**Learning Outcome:** Discuss how social and environmental variables may affect cognitive development.

Command term: *Discuss-offer a considered and balanced review that includes a range of arguments, factors or hypotheses. Conclusions should be presented clearly and supported by appropriate evidence.*

Key points: In an ERQ you may be asked to discuss social variables, environmental variables or **both**.

Background Information:

Intelligence test scores are increasing yearly and this effect is found across many different intelligence tests and in different countries (Flynn, 1994). These increases are happening too rapidly to indicate genetic change and they demonstrate the importance of environmental factors in cognitive development.

Diet

Would you consider diet to be an environmental or social variable?

Is breast best?

One key debate is the impact of breast milk on cognitive development. Many studies demonstrate that breast-fed babies go on to perform better on tests of cognitive ability compared to bottle fed (formula) babies.

Evidence:

**Oddy et al (2004)** studied a sample of 2000 children from birth to 8 years old and found that those who had been breast fed for more than 6 months had higher verbal intelligence scores at age 8.

List some extraneous variables that make it difficult to draw conclusions about cause and effect from uncontrolled studies such as Oddy et al.

**Der et al (2006)** carried out a study in which they controlled for extraneous variables (e.g. maternal intelligence) in the link between breast-feeding and children’s intelligence. A longitudinal study of 5,475 children was carried out with statistical adjustments made to rule out the effects of maternal education and socio-economic status. Before adjustment, breast-feeding was associated with an increase of around 4 points in mental ability. However, when maternal intelligence was taken out of the equation, the effect of breast-feeding was statistically insignificant. This led Der et al to conclude that breast-feeding has little or no direct effect on **intelligence** in children.

This is supported by **Holme et al (2009)** who examined data from 1,218 children, 61.6% of whom had been breastfed. Before statistical adjustment, breast-feeding was significantly associated with higher total, verbal and visual IQ scores in children. However, when mother’s socio-economic status was controlled, the effect disappeared, leading researchers to agree with Der et al’s conclusion.

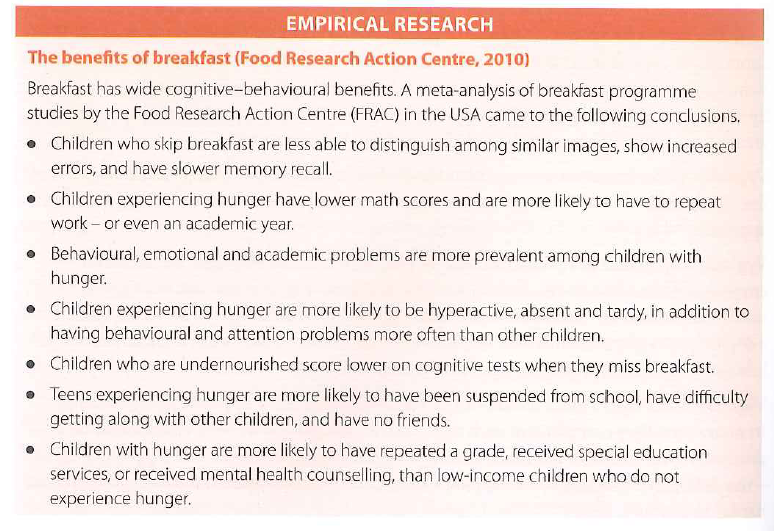
Which experimental technique is used in the above studies?

Why is using this technique problematic?

The importance of breakfast

Do you eat breakfast?

**Raloff (1989)** studied 1023 6th grade children over the course of one year and found those who were given free school breakfasts improved their math’s and science scores.



Caution should be used when attributing improved cognitive functioning to a healthy diet. A healthy diet can have less quantifiably measurable affects on a child compared to factors such as increased self esteem, improved personal discipline and a greater sense of responsibility all of which would have an effect on school grades.

**Cook et al (1996)** found children who participate in universal school breakfast programmes have lower rates of absence and tardiness, which would inevitably improve their cognitive development simply because they are in school more. This is supported by **McLaughlin et al (2002)** who found that schools which provide universal school breakfast have higher breakfast participation, especially when breakfast is served in the classroom, and students who significantly increase their breakfast participation are more frequently in attendance and on time.

