WHITE PAPER
Cognitive-Behavioral Foundations of Aggression and Violence
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A variety of individual characteristics have been identified that increase risk for childhood aggression and youth violence. Some of these individual factors (such as perinatal trauma) begin in utero, whereas others (such as difficult temperament, fearlessness, impulsivity, low verbal ability, and lack of control) begin at birth or shortly after. Over time, distinct dimensions of personality including low agreeableness and low conscientiousness also crystallize and increase the likelihood of aggression. In other words, a host of individual predispositions, whether written on a child's biological birth certificate or emerging early in the course of development, render certain children more prone to aggression than others from a very early age.

Without intervention, children who develop aggressive behavioral patterns early in life are also more likely to graduate to more serious violence in adolescence and continue such behavior chronically. For this reason, elevated aggression and its precursors in early childhood are among the best factors for selecting individuals or subgroups for focused prevention and intervention programs. However, selecting children based on early aggression does not provide specific guidance for the content and scope of the intervention itself. Indeed, many individual risk factors linked to temperament, personality, and neuropsychological functioning are difficult to change, although how these unfold in a given context can dictate their course. For this reason, it is important to identify individual characteristics associated with aggression and violence that can be targeted specifically by prevention and intervention programs.

It is also the case that children actively navigate and interpret their social worlds. How they come to understand both their own behavior and the behavior of others has important

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implications for action. Over time, children learn specific patterns of cognition that make aggression more or less likely. Beginning in the 1960s, there has been an increasing recognition of the cognitive underpinnings of aggression. Most social-cognitive models of childhood aggression draw heavily from cognitive information-processing theory, emphasizing both discrete social information-processing-skills as well as specific types of social knowledge stored in memory (the 'data base" that individuals develop over time). In short, the cognitive system is seen as processing inputs of social stimuli (what happened and what does this mean?), considering desired outcomes (what do I want?), searching memory for relevant information (what are my options?), generating outputs accordingly (what should I do?), evaluating options accordingly (what are the consequences?), and deciding on the best option (I'll do this). Furthermore, because the child's cognitive system develops over time, it is amenable to early preventive efforts while cognitions are most malleable as well as later efforts to modify maladaptive patterns of thought. Indeed, cognitive-behavioral prevention, intervention, and treatment programs consistently have been shown to be effective for preventing aggression, violence, and delinquency.

This leads us to ask what specific social information-processing skills and/or specific types of social knowledge are the most robust risk factors for childhood aggression and/or youth violence *and* are the most **viable targets for prevention and intervention?** According to recent models, a child or young person with a specific set of individual characteristics (biological, social, environmental, etc.) is regularly presented with social cues that require encoding, interpretation, processing, and decision-making, for instance, an unknown peer trips a boy at school. The boy can either respond quite automatically without much conscious processing or

carefully consider the peer's intent, different response options, and the consequences of different courses of action. The former is considered *automatic processing,* while the later is considered *controlled processing.* Because most social situations require relatively quick responding, as children grow up and confront similar situations (such as peer provocation) their responding becomes more automatic—for aggressive children and youth this often becomes more automatically aggressive and violent, leading to aggressive scripts for social interaction.

The Data Base: Aggressive Scripts and Moral System of Belief (Normative Beliefs)

In everyday life we are confronted with a vast amount of information and options that would simply be exhausting (and impossible) to process time and time again. To simplify things, we develop mental representations that serve as shortcuts for information processing. *Schemas* refer to general categories that assist in processing, with *scripts* representing a specific type of event schema for common interactions. Stereotypes are simple examples of schemas that assist in processing. Scripts are more complex as they provide for a series of automatic actions—ordering in a restaurant is perhaps the easiest illustration of an event schema or script. Without really thinking, we sit down, get menus, read the menu, order, eat, and pay the bill. In other words, each time we eat at a restaurant we do not walk through the door and try to figure out what will happen next.

How does this apply to childhood aggression and youth violence? Just as we regularly eat at restaurants and learn what to expect, children and youth gain experience with specific types of social interactions as they grow up, be it peer harassment, an angry parent, or rejection by a desired romantic partner. To the extent that these situations occur regularly, they develop scripts for these social interactions that are stored in memory and include prescribed actions. If and

when these actions include aggressive and violent responses, they are more likely to be enacted, particularly in dangerous situations requiring automatic processing.

