

# FOUNDATION YEAR

## READING TEST

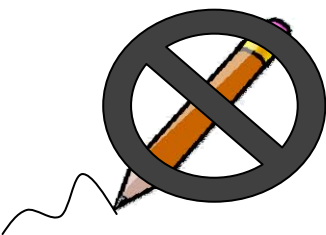
**TITLE:** **The Teenage Brain and Crime**

**LEVEL:** Final Exam – High difficulty

**WHAT:** **Practice Reading Exam including:**  
Text  
Worksheets  
Answer Key

**WHY:** To give practice in multiple choice exam format similar to the Foundation Year Reading Exam

**HOW:** Read the text and answer the questions.  
Check your answers in the Answer Key.  
*If your answer doesn't match the Answer Key, refer to the script.*



**PLEASE DO NOT WRITE ON THE PACKAGE**

IF ANYTHING MISSING/DAMAGED, PLEASE CONTACT THE LSU STAFF

## PRACTICE EXAMINATION - READING TEST

### INSTRUCTIONS FOR STUDENTS:

The questions in this section relate to the reading text: **The Teenage Brain and Crime**

There are **6** parts in the reading section of the test:

Part 1: Main Points	(20 marks)
Part 2: Scan Reading	(32 marks)
Part 3: Summary	(10 marks)
Part 4: Connectors	( 6 marks)
Part 5: Reference Words	( 6 marks)
Part 6: University Word List/Vocab	(15 marks)

**Time approximately: 60 minutes**

### The Teenage Brain and Crime.

Adapted from:

Bower, B. (2004) 'Teen Brains on Trial. The Science of Neural Development Tangles With the Juvenile Death Penalty'.

*Science News Online* Vol 165, No. 19, p 299 <http://www.sciencenews.org/articles/20040508/bob9.asp>

'Teenagers' Brains' (2006). *The Science Show*. Transcript. ABC Radio National 14 October

<http://www.abc.net.au/rn/scienceshow/stories/2006/1764412.htm>

1. Later this year, the U.S. Supreme Court will hear arguments about whether federal law should continue to permit executions of 16- and 17-year-olds convicted of murder. On this life-or-death issue, controversial legal and ethical views on teenagers' capacity to control their behaviour and obey the law will be the focus. However, a relative newcomer to the debate—the burgeoning science of brain development—may critically influence the high court's final decision.
2. A coalition of psychiatric and legal organizations plans to submit a brief to the justices **contending** that teenagers often make poor decisions and act impulsively because their brains have not attained an adult level of organization. **Consequently**, the coalition argues, teenage killers are less **culpable** for their crimes than their adult counterparts are. Capital punishment of teenagers thus violates the constitutional amendment protecting citizens from cruel and unusual punishment. This article will support the above contention by looking at adolescent brain development research and **its** implications for crime and punishment.

#### Teen brains and the justice system.

3. The main objection to the juvenile death penalty is rooted in the fact that adolescents' brains function in fundamentally different ways than adults' brains. According to David Fassler, a psychiatrist at the University of Vermont in Burlington and a leader of the effort to **infuse** capital-crime laws with brain science, from a biological **perspective**, an anxious adolescent with a gun in a convenience store is more likely to perceive a threat and pull the trigger than is an anxious adult with a gun in the same store. However, Stephen Harper, a lawyer of the University of Miami, states that **although** there is growing evidence that teenagers possess unfinished brains, **it** has not received much attention in the courts. The legal system does not yet appreciate that adolescents' brains are not fully equipped for making long-term plans and controlling **impulses**.

4. There is still a considerable amount of work to be done in untangling how brain development influences what teenagers do and why they do it. Nevertheless, Jay Giedd of the National Institute of Mental Health in Bethesda, Maryland, states that courts and legislatures grappling with the juvenile death penalty need to consider the brain's unfinished status during adolescence, especially in the frontal lobes. Several research teams have now undertaken the difficult task of searching for links between specific traits of teenagers' brains and their real-life decisions and behaviours. In fact, neuroscientist Bruce McEwen of Rockefeller University adds that currently there is enough known about brain development to call for serious discussions between scientists and the legal community.

