior and negative affect in parent-adolescent problem-solving interaction, 2 time points	G1 (1 or 2 parents): Self, child, and observer ratings of monitoring, discipline, and relationship quality, 2 time points
	G2: Self-reported affective ties to G3 and consistency of discipline of G3, 1 time point	G2: Observer ratings of parents' hostile, angry, and antisocial behavior during parent-child puzzle task, 1 time point	G2: Observer ratings of parent verbal aggressive behavior and negative affect in parent-child play and clean-up interaction, 1 time point	G2: Self and G3 reports of G2 punishment, nurturance, rejection, discipline, and monitoring, 2 time points
				G2: Self and G3 reports of G2 punishment, nurturance, rejection, discipline, and monitoring, 2 time points
				G2: Self and G3 reports of G2 punishment, nurturance, rejection, discipline, and monitoring, 2 time points

Columbia County Longitudinal Study (Huesmann et al.)

Community sample; males and females

G1 parenting when G2 is 8; G2 agg. at 8, 19, 30, and 48

G2 parenting when G3 is 8.81 and 19.97; G3 agg. also at 8 and 19

N = 521

Peer nominations, parent and child surveys, teacher reports, arrest records

G1 (1 or 2 parents): Self-ratings of punishment, nurturance, and rejection, 1 time point

G2: Self and G3 reports of G2 punishment, nurturance, rejection, discipline, and monitoring, 2 time points

G2: Self and partner reports of G2 discipline; self report of child-rearing tasks, 1 time point

G2: Observer ratings of parent verbal aggressive behavior and negative affect in parent-child play and clean-up interaction, 1 time point

G2: Observer ratings of parents' hostile, angry, and antisocial behavior during parent-child puzzle task, 1 time point

G2: Self-reported affective ties to G3 and consistency of discipline of G3, 1 time point

G2: Self and G3 reports of G2 punishment, nurturance, rejection, discipline, and monitoring, 2 time points

Table 1. (Continued)

	Study			
	Rochester Youth Development Study (Thornberry et al.)	Family Transitions Project (Conger et al.)	Family and Youth Interactions Study (Hops et al.)	Oregon Youth Study (Capaldi et al.)
Design characteristics				
Measurement of G2/G3 behavior	G2: Self-reported frequency of delinquency, 7 time points G3: G2-reported externalizing behavior, 1 time point	G2: Observer ratings of hostile, angry, and antisocial behavior towards siblings; G1 ratings of conduct problems, 2 time points G3: Observer ratings of hostile, angry, and antisocial behavior towards G2; G2 ratings of aggression, 1 time point	G2: Self-reported and G1-reported aggressive behavior, 2 time points G3: G2-reported externalizing behavior, 1 time point	G2: Self-reported, G1-reported, and teacher-reported delinquency and antisocial behavior, 2 time points; arrest records over 3-year span G3: G2-reported activity level and angry displays, 1 time point
Findings				
Intergenerational correlations for parenting and aggression	Parenting: Males: <i>ns</i> ; Females: .47 Aggression: Males: .31; Females: .22	Parenting: Obs: .37; Survey: .30 Aggression: Obs: <i>ns</i> ; Survey: <i>ns</i>	Parenting: .38 Aggression: <i>ns</i>	Parenting: .46 Aggression: .30
Intergenerational transmission findings for mediational models	For G2 males: G1 parenting → G2 agg. → G2 parenting → G3 agg. For G2 females: G1 parenting and G2 agg. → G2 parenting → G3 agg.	G1 parenting → G2 agg. and G2 parenting; G2 parenting → G3 agg.	G1 parenting → G2 agg. → G2 parenting → G3 agg.	Parenting Pun. (G1-G2): Males: .16; Females: .20 Aggression (G2-G3): Males: .31; Females: .34 G1 parenting → G2 agg. → G2 parenting → G3 agg.

Note. G1 = Generation 1; G2 = Generation 2; G3 = Generation 3; *ns* = not significant; Agg. = aggression; Pun. = punishment.

screaming) and G3 child externalizing behavior (e.g., physical attacks on others, screaming, disobedience). Capaldi et al. examined G2 adolescent delinquency and antisocial behavior (e.g., cheating at school, destroying possessions, selling drugs) and G3 toddler activity level and angry affect (e.g., squirming, screaming).

