Developmental Issues in School-Based Aggression Prevention from a Social-Cognitive Perspective

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Contemporary research on the development and prevention of aggressive behavior in childhood and adolescence emphasizes the importance of social-cognitive factors such as perceptual biases, problem-solving skills, and social-moral beliefs in the maintenance of aggression. Indeed, school-based social-cognitive intervention approaches have been identified as best practices by the Centers for Disease Control and Prevention. However, because child age is an important covariate of both intervention effectiveness and social-cognitive ability, school-based prevention program designers should keep in mind a number of issues identified through developmental research. In this paper, we review the social-cognitive model of aggressive behavior development as applied to prevention programming. We then discuss some of the ways in which the broader developmental research base can inform the design of aggression prevention programs.

Editors' Strategic Implications: *Educational administrators and policy makers will find evidence in this review that school-based programs that employ a social-cognitive model represent a strategy that works for preventing violence. Prevention researchers will also benefit from the authors' insights regarding theoretical mediating processes and the importance of a developmental view.*

KEY WORDS: development; school-based prevention; aggression; social cognitive.

Prevention researchers have been concerned with youth aggression and violence for decades, but recently the amount of attention given to this area by scientists and practitioners alike has increased (Acosta, Albus, Reynolds, Spriggs,

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& Weist, 2001), consistent with an enhanced national research agenda targeting the reduction of youth violence (Human Capital Initiative, 1996; Surgeon General, 2001; Thornton, Craft, Dahlberg, Lynch, & Baer, 2000). Much contemporary prevention research on youth aggression relies on a cognitive-ecological view of behavior development (e.g., Conduct Problems Prevention Research Group, 1999; Metropolitan Area Child Study [MACS] Research Group, 2002). In this view, child risk factors such as difficult temperament and poor intellectual functioning, and ecological risk factors such as family conflict and community violence interact to create a social-cognitive style that supports the use of aggression over time and in different situations. This model has important implications for the design of programs targeting the prevention of aggression in school (Boxer & Dubow, 2002). Indeed, school-based approaches to prevent aggression derived from this model have been identified as "best practices" by the Centers for Disease Control and Prevention (Thornton et al., 2000). According to the model, it is critical to modify the child's social-cognitive style related to managing social conflicts and problems (Boxer & Dubow, 2002; Huesmann & Reynolds, 2001) because social-cognitive processes are viewed as the person-level mediating components linking ecological inputs to behavioral outputs over time and across situations.

A recent meta-analysis highlighted the modest to moderate effectiveness of school-based aggression prevention programs (Wilson, Lipsey, & Derzon, 2003). However, this analysis also showed that program effectiveness varies by age: programs were most effective for preschool and high school students. This is relevant for programs relying on a social-cognitive intervention model, as social-cognitive abilities can be sensitive to normal variation by age. In this paper, we examine the ways in which the developmental literature can inform the design of programs targeting the prevention of aggressive behavior from a social-cognitive perspective.

A SOCIAL-COGNITIVE MEDIATIONAL VIEW OF AGGRESSIVE BEHAVIOR DEVELOPMENT

A vast body of research has identified specific risk factors that contribute to the emergence of aggressive behavior in childhood, including: biological predispositions (e.g., impulsivity, emotional lability); exposure to domestic, community, or media violence; socioeconomic disadvantage; psychological disorder; harsh parenting practices; and peer relationship difficulties, among others. Aggression also has been shown to result from immediate situational factors such as negative arousal, substance use, and provocation. All of those risk factors can interact; for example, an overly emotional child might elicit harsh treatment or rejection from his peers (e.g., Tolan, Guerra, & Kendall, 1995).

The consistent finding that aggression is a relatively stable or continuous behavior over the life-course (e.g., Huesmann, Dubow, Eron, & Boxer, in press)

has led to specification of theoretical *mediating processes*, or internal mechanisms that maintain particular styles of behavior over time and across situations. One of the most prominent contemporary perspectives on how aggression emerges, persists, and resists change is the *social-cognitive information-processing model* of mediation (Crick & Dodge, 1994; Huesmann, 1998). In this framework, a child's cognitions related to social situations and social behavior are thought to account for the association over time between individual and environmental risk factors and actual aggressive behavior. A child's temperamental tendencies and social experiences interact through observational and direct learning experiences to produce an enduring set of "aggression-supporting" cognitions that account for habitual aggression.

Researchers have demonstrated that a variety of social-cognitive functions are associated with children's aggressive responding, such as attributing hostile intent in others' behavior (Dodge, 1980), generating aggressive responses to hypothetical social problem situations (Dubow & Reid, 1994), believing that aggression is an acceptable behavioral response (Huesmann & Guerra, 1997), and valuing the potential positive outcomes of aggressive action (Egan, Munson, & Perry, 1998). Social-cognitive factors account for links between contextual influences and aggressive behavior over time (e.g., Guerra, Huesmann, & Spindler, 2003).

Huesmann (1998) presented a unified sequential model of the social-cognitive processing steps necessary for enacting an aggressive behavioral response, based upon earlier formulations. Huesmann's (1998) model rests on the concept of mental "scripts," or cognitive representations that guide behavior by "laying out the sequence of events that one believes are likely to happen and the behaviors that one believes are possible or appropriate for a particular situation" (p. 80). The model includes four key sequential processing steps: (1) Attending to and interpreting aspects of the social situation; (2) Searching for and retrieving relevant response scripts (i.e., potential behavioral responses); (3) Evaluating response scripts; and (4) Interpreting others' responses to behavior. From the standpoint of preventing youth aggression, this model suggests that aggressive behavior can be modified by teaching youth to: *interpret the behavior of others accurately, enact non-aggressive problem-solving strategies,* and *believe that aggressive responses are inappropriate and ineffective* (Boxer & Dubow, 2002).

