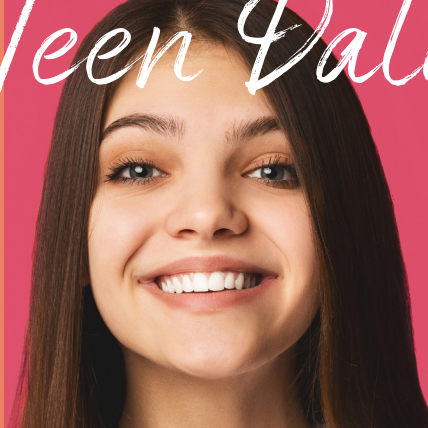


Applying an Understanding of



**Adolescent
Brain
Development** in

Teen Dating Violence Cases



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Applying an Understanding of **Adolescent Brain Development** in *Teen Dating Violence Cases*

This technical assistance brief was developed to provide judges with an overview of brain development during adolescence and to provide an overview of the following:

- Typical adolescent brain development;
- How brain development may be impeded by toxic stress and adversity;
- Implications of brain development in how we understand and address teen dating violence; and
- Recommendations and promising practices for effective intervention in cases of teen dating violence.

While understanding adolescent brain development helps us address teen dating violence more effectively, it is also important to remember what our current knowledge of adolescent brain development can and cannot tell us.

An understanding of adolescent brain development can help us identify why some adolescent behaviors are counterintuitive to adults.

An understanding of adolescent brain development can help us identify interventions that are developmentally appropriate. It can also help us understand why certain intervention approaches are not likely to lead to positive changes.

An understanding of adolescent brain development cannot help us identify a risk level for a particular adolescent.

An understanding of adolescent brain development cannot help us identify responsiveness to an intervention for a particular adolescent.

Brain Development from Birth through Adolescence

The architecture of the brain develops in a process starting before birth and continues through adolescence and into adulthood. Throughout childhood, the number of connections in the brain (synaptic density) increases steadily (Choudhury, Charman, & Blakemore, 2008).

Brains develop in a sequential and predictable manner. The most primitive parts of the brain develop first. These are the parts key to survival. The thinking and reasoning parts develop later, which is why the typical toddler is less able to inhibit frustration and strong emotions compared to a typical 12-year-old. Some researchers have described the brain in two parts - the downstairs brain and the upstairs brain (Siegel & Bryson, 2012; see figure 1). In this analogy, the downstairs brain (which includes the amygdala and hippocampus) develops first. The upstairs brain (comprised of the prefrontal cortex or PFC) develops later. Understanding the functions of these areas and the sequencing of development provides an important context for understanding adolescent development and behavior in general.

The downstairs brain (including the amygdala and hippocampus) controls arousal, emotion and fight, flight, or freeze responses. The PFC is the "smart part" of our brain. It uses reasoning and logic, stores conscious memories, creates awareness, handles detailed information, and allows for flexibility. Executive functions, such as the ability to initiate and inhibit behavior, and to consider consequences, are housed in the PFC.

