A Cognitive-Ecological Approach to Serving Students With Emotional and Behavioral Disorders: Application to Aggressive Behavior

Nancy G. Guerra
University of New Hampshire

Paul Boxer
University of New Orleans

Tia E. Kim
University of California at Riverside

ABSTRACT: In this article we present a cognitive-ecological model for understanding and preventing emotional and behavioral difficulties and propose directions for school-based intervention programs, particularly with aggressive children. In the cognitive-ecological framework, intervention efforts should target certain cognitive skills (e.g., skills that encourage attention to multiple cues in a setting) and knowledge structures (e.g., normative beliefs about appropriate responses to conflict) across multiple contexts that change over time (e.g., classroom, peer, school, family). We also emphasize the importance of coordination among contextual influences so that children learn consistent, cross-context standards that encourage prosocial and socially competent behavior. Practitioners working with students who exhibit emotional and behavioral difficulties should strive to integrate efforts at modifying cognition as well as context in the service of promoting behavioral change that maintains over time and across situations.

Recent advances in understanding the learning, maintenance, prevention, and treatment of problematic social behaviors in childhood and adolescence have emphasized the central role of the child's developing cognitions (Beck, 1999; Boxer & Dubow, 2002; Compton et al., 2004; Crick & Dodge, 1994; Durlak, Rubin, & Kahng, 2001; Eron, 1994; Guerra & Huesmann, 2004; Huesmann, 1998; Lochman & Lenhart, 1995). The developing individual is seen as an active participant in a learning process linking individual (e.g., irritability, impulsivity) and environmental (e.g., community violence, poverty) risk factors to social behavior through cognitive structures, such as beliefs, rules, and schemas, and skills, such as attention, attribution, and problem solving. This cognitive-ecological view posits that problem behaviors emerge through interactions between individual predisposition and contextual socialization and are maintained over time and across situations by cognitive "styles" that are shaped by direct and observational learning experiences. Cognitive styles are learned across multiple contexts and, in turn, influence responding across these contexts. The term "ecological" refers to the nested contexts of child development, providing a stage for social interactions, opportunities for social engagement, and a normative or regulatory structure that includes costs and benefits of distinct courses of action (Guerra & Huesmann).

Consider a boy who grows up in an environment laced with harsh and hostile encounters with parents, teachers, and peers. Over time, it is likely that these negative experiences will influence, at least to some degree, his self-perception ("nobody likes me"), perceptions of others ("they have it in for me"), and beliefs about aggression ("it's OK to hit and be mean—everybody does it"). Under these conditions, it is also likely that he will develop characteristic biases in social information processing that are based on the presumption that others act with hostile intent, leading to
increased perceptions of vulnerability and anger, and a greater likelihood of aggressive retaliation. For example, Dodge and colleagues (Dodge, Pettit, & Bates, 1997; Dodge, Pettit, Bates, & Valente, 1995) have shown that children who experience harsh parental discipline or are physically abused during their early childhood years are more likely to attribute hostile intent to peers in ambiguous situations and behave more aggressively than their nonexposed peers.

If cognitive patterns linked to emotional reactions, such as anger, and behaviors, such as aggression, are learned over time, then it is also the case that they can be "unlearned." In essence, this is a fundamental premise of cognitive-behavioral interventions; that is, modifying dysfunctional cognition will, in turn, lead to positive effects on emotional and behavioral adjustment. However, because the primary emphasis is on the individual's cognitive deficits and distortions and how these can be modified, less attention has focused on the contribution of the child's total developmental ecology to the emergence and maintenance of targeted cognitions (Boxer & Butkus, in press; Durlak et al., 2001).

Both clinical and psycho-educational interventions typically are designed to change how children think in response to problematic social situations, with less attention focused on modifying contextual influences on these emerging cognitions. The assumption is that once children correct errors in thinking or reduce deficits in social information-processing skills, they will be better equipped to navigate their social and emotional worlds, resulting in corresponding gains in adjustment. Although cognitive-behavioral interventions also address situational factors that have established or are maintaining specific symptoms or behaviors (e.g., functional analysis; Haynes & O'Brien, 1990), they focus primarily on immediate situational contingencies rather than overarching developmental contexts. In some sense, a focus on the individual as the target of intervention ignores the continuous and dynamic influence of the social environment on the child's emerging cognitions. Indeed, one of the most robust findings in both the prediction and intervention literature looking at youth problem behaviors is the complex and continuous interplay between the developing child and the nested social contexts in which development unfolds (Bronfenbrenner, 1979; Guerra, Huesmann, Tolan, VanAcker, & Eron, 1995; Henggeler, Schoenwald, Bourduin, Rowland, & Cunningham, 1998).