### Brain Research

5. Over the last few years, research into brain development in teenagers has gained momentum. Sarah-Jayne Blakemore from the Institute of Cognitive Neuroscience at University College London is investigating how behavioural functions develop. She states that as well as hormones, the fact that the brain itself is changing during teenage years should be a consideration in both educational and legal matters. Teenagers are known for lack of empathy (or the emotional ability to understand others' feelings), being impulsive, being risk-takers, and not socialising with adults. These behaviours are controlled in the pre-frontal cortex of the brain and this area undergoes change during adolescence. The pre-frontal cortex is involved in a wide range of high-level functions like decision making, planning, memory, self-awareness, empathy and understanding others.
6. These behavioural functions and how those functions develop are the focus of various research world-wide. Blakemore's UK laboratory research, for example, uses magnetic resonance imaging (MRI) to examine the differences in how teenage and adult brains function while doing empathy and self-awareness tasks. Another team led by James M. Bjork of the National Institute on Alcohol Abuse and Alcoholism in the USA, is also interested in why teenagers are drawn to risky and impulsive behaviour. These researchers used functional magnetic resonance imaging (fMRI) to **probe** both adult and teenage brains and found that adolescents exhibit weaker activity than young adults **do** in a brain region that scientists consider to be crucial for motivating efforts to obtain rewards or attain goals. **This** finding is consistent with the theory that the amount of stimulation that is enough to give adults a motivational boost is insufficient to **arouse** teens. To attain the same rewarding feeling, teenagers may seek the 'high' that comes from risky behaviours.
7. Teenagers' brains also undergo a period of pruning, when certain connections called neurons, are removed if they are not used. Blakemore points out that it is known from early developmental work that this pruning, or removing, is partly dependent on the environment, that is, the environment determines what brain connections are being used and therefore determines which ones should be pruned away. Other investigations indicate that the number of brain cells and their connections **surge** just before puberty. **However**, through late adolescence, the pruning of excess neurons and their linkages produces substantial declines in the volume of the part of the brain, called the grey matter that contains the cell bodies. According to psychology professor Janice Juraska from the University of Illinois, while earlier studies found gradual reductions in the volume of the prefrontal cortex from adolescence to adulthood, the finding that neurons are actually dying is completely new. **This** indicates that the brain reorganizes in a very **fundamental** way in adolescence. Therefore, these findings challenge current models of brain development by showing that some parts of the brain are still being organized well after puberty.
8. This research could also have implications for understanding other psychopathological conditions. For example, Juraska states that schizophrenia and depression often first occur in adolescence, and alcohol and nicotine addictions that start in adolescence are harder to overcome than **those** that begin in adulthood. Blakemore also points out some recent research by the Institute of

Psychiatry showing that teenagers who smoke a significant amount of cannabis regularly, have much higher **instances** of schizophrenia later on in their 20s, than teenagers who do not smoke a lot of cannabis. An interesting possibility which has not been looked at **empirically** yet but is still **speculation**, is that possibly cannabis is affecting this brain development that occurs during the teenage years **thus**, in turn, affecting which brain connections are pruned away and which are not.