Differing manifestations of aggression at differing ages, and associated differences in measuring aggression, are not unique to this set of studies (see Tremblay, 2000). The variety of definitions utilized in the four studies is testament to the fact that aggression is a multifaceted construct that can be defined by its antecedents (e.g., hostile intentions or emotional reactions), behaviors (e.g., hitting, gossiping), and consequences (e.g., physical or psychological harm). In our own Columbia County Study, we have utilized a basic definition of aggression as an “act that injures or irritates” another person (Eron, 1987; Eron et al., 1971). That definition allows for the inclusion of a variety of behaviors that can be measured across ages while avoiding the problems of quantifying motivation. Perhaps this is one reason why the continuity coefficients for aggression are higher in the Columbia County Study than in several of the other studies. However, even with the common definition we used for all waves of data collection, the degree to which differing “aggressive” behaviors are assessed across generations likely attenuates the magnitude of the cross-generational continuity coefficients that can be obtained.

Similarly, differing aspects of parenting were assessed across the five studies. As Table I indicates, Thornberry et al. measured affective ties (e.g., enjoyment of child) and consistent discipline (e.g., following through with punishments). Conger et al. and Hops et al. utilized observer ratings of aggressive parenting behavior displayed during problem-solving or play interaction tasks. Capaldi et al. constructed measures based on parent, child, and observer ratings of monitoring, discipline, and relationship quality. In our Columbia County Study, we relied on parent and child reports of parental punishment, rejection, nurturance, and monitoring. Parenting is clearly a multifaceted construct that consists of a broad range of positive (e.g., nurturance, monitoring) and negative (e.g., physical punishment, rejection) behaviors, all of which might be subject to variation in antecedents (e.g., child misbehavior, parenting stress) and consequences (e.g., harm to child, child success). Researchers interested in cross-generational continuities and discontinuities are faced with the daunting task of selecting from among a variety of specific parenting behaviors and styles that might increase or decrease the likelihood of offspring becoming aggressive children and, in turn, aggressive parents themselves.

An additional issue in assessing the construct of parenting is whether G1 measures should be taken of mothers, fathers, or both. As Table I indicates, the studies reviewed here opted for a variety of strategies. For example, Conger et al. focused on G1 mothers to ensure comparability across single-parent (mother-headed) and dual-parent families, and Thornberry et al.’s G1 parent sample also was comprised primarily of mothers. Hops et al. and Capaldi et al. included data from both parents. In the Columbia County Study, we also have utilized composited parenting scores obtained from G1 mothers and fathers; we have found that these scores relate more strongly to measures of child behavior than parenting measures taken from a single parent. Although large samples are required, future studies should consider whether cross-generational continuities are stronger for same-sex parent–child dyads than combined parent–child dyads.

A second key theoretical issue is that these five studies, to date, have essentially investigated the effects of parenting on child aggressive behavior as unidirectional within a social learning framework. That is, through exposure to G1’s aggressive parenting behavior, G2 is thought to acquire aggressive interpersonal strategies, including similar aggressive parenting techniques toward G3; these behaviors and parenting techniques, in turn, serve as models for G3’s subsequent behavior. This unidirectional parent-to-child model of behavior development represents a classic approach to the study of child development, in line with Diana Baumrind’s early work on the influence of parenting style on child behavior (e.g., Baumrind, 1967, 1971). However, empirical studies of child development, while not neglecting the important influence of parenting on children’s behavior, typically assume a broader model of causality that also incorporates the effects of child behavior on subsequent parenting (e.g., Belsky, Lerner, & Spanier, 1984). Applying this model to the four studies, Fig. 1 shows how it might be possible to assess reciprocal effects of parenting and child behavior at two time points. Thus, one could examine the relation between Time 1 G1 parenting and Time 2 G2 behavior, while controlling for Time 1 G2 behavior (model A). At the same time, one could examine the relation between Time 1 G2 behavior and Time 2 G1 parenting, while controlling for Time 1 G1 parenting (model B). In fact, in our own Columbia County Study we have examined preliminarily the effects of G3 behavior on subsequent G2 parenting for a subset of subjects. In this analysis we found that G3’s self-reported aggression during childhood was significantly related ($r = .35$) to G2’s much later (18 years later) self-reports of how they had parented G3.