The purpose of this paper is to describe how a cognitive-ecological model of children's social behavior builds on cognitive-behavioral approaches to suggest effective avenues for intervention. As described, the cognitive-ecological model emphasizes the role of cognitions that develop over time as individuals navigate multiple social environments. We propose that the effectiveness of cognitive-behavioral interventions for children with emotional and behavior disorders should be enhanced by simultaneously addressing maladaptive cognitions and relevant situational and contextual influences on these emerging cognitions. Because most of our work has focused on school-based approaches to the prevention and treatment of children's aggressive behavior, we illustrate the cognitive-ecological approach as applied to the learning and prevention of aggression in schools.

We begin by discussing specific patterns of cognition and information processing related to social behavior. Following this, we examine specific teacher, peer, and school influences on both cognition and aggression that are potentially malleable via prevention and intervention efforts. We highlight the need to think about developmentally appropriate, universal strategies for preventing the emergence of distortions or deficits in cognitive processing as well as strategies for intervening with at-risk students. Finally, we discuss how individual and contextual influences on aggression and social behavior can be integrated into school-based, multicomponent prevention and intervention programs that address complex needs of children over time and across contexts.

The Cognitive Underpinnings of Children's Social Behavior

In the cognitive-ecological framework, behavior is seen as a product of an array of causal influences including individual factors (e.g., temperament, arousal level, brain structures), environmental socializers (e.g., family practices), and situational instigators (e.g., stress). These predisposing factors are believed to influence behavior, in part, via their influence on cognitive processes and structures that develop over time. For example,
both high levels of impulsivity and high levels of environmental violence can lead children to short circuit their search for cues in threatening situations, leading to a hostile attributional bias that is more likely to trigger aggressive responding (Dodge, Bates, & Pettit, 1990).

The cognitive-ecological framework builds on a number of integrative social-cognitive models of behavior (e.g., Anderson & Bushman, 2002; Crick & Dodge, 1994; Huesmann, 1998). What these models have in common is an emphasis on both sequential processing of social information (although this processing can also occur in simultaneous parallel paths) and an emphasis on latent mental structures that guide information processing by reducing the cognitive workload. A cognitive system thus includes memory structures that link cognitive concepts and emotions, knowledge structures that represent interconnected concepts, and an executive program that manages the entire system linking inputs to outputs (Huesmann). Over time, both processing styles and mental structures crystallize, resulting in characteristic patterns of cognition and associated behaviors. Further, as children develop more habitual styles of responding in familiar situations, cognitive processing becomes more automatic. In this fashion, social-cognitive mechanisms are seen as instrumental in the stability and maintenance of behavior over time and across situations. Which aspects of cognition and their development represent the best bets for intervention? We now turn to a brief review of cognitive processes and structures that have been studied in relation to children's social behavior.

In social situations, children are presented with an array of internal and external cues; in the interest of cognitive efficiency, they learn over time to address certain cues and ignore others. The salience of different cues hinges on personal and situational factors. An aggressive child is more likely to attend to aggression-promoting cues (e.g., being bumped-into by a peer) and less likely to properly address prosocial cues (e.g., the peer subsequently apologizing). Contextual stimuli also can exert a priming effect, where cues linked to these stimuli are processed more readily. For instance, if kindness and caring are repeatedly emphasized in the classroom, children may be more sensitive to facial cues that suggest someone's feelings are hurt.

The link between processing of social cues and behavior also hinges on how cues are interpreted or causally attributed. A major emphasis of cognitive-behavioral therapy is on understanding how meanings, attributions, and explanations guide behavior, and how related distortions can misguide behavior. For example, social categories such as gender or ethnicity can be used as guides for interpretation or misinterpretation. A child who believes that girls are nice and boys are mean may attribute a “stare” from a girl as an attempt at engagement while attributing the same stare from a boy as a show of disrespect or provocation. Perhaps the most robust finding linking attributions to children's behavior in both clinical and population samples is that aggressive children are more likely to attribute hostile intent to others under ambiguous circumstances (Dodge et al., 1990; Guerra & Slaby, 1990; Orobio de Castro, Veerman, Koops, Bosch, & Monshouwer, 2002).