From research into school breakfast programmes, is it the provision of food that is the main factor that increases cognitive functioning?

Parenting

Would you consider parenting to be an environmental or social variable?

**Neisser (1996)** notes that “Parents everywhere are now interested in their children’s intellectual development and are probably doing more to encourage it than they did in the past.”

Michigan department of Education (**MDE, 2002**) argued that the most consistent predictors of a child’s academic achievement and social adjustment were parent expectations: parents of high-achieving students set higher standards for their children’s educational activities than parents of low achieving students and this drove educational achievement and therefore cognitive development.

Furthermore, family participation in education was twice as predictive of student’s academic success as family socio-economic status; the more intensely parents were involved, the more beneficial the achievement effects. This has also been supported by other research, for example, children who practice reading at home with their parents, make significant gains in reading achievement compared to those who practice only at school, **Tizard et al** 1982.

Overall the **MDE** found families whose children are doing well in school exhibit the following characteristics.

* They have an established daily family routine regarding study, chores, dinner and bedtime.
* They monitor out of school activities such as setting limits on TV watching and arranging activities.
* They model the value of learning, self discipline and hard work.
* They encourage development and progress in school by maintaining a warm and supportive home, showing interest in children’s progress at school, helping with homework.
* They encourage reading, writing and discussions among family members.

How can the above parental strategies be linked to Vygotskian theory?

Rochester longitudinal Study (**Sameroff and Seifer 1993**)

This study followed a group of 152 families, from the prenatal period through to adolescence. The children were studied at 4 and 13 years of age and measurement taken of their performance on various cognitive tests. The Rochester study identified a range of environmental ‘risk’ factors, which were associated with poorer cognitive development. Each of these factors had the potential to reduce the child’s IQ score by up to four points. The factors included:

* Absence of father in the family home
* Mother’s mental health (notably maternal anxiety)
* Rigid attitudes and beliefs held by the mother, particularly an orientation towards child conformity (e.g. obedience, good manners and neatness) rather than child self-direction.

What type of study is the Rochester study? What is a criticism of this type of study?

Why can’t laboratory experiments be used to study parenting?

Using the parenting notes. Outline the findings of **Kim’s 2013** Tiger Mom’s study. How does it link to the Rochester longitudinal study?

Devise 10 rules that parents should follow to improve their child’s cognitive development.

Poverty

Would you consider poverty to be an environmental or social variable?

Cognitive researchers have found that poverty is one of the major risk factors in children’s cognitive development. What factors might prevent a poor child from reaching his cognitive potential?

According to the **National Center for children in poverty (2002)** USA, one third of children from low-income communities who enter kindergarten are behind their peers. In their fourth year of elementary school, 50% of these children do not meet the standard for reading proficiency.

**Socio-economic status** is a total measure of a person’s social and economic position based on income, education and occupation. **Farah et al (2005)** found that low SES children performed worse on all tests of cognitive performance compared to middle SES children.

One effect of poverty is malnourishment, which is linked to less activity and interest in learning. Malnutrition is associated with impaired or delayed brain development. A number of cognitive deficits have been reported in malnourished children. **Bhoomika et al (2008)** studied the effect of malnutrition on cognitive performance in a sample of 20 Indian children in two age groups, one aged from 5-7 and another aged between 8-10. The data was compared to those in a control group. Malnourished children in both age groups scored lower in tests of attention, working memory and visuo-spatial tasks. The older children showed less cognitive impairment, which suggests that the effects of malnutrition on cognitive competence may result in delayed cognitive development during childhood but it is not a permanent generalized cognitive impairment.

Evaluate Bhoomika et al’s research

Link this study with another piece of research that that indicates that diet causes changes in cognitive development.

Would being poor have an impact on parenting style? Read through the MDE study and provide specific examples.

**Read the key study on Pollitt and answer the questions.**

Why do you think that the link between socio-economic background and individual development is still not fully understood?

Conclusion

Cognitive development is affected by a number of social and environmental variables that interact with the child’s genetic inheritance in complex ways that are not yet fully understood.

Children need a minimum level of care in the family environment and deprivation, as a result of **poverty,** or neglect can have many negative effects on development. However, beyond a minimum level, the role of the **parenting** and indeed **diet** are unclear.