APPLYING THE SOCIAL-COGNITIVE MODEL OF AGGRESSION TO SCHOOL-BASED PREVENTION PROGRAMS

Schools are perhaps ideal venues for the delivery of youth aggression prevention programming (Farrell, Meyer, Kung, & Sullivan, 2001) because they are natural environments for children in which aggressive acts are common (Chandler, Chapman, Rand, & Taylor, 1998; Kingery, Coggeshall, & Alford, 1998). The social-cognitive perspective has produced numerous school-based ag-

gression prevention programs, and has been identified as a "best practice" approach by the Centers for Disease Control (Thornton et al., 2000). However, as noted by Boxer and Dubow (2002), no extant social-cognitive programs rely on a comprehensive model that takes into account the full scope of the social-cognitive model summarized by Huesmann (1998). Because many activities culled from the array of available programs can fit into a comprehensive social-cognitive approach, there appears to be much promise in applying Huesmann's (1998) model to school-based aggression prevention (Boxer & Dubow, 2002).

Social-Cognitive Intervention and Activities

There are many ways in which a broad social-cognitive model has been applied to the design of specific aggression prevention program techniques and activities, and we briefly review a selection of those here (for detailed reviews, see Boxer & Dubow, 2002; Huesmann & Reynolds, 2001; Thornton et al., 2000). For example, Hudley et al. (1998) designed program activities for 8–12 year olds that help aggressive children perceive and interpret the intentions of others more accurately through "attribution retraining." After several sessions learning to read and interpret others' verbal, physical, and behavioral cues, children are taught to link "inconsistent or uninterpretable social cues with attributions to 'uncontrollable' or 'accidental' causes" (Hudley et al., 1998, p. 274). Lochman, Lampron, Gemmer, and Harris (1987) devised activities that encourage students (ages 8–12) to come up with problem-solving alternatives to aggression. In those activities, each child is asked to describe a situation that made him or her angry, and then group members list all the possible behavioral choices that could have been made to address the situation. Huesmann, Eron, Klein, Brice, and Fischer (1983) utilized social-psychological "attitude change" techniques in designing activities that target the ways in which 7- to 10-year-olds evaluate aggressive scripts. Children produce and then view videotapes in which they present essays stating their beliefs regarding why it is harmful to imitate televised violent behavior.

The Importance of a Developmental View

Although a number of concerns inhere in the design and implementation of school-based prevention programs for youth, among the most important is the age of the participants. Wilson et al. (2003) found that across more than 200 evaluation studies of school-based programs, the strongest program effects were found for young children and adolescents. This finding highlights a key consideration: Different programming is needed for different age groups. Children and adolescents should benefit the most from aggression prevention programs that are tailored to their unique developmental levels and experiences. For example, whereas eighth

graders might encounter salient social conflicts engendered by clique formation, high school seniors might find problems in the transition to young adulthood relatively more salient to them. Further, changes in social-cognitive processes occurring between early childhood and adolescence can pose considerable challenges to program developers. This paper discusses developmental issues in designing and implementing school-based aggression prevention programs in the social-cognitive framework, and offers guidance to practitioners and researchers wishing to implement such programs for youth at different ages.

A DEVELOPMENTAL PERSPECTIVE ON DESIGNING SOCIAL-COGNITIVE AGGRESSION PREVENTION PROGRAMS

Aggressive behavior, like other problem behaviors exhibited by children and adolescents, is not a singular or static phenomenon. Two key points underscore this fact. First, problems with aggression can emerge at different ages. For example, a 3-year old who hits his or her peers out of frustration likely will not be viewed as having a significant "problem" with aggression. However, a 15-year-old who does the same likely will. Second, an underlying problem can manifest itself in varying forms at different ages. The physically aggressive preschooler (hitting, kicking) might become the relationally aggressive middle schooler (gossiping, teasing), and then the antisocial high school student (stealing, vandalizing). Longitudinal research supports the notion that minor forms of aggression can escalate over time into serious acts of violence (e.g., Tolan, Gorman-Smith, & Loeber, 2000). Any prevention program thus should recognize the various forms that aggression among children and adolescents can take.

From the social-cognitive perspective, however, there are other complex considerations. Social-cognitive factors in aggression are directly related to cognitive development in general. For example, specific social-cognitive abilities such as perspective taking (i.e., understanding that others have their own views on events; Selman, 1980) are acquired gradually and differentiated over time. A young child who has not yet acquired the ability to understand another's perspective would likely have difficulty with activities designed to enhance empathy or problem-solving skills. In contrast, older children and adolescents who already recognize that others have unique perspectives might be apathetic to activities designed to enhance those skills.

The following sections highlight developmental considerations for implementing prevention programs based upon social-cognitive processes illuminated by an integrated social-cognitive model (Boxer & Dubow, 2002; Huesmann, 1998). Social-cognitive programs typically center on activities subsuming the following concepts or skills: (1) *interpreting the behavior of others accurately* (e.g., understanding others' intentions, "reading" emotional cues properly); (2) *learning to use non-aggressive problem-solving strategies* (e.g., thinking of multiple responses

to social problems, acquiring non-aggressive or prosocial "scripts"); and (3) *believing that aggression is inappropriate and ineffective* (e.g., viewing aggression as "wrong," expecting that aggression will ultimately result in undesirable outcomes). For each general concept, we review research related to the developmental underpinnings of the social-cognitive process in order to elaborate on variations across ages. We also discuss considerations for program developers interested in targeting those processes in school-based programs. This review is not intended to provide an exhaustive developmental "how-to" for aggression prevention, but rather to discuss developmental concepts and issues we believe are important in regard to program design.

INTERPRETING THE BEHAVIOR OF OTHERS ACCURATELY

Aggression prevention programs designed to teach youth skills for interpreting others' behavior should consider several aspects of cognitive development. Four developmental considerations are particularly relevant: changes in *perspective taking abilities*, advances in *emotional understanding*, progressions in *selective attention*, and changes in *processing speed*.