The social learning model employed across these studies can be viewed as part of a broader

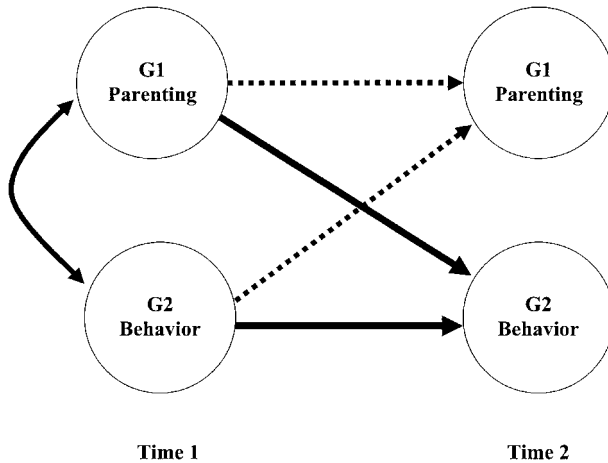


Fig. 1. Alternative models for examining reciprocal effects in the intergenerational transmission of parenting and behavior. [Model A = solid lines; Model B = broken lines. Specified correlation (curved arrows) between parenting and behavior at Time 1 applies to both hypothetical models.]

individual-ecological framework that can help guide a rich understanding of the processes accounting for cross-generational transmission of parenting and aggressive behavior. Indeed, studies of the development, prevention, and treatment of child aggression have profited from an incorporation of this broader perspective (Conduct Problems Prevention Research Group, 1999; Metropolitan Area Child Study Research Group, 2002; Tolan, Guerra, & Kendall, 1995), which emphasizes the ongoing interplay between child variables (e.g., temperamental risk, intellectual achievement, social cognition, emotion regulation) and contextual variables (e.g., parenting, peer relations, neighborhood characteristics, media exposure) in the emergence and maintenance of aggressive behavior. Therefore, it will be important for future studies to consider more complex theoretical models.

A third important theoretical consideration is to employ a framework that guides the researcher in identifying the ages at which cross-generational assessments occur. For example, regarding aggression, in the four studies presented in this special issue, G2's aggression was assessed during adolescence, but G3's aggression was assessed during toddlerhood to early childhood. Thornberry et al. note that one possibility is to "focus . . . on similar forms of antisocial behavior measured at similar developmental stages for both generations." That would suggest, for example, that we measure G1's aggressive behavior as an adolescent if we want to understand G2's behavior as an adolescent. But what is the theory that drives this proposition? This proposition certainly would not derive from a social learning perspective because the G2 adolescent

would not have been exposed to the G1 adolescent as a behavioral model. Perhaps the proposition derives from a genetic perspective given the unfolding of an antisocial genetic predisposition. In our own Columbia County Study, we have found that the best predictor of G3's late adolescent aggression is G2's aggression at the time G3 was very young (Huesmann et al., 2002). This is consistent with our individual-ecological framework because we believe that a critical process through which aggressive behavior develops is the child's acquisition of an aggression-supporting cognitive style; this cognitive style typically crystallizes between the ages of 6 and 9 (Huesmann & Guerra, 1997) and is likely influenced in large part by the parent's behavior before and during this time. The intergenerational continuity coefficients for aggression might not be as high in the other four studies as in the Columbia County Study because G2's aggression during G3's early years could not be correlated with G3's late adolescent aggression in those studies.

Methodological Issues

Because methodological issues often are intertwined with theoretical issues, we have already addressed various methodological issues in the preceding section (e.g., defining and operationalizing "aggression" and "parenting"; assessing reciprocal effects of parenting and child aggression; identifying the ages at which aggression should be assessed across generations; broadening the investigation of individual and contextual factors that influence cross-generational continuities and discontinuities). In this section, we highlight what we consider to be additional important methodological considerations in the study of cross-generational influences on parenting and aggression.

In any prospective study, the investigator must identify the most informative measurement intervals for assessing longitudinal effects (see Nesselrode & Boker, 1994). That is, researchers must identify how often, and over how long a time span, each construct ought to be measured. The researcher might hypothesize relatively high stability in a construct over a selected interval and thus average across multiple measurement points to derive composite measures of behavior, as was done in several studies presented here. For example, Thornberry et al. measured G1 parenting four times over a year and a half and G2 delinquency seven times over three and a half years and computed means across each set of measurements to create "Time 1" G1 parenting and G2 delinquency composites. An alternative method for handling those data would be to hypothesize less stability between measurements over the same interval. In this case, the data would lend themselves well to studying the associations between

single observations by analyzing multiple time-lagged reciprocal relations over several years. This is more like the approach we adopted in the Columbia County Study with four widely spaced measurement times for G2 (Ages 8, 19, 30, and 48) during which single measurements of constructs were obtained. Careful consideration thus needs to be given to how measurement intervals can be spaced in order to obtain optimal analyses of developmental processes.