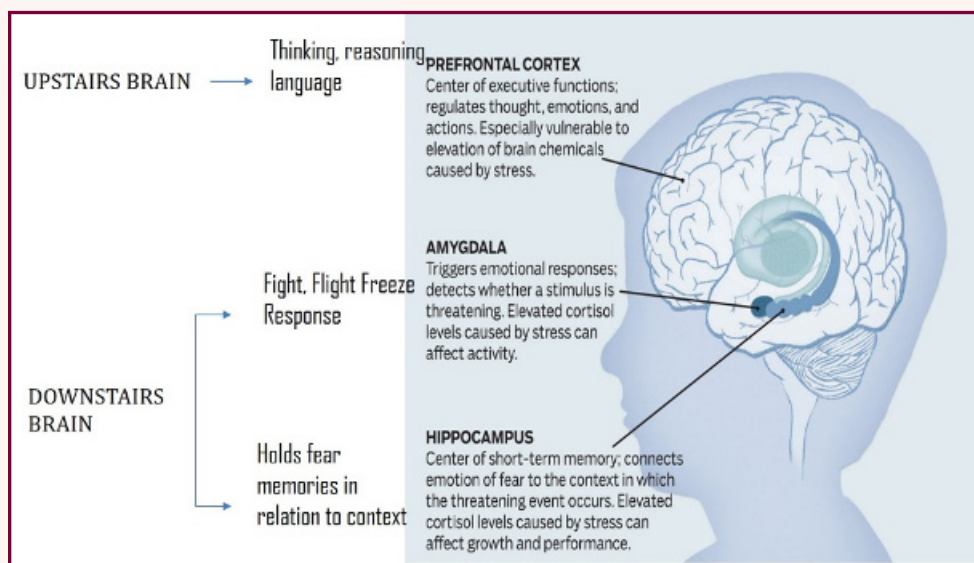


Figure 1.
Areas and function of the downstairs brain versus the upstairs brain

How Does Brain Development Accelerate and Change in Adolescence?

Adolescence is a time of significant and exciting brain development. There is a growth spurt in the prefrontal cortex starting around age 9 or 10. Around the age of 11, a pruning process begins through which neural pathways that are not frequently used wither away (Chamberlain, 2008). This is the use-it-or-lose-it phenomenon that makes experiences, both good and bad, so salient in brain development.

One way to visualize this is to think of a meadow between two patches of forest. As people travel from one forest to the other, they cross the meadow. In the beginning, there will be any number of small paths that can get people from one side to the other. But as people figure out the most efficient way and begin to all follow the same route, a small path will appear in the grass. This path will grow over time, and the other small paths will eventually fade away. That's what the pruning of the brain is like. (<https://momentousinstitute.org/blog/brain-under-construction>: Brain under Construction)

As teens mature their brains become faster, sharper, and more specialized but they still process information differently from adults, largely because their PFCs are still under construction (Chamberlain, 2008). Adults can rely on their frontal lobes of their PFC, which allows for more advanced use of reasoning and language, to respond to situations. Adolescents rely more on the amygdala, which is why we see more emotion and difficulty finding words among youth. Adolescents are both more emotional and emotionally reactive than adults, but also more sensitive to this emotional volatility influencing their behavior and decision-making (Spear, 2011). Furthermore, the presence of peers changes processing of emotional information and subsequent risk-taking in adolescents, but not in adults (Garner & Steinberg, 2005). Given the ever-present role of peers in the lives of adolescents can create a perfect storm risk-taking and poor decision-making.

Because different parts of the brain are growing at different rates, we often see imbalance in their abilities. Adolescents have an amazing capacity for learning, but have trouble with prioritization and organization, since these executive functions are the domain of the PFC. Similarly, emotion regulation tends to develop later than motor control for adolescents (Choudhoury, et al., 2008).

Sex Differences in Brain Development

Some sex differences in brain development during adolescence has been identified. Overall, girls' brains develop earlier, and their hippocampus grows faster and larger than in boys' brains. The relative rapid growth of this emotion center may lead to improved ability to size up social situations, be emotionally supportive, and coordinate complex relationships (Chamberlain, 2008). In general, boys have busier and bigger amygdalas during this developmental phase, which might account for some of the physical activity and increased risk-taking as compared to girls. However, it is important to remember that these differences are general differences, and there is much variation in timing of brain development among individual girls or boys.

Stress, Trauma, and Adversity Impact Brain Development

Adolescents who are growing up in fear and chaos tend to spend more time in the 'survival brain' trying to feel okay rather than in activities that develop their pre-frontal cortex (Chamberlain, 2008). In other words, children and youth in chaotic environments can adapt to those environments, but at a cost. If brain development is based on experience and a use-it-or-lose-it process, teens in chaotic environments, especially those who were previously children in chaotic environments, have over-developed their fight or flight response and under-developed the neural pathways that serve a foundation for self-regulation and reasoned decision-making. Prolonged activation of the stress response, which culminates in the release of cortisol and other stress hormones, can induce genetic alterations in multiple areas of the brain (see Shaw, Dupree, & Neigh, 2019).