Perspective Taking

Children can be limited in their *perspective-taking abilities*. Younger children tend to be egocentric; that is, under most circumstances, they have difficulty conceptualizing situations from perspectives other than their own (Piaget & Inhelder, 1969). Research on children's "theory of mind" (i.e., understanding that others can have unique beliefs, desires, and intentions) demonstrates that prior to age four or five, children generally are unable to understand fully that others have beliefs different from their own (e.g., Gopnik & Meltzoff, 1994). When presented with an ambiguous social interaction, preschoolers might find it challenging to understand another's perspective. Thus, programs targeting very young children (approximately ages four and younger) should concentrate efforts on how the child himself or herself is behaving, rather than on peers' intentions.

It is not until about age eight to ten that children recognize that their own and others' beliefs and reactions to a situation can differ even when both parties receive the *same* information (Selman, 1980). Young children often experience difficulty understanding others' perspectives in situations in which they and a peer are involved in a conflict triggered by an ambiguously motivated social situation (e.g., one child "cuts" in front of another child in line; one child bumps into another child in the hallway). Therefore, programs aimed at children in kindergarten through approximately fifth grade should not take it for granted that children understand this concept. Rather, programmers might wish to demonstrate clearly and concretely

how it is possible for two peers to have witnessed the same event, but perceive the outcomes differently (e.g., through the use of live or video-taped vignettes). Finally, research suggests that it is typically not until early adolescence when youth understand that the thoughts or behavior of one individual can influence the thoughts or behavior of another (Selman, 1980). Thus, adolescents likely would be able to understand that one reason why they, themselves, do not like a particular peer is because a good friend does not like that peer, but younger children might have a more difficult time with such a concept. Programs for adolescents might find it useful to incorporate this concept, especially given the finding that adolescents have identified perceived injustice to others as a key situational instigator to peer conflict (Farrell, Ampy, & Meyer, 1998).

Emotion Knowledge and Understanding

Program developers should also keep in mind the developmental progression of *emotional understanding*. The ability to recognize emotions in others typically begins quite early. For example, infants' rudimentary understanding of others' emotions is demonstrated by their social referencing behavior, in that by about eight to ten months of age children use their caregivers' emotional reactions to situations to help modulate their own reactions (Feinman, 1992). By age three, many children are good at identifying emotions, although this skill tends to be more advanced in those children who are also good at expressing their own emotions clearly (Magai & McFadden, 1995).

When they are about four or five, many children are able to offer guesses as to *why* others might be experiencing emotions (Fabes, Eisenberg, Nyman, & Michealieu, 1991). Children's first explanations for their peers' emotional experiences typically focus on external causes rather than on internal motivations (Fabes et al., 1991). For example, it might be difficult for a young child to understand that a peer could be motivated to do something negative to another peer due to a factor such as jealousy or a desire to improve social status.

Programs aimed at even young children can incorporate discussions of others' emotions, which might help participants gain a better understanding of some implications of aggressive and prosocial problem-solving strategies. However, programmers should take care that discussions of emotions with very young children (ages four and younger) remain on either understanding their own emotions (e.g., a discussion of what happens to them when they are feeling upset or angry) or the implications that aggression has for others' emotions (e.g., hitting a friend makes a friend feel sad). In contrast, discussions about emotions with older children also can include aspects of understanding why others behave the way they do (e.g., a friend has a bad day at school and the friend says mean things to you because he or she is in a bad mood, not because of being mad at you). With younger children, explanations should be concrete and based on external causes

(e.g., the friend failed a spelling test) but with preadolescents and adolescents they can include internal and increasingly abstract concepts (e.g., the friend thinks another friend likes her boyfriend).

During middle childhood, children improve in their abilities to recognize that one situation can lead to different types of emotional responses (Gnepp & Klayman, 1992). Therefore, young children might experience difficulty understanding why a peer might react one way to a situation (e.g., by getting angry or upset) when they, themselves, are not experiencing the same emotion. Research also suggests that during middle childhood, children become better at recognizing that others can experience more than one emotion at the same time (Arsenio & Kramer, 1992). Additionally, by middle childhood many children are able to make sense of situations where there might be conflicting cues (Hoffner & Badzinski, 1989), as is often the case in real-life social situations (e.g., a peer fails at a task but starts to laugh rather than cry).

Given such developmental progressions, programmers might wish to consider focusing on aspects of emotional understanding that children in their program's target age group will be able to grasp and that will not be too much "beneath" what they already know. For example, a primary program targeting fourth graders might find it useful to devote several sessions to discussing how two people can experience the same conflict situation but still have different emotional reactions (e.g., one feels powerful and the other feels scared). However, spending too much time on this concept with a group of eighth or ninth graders—especially in a primary prevention context—might lead to participants losing interest quickly.

Selective Attention

A third important cognitive developmental mechanism to consider when addressing youths' interpretations of others' behavior is the development of *selective attention*. With age, children increasingly pay attention to cues that are more relevant to the particular task at hand (see Miller & Seier, 1994). When scanning a social situation for relevant cues (e.g., when a child sees a peer approaching on a playground), older children are more likely than younger children to focus on relevant cues for detecting the peers' motives, such as facial expressions and posture rather than irrelevant cues, such as the peer's clothing. Adolescents are even better able to do this. Programs for younger children should spend more time identifying the relevant cues to attend to in a social situation (e.g., through videotaped or live vignettes; see Dodge, Murphy, & Bushbaum, 1984). Programs with older children might profit more from focusing on the idea that what seems to be an aggressive cue (e.g., a stare in the hallway) could easily be another cue (e.g., daydreaming) and therefore misunderstood.