In addition to encoding and interpretation of cues, children must select from a range of available responses, evaluate these responses, and select a response for enactment. Although responses such as aggression and withdrawal seem to be part of an innate behavioral repertoire, through socialization experiences children develop more elaborate and situation-specific guidelines for generating responses and evaluating the outcome of these responses. Over time, a child's response repertoire becomes more sophisticated and more organized according to rules of social interaction across contexts. Responses are guided by cognitions including beliefs about their appropriateness, beliefs about consequences, beliefs about self-ability or efficacy to enact them, and consistency with self-schema. For instance, it is likely that a child who believes that saying “please” is very important will automatically respond in this manner when making a request. Alternately, a child who believes that “nice guys finish last” will probably generate more aggressive than passive responses in social situations.

In our own work we have been interested in the role of normative beliefs for behavior, defined as one's perception about the appropriateness of a particular behavior in specific settings. In the case of aggressive behavior, we have shown that these beliefs emerge from observation of one's own behavior, observation of others' behavior both in vivo and through media representations,
Knowledge structures such as normative beliefs can influence social information processing by increasing the salience of particular cues or specific responses. Further, simple structures often are linked together in a larger organizational framework that suggests possible courses of action or "scripts" for responding. Scripts are mental constructs that direct behavior by organizing a person's understanding of a given situation, including a likely sequence of action, preferred response, and expected consequences. Scripts serve to simplify the cognitive workload and increase the automaticity of responding. As development unfolds across familiar situations, children's characteristic responses become increasingly guided by associated scripts. For instance, prosocial children presumably have more dominant prosocial scripts, and aggressive children are more likely to access regularly more aggressive scripts.

The cognitive-ecological model emphasizes the role of contextual influences on the learning, encoding, and utilization of scripts for social interaction and behavior. Contexts provide rich opportunities to observe patterns of social interaction, frequency of different types of behavior, likely consequences of different courses of action, as well as to experiment with different behaviors in different situations. For example, a child who grows up in a violent home is likely to encode patterns of interaction under conditions of social conflict that include yelling, screaming, and other types of aggressive behaviors. Cues for conflict thus might trigger similar aggressive interaction patterns.

Contextual influences impact cognition and behavior through several mechanisms. These include observational learning, reinforcement, and normative standards. Observational learning involves both imitation and active information processing—children must frequently make sense of diverse observations that do not provide a consistent guide for action. Further, what is observed in different contexts also may vary. Similarly, contexts vary in the extent to which they provide reinforcements for specific behaviors. Among some youth, aggression may be highly regarded in the neighborhood and peer contexts, whereas this behavior often is discouraged and punished in family and school contexts. Contexts also provide information about normative standards of acceptable behavior. For instance, youth gangs provide youth with well-articulated norms and scripts and govern almost every aspect of social behavior and relationships in that context. Through such overwhelming modeling and reinforcement, youth in gangs are likely to generalize those norms and scripts to other contexts as well—for example, by believing generally that any insult or provocation must be addressed with a violent response.

Teacher, Peer, and School Influences on Cognition and Aggression

Given the influence of multiple contexts on development, cognition, and behavior, how can we best design and implement prevention and intervention programs that acknowledge, incorporate, and modify these ecological influences? From the cognitive-ecological perspective, schools represent excellent settings for prevention and intervention. In particular, schools have been identified as key venues for the delivery of services related to the mitigation or prevention of aggression and other problem behaviors, in part because of the opportunities they provide for reaching large numbers of children and adolescents, thus permitting universal or large-scale selected preventive interventions (Farrell, Meyer, Kung, & Sullivan, 2001).

Within the cognitive-ecological framework, schools also represent a setting for development that includes multiple sources of influence on student cognition and behaviors. In this framework, how teachers treat students and respond to classroom behavior, how students interact in the classroom as well as the lunchroom and playground, and how the school in general deals with students can promote or discourage positive or negative behaviors. Schools thus directly impact student cognitive, social, emotional, and behavioral development by influencing the transactions of students within the school.
system. Further, schools also can influence transactions between systems, for instance, by encouraging family involvement in student life or school work, or by providing opportunities for student involvement in community service learning activities.