An important component of the knowledge base related to scripts that has been studied with aggressive children involves their moral system of belief, specifically normative beliefs about the appropriateness of aggression under different conditions. We hold a set of beliefs (albeit frequently erroneous) that often guide our processing of information relevant to individuals in specific categories or groups (young people/old people, males/females, etc.). Most relevant to aggression and violence, a moral system of belief includes cognitions about the acceptability of causing harm to others under different circumstances, called *normative beliefs*. As an example, if a young boy believes it is acceptable to hit another child if he doesn't like him, this normative belief makes it more likely that the boy will act aggressively.

Self Control (Stop and Think)

From an early age, children become increasingly adept at self-control, defined broadly as the ability to regulate and manage affect and behavior in a controlled versus automatic fashion in accordance with situational or normative demands. Self-control is evident when children follow rules they might rather disobey, inhibit their desire for immediate gratification, particularly in the presence of a tempting reward, and modulate responses in accordance with age-graded standards. A further distinction has been made between *emotion regulation* of internal feeling states and *behavioral regulation* of actions as two distinct components of self-control.

Significant advances in self-control emerge during the preschool years in tandem with advances in general cognitive abilities, the control of attention, and emergent selfhood. Early in development, children control their behavior primarily in response to environmental

contingencies such as punishment and reinforcement. They resist the temptation to take a coveted toy when an adult is present, but grab the same toy as soon as the adult leaves the room. Over time, standards are internalized, requiring less external monitoring and more internal management. However, brain maturation linked to self-control continues to develop through the adolescent years, as demonstrated in recent studies of brain activity showing that frontal lobe activation, an important determinant of behavioral inhibition, increases between adolescence and adulthood. In addition to developmental progressions in self-control skills, there are also individual temperamental, neurobiological, and caregiving contributions to the development of self-control that contribute to relatively stable individual differences in self-control.

Self-control is a prerequisite for goal-oriented behavior across multiple domains. A person who wants to lose weight must exert self-control to inhibit a competing desire to each chocolate cake. A student who wants to get a good grade on a test must inhibit a competing desire to stay out late with friends. Sustained relationships often require learning how to regulate negative emotions such as anger in a constructive fashion. Some evidence suggests that self-control may actually be a limited resource that can become depleted if used too often.

From a developmental perspective, interest in self-control initially emerged from the study of dysregulation, in other words, why do some children resist parental requests or seem to be unable to wait their turn? Much of this work focused on the origins of self regulation in young children and associated problems, with less attention focused on self-control during adolescence and its relation to adjustment. Most of the work on self control during childhood and adolescence has emphasized the relation of low self control to risk behaviors such as aggression and criminality. Integrating this into a social-information processing model, self control is required in

order to accurately process information in a given situation and respond in a more controlled rather than automatic (and often aggressive) manner.

Social-Information-Processing Skills (also referred to as Decision-Making Skills)

A number of different social-information-processing models have been developed over the past decades and have been studied in relation to childhood aggression and youth violence. In general, these models all emphasize discrete information-processing steps as influenced by an underlying knowledge base. The most significant (and modifiable through intervention) skills are: (a) understanding and interpreting social cues; (b) setting goals; (c) generating responses; (d) thinking about consequences; and (e) behavioral enactment.

Understanding and interpreting social cues. In most social information-processing models the first step in understanding a given situation is attending to and understanding relevant cues (what happened and what does this mean?). An individual may fail to encode relevant cues, for instance, the boy who was tripped by the peer may fail to notice that the other boy's shoe was untied, suggesting he may have slipped unintentionally. Indeed, research has shown that more aggressive youth are less attentive to relevant and important social cues. Further, these more aggressive youth, particularly those with a history of abuse, have been shown to pay more attention to hostile stimuli, such as angry faces, than positive stimuli, such as happy faces. This may be related to a hypervigilance to threat that develops as a result of early abuse and other experiences with aggression and violence. In other words, individuals who have more experience with aggression, particularly as victims, are more vigilant to signs of threat and/or danger that signal potential harm.

In addition to attending to relevant cues, individuals must interpret and give meaning to the cues that are noticed. This process opens a large window for potential misinterpretation. How many times have we all thought another person was intentionally avoiding us, being mean, or trying to harm us when this "attribution" was completely unfounded. In the case of aggressive children and youth, multiple research studies over several decades have demonstrated a consistent bias towards attributions of hostility in social situations when the other person's intent is either ambiguous or even clearly benign (labeled *hostile attributional bias)*. This has been reported across ages, ethnic groups, and for girls and boys in both hypothetical and real-world situations. It has also been found to characterize youth across a range of settings including schools, clinics, and residential treatment facilities for juvenile offenders. Hostile bias has also been found to be more predictive of angry and reactive aggression rather than more controlled and instrumental proactive aggression.

