

Teens' Ability to Multi-Task Develops Late in Adolescence

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Current research suggests that several regions of the brain are continuing to mature during the teenage and early adult years. One of these regions is the frontal cortex. This part of the brain controls the ability to think flexibly, control behavior when confronted with challenging situations, and juggle multiple pieces of information at the same time, or “multi-task.” Our research found behavioral evidence that the part of the brain responsible for the ability to multi-task continues to develop until late adolescence.

To better understand this association between brain and behavioral development, adolescents between the ages of 9 and 20 years of age completed several behavioral tests designed to measure the functioning of the frontal cortex. One task involved recognizing previously-presented faces. A second task involved looking at the location of a dot on a computer screen then, after a delay, indicating where the dot had been presented. These two tasks do not require a lot of multi-tasking skill, but they assess what is referred to as “working memory”, the ability to use recognition or recall to guide future actions. A third task required multiple pieces of information to be remembered in the correct sequence and sometimes re-ordered in memory prior to making a response. Finally, we included a task that required participants to search for hidden items in a manner that required a high level of multi-tasking and strategic thinking.

We found that the ability to use recall-guided action to remember single pieces of spatial information developed until ages 11 to 12, while the ability to remember multiple units of information developed until ages 13 to 15. However, strategic self-organized thinking, the type that demands a high level of multi-tasking skill, continues to develop until ages 16 to 17.

When the frontal lobe reaches maturity has been a matter of debate among researchers. It has been speculated that it matures after puberty based on recent imaging data. Our findings lend behavioral support to that work and indicate that the frontal lobe is continuing to develop until late adolescence. Observing this development depends upon the complexity of the task that is being demanded. When we used tasks that would be challenging even for a healthy adult, it becomes apparent that teenagers are still developing the cognitive skills necessary to efficiently manage multiple pieces of information simultaneously. These findings have important implications for parents and teachers who might expect too much in the way of strategic or self-organized thinking, especially from older teenagers. We need to keep their cognitive limitations in mind, especially when adolescents are confronted with demanding situations in the classroom, at home, or in social gatherings.