Additionally, with age, children's ability to be systematic in their search for relevant cues also improves. By about seven or eight years of age, most children have developed an ability to scan systematically their environment to

find relevant information (Vurpillot, 1968). Thus, older children would be more likely to consider a greater number of relevant cues when gauging a complex social situation. For instance, when deciding whether to enter a particular group of peers on the playground, an older child would be more likely than a younger child to consider each peer's facial expression, posture, reputation, and current activities. Programs for all ages might benefit from giving youth practice at the skill of scanning their environment systematically, but those for younger children should allocate more time for this specific activity.

Processing Speed

Finally, improvements in *processing speed* are relevant for youths' emerging abilities to understand the behaviors and intentions of others. The speed with which children process information improves with age (e.g., Hale, 1990; Kail, 1986). Younger children, as compared to older children and adolescents, need more time to complete cognitive problems of various types. Thus, in social situations, older youth are likely to process relevant environmental cues more quickly (which also is augmented by their more sophisticated perspective taking skills, emotional understanding, and selective attention).

Age trends in processing speed have several implications for programming. Most importantly, younger children will require much more time and practice than older children in learning new social-cognitive concepts and skills. Developmental research also indicates that programs for older children and adolescents should teach skills for "slowing down" their decision-making process so that controlled cognitive processes can "catch up" with behavioral responses that have become automated (e.g., making fun of a particular child every time he or she emits a certain behaviour; immediately reacting aggressively to provocation). The focus also could be on generating ways to react to particular cues, rather than on the first response that comes to mind. Given age-related advances in processing speed, such activities seem as though they would be useful in programs targeting children approximately in the third or fourth grades and older. With younger children, programmers could capitalize on relatively slower processing rates by focusing on helping children consider carefully whether they are utilizing the "right" information when making a decision. Using this approach with younger children might support the development of more appropriate automated social-information processing.

LEARNING TO USE NON-AGGRESSIVE PROBLEM SOLVING STRATEGIES

As was the case with teaching youth skills for interpreting others' behavior, there are several key developmental processes to consider in programming that

encourages non-aggressive problem solving. We discuss two particularly salient considerations: changes in *response inhibition*, and advances in the ability to *generalize problem-solving strategies*.

Response Inhibition

Behavioral, emotional, and cognitive impulsivity often are implicated in the emergence and maintenance of aggressive responding in childhood (e.g., Derryberry & Rothbart, 1997). Young children often have difficulty inhibiting their behavioral responses. With age, children's ability to control responses in various situations improves (e.g., Harnishfeger & Pope, 1996; Kochanska, Murray, Jacques, Koenig, & Vandegeest, 1996). Older children, as compared to their younger peers, are better able to prevent themselves from engaging in a behavior and instead are more able to replace the preferred behavior with an alternative choice. Thus, when taught new ways to respond to social situations, older children might have an easier time inhibiting old responses (e.g., hitting a peer), thus enhancing the likelihood that a new response (e.g., walking away) will be emitted.

Nonetheless, research shows that even preschoolers can be taught successfully how to control their behavioral responses, if given directions that are very specific to the particular behavior that they are trying to inhibit (e.g., Patterson & Mischel, 1976). When working with very young children, then, the focus should be specifically on the task (e.g., "Think about how you are not going to hit your friend if she takes your blocks. You can say to yourself that you are not going to hit your friend."). However, older children might be more receptive to more general redirecting (e.g., "Think about something that makes you happy;" or "Think about the time when the kid who spilled the juice on you was nice to you.").

In the context of a social-cognitive information-processing view, the concept of response inhibition is particularly critical when considering the ways in which aggressive behavior is learned and maintained over time. In this view, cognitive scripts are created through both observational and direct learning experiences in which particular social stimuli (e.g., a hostile peer) become associated with particular behavioral responses (e.g., retaliatory aggression). Conceptualized in the language of classical behavioral theory, aggressive responses must become "unlearned" if non-aggressive responses are to be learned and subsequently employed. Thus, part of inhibiting old responses to common situations is to employ strategies designed to pair newly learned responses to those situations. This was demonstrated elegantly in components of the FAST Track Project (Conduct Problems Prevention Research Group, 1999), in which schools displayed classroom-based prevention materials in other parts of the school environment.

Generalization of Problem-Solving Strategies

Younger children are less adept than their older peers at drawing analogies between problem-solving situations in different contexts (e.g., Crisafi & Brown, 1986). For example, aggression prevention programs often include activities in which children are presented with a typical social conflict and then instructed on or challenged to generate methods of handing the conflict. However, younger children have more difficulty than older children with drawing an analogy between problem solving in one specific context (e.g., a peer conflict over candy sharing in the cafeteria) and problem solving in another, albeit conceptually similar, situation (e.g., a peer conflict over turn-taking on a swing set in the playground). Thus, younger children might learn very effective social problem-solving strategies but then be unable to generalize them across situations.

Children improve in their ability to draw analogies if the parallel between two situations is specifically pointed out (Crisafi & Brown, 1986; Holyoak & Thagard, 1995). Still, preschool-aged children require much more explicit description of such similarities, and often need such prompting in situations, whereas elementary–school-aged children do not (e.g., Crisafi & Brown, 1986). Thus, even if explicitly told "you should not hit or yell at other kids when they take your things without asking," the younger child will benefit from being specifically told that this is also the case in other, similar situations. With regard to program design, then, it would be useful for younger children to be engaged in activities designed to help them identify a variety of situations in which they might be provoked to behave aggressively. It also might be helpful to encourage younger children to identify common features of such provocative situations, such as "when other kids do things that you don't like."