The rise in neuroimaging research has helped identify areas of the brain that are implicated in the observed relationship between exposure to violence and functioning. For example, a recent study with Latin-American adolescents found that recent and chronic exposure to violence was associated with less activation of the superior parietal lobe (part of the PFC) and more prominent deterioration on an executive functioning task (i.e., performance declined with time; Cará et al., 2019). Results of studies such as this have begun to identify mechanisms through which exposure to violence affect executive functions and underscore the need to address exposure to violence as a public health problem. Numerous studies indicate clear evidence that negative, stressful experiences show associated effects on executive functioning and underlying brain networks.

We know that it is the cumulative impacts of adversity and stressor that has the most negative impact on development rather than any one adversity. Studies also suggest

that the brain is particularly sensitive to the environment during times of rapid brain development (Johnson et al., 2016), such as in early childhood or adolescents.

Drawing the Connections Between Brain Development and Teen Dating Violence

The typical adolescent brain can be challenged by the rapidly changing social world that youth face. Adolescents are navigating dating, ever-changing peer relationships, identity development, and puberty all during a time when their PFC's are still under construction. Many characteristics of adolescent development, including increased impulsivity, poor decision-making, and heightened emotionality can contribute to teen dating violence. Furthermore, poor risk assessment and limited capacity to evaluate the costs and benefits of different choices can negatively influence youths' decision-making when they are victims of TDV.

Adolescents who have been exposed to toxic stress and adversity have additional liability for TDV perpetration in that they might be very reactive to perceived threat and the development of their rational, logic centers have not kept pace with their fight-or-flight centers. Teen dating violence is the culmination of many different types of risk and protective factors. Impacts of toxic stress and violence on the brain create some degree of risk. However, these impacts are not deterministic, and can be mediated with the development of healthy relationships and other protective factors.

Promoting Healthy Relationships to Prevent and Intervene in Teen Dating Violence

Below are examples of programs that help promote healthy relationships for youth who may be involved in teen dating violence. Each of the interventions included have been

Currently, there is an explosion of research that is using neuroscience and other physiological measures to understand some of the observed links. For example, Madden and Shaffer (2019) looked at how the impact of emotional abuse as a child predicts dating violence in adolescence. They found that cortisol reactivity played a moderating role in the strength of the relationship between early emotional abuse and dating violence. We know that cortisol reactivity is negatively affected by chronic, toxic stress. Thus, this study is one example of the complexity and interrelatedness of these developmental experiences.

rated as either a promising or evidence-based programs.

Brief Motivational Interviewing for Dating Aggression

Brief Motivational Interviewing (MI) for Dating Aggression uses the principles of MI to provide unmarried emerging adult couples between the ages of 18 – 25, who have a history of moderate physical aggression with a two-hour counseling intervention. During the session, the couple work with a counselor to identify and address their desire to change their behavior.

The couples complete a questionnaire where they each are asked to identify levels risk factors for aggression, rate levels of aggression, and effects of aggression. The counselor then meets individually with each partner to provide feedback on the results of the questionnaire and to identify changes the individual could make to reduce aggression and improve communication. These feedback sessions last for a total of 1.5 hours. Following the feedback sessions, the counselor spends 15 minutes with the couple to discuss and reflect on their desire to make changes. The couple is then provided with summaries of their assessment and resources they can use to make changes in their own behavior.

In evaluating the program, Woodin and O’Leary (2010) found a statically significant difference in couples who attending the Brief Motivational Interviewing for Dating Aggression than the control group. Couples who participated in the intervention reported fewer incidents of moderate physical aggression at nine-months.

Healthy Relationship Program — Enhanced

Another promising approach for TDV intervention is Healthy Relationships Program—Enhanced¹ (HRP-E), which is an evidence-informed program that has been adapted to be more trauma-informed and focus on higher risk youth (Crooks et al., 2018). The HRP-E is a 16-hour group intervention that focuses on developing healthy relationships skills such as assertive communication, help-seeking, giving an apology, ending relationships respectfully, and helping peers and partners. It also includes a focus on harm reduction related to substance use, and recognizing and responding to mental health challenges in yourself or others. It was created specifically to match the developmental needs and maturation of adolescents.