From a cognitive-ecological perspective, contextual influences within schools operate at multiple levels. Teachers, peers, and administrators come to the school setting with a distinct set of social-cognitive skills and beliefs that, in turn, influence how they treat others. A striking example of how teacher beliefs influence both their own behavior and student outcomes comes from a series of experiments conducted several decades ago by Rosenthal and colleagues (e.g., Rosenthal & Jacobson, 1968). In these experiments, the researchers demonstrated that teachers' beliefs about student abilities had a meaningful impact on the students' actual academic performance. They noted that teachers responded differently to children whose perceived performance levels (regardless of their actual ability levels) compared to other children, calling on them more frequently and providing more encouragement in the classroom. In turn, these students actually improved on achievement indicators. These results suggest that teachers' beliefs and attitudes toward student achievement affected their actual achievement-relevant behaviors with students and subsequently students' actual achievement.

Translating this to social behavior, teacher expectations also should influence how students are treated through a similar process that might actually reinforce and even shape these behaviors. Indeed, teachers' perceptions of and attitudes toward their students often have been shown to relate to students' behaviors in the classroom (Hughes, Cavell, & Jackson, 1999; Hughes, Cavell, & Wilson, 2001), underscoring their role as socializing agents and the importance of their attitudes toward student behavior (Boulton, 1997; Craig, Henderson, & Murphy, 2000). Teacher cognitions also may shape social preferences and peer culture in the classroom. For instance, Chang (2003) observed that when teachers held more negative attitudes toward student aggression, students in their classes were more rejecting of aggressive classmates. This effect was attenuated, however, when coupled with higher levels of teachers' general warmth toward students. In this fashion, teacher cognition can influence student behavior by influencing how peers respond to this behavior in the classroom and school.

Schools also provide a venue for regular and ongoing exposure to the peer group at the classroom and school level. In part, this exposure puts a normative "stamp" on certain behaviors as a function of their frequency and consequences. Otherwise put, if a majority of students at a school engage regularly in a particular problem behavior for which they are infrequently reprimanded, it is likely that this behavior will come to be seen as normative and acceptable. Children learn about appropriate behaviors by observing the behavior of similar others in routine activities. Aggressive behavior provides a good illustration of these "peer contagion" effects, by which aggressive children promote aggressive and antisocial behavior in one another (Boxer, Guerra, Huesmann, & Morales, in press; Dishion, McCord, & Poulin, 1999; Espelage, Holt, & Henkel, 2003). More generally, children exposed frequently to aggression as witnesses or victims also are more likely to behave aggressively (Boxer, Edwards-Leeper, Goldstein, Musher-Eizenman, & Dubow, 2003; Guerra, Huesmann, & Spindler, 2003; Schwartz, 2000; Singer, Anglin, Song, & Lunghofer, 1995). When analyzed at the level of the classroom (i.e., specifying classrooms as the units of analysis), it has been shown that children's levels of aggression tend to co-vary—that is, entire classes may be characterized as more or less aggressive (Stormshak et al., 1999). Interestingly, however, a sanctioning effect also has been observed at the level of the peer group. Henry and colleagues (2000) found that when children in a classroom made behavioral norms against aggression salient (i.e., by rejecting aggressive peers), classroom levels of aggression reduced over time.

Although teachers and students are key components of the overall ecology of a school, school-level characteristics also are important to consider. For example, rates of student aggression appear to be lower when teachers perceive that their school administration maintains consistent and effective policies toward student aggression at the school level (Boxer, Musher-Eizenman, Dubow, Heretick, & Danner, 2003). Similarly, bullying prevention programs seem to be most effective when they are designed as whole school efforts that
send a clear message indicating bullying will not be accepted at school (Olweus, 1993). Further, aggressive behavior at school is likely to be greater at unstructured times and in unsupervised areas—for example, hallways during class period transitions when student perceptions of danger are higher (Astor, Meyer, & Behre, 1999; Astor, Meyer, & Pitner, 2001; Behre, Astor, & Meyer, 2001). However, it is also the case that school policies can give mixed messages about acceptable behaviors and probable consequences. For example, although the “zero tolerance” policy was popularized in the 1990s as an effective response to increasing rates of youth violence, it also has received criticism due to inflexible implementation and the potential to punish students drastically for very minor offenses (cf. Casella, 2003).