### A question of punishment

9. One of the concerns that has arisen through this research is the question of the punishment and long-term imprisonment of teenagers. According to Blakemore, when deciding how to treat teenagers, both in terms of education and also legally, this new research showing that the brain is essentially still developing, must be taken into consideration. Through no fault of their own the teenager's brain is genetically pre-programmed to continue developing well into the early 20s. While it has been known and accepted for many years that hormones affect teenagers and cause all sorts of teenage behaviour, this research is showing that it is not just hormones, it is also the brain that is changing during those years. Thus, a 25 year old on death row may essentially be a very different person to the teenager who committed the crime at 15 or 16.
10. However, Harvard University psychologist Jerome Kagan asserts that brain data, particularly the research on frontal-lobe growth in adolescents, also needs to be put in a cultural and historical **context**. Frontal-lobe development presumably proceeds at roughly the same pace in teenagers universally. **Yet** current rates of teen violence and murder vary from remarkably low to alarmingly high from country to country. He notes that cultural context is critical and that under the right conditions, 15-year-olds can control their impulses without having fully developed frontal lobes. If incomplete brains automatically reduce adolescents' capacity to **restrain** their darker urges, there should be Columbine incidents every week. Blakemore agrees and states that not all teenagers commit crimes. She also asserts that if the brain naturally caused teenagers to be risk-taking and not think about the consequences of their actions or about others, it would be expected that every teenager would commit crimes which of course is not the case. Nevertheless, when considering punishment for crimes committed by teenagers, the fact that their brains are still developing should be taken into account.
11. One suggestion that has been proposed to improve self awareness in teenagers, and thereby helping them avoid risk, is education. According to Blakemore, teaching children brain science in schools should certainly be considered. In the UK, brain science has been neglected in schools and removed from most syllabuses. This means that teenagers are not learning about how their brains are developing, information which might be useful. **While** it is not known what sort of effect this type of education would have on teenagers, it is a possibility that could be explored.
12. In conclusion, this article has looked at various research findings concerning brain development in adolescents and differences between adolescents and adults, the pruning process of neurons, the possible influence of cannabis and the cultural context. The possibility of educational programs in schools was proposed as a self-awareness exercise for teenagers. While there are many arguments against applying brain research to the law as the link between brain developmental changes and teenage behaviour is still considered weak, some predict that brain data will eventually support reduced legal culpability for adolescents, although not for a while.

References: Yates, D. (2007) 'Prefrontal cortex loses neurons during adolescence, researchers find' *News Bureau*. University of Illinois at Urbana-Champaign. Released 3/12/07 <http://www.news.uiuc.edu/news/07/0312juraska.html>

# QUESTIONS

<b>PART 1: MAIN POINTS</b>	<b>20 MARKS</b>
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**1. The main purpose of this article is to**

- a) discuss the strengths and weaknesses of brain research
- b) explain why teenagers are not capable of committing crimes
- c) use brain research to argue that teenagers are less to blame for their crimes
- d) use brain research to argue that the death penalty for teenagers is less constitutional than for adults

**2. According to the article, the reason for opposition to the death penalty for juveniles is that**

- a) adolescents behave very differently to adults and cannot be held responsible for their crimes
- b) adolescents' brains are still developing and this may affect their decision making
- c) the frontal lobes of adolescents' brains develop differently to adults' brains
- d) adolescents are too young to understand the seriousness of their crimes

**3. The researchers mentioned throughout the article agree that**

- a) adolescents commit murder because their brains are developing differently to adults
- b) the justice system is not taking research on brain development in teenagers seriously
- c) the research on brain development in adolescents has not yet found the reasons for particular teenage behaviour
- d) the data on brain development in adolescents should be considered by the justice system when dealing with teenagers

**4. The article contends that brain research is important in the area of crime and punishment because**

- a) brain development determines whether an adolescent will commit crime or not
- b) the offender may be executed before brain development has finished
- c) it will determine whether an offender gets the death penalty or a prison sentence
- d) 10 years after committing a crime, the offender may be quite a different person

**5. A caution put forward by researchers concerning brain research is that**

- a) cultural context does not provide an excuse for teenagers to commit crimes
- b) cultural context is important because not all teenagers commit crimes
- c) it does not support the fact that teenagers may commit crimes
- d) not all adolescents experience continuing brain development

**6. The introduction states that research on brain development**

- a) is a recent addition to the controversy over the execution of juveniles
- b) will be critical in preventing the execution of juveniles
- c) will prove that teenagers do not think like adults
- d) is a debatable science

**7. David Fassler asserts that**

- a) informing the legal system about brain research will prevent the death penalty
- b) biological influences are more likely to cause anxiety in adolescents than in adults
- c) biological influences may cause an adolescent to act more impulsively than an adult
- d) due to biological influences, anxious adolescents are more likely to buy guns than anxious adults

**8. According to Stephen Harper**

- a) brain researchers object to the juvenile death penalty
- b) brain research has not been fully accepted by the legal community
- c) without any evidence, lawyers are not paying attention to brain research
- d) lawyers are hoping to include brain research as evidence in the legal system