The HRP-E Program was piloted in youth correctional settings to assess the feasibility,

¹ For the sake of transparency, it is noted that the author of this brief is one of the lead developers of the HRP-E and is currently leading the research to further explore its effectiveness.

acceptability, and utility of the program (Kerry & Crooks, 2020). Both staff and youth reported high levels of acceptability and utility. The quasi-experimental evaluation included eleven HRP-E intervention groups in four facilities. The research sample included 92 youth (62% male, mean age of 16.5 years). The study employed a multiple baseline design whereby youth and their teachers completed surveys on four occasions (twice before the intervention, once at the end, and once a month later). In addition, 39 youth participated in focus groups at the end of the intervention, providing an important youth perspective that is often missing from intervention research.

At post-intervention, youth reported significant increases in assertiveness, self-control, empathy, problem-solving efficacy, as well as a significant decrease in attitudes supporting peer conflict. In addition, many of these improvements remained significant at a one-month follow-up. In focus groups, youth reported that participation in the program promoted the development of social-emotional learning skills, and provided highly relevant and specific examples of how the program had changed their relationships with partners, peers, family, and staff in the correctional settings. Based on the data, the program was judged to show promising effectiveness, and excellent fit and feasibility.

The researchers were not able to look at impacts on actual dating behaviors because the youth were in secure custody and did not have the opportunity to engage in intimate relationships. Nonetheless, improvements in risk factors (e.g., poor self-control, attitudes supporting conflict) and protective factors such as empathy, self-control, and problem-solving for TDV are a promising step. Additional research is currently underway with juvenile-justice involved youth, including those in community contexts. This research will provide the opportunity to look beyond changes in skills and protective factors and see if those translate to reduced TDV.

Safe Dates

A promising intervention strategy is Safe Dates, an evidence-based curriculum to be used in an educational setting for middle and high school students to prevent dating abuse. In 10 interactive sessions, it targets attitudes and behaviors associated with dating violence, equips students with skills and resources to help themselves or friends in abusive dating relationships, as well as equips students with skills to develop healthy relationships. Safe Dates is primarily focused on prevention. And can be used in conjunction with evidence-based drug and alcohol prevention curricula in recognition of the link between dating violence and substance use.

This program is rated "Effective" by the National Institute of Justice (See <https://crimesolutions.ojp.gov/ratedprograms/142>). In completing a four-year follow-up and evaluating outcomes for those who participated in the educational program, Foshee and colleagues (2005) found a statistically significant reduction in psychological abuse perpetration, physical abuse perpetration, sexual violence perpetration, physical abuse victimization, and sexual abuse victimization.

Risk Detection/Executive Function (RD/EF)

The Risk Detection/Executive Function (RD/EF) is an intervention that is designed to reduce re-victimization of girls who had previously been exposed to maltreatment. This intervention was designed in response to research that indicates that young people with exposure to maltreatment often have a difficult time evaluating threats or potentially dangerous situations in intimate relationships. In addition, there is research that has identified a link between youths who experience child abuse and deficits in executive function (EF). The RD/EF intervention seeks to address both risk detection and executive function and focuses not only on improving girls' ability to perceive risky and dangerous situations, but also on improving their ability to respond to those situations.

This intervention focused on girls between the ages 12-19 who had child welfare system involvement (either currently or previously) as well as a maltreatment exposure history. There were three other criteria for inclusion in the study: they did not report current suicidal ideation; they were receiving current treatment services for reported suicide attempts or psychiatric hospitalizations within the last 3 to 6 months; and 3) were receiving current treatment services for reported self-harm behavior or psychosis (DePrince et al. 2013).

Risk detection and executive functioning work together to allow an individual to identify and respond to threats in their environment. In the case of the study, the girl's ability to identify and respond appropriately to intimate partner behavior was studied. The intervention was designed to teach the young women executive functioning strategies so they could identify and respond to threats with the goal of decreasing instances of re-victimization.

DePrince and colleagues (2013) found that 6 months after the treatment, the girls who participated in the Risk Detection/Executive Function program were nearly five times more likely not to be sexually re-victimized, compared with the girls in the comparison group. In addition, 6 months after the treatment, the girls who participated in the Risk

Detection/Executive Function program were more than three times more likely not to be physically re-victimized, compared with the girls in the comparison group.

