



## **Executive Functioning The Intelligence IQ Doesn't Capture**

An exasperated juvenile court judge from Texas contacted me this past week. She is becoming worn down by the parade of adolescents coming before her bench who “just don’t seem to get it. They’re bright, communicative, but something doesn’t click.” Most of the young people appearing in her courtroom have had psychological exams, and almost all have scored well within the normal range on IQ tests. But it is when these young people are asked to connect the dots, to put everything together, to use the information embedded in the deep recesses of their brains, that everything seems to fall apart.

This judge’s confusion and exasperation are grounded in her mistaking IQ scores—a marker of global intellectual functioning—as an indicator of how well an individual can put information to use. To get at this second aspect of cognition, we need to look at executive functioning.

Executive functioning, put most simply, is the ability to plan and complete a task. It is a higher cognitive process that involves communication and organization across multiple brain sites and pathways; it is the interconnecting virtual pathway that brings all aspects of brain functioning together. Executive functioning is involved in planning complex cognitive behaviors and expressing one’s personality. It allows individuals to differentiate among conflicting thoughts and filter out unimportant information; it also helps the individual anticipate future consequences of current activities and work toward a defined goal. And, most important from the judge’s perspective, executive functioning inhibits impulses that could lead to socially unacceptable outcomes.

Because executive functioning involves all aspects of brain function, this is the aspect of neurocognitive functioning that is most vulnerable to the detrimental effects of prenatal exposure to tobacco, alcohol, and illicit drugs. Alcohol is the only substance known to affect global cognitive functioning as measured by IQ; however, a pregnant woman’s use of tobacco, cocaine, heroin, alcohol, or just about any other drug—including marijuana—has a detrimental effect on the child’s long-term executive functioning. In fact, executive functioning seems to be the final common pathway of prenatal substance exposure.

Prenatally exposed children, as they grow and mature into adulthood, never acquire the ability to think ahead. This results in a variety of problems including the inability to self-direct behavior, to maintain and integrate multiple bits of information, to manage goals, stay on task, problem solve in a cognitively fluent manner, and place information into memory, so she can complete a later task. A child with deficits in executive functioning is not being disobedient by running out into the street. She simply has not made the connection between the words, “Do not run out into the street,” and the literal motor action. Thus, she requires structure (e.g., “This is the boundary of our yard.”), along with a physical barrier or marker as a cue, to ensure her safety.



Executive functioning disorders can make it particularly difficult for children to perform operations that require attention, concentration, and mental control. It is therefore not surprising that so many prenatally exposed children get diagnosed with attention deficit hyperactivity disorder (ADHD). They also have significant difficulties in school.

Frequently, children who have histories of prenatal alcohol or drug exposure struggle to complete abstract processes, such as math problems, in their head. As another example, a child may know all his spelling words one day, yet be unable to spell a single word the next day. Although children often are accused of having “selective memory,” in reality, the problem is not related to selection but to storage and retrieval. Because of the executive functioning disorder, the child is having difficulty recording information, storing it for later use, and then recalling that information. To remember her spelling words, the child will need special, often multi-sensory, cues.

Executive functioning deficits also may play an important role in social and learning difficulties. For instance, parents often say that prenatally exposed children have a hard time inhibiting their impulses and shifting between different activities. Routine transitions become difficult because the children have trouble moving from one activity to the next. This dynamic is especially evident in school, where changing from a reading lesson to a music lesson may set off tantrums and outbursts, particularly in the context of learning new information.

What one quickly discovers when working with prenatally exposed children is that classic behavior modification strategies to change the child’s behavior do not work; the children are unable to relate consequences to the misbehavior that caused them. In addition, children with prenatal exposure have difficulties inhibiting previously learned responses; rather than adapting a new way of doing something, the children often repeat the same behaviors because they cannot use new skills to solve problems, so they simply revert back to prior knowledge. This often inappropriate repetition can lead to a significant amount of frustration for parents and teachers—and judges—particularly when they do not understand the root cause of the child’s behaviors. There are treatment approaches available that successfully address executive functioning deficits. Thus, assessments of any child with a history of prenatal exposure to alcohol, tobacco, or illicit drugs, must include testing of the child’s executive functioning capabilities. Failure to include this testing will result in an incomplete treatment plan and, in many cases, the use of inappropriate medication.