A cognitive-ecological framework emphasizes the role of teachers, peers, and school administrators in the emergence and maintenance of students’ cognitive skills, beliefs, and behaviors. As we have pointed out, each of these socialization agents also brings a set of cognitive skills and beliefs to the table that shapes their actions accordingly. For example, a teacher who believes that a specific child is aggressive and unlikely to change may respond quite differently to that child—being more sensitive to aggression-related cues—resulting in increased attention when the child is aggressive and decreased attention when the child behaves in a prosocial manner. As the child’s aggression increases, he/she may come to see this behavior as normative, resulting in subsequent increases in aggression (see Huesmann & Guerra, 1997).

A Cognitive-Ecological View on Population-Based and Targeted Prevention

Developmentally oriented practitioners and researchers in the area of children’s behavioral and mental health often have advocated the use of preventive, rather than remedial approaches to promoting children’s psychosocial adjustment—particularly in school settings (e.g., Cowen et al., 1996; Dubow, Roecker, & D’Imperio, 1997). This orientation stems from the recognition that emotional and behavioral disorders are developmental phenomena, emerging from the conflation of individual and environmental risk factors at multiple levels. Prevention-oriented activities typically fall into two categories (cf. Institute of Medicine, 1994). Population-based prevention activities, also known as universal or primary prevention, provide services to an entire population to reduce the likelihood that some problem will emerge. A zero tolerance policy adopted by school administrators in an attempt to deter aggression in the entire student population would be considered a population-based strategy. Targeted (also selected or secondary) prevention activities generally include “at-risk” or “high-risk” individuals and are designed to prevent the emergence of a full-scale problem following the initial appearance of signs or symptoms of the problem. A diversion program for first-time youthful status offenders intended to dissuade them from escalating into serious antisocial offending is an example of the targeted approach (Tolan & Guerra, 1994).3

Because it is a developmental model, the cognitive-ecological framework may best be applied to behavioral and emotional difficulties through population-based and targeted prevention services. As discussed earlier, with respect to aggression, the cognitive-ecological model specifies clear sources of both early (e.g., temperamental vulnerability, physical abuse) and later (e.g., aggressive cognitive styles) risk as well as factors that can promote or maintain problems over time (e.g., violent communities, schools, families, and media; antisocial peer affiliations). Further, the cognitive-ecological model identifies risk factors that may be present for an entire population, such as a hostile school climate or violent media, or present only for some portion of a population, such as domestic violence. Most importantly, the cognitive-ecological model also implies clearly a point in development after which population and targeted strategies may begin to show less effectiveness: around middle childhood (approximate age 7–10 years old) when children’s social cognitions are likely to begin guiding their social behavior and to become more resistant to change (Huesmann, 1998; Huesmann & Guerra, 1997). The cognitive-ecological framework thus underscores the need to deliver preventive services to children during and prior to the elementary school years, when their social cognitions are expected to be most malleable.
This is not to suggest, however, that cognitive-ecological interventions would be ineffective for children past middle childhood. Certainly, studies of cognitive-behavioral and social-cognitive interventions support the notion that even into adolescence, programs employing those treatment modalities can yield positive effects (e.g., Guerra & Slaby, 1990; Sussman, Rohrbach, & Mihalic, 2004; Yung & Hammond, 1995). Further, empirical research supports the utility of implementing developmentally tailored cognitive interventions across the childhood to adolescence age span (Boxer, Goldstein, Mushery-Eizenman, Dubow, & Heretick, in press). Still, interventions derived from the cognitive-ecological framework are likely to be most effective when delivered to youth before the youth have established persistent patterns of aversive behavior and related social and academic problems (Metropolitan Area Child Study Research Group, 2002).

### Cognitive-Ecological Strategies for Population-Based and Targeted Prevention in Schools

It has long been recognized that prevention and intervention programs targeting aggression and antisocial behavior may be most effective when conducted as multilevel interventions that also target the influence of contexts on behavior and development. For example, the Metropolitan Area Child Study (MACS; MACS Research Group, 2002), Project FAST Track (Conduct Problems Prevention Research Group, 1999), and Project LIFT (Reid, Eddy, Fetrow, & Stoolmiller, 1999) included classroom-based, peer group, and family interventions. One goal of the multilevel approach, of course, is to promote consistency across contexts: for example, what a child learns at school via classroom programming should be reinforced at home and among peers. Still, this goal may be viewed as operating within the individual-deficit framework. That is, new skills (to replace or augment those that are presumed to be deficient or deviant) that children learn for managing conflict or negative arousal can more effectively generalize in the presence of cross-context support for implementing those skills. The cognitive-ecological framework requires much more than skills transfer. In the cognitive-ecological view, ecologies must change in tandem with individual skills to support the emergence and crystallization of new cognitions.