**9. According to Blakemore, teenagers are notorious for traits such as**

- a) lack of understanding, impulsiveness, taking risks, and not seeking adult company
- b) understanding others' feelings, risk taking, and not being sociable with adults
- c) decision making, planning, memory, self-awareness and empathy
- d) hormones, empathy, impulsiveness and not liking adult company

**10. The article states that the pre-frontal cortex**

- a) is a part of the brain that remains unfinished after adolescence
- b) controls the high-level functions which are pruned if they are not used
- c) determines which neurons are unused and therefore should be pruned
- d) changes during adolescence and controls a variety of high-level functions

**11. Bjork's brain data disagrees with the theory that adolescents may engage in dangerous behaviour because they need more stimulation than adults to motivate them.**

- a) True
- b) False
- c) Not given

**12. The research on pruning shows that**

- a) there is significant brain reorganization during adolescence
- b) the dying neurons cause adolescents to engage in risky behaviour
- c) the current models of brain development are incorrect and need to be changed
- d) brain reorganization during adolescence causes depression and schizophrenia

**13. There is a possibility that smoking cannabis during adolescence may**

- a) cause problems in overcoming addictions
- b) influence the extent of depression experienced
- c) cause the pruning process in the pre-frontal cortex
- d) influence brain development and the pruning process

<b>PART 3: SUMMARY</b>
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<b>10 MARKS</b>
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**14. Select the most academic summary of paragraphs 3 - 4.**

- a) The author states that controversy surrounding the death penalty for juveniles includes new evidence concerning brain development in adolescents. Young people have unfinished brains and therefore are more likely to commit murder than adults. For example, an anxious adolescent with a gun in a convenience store is more likely to perceive a threat and pull the trigger than is an anxious adult with a gun in the same store. The author also states that while there is still a significant amount of work to be done in figuring out how brain development influences adolescent behaviour, there is enough evidence to push for serious discussion between scientists and the legal community (Bower, 2004,1).
- b) Bower asserts that a major argument against the death penalty for adolescents is that there are fundamental differences in the way the brain functions between adolescents and adults (2004, 1). While there is still a considerable amount of research to be undertaken in this area, Giedd states that the fact of continuing development in the adolescent brain should be taken into account by the justice system, particularly when considering the death penalty (cited in Bower, 2004, 1). Giedd's position is strongly supported by other researchers who maintain that there is enough data on brain development for earnest debate to take place (McEwen, cited in Bower, 2004, 1). Nevertheless, the legal community has not shown serious interest in this area as yet.
- c) David Fassler says that the main problem with the death penalty for juveniles is that their brains are different to adults' brains. However, Stephen Harper says that this research does not have evidence yet to use it in court. Other scientists say that the legal system should start using brain research in court to prevent the death penalty and more research needs to be done on the pre-frontal cortex. Apparently, there is research being done on trying to link specific characteristics of teenagers' brains and their real-life decisions and behaviours.



**15. Select the most academic summary of paragraphs 5 – 6.**

a) Brain development research has increased considerably in recent years. Blakemore's research in the UK is examining the differences in brain functions between adults and adolescents in terms of empathy skills and self-awareness. She states that besides the effects of hormones, adolescents typically display behaviours that are controlled in a region of the brain known as the pre-frontal cortex which influences various high-level functions (cited in Bower, 2004, 2). Other researchers are also interested in brain differences between adolescents and adults, and have found that adolescents have less brain activity in a region that deals with motivation for rewards and goals. This means that adolescents are more likely to choose risky behaviour in order to attain the same feeling that an adult would feel with much less stimulation (Bjork, cited in Bower, 2004, 2).

b) Hormones as well as brain changes are involved in teenagers' behavioural problems. Teenagers do not understand others' feelings, are impulsive, take risks and do not socialize with adults. Researchers are comparing adolescents with adults while observing them doing self-awareness and empathy tasks. They also want to know why teenagers like to get involved in risky behaviour. So, using magnetic resonance imaging, they found that adolescents need a lot more stimulation than adults to get the 'high' that they need. This makes them participate in dangerous activities.

c) According to Blakemore, the pre-frontal cortex is involved in a wide range of high-level functions like decision making, planning, memory, self-awareness, empathy and understanding others. She is researching these functions by asking adolescents to do empathy and self-awareness tasks. She is doing this using magnetic resonance imaging (MRI). Another researcher, Bjork, is comparing adolescents and adults but he is looking at why teenagers are drawn to risky behaviour. He found that adolescents' brains showed weaker activity than young adults in a brain region that is important for the motivation to receive rewards and achieve goals. This is why teenagers may seek the 'high' that comes from risky behaviours (Bower, 2004, 2).