As noted earlier, the acquisition of cognitive scripts is a core feature of Huesmann's (1998) social-cognitive model of aggression. The generalization of social problem-solving strategies learned in the context of aggression prevention programming might thus be viewed as writing a more generalized script. This might be more difficult for non-aggressive as compared to aggressive scripts. Aggressive children have been shown to possess more aggressive problem-solving strategies than non-aggressive children (Dubow & Reid, 1994); such results are derived partly by aggressive children applying similar aggressive responses to a variety of problematic situations. Indeed, from a purely instrumental perspective, specific acts of aggression can be functional for several different situations. For example, "hit him" could serve as a response to situations such as "being made fun of," "having something taken from you," or "not being allowed to play with the group." In contrast, it is difficult to imagine that a single form of non-aggression, such as "walk away from the conflict" could be applied in a similarly general manner. Therefore, program designers should emphasize, particularly to younger children, the training of a variety of non-aggressive and prosocial problem-solving

strategies, with standard techniques such as "brainstorming" lists of solutions (e.g., Lochman et al., 1987).

BELIEVING THAT AGGRESSION IS INAPPROPRIATE AND INEFFECTIVE

Learning to interpret others' behaviors accurately and learning to use non-aggressive strategies provide an important foundation for developing the belief that aggression is inappropriate and ineffective. For example, aggression can seem much more inappropriate in the context of recognizing that a peer's behavior was accidental as opposed to hostile and intentional. Further, implementing non-aggressive solutions that actually work (or work better than aggressive solutions) is an important step in the acquisition of the belief that aggression is ineffective. However, there also are social-cognitive developmental concerns related uniquely to the emergence of beliefs about inappropriateness and ineffectiveness. We present two below: the development of *social-moral reasoning* and age-related changes in *social goals*.

Social-Moral Reasoning

From a very early age, most children believe that it is *wrong* to engage in a behavior that hurts another person, that there should be rules and laws against behavior that hurts another person, that hurting another is wrong even if an authority or a rule deems such behavior acceptable, and that it is wrong to hurt another person in various contexts (Smetana, 1994; Tisak, 1995; Turiel, 1983). When explaining why it is wrong, youth often cite reasons of others' welfare and rights. From early on, children thus typically recognize that it is wrong to engage in behavior that harms others, even though youth themselves acknowledge that their own responses in social situations are not always the "right" way to behave (e.g., Rogers & Tisak, 1996). However, children and adolescents think differently about events that they perceive to be violations of arbitrary rules of social conduct, such as addressing an adult by his or her first name. Typically, children and adolescents do believe such "social conventional" acts to be wrong; however, they think these behaviors *would be okay* if rules and/or authority permitted their occurrence. When explaining why such behaviors are wrong, in contrast to reasons provided for events that harm others, youth cite rules, customs, and authority. Finally, children and adolescents believe other behaviors, those primarily impacting only themselves such as clothing choice or friendship selection, to be outside of the jurisdiction of rules and authority, and typically do not believe such "personal choice" behaviors to be wrong (Tisak, 1995).

Although most children, from a very young age, are aware that it is wrong to hurt somebody, children and adolescents who believe aggression is more

acceptable are the ones who are more likely to act aggressively (Crane-Ross, Tisak, & Tisak, 1998; Huesmann & Guerra, 1997). Thus, as discussed by Harvey, Fletcher, and French (2001), it might be that aggressive youth view decisions about aggression similarly to how their non-aggressive peers view decisions about violating social conventions or executing personal choices. In other words, aggressive youth tend to view aggression in terms of whether it will "get them in trouble" or impact them negatively in some other way, rather than in terms of whether it will harm others.

Given such concerns, primary prevention programs probably would not benefit as much from spending a great deal of time discussing the moral unacceptability of aggression. This is because the majority of students in these programs, regardless of age, already recognize that aggression is wrong, that aggression hurts others, and that aggression violates individual rights. Rather, such programs might derive greater benefit from spending time on other social-cognitive aspects of aggression prevention (e.g., learning more effective problem-solving strategies). In contrast, developmental research indicates instead that programs aimed *specifically* at aggressive youth (i.e., secondary/selected or tertiary/indicated programs) should spend time focusing on the conception of aggression as a morally reprehensible behavior (for example, through Moral Reasoning Training; Goldstein, Glick, & Gibbs, 1998).

Changes in Social Goals

As suggested earlier, aggression can be a functional response to a variety of social problems and conflicts. Aggression is simple to execute and also can be effective for a number of reasons: it can convey a powerful social message ("don't mess with me"), meet instrumental desires (e.g., taking a ball from another child to play with it), and also can be associated with social reinforcement from the peer group (e.g., the aggressor might be viewed as "tough" and "cool"; Rodkin, Farmer, Pearl, & Van Acker, 2000). In short, it can be an easy way for youth to achieve a variety of *social goals*. It is a challenge for programmers to convince children and adolescents that there are better ways to achieve social goals.

Although specific aspects of social goals vary depending on a youth's developmental level, many goals are salient throughout childhood and adolescence. One social goal of particular salience is that of having friends. Although friends are special relationships for youth of all ages (see Hartup, 1992), the function and meaning of friendship changes over time. During preschool, friendship tends to be based on shared activities; friends are typically those with whom a child plays. Over the next few years, children begin to recognize that friends are people who *decide* to be nice to them and play with them, and by eight to ten years of age children believe that, in addition to sharing common activities, friends are people who display kindness, commitment, and trustworthiness (Hartup, 1992). Older

children emphasize that friends are psychologically similar to them, that is, that their friends share their likes, dislikes, and interests (Selman, 1980).

During early adolescence, abstract concepts such as intimacy, loyalty, and emotional support increase in salience (Berndt, 1982; Buhrmester, 1990). More-over, as children get older the number of people whom they consider to be friends gets smaller, as their definition of friendship grow increasingly complex and the responsibilities of friendship become increasingly challenging (e.g., Berndt & Hoyle, 1985). Therefore, a young child would be most interested in maintaining a friendship so that he or she would have someone with whom to play. An older child would be far less concerned about such a concept, and instead would be more interested in the idea of maintaining a friend for the purposes of self-disclosure and support. Programmers should attend to such developmental concerns when discussing why it is important to behave in a way that is conducive to friendship maintenance.