Another key methodological issue related to these studies is population sampling. As shown in Table I, three of the studies sampled high-risk populations. Thornberry et al. and Conger et al. determined high-risk status based on contextual variables (high crime neighborhoods and depressed economic conditions, respectively), whereas Capaldi et al. defined high risk by the early age at which G2 participants became parents. In contrast, Hops et al. utilized a community sample as did we in our Columbia County Study. Findings from high-risk samples in which levels of aggression and harsh parenting are expected to be elevated (see Eron, Guerra, & Huesmann, 1997) might not replicate findings from community samples. However, our Columbia County findings and Hops et al.'s findings suggest that the relations might be similar across samples, at least with respect to low-intensity forms of aggression. Of course, researchers sampling from normative populations generally require larger numbers of participants to identify those who engage in lower base rate behaviors such as severe parent-to-child physical aggression or interpersonally violent antisocial acts.

A final methodological concern that we highlight is the selection and measurement of potential moderating and mediating variables. As is evident from the magnitude of the cross-generational continuity coefficients presented in the five studies reviewed here (ranging from effectively 0 to .34 for aggression; 0 to .47 for parenting), there is evidence of both continuity and discontinuity in both parenting and aggression. Several variables might moderate or mediate the degree of continuity of parenting and of aggression across generations. For example, contextual risk factors that replicate across generations (e.g., socioeconomic disadvantage; Furstenberg, Hughes, & Brooks-Gunn, 1992) could account for behaviors that replicate across generations. Similarly, contextual factors might moderate the relation between parenting in one generation and child behavior in the next. For example, cross-cultural studies have demonstrated that the impact of parenting on child externalizing behavior is moderated by ethnic group status (e.g., Lindahl & Malik, 1999). In addition, some research has provided evidence that personal variables mediate the relation between parenting and child behavior (e.g., social cognitions; Gomez, Gomez, DeMello, & Tallent, 2001). Thus, researchers need to

broaden their assessments to include potential moderators and mediators that might explain cross-generational continuity and discontinuity of both parenting and aggression.

We have discussed several important theoretical and methodological issues related to cross-generational research on parenting and child aggression. It is important to note that a number of these concerns also were raised by Rutter (1998). One key factor that we did not address is the need to assess genetic variables that might account for cross-generational continuities. In fact, the design of the studies presented in this special issue does not permit easy estimation of heritability indices for aggression. Twin studies or adoption studies are more appropriate for that goal. Such research would allow for the examination of the relative impact of genetics and environment on the intergenerational transmission of behavior. As Rutter noted, ". . . any adequate understanding of intergenerational continuities or discontinuities must consider the interplay between nature and nurture" (p. 1273).

SUMMARY AND FUTURE DIRECTIONS

One consistent finding across the studies presented in this special issue is that parenting is an important factor in the cross-generational transmission of aggressive behavior. The detrimental effects of harsh and inconsistent parenting have been documented for a number of years (e.g., Eron et al., 1971; Patterson, 1982). However, the studies reviewed here underscore and advance those earlier findings by demonstrating that parenting and aggressive behavior can be linked across three generations. The social learning framework employed in these studies implies that in order to prevent the ongoing transmission of aggression from one generation to the next, interventions should target the training of better parenting skills. These studies thus lend additional support to many well-established parenting programs (see Brestan & Eyberg, 1998).

Current theoretical models of the development of aggressive child behavior include factors outside of the parent-child relationship. A major issue in the ongoing refinement of cross-generational research on aggression is the identification of the specific individual and contextual factors that strengthen our ability to predict, and potentially modify, the emergence and maintenance of aggressive behavior over time and across generations. For example, in our own research we have examined the mediating role of social-cognitive information-processing factors in the maintenance of aggression. Considerable evidence suggests that aggression-supporting social-cognitive variables such as normative beliefs approving of aggression (Huesmann & Guerra, 1997), aggressive

fantasies (Eron, 2001), and aggressive scripts for solving social conflicts (Dubow & Reid, 1994) account for the maintenance of aggressive behavior over time (Huesmann, 1998). In our preliminary analyses of the Columbia County data, we have in fact found that knowledge about G3's social cognitions added significantly to our ability to predict G3's aggression beyond the information obtained from G2's aggression and parenting.

Family-based and social-cognitive interventions have been labeled as "best practice" strategies for preventing child aggression by the Centers for Disease Control (Boxer & Dubow, 2002; Thornton, Craft, Dahlberg, Lynch, & Baer, 2000). Thus, future cross-generational research could enhance intervention strategies by measuring variables derived from theory that might account for continuity and discontinuity of aggressive behavior over time and across generations.

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