Implications for Intervening with Teen Dating Violence

There are a number of strategies that judges and other juvenile justice professionals should employ when working with adolescents in general as well as specific approaches within the context of TDV.

1. **Avoid over- or under-responding**

Our understanding of adolescent brain development provides us with a nuanced picture. On one hand, youth are navigating complex social relationships during a time of uneven brain development and decreased ability to access good judgment, so relationship conflict is inevitable, and some youth will act out in ways that will stop as a function of development. On the other hand, some adolescents who engage in dating violence engage in highly destructive behaviors and are at continued risk for such behaviors. An assessment of the context of the behaviors, as well as individual protective and risk factors can help identify a “just right” response.

2. **Recognize that youth are still developing cognitive capacity**

Given that youths’ brains are still very much under construction, particularly the parts that help with cool, logical decision-making and behavioral inhibition, it is not surprising that youth are at elevated risk for experiencing TDV as both perpetrators and victims. A response that recognizes youth are still developing their cognitive capacity to manage their emotions and behaviors would recognize that there is much room for growth, especially if provided with the right supports. Furthermore, the state of flux creates opportunities for intervention and growth for both perpetrators and victims of domestic violence.

3. **Consider the age of the youth**

Developing and maintaining healthy relationships requires adequate awareness and regulation of one’s emotions. Adolescents who delay intimate relationships until later in adolescent brain development may be better able to embrace the complexities of healthy relationships (Herman, 2013). Although the courts do not get to decide when adolescents start dating, it is important to remember that

youth are developing these skills as their brains mature, and difficulties exhibited in early adolescence might look different in a couple of years. Furthermore, there is a need for ongoing assessment and intervention planning because youths' capacities are changing so quickly. Just because a youth did not benefit from a particular intervention when they were 13 years old does not mean it will be ineffective when they are 15 or 16.

4. Use a therapeutic approach

In general, youth justice programs that employ a therapeutic approach are associated with positive outcomes, compared to interventions that rely on external control techniques (Lipsey & Howell, 2012). The lack of effectiveness of control-based strategies might be partially based on brain development. During adolescents, the reward centers in brains are much more sensitive than the risk-assessment or punishment centers, contributing to the poor judgment we see among adolescents assessing consequences of behavior (Spear, 2011). In contrast to punitive strategies, rehabilitative strategies that focus on skill acquisition have the potential to create real growth and change (de Vries et al., 2015). Skill development should focus on the acquisition of strong executive functioning, as well as social and emotional skills more general (e.g., self-awareness, self-management, social awareness, positive decision-making, and healthy relationships; CASEL, 2015).

5. Create safe and calm spaces for engaging perpetrators of TDV

There is a need for youth to learn self-regulation strategies, but these logic-based approaches work best when the amygdala is not activated. When a youth is activated and dysregulated, the more immediate focus may need to be on sensory experience and physiological strategies (i.e., calming the body and brain, so that the PFC can re-engage). For example, a youth who is highly agitated and stressed during a court proceeding may have an impaired ability to understand the proceedings and ask relevant questions. Any supports that can create safety and predictability during the court process will bolster youths' abilities to process the proceedings and participate in them more fully.

6. Creating safe and calm spaces for engaging victims of TDV

Creating safe and calm spaces for victims of TDV is a critical intervention and one that could improve their ability to both process information, and benefit from other interventions. Many psychological interventions have a cognitive

component (such as cognitive behavioral therapy), and youth who are safe will benefit more from these interventions than youth who are still hypervigilant because of lack of safety.

7. Promote positive and healthy relationships

Given the importance of promoting safety to enhance cognitive functioning among youth, there is a need to prioritize the development of healthy and consistent relationships with adults. These relationships can include formal helping professionals and court-related workers. They can also include informal helpers and mentors. An intervention plan that capitalizes on any existing positive relationships with adults and promotes new ones will provide a strong foundation for growth for those who experience TDV as perpetrators or victims.

8. Promote healthy relationship skills

The state of rapid growth that adolescents are undergoing with respect to brain development present a great opportunity to promote skill development. Some skills promote healthy relationship and others help inhibit existing risk factors.

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