Also in early adolescence a new social goal emerges, one of forging relation-ships with individuals of romantic interest. Adolescent females begin to "date" in some form by about age 12 or 13, whereas adolescent males generally start to "date" around 13 or 14 (Padgham & Blyth, 1991). Early romantic relationships typically last for only a short amount of time, but involve a lot of contact during the relatively brief period (Feiring, 1996). Romantic relationships are very important to adolescents and become increasingly so over time (Furman & Wehner, 1994). Thus, with regard to program design, adolescents might be motivated by learning how to behave in a way that makes them attractive to potential dating partners. As an extension of this, it would be useful for program facilitators working with adolescents to determine whether program participants believe that behaving ag-gressively is a way to attract dating partners; this belief clearly would need to be addressed and modified.

THE IMPORTANCE OF METACOGNITION

We have so far considered developmental issues relevant to specific aspects of the social-cognitive mediation of aggressive behavior. However, it is important to note that the overarching social-cognitive information-processing model refers to a *set* of cognitive skills and structures that can co-exist in a hypothesized sequence during a single social-conflict situation (e.g., a child interprets another's behavior, determines a potential response, and then evaluates its appropriateness). Thus, it is important to consider the social-cognitive model in its entirety. Because social-cognitive programs are designed to modify a number of aspects of children's thinking as it relates to aggression, developmental research on *metacognition* (or "thinking about thinking") also has implications for program design. For example, are children even aware of the cognitive processes in which they engage in the context of social conflicts?

Metacognitive abilities improve across childhood and adolescence. Studies indicate that with age, youth tend to become more aware of their own thoughts, and acquire the ability to monitor those thoughts effectively by tracking the cognitive steps they might use to solve problems (e.g., Flavell, Friedrichs, & Hoyt, 1970; Kuhn, 1999). This developing skill is important because unifying a number of discrete social-cognitive skills into an explicit problem-solving model is a common strategy of aggression prevention programs (e.g., Conduct Problems Prevention Research Group, 1999; Guerra & Slaby, 1990; MACS Research Group, 2002). For example, Guerra and Slaby's (1990; p. 272) cognitive mediation training program teaches adolescents an eight-step model that begins with "is there a problem?" (step a) and goes through several steps in sequence before concluding with "evaluate the results" (step h). Given their better metacognitive self-awareness, adolescents are more likely than children to utilize effectively such an approach, although it has been used in simplified form with children as young as early elementary school (MACS Research Group, 2002). Program developers should be cautious when attempting to train younger children on a stepwise problem-solving model, taking care that the model is brief, easy to understand, and reviewed frequently.

FUTURE DIRECTIONS

The social-cognitive approach to reducing aggression is considered a best-practice strategy by the Centers for Disease Control (Thornton et al., 2000); the social-cognitive theory of aggressive behavior development currently is one of the more prominent models for understanding the emergence and maintenance of aggression over time (Anderson & Huesmann, 2003). Prevention programs based on social-cognitive techniques thus rest on a solid foundation of both practice and research. Still, ongoing research is needed into the social-cognitive processes accounting for variation in youth aggression over time (Boxer & Dubow, 2002). Prevention research, particularly in context of a primary or universal approach, is important not only for enhancing our knowledge of how to mitigate youth aggression but also for refining our models of both normal and atypical development in aggressive behavior. Some children increase in aggression over time whereas others decrease, and still others begin school at a high level and then persist at that level (Broidy et al., 2003). By modifying and measuring social-cognitive processes related to aggression in normative groups of children in the context of action research (i.e., ongoing integration of theory and practice through actual programming; Hunter, Elias, & Norris, 2001; Leff, Costigan, & Power, 2004), we can gain a more elaborated understanding of how *changes* in social-cognitive factors relate to *constancy or change* in aggression over time.

REFERENCES

Acosta, O. M., Albus, K. E., Reynolds, M. W., Spriggs, D., & Weist, M. D. (2001). Assessing the status of research on violence related problems among youth. *Journal of Clinical Child Psychology*, *30,* 152–160.

Anderson, C. A., & Huesmann, L. R. (2003). Human aggression: A social-cognitive view. In M. A. Hogg & J. Cooper (Eds.), *The SAGE handbook of social psychology* (pp. 296–323). Thousand Oaks, CA: Sage.

Arsenio, W. F., & Kramer, R. (1992). Victimizers and their victims: Children's conceptions of mixed emotional consequences of moral transgressions. *Child Development*, *63,* 915–927.

Berndt, T. J. (1982). The features and effects of friendship in early adolescence. *Child Development*, *53,* 1447–1460.

Berndt, T. J., & Hoyle, S. G. (1985). Stability and change in childhood and adolescent friendships. *Developmental Psychology*, *21,* 1007–1015.

Boxer, P., & Dubow, E. F. (2002). A social-cognitive information-processing model for school-based aggression reduction and prevention programs: Issues for research and practice. *Applied and Preventive Psychology*, *10,* 177–192.

Broidy, L. M., Nagin, D. S., Tremblay, R. E., Bates, J. E., Brame, B., Dodge, K. A., et al. (2003). Developmental trajectories of childhood disruptive behaviors and adolescent delinquency: A six-site, cross-national study. *Developmental Psychology*, *39,* 222–245.

Buhrmester, D. (1990). Intimacy of friendship, interpersonal competence, and adjustment during preadolescence and adolescence. *Child Development*, *61,* 1101–1111.

Chandler, K. A., Chapman, C. D., Rand, M. R., & Taylor, B. M. (1998). *Student*s' *reports of school crime: 1989 and 1995*. Washington, DC: U.S. Departments of Education and Justice.