**PART 4: CONNECTORS**

**6 MARKS**

**Select the best replacement connector for the following ones in the text. The words are in bold in the text.**

**16. Consequently (para 2)**

- a) As a result
- b) Indeed
- c) Nevertheless

**19. thus (para 8)**

- a) furthermore
- b) whereas
- c) consequently

**17. although (para 3)**

- a) because
- b) despite the fact that
- c) unless

**20. Yet (para 10)**

- a) Nevertheless
- b) Therefore
- c) Similarly

**18. However (para 7)**

- a) Nevertheless
- b) In addition
- c) Therefore

**21. While (para 11)**

- a) Unless
- b) Meanwhile
- c) Although



*Select from a), b) and c) what the following words refer to. The words are in bold in the text.*

**22. its (para 2)**

- a) adolescent brain development
- b) adolescent brain development research
- c) the above contention

**23. it (para 3)**

- a) the possession of unfinished brains
- b) the infusion of capital-crime laws with brain science
- c) growing evidence that teenagers possess unfinished brains

**24. do (para 6)**

- a) probe
- b) exhibit
- c) find

**25. This finding (para 6)**

- a) the finding that adolescent brains display weaker signals than adults' brains in the region involved in the motivation to strive for rewards or goals
- b) the finding that adolescents are weaker than adults and therefore are much less motivated to obtain rewards
- c) the finding that adults' brains need more stimulation than adolescents' brains to be motivated

**26. This (para 7)**

- a) gradual reductions in the volume of the prefrontal cortex
- b) the number of brain cells surge just before puberty
- c) the fact that neurons are actually dying

**27. those (para 8)**

- a) alcohol and nicotine addictions
- b) other psychopathological conditions
- c) schizophrenia and depression

*Select the choice which has the closest meaning to the following words from the text. The words are in bold in the text.*

**28. contending (para 2)**

- a) explaining
- b) arguing
- c) stating

**29. culpable (para 2)**

- a) innocent
- b) blameworthy
- c) sorry

**30. infuse (para 3)**

- a) counter
- b) change
- c) inject

**31. perspective (para 3)**

- a) standpoint
- b) study
- c) outline

**32. impulses (para 3)**

- a) urges
- b) tempers
- c) thoughts

**33. status (para 4)**

- a) period
- b) region
- c) condition

**34. probe (para 6)**

- a) operate
- b) examine
- c) remove

**35. arouse (para 6)**

- a) waken
- b) excite
- c) calm

**36. surge (para 7)**

- a) decline
- b) undulate
- c) increase

**37. fundamental (para 7)**

- a) amazing
- b) narrow
- c) radical

**38. instances (para 8)**

- a) rates
- b) possibilities
- c) moments

**39. empirically (para 8)**

- a) systematically
- b) constructively
- c) seriously

**40. speculation (para 8)**

- a) prediction
- b) hypothesis
- c) risk

**41. context (para 10)**

- a) theme
- b) framework
- c) atmosphere

**42. restrain (para 10)**

- a) suppress
- b) understand
- c) expose

# ANSWER KEY

<b>PART 1: MAIN POINTS</b>
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1.c    2.b    3.d    4.d    5.b

<b>PART 2: SCAN READING</b>
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6.a    7.c    8.b    9.a    10.d    11.b    12.a    13.d

<b>PART 3: SUMMARY</b>
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14.b    15.a

<b>PART 4: CONNECTORS</b>
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16.a    17.b    18.a    19.c    20.a    21.c

<b>PART 5: REFERENCE WORDS</b>
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22.b    23.c    24.b    25.a    26.c    27.a

<b>PART 6: UNIVERSITY WORD LIST and VOCABULARY</b>
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28.b    29.b    30.c    31.a    32.a    33.c    34.b    35.b    36.c    37.c    38.a    39.a    40.b    41.b    42.a