Consider the aggressive child enrolled in a multicomponent program that provides both classroom and family interventions. The child may learn new problem-solving skills in the classroom, and the child’s parents may learn new strategies for managing that child’s behavior in a multiple family therapy group program. To some extent, then, the child’s immediate contexts might change: teachers provide instruction and reinforcement for new behaviors at school while parents do likewise for new behaviors at home. However, what about other classrooms in the school building, and other teachers? What about the neighborhoods through which the child must travel on the way to and from school, or playground interactions during recess? On the home front, what about the parents’ interactions with one another, or with other adults in the home? What about the child’s own neighborhood, and his/her interactions with peers in that context? What about the television shows the child is permitted to watch?

With regard to population-based prevention approaches to aggression in the cognitive-ecological framework, Boxer and Dubow (2002) noted ways to modify school ecologies in accordance with a cognitive-ecological view. For example, schools can emphasize the promotion of safety and nurturance rather than the reduction of aggression and disruption by instituting new prosocial extracurricular activities and fostering positive and meaningful teacher-student relationships (Morrison, Furlong, & Morrison, 1994). Schools also can integrate social and emotional learning concepts into regular classroom materials (Elias et al., 1997). In recent years, a number of efforts have been underway to improve school climate as a means for enhancing student engagement, learning, and development. Several different approaches and models have been implemented, but they all share a common set of principles. These principles focus on building close-knit learning communities that emphasize caring and compassion, creating a sense of community, providing a welcoming environment, increasing and sustaining student-adult connections, and setting clear and well-publicized rules and standards for acceptable behaviors at school (Charney, 1998; Noddings, 1992).
As mentioned previously, schools also can influence transactions between systems. Of particular relevance to population-based approaches are policies and strategies for parent engagement. A large literature suggests that parent involvement in schools can enhance student outcomes (e.g., Ban, 1993). Parent involvement can provide consistency in the learning and developmental environment for children by establishing mutual goals that are supported by both parents and teachers, increasing parents' ability to monitor their child's learning and behavior, and by creating activities that link home and school. These collaborative strategies should yield norms and rules for behaviors that are consistent at both home and at school, providing a clear message that is reinforced across contexts. Schools therefore can strive to engage their students' families by encouraging teacher-parent communication through formal and informal meetings, informing parents about policies and programs through newsletters mailed directly to homes, and enhancing student accountability through the inclusion of social and behavioral evaluations in student report cards.

It is also important to note that schools can serve as the locus of prevention efforts within neighborhoods and larger communities. Schools might take the lead on efforts to reduce violence in the broader ecology by encouraging or requiring students to engage in prosocial community service activities or hosting after-school activities for students as well as adults. Schools also can partner with university researchers to expand their services and their positive impact (Hunter, Elias, & Norris, 2001).

In terms of targeted prevention, a fully elaborated cognitive-ecological approach requires a new orientation to the therapeutic enterprise. In this view, for lasting changes, it would not be sufficient to provide individual cognitive-behavioral treatment focused on modifying problematic cognitions and behaviors, even with adjunctive family therapy, teacher training, or group social skills training. Returning to the example of aggression, the practitioner in such a case would need to consider all possible ecological sources of influence on the child's aggression-supporting cognitive style. Responses from teachers, parents, and peers to the child's behavior would of course be important, but it would also be important to consider the extent to which the child is exposed to aggression across those and other contexts and make recommendations for treatment accordingly. For example, the practitioner would need to assess the types and levels of aggression in the child's home environment and offer suggestions for any necessary remediation: Does the child consume violent media? Do the parents or other adult caretakers engage in frequent verbal conflict or any physical aggression? Does the child view violence or other antisocial behavior in the neighborhood? If the answer to any of these questions is yes, the practitioner must offer potential modifications, such as reducing the child's access to violent media, referring for couples counseling, or finding appropriate after-school activities to limit the child's exposure to aggression in the community.