Conduct Problems Prevention Research Group (1999). Initial impact of the Fast Track Prevention Trial for conduct problems: II. Classroom effects. *Journal of Consulting and Clinical Psychology*, *67,* 648–657.

Crick, N. R., & Dodge, K. A. (1994). A review and reformulation of social information-processing mechanisms in children's social adjustment. *Psychological Bulletin*, *115,* 74–101.

Crisafi, M. A., & Brown, A. L. (1986). Analogical transfer in very young children: Combining two separately learned solutions to reach a goal. *Child Development*, *57,* 953–968.

Derryberry, D., & Rothbart, M. K. (1997). Reactive and effortful processes in the organization of temperament. *Development and Psychopathology*, *9,* 633–652.

Dodge, K. A. (1980). Social cognition and children's aggressive behavior. *Child Development*, *51,* 162–170.

Dubow, E. F., & Reid, G. J. (1994). Risk and resource variables in children's aggressive behavior: A two-year longitudinal study. In L.R. Huesmann (Ed.), *Aggressive behavior: Current perspectives* (pp. 187–214). New York: Plenum.

Egan, S. K., Monson, T. C., & Perry, D. G. (1998). Social-cognitive influences on change in aggression over time. *Developmental Psychology*, *34,* 996–1006.

Eron, L. D., Lefkowitz, M. M., & Walder, L. O. (1971). *Learning of aggression in children*. Boston: Little, Brown.

Fabes, R. A., Eisenberg, N., Nyman, M., & Michealieu, Q. (1991). Young children's appraisals of others' spontaneous emotional reactions. *Developmental Psychology*, *27,* 858–866.

Farrell, A. D., Ampy, L. A., & Meyer, A. L. (1998). Identification and assessment of problematic interpersonal situations for urban adolescents. *Journal of Clinical Child Psychology*, *27,* 293–305.

Farrell, A. D., Meyer, A. L., Kung, E. M., & Sullivan, T. N. (2001). Development and evaluation of school-based prevention programs. *Journal of Clinical Child Psychology*, *30,* 207–220.

Feinman, S. (1992). *Social referencing and the social construction of reality in infancy*. New York: Plenum.

Feiring, C. (1996). Concepts of romance in 15-year-old adolescents. *Journal of Research on Adolescence*, *6,* 181–200.

Flavell, J. H., Friedrichs, A. G., & Hoyt, J. D. (1970). Developmental changes in memorization processes. *Cognitive Psychology*, *1,* 324–340.

Furman, W., & Wehner, E. A. (1994). Romantic views: Toward a theory of adolescent romantic relationships. In R. Montemayor, G. R. Adams, & T. P. Gullotta (Eds.), *Advances in adolescent development, Vol. 6: Relationships during adolescence: Developmental perspectives* (pp. 21–36). San Francisco: Jossey-Bass.

Gnepp, J., & Klayman, J. (1992). Recognition of uncertainty in emotional inferences: Reasoning about emotionally equivocal situations. *Developmental Psychology*, *28,* 145–158.

Gopnik, A., & Meltzoff, A. N. (1994). Minds, bodies, and persons: Young children's understanding of the self and others as reflected in imitation and theory of mind research. In S. T. Parker (Ed.), *Self-awareness in animals and humans: Developmental perspectives* (pp. 166–186). New York: Cambridge University Press.

Guerra, N. G., Huesmann, L. R., & Spindler, A. (2003). Community violence exposure, social cognition, and aggression among urban elementary-school children. *Child Development*, *74,* 1561–1577.

Guerra, N. G., & Slaby, R. G. (1990). Cognitive mediators of aggression in adolescent offenders: 2. Intervention. *Developmental Psychology*, *26,* 269–277.

Hale, S. (1990). A global developmental trend in cognitive processing speed. *Child Development*, *61,* 653–663.

Harnishfeger, K. K., & Pope, R. S. (1996). Intending to forget: The development of cognitive inhibition in directed forgetting. *Journal of Experimental Child Psychology*, *62,* 292–315.

Hartup, W. W. (1992). Friendships and their developmental significance. In H. McGurk (Ed.), *Childhood social development: Contemporary perspectives* (pp. 175–205). Hove, England: Erlbaum.

Harvey, R. J., Fletcher, J., & French, D. J. (2001). Social reasoning: A source of influence on aggression. *Clinical Psychology Review*, *21,* 447–469.

Hoffner, C., & Badzinski, D. M. (1989). Children's integration of facial and situational cues to emotion. *Child Development*, *60,* 411–422.

Holyoak, K. J., & Thagard, P. (1995). *Mental leaps*. Cambridge, MA: MIT Press.

Hudley, C., Britsch, B., Wakefield, W. D., Smith, T., Demorat, M., & Cho, S. (1998). An attribution retraining program to reduce aggression in elementary school students. *Psychology in the Schools*, *35,* 271–282.

Huesmann, L. R. (1998). The role of social information processing and cognitive schema in the acquisition and maintenance of habitual aggressive behavior. In R. G. Geen & E. Donnerstein (Eds.), *Human aggression: Theories, research, and implications for social policy* (pp. 73–109). San Diego, CA: Academic Press.

Huesmann, L. R., Dubow, E. F., Eron, L. D., & Boxer, P. (in press). Middle childhood family-contextual and personal factors as predictors of adult outcomes. In A. Huston & M. Ripke (Eds.), *Middle childhood: Contexts of development*. UK: Cambridge.

Huesmann, L. R., Eron, L. D., Klein, R., Brice, P., & Fischer, P. (1983). Mitigating the imitation of aggressive behaviors by changing children's attitudes about media violence. *Journal of Personality and Social Psychology*, *44,* 899–910.