Setting goals. After a person has assessed the immediate stimuli (i.e., encoded and interpreted social cues), a next step is to determine how this fits with pre-existing goals for this type of situation. If the social cues are consistent with previous goals the processing workload is lightened. For instance, a teenager who wants to be part of a social group can respond to gentle teasing with humor and possibly facilitate an invitation to join the group. In contrast, more intense signaling obvious rejection may trigger a newly-defined revenge goal. Although balancing social goals in order to integrate previous desires with current opportunities is a marker of healthy adjustment, relatively little research has examined how individuals accomplish this. Rather, studies have looked at the pre-existing and general goals of more aggressive

children and youth and found that they tend to be more present-oriented, less socially competent, and more directed towards revenge.

Generating responses (Alternative Solution Thinking). After relevant social cues have been encoded and understood and a general goal orientation has been established, an individual must think about possible responses and whether they are appropriate (what are my options and what should I do?). Research has examined both the quantity and quality (for instance, aggressive or prosocial) of responses that distinguish more aggressive and violent children and youth from their less aggressive peers. Several studies have found that aggressive children, particularly very young children, are less adept and thinking of many and varied solutions. In other words, they generate fewer solutions to social problems and consequently have fewer options from which to choose. Not surprisingly, more aggressive youth typically generate more aggressive solutions and generate these solutions earlier in their consideration of response options. Generating aggressive responses (as well as violent or delinquent actions) is more likely when individuals hold specific *normative beliefs* supporting these actions. In other words, youth who think it is appropriate or "OK" to hit other people in response to a slight provocation are more likely to generate aggressive solutions under these conditions. Research has shown that normative beliefs about the appropriateness of aggressive behaviors emerge during early childhood and crystallize by adolescence.

Thinking about consequences (Consequential Thinking). From an early age children realize that they must consider the consequences of specific actions. However, generating and evaluating consequences first requires an ability to inhibit automatic responding. This is difficult for young children and for children who are more impulsive and less able to exert self-control.

Consequential thinking also requires mental abilities to think abstractly, consider the impact of one's actions on others, imagine future outcomes, and understand the likelihood of various consequences. All of these abilities increase with age (although children of similar ages also differ on these skills).

Young children focus on whether they will get caught and punished and/or what benefits they might get in the present moment. As children get older their ability to generate multiple and varied types of consequences increases, although compared to adults they are still less adept at anticipating the future, generating consequences spontaneously, learning from negative consequences, and viewing negative consequences as harmful. Also, as studies of adolescent risk-taking have shown, they are also more likely to focus on perceived benefits then risks when considering consequences.

Research that has examined the consequential thinking skills of aggressive and non-aggressive children and youth has shown that aggressive children are more likely to expect positive instrumental outcomes, fewer negative outcomes, and fewer sanctions. Similarly, studies of delinquent youth have found patterns of consequential thinking that emphasize positive rewards for self, minimize risks such as the chance of being caught, and display low levels of empathy and consideration of potential harm to others. In addition, different types of "cognitive restructuring" can occur such that the negative consequences of one's actions are further minimized (possibly because an action is seen as serving a higher purpose or the victim is "dehumanized" through social bias). Euphemistic labels such as "teaching someone a lesson" also can minimize the perceived degree of harm.

Behavioral enactment. The final step in the information-processing sequence is to translate cognitions into actions, in other words, to perform the selected response. This can be influenced by beliefs about one's skills to perform aggressive and prosocial behaviors, labeled *self-efficacy.* For instance, a teenager may want to select a response that will diffuse a potentially violent situation through humor, but not be very skilled at making jokes. Similarly, a child may prefer to hit another child, but be small and weak and unlikely to succeed. In general, studies have found that aggressive children and youth are less adept at socially competent solutions and may select more aggressive solutions simply because they are easier to enact.

Implications for Cognitive-Behavioral Interventions

Three aspects of social cognition are particularly relevant for cognitive-behavioral prevention and intervention programs: the data base (scripts and beliefs); self-control; and social information-processing skills. Each of these social-cognitive foundations has been described and can provide direction for interventions. For example, an important component of social-cognitive training is to examine aggressive or maladaptive schema and scripts and how they may unwilling drive responding, "slow down" processing in regular social interactions in order to minimize automatic and aggressive actions, and build prosocial and competent scripts that can be implemented under conditions where responding must be automatic. This requires self-control training to improve children's abilities to manage and regulate emotions and behaviors including techniques to encourage them to "stop and think" before they act. Finally, discrete social information-processing skills can be taught in situations likely to provoke aggression in the real-world in order to provide prosocial alternatives to aggressive responses.