**Future Directions and Caveats**

Given the large body of research supporting a cognitive-ecological view (cf. Boxer & Dubow, 2002; Guerra & Huesmann, 2004), it seems imperative that researchers and practitioners begin to design, implement, and evaluate prevention activities derived from this model. Although we have focused on how the cognitive-ecological framework can support efforts to prevent student aggression, this framework can be applied to crafting interventions for other emotional and behavioral problems as well. In some respects, cognitive-ecological approaches to dealing with problems besides aggression can be based directly on expansions of traditional cognitive-behavioral interventions. Cognitive-behavioral interventions have received considerable support in the childhood intervention literature for dealing with a host of other emotional and behavioral problems including anxiety and depressive disorders (Compton et al., 2004; Gaynor et al., 2003), stress management and coping (Hains, 1994), and secondary prevention of mental health problems (Durlak & Wells, 1998). When compared to other therapeutic modalities and psycho-educational programs, cognitive-behavioral approaches consistently produce the most significant gains (Barrett & Ollendick, 2004; Compton et al.; Kazdin & Weisz, 2003).

The key to making a cognitive-behavioral intervention one that is cognitive-ecological lies in the extent to which practitioners are...
able to address sources of ecological risk in the specific disorder or problem behavior. For example, ecological risk factors for depression include periodic major stressful life events and ongoing daily stresses (Compas, Howell, Phares, Williams, & Giunta, 1989). Psychoeducational interventions can of course be used to instruct children on ways to cope and prepare for both types of stress (Dubow, Schmidt, McBride, Edwards, & Merk, 1993). However, practitioners also could work with families and teachers to reduce the prevalence and impact of everyday hassles, for example, by improving organization in children's home and classroom environments, reducing family and peer conflict, helping families access social services for reducing economic stress and helping teachers access resources for students. It should be noted that problems in the broader community, such as crime, violence, and poverty, are associated with a range of potential negative emotional and behavioral outcomes, and therefore interventions targeting modifications to communities can benefit a variety of child problems.

It must be said that shifting from a cognitive-behavioral to a cognitive-ecological approach to dealing with emotional and behavioral difficulties in students is not likely to be an easy or rapid transition. Besides the typical barriers to implementation, such as teacher and parent resistance to changing their own behaviors to ameliorate children's difficulties, the cost of providing mental health programs and services, and of course, the stability of children's behavioral difficulties (especially aggression; Huesmann & Guerra, 1997), cognitive-ecological intervention requires the practitioner to place even greater demands on individuals representing sources of ecological influence, not to mention on whole ecologies. However, one way to facilitate the transition to cognitive-ecological intervention is for school-based practitioners to educate teachers and families about this broader perspective and thus rally their support for new population-based or targeted programs.

Summary

In this article, we have presented a cognitive-ecological model for understanding and preventing an array of emotional and behavioral problems, and have suggested directions for school-based universal and selected programs, particularly those targeting aggressive behavior. Consistent with the cognitive underpinnings of behavior discussed, we believe that efforts should target certain cognitive skills and knowledge structures across multiple contexts that change over time. Of particular importance are social-cognitive skills that encourage attention to multiple cues in a setting, interpretation of cues based on factual information rather than stereotypes or biases, and generation of responses and consequences that emphasize consideration of both self and others. It also is critical that contextual influences coalesce in their normative orientations so that children learn consistent standards that encourage prosocial and socially competent behavior. These standards can be communicated through schoolwide interventions such as the Olweus (1993) bullying prevention program; they must also be reinforced at the classroom and peer level through consistent reinforcement of rules. An emphasis on the cognitive foundations of behavior in context provides a venue for intervention that is consistent with the educational mission of schools and their important role in promoting child well-being.

NOTES

1. It is important to note that although this model emphasizes the context-cognition-behavior link, this does not mean that emotional reactions are not considered. In many instances, emotions may be the strongest predictor of behavior, for instance, perceptions of distress blamed on others can lead to an upward spiral of extreme rage that leads to reactive, hostile, and under-controlled aggression. Similarly, distress blamed on self can lead to a downward spiral of shame and withdrawal (Beck, 1999). Alternately, children who are prone to strong emotional reactions might be too overwhelmed during a social encounter to search for relevant cues, generate solutions, etc. (e.g., Lemerise & Arsenio, 2000). As this illustrates, we do not deny the innate primacy of many emotional reactions, but contend that most events trigger a chain of emotional and cognitive reactions, such that emotions are moderated by cognitions and cognitions are moderated by emotional reactions.

2. A third type of prevention—indicated or tertiary prevention—is similar in concept
and execution to remediation or intervention for full-scale psychosocial problems (e.g., the use of stimulant medications for attention-deficit/hyperactivity disorder). To refer to it as “prevention” is essentially a semantic convention, and thus, we do not discuss it here.

REFERENCES