Huesmann, L. R., & Guerra, N. G. (1997). Children's normative beliefs about aggression and aggressive behavior. *Journal of Personality and Social Psychology*, *72,* 408–419.

Huesmann, L. R., & Reynolds, M. A. (2001). Cognitive processes and the development of aggression. In A. C. Bohart & D. J. Stipek (Eds.), *Constructive and destructive behavior: Implications for family, school, and society* (pp. 249–269). Washington, DC: American Psychological Association.

Human Capital Initiative. (1996). *Reducing violence: A research agenda*. Washington, DC: American Psychological Association.

Hunter, L., Elias, M. J., & Norris, J. (2001). School-based violence prevention: Challenges and lessons learned from an action research project. *Journal of School Psychology*, *39,* 161–175.

Kail, R. (1986). Sources of age differences in speed of processing. *Child Development*, *57,* 969–987.

Kingery, P. M., Coggeshall, M. B., & Alford, A. A. (1998). Violence at school: Recent evidence from four national surveys. *Psychology in the Schools*, *35,* 247–258.

Klahr, D. (1985). Solving problems with ambiguous subgoal ordering: Preschoolers' performance. *Child Development*, *56,* 940–952.

Klahr, D., & Robinson, M. (1981). Formal assessment of problem solving and planning processes in children. *Cognitive Psychology*, *13,* 113–148.

Kochanska, G., Murray, K., Jacques, T. Y., Koenig, A. L., & Vandegeest, K. A. (1996). Inhibitory control in young children and its role in emerging internalization. *Child Development*, *67,* 490–507.

Kuhn, D. (1999). Metacognitive development. In L. Balte & C. S. Tamis-Lemonda (Eds.), *Child psychology: A handbook of contemporary issues* (pp. 259–286). Philadelphia: Psychology Press.

Leff, S. S., Costigan, T., & Power, T. J. (2004). Using participatory research to develop a playground-based prevention program. *Journal of School Psychology*, *42,* 3–21.

Lochman, J. E., Lampron, L. B., Gemmer, T. C., & Harris, S. R. (1987). Anger coping intervention with aggressive children: A guide to implementation in school settings. In P. A. Keller & S. R. Heyman (Eds.), *Innovations in clinical practice — A source book: Vol. 6* (pp. 339–356). Sarasota, FL: Professional Resource Exchange.

Long, B. (1989). Heterosexual involvement of unmarried undergraduate females in relation to self-evaluations. *Journal of Youth and Adolescence*, *18,* 489–469.

Magai, C., & McFadden, S. H. (1995). *The role of emotions in social and personality development.* New York: Plenum.

Metropolitan Area Child Study Research Group. (2002). A cognitive-ecological approach to preventing aggression in urban settings: Initial outcomes for high-risk children. *Journal of Consulting and Clinical Psychology*, *70,* 179–194.

Miller, P. H., & Seier, W. (1994). Strategy utilization deficiencies in children: When, where, and why. In H. Reese (Ed.), *Advances in child development and behavior: Vol. 25* (pp. 107–156). New York: Academic Press.

Padgham, J. J., & Blyth, D. A. (1991). Dating during adolescence. In R. M. Lerner, A. C., Peterson, & J. Brooks-Gunn (Eds.), *Encyclopedia of adolescence* (pp. 196–198). New York: Garland.

Patterson, C. J., & Mischel, W. (1976). Effects of temptation inhibiting and task facilitating plans on self-control. *Journal of Personality and Social Psychology*, *33,* 209–217.

Piaget, J., & Inhelder, B. (1969). *The psychology of the child*. New York: Basic Books.

Rodkin, P. C., Farmer, T. W., Pearl, R., & Van Acker, R. (2000). Heterogeneity of popular boys: Antisocial and prosocial configurations. *Developmental Psychology*, *36,* 14–24.

Rogers, M. J., & Tisak, M. S. (1996). Children's reasoning about responses to peer aggression: Victims' and witness's expected and prescribed behaviors. *Aggressive Behavior*, *22,* 259–269.

Selman, R. (1980). *The growth of interpersonal understanding: Developmental and clinical analyses*. New York: Academic Press.

Smetana, J. G. (1994). Morality in context: Applying moral judgments to complex social issues. In R. Vasta (Ed.), *Annals of Child Development: Vol. 10* (pp. 83–100). London: Kingsley.

Surgeon General (2001). *Youth violence: A report of the Surgeon General*. Rockville, MD: U.S. Department of Health and Human Services.

Thornton, T. N., Craft, C. A., Dahlberg, L. L., Lynch, B. S., & Baer, K. (2000). *Best practices of youth violence prevention: A sourcebook for community action*. Atlanta, GA: Centers for Disease Control and Prevention.

Tisak, M. S. (1995). Domains of social reasoning and beyond. In R. Vasta (Ed.), *Annals of child development: Vol. 11* (pp. 95–130). London: Kingsley.

Tolan, P. H., Gorman-Smith, D., & Loeber, R. (2000). Developmental timing and onsets of disruptive behaviors and later delinquency of inner-city youth. *Journal of Child and Family Studies*, *9,* 203–220.

Tolan, P. H., Guerra, N. G., & Kendall, P. C. (1995). A developmental-ecological perspective on antisocial behavior in children and adolescents: Toward a unified risk and intervention framework. *Journal of Consulting and Clinical Psychology*, *63,* 579–584.

Turiel, E. (1983). *The development of social knowledge: Morality and convention*. Cambridge, England: Cambridge University Press.

Vurpillot, E. (1968). The development of scanning strategies and their relation to visual differentiation. *Journal of Experimental Child Psychology*, *6,* 632–650.

Wilson, S. J., Lipsey, M. W., & Derzon, J. H. (2003). The effects of school-based intervention programs on aggressive behavior: A meta-analysis. *Journal of Consulting and Clinical Psychology*, *71,* 136–149.