FOUNDATION YEAR

LISTENING TEST

TITLE: The Nature of Intelligence

LEVEL: Medium

WHAT: Practice Listening Exam including:
Worksheet
Answer Key
Transcript
CD

WHY: To give practice in multiple choice test format similar to the Foundation Studies Listening Exam

SKILLS: Listening and note-taking; answering examination questions

PLEASE DO NOT WRITE ON THE PACKAGE
IF ANYTHING MISSING/DAMAGED, PLEASE CONTACT THE LSU STAFF
PRACTICE EXAMINATION - LISTENING TEST

INSTRUCTIONS FOR STUDENTS:

The topic of the lecture you are going to hear is **The Nature of Intelligence**

- Listen to the lecture **twice**.
- **Do not look at the questions** while you are listening to the lecture.
- On separate sheets of paper, take notes on both occasions using note-taking techniques.
- Using the notes you have taken, select the most appropriate answer to the following questions.
- You will have **20 minutes to answer the questions**.
- Check your answers in the Answer Sheet.

Time approximately: 40 minutes

SECTION ONE: SCOPE AND OVERVIEW (20 Marks)

1. The **sequence of main points in the lecture is as follows:**
   - a) definition of intelligence; problem solving; the heritability of IQs; social and racial factors; categories of retardation
   - b) different views concerning the nature of intelligence; heredity versus the environment; mental retardation
   - c) intelligence; IQ scores; intellectual giftedness
   - d) the nature of intelligence; views concerning what intelligence is; heredity and the environment; extremes of intelligence

2. The lecturer’s **most likely intended audience are**
   - a) intellectually gifted and mentally retarded individuals
   - b) medicine postgraduates
   - c) psychologists and doctors
   - d) psychology undergraduates

3. The lecturer’s **attitude towards the topic can best be described as**
   - a) concerned
   - b) neutral
   - c) optimistic
   - d) pessimistic

4. The lecturer concludes by
   - a) announcing the topic of the next lecture
   - b) recommending IQ tests
   - c) stating the most important reason for sociocultural retardation
   - d) summarising the main points
5. According to the lecturer, Charles Spearman, a British psychologist believed that intelligence was a
   a) mixed bag of abilities
   b) pool of energetic ability
   c) unitary entity

6. The lecturer cites another psychologist, Thurstone, in order to
   a) support Spearman’s view
   b) present a contrast to Spearman’s view
   c) support her own point of view

7. The lecturer believes that intellectual abilities are
   a) in some cases interrelated and in others independent of one another
   b) independent of one another
   c) interrelated

8. The lecturer cites Gardner’s broad view of eight different and independent “intelligences” and then lists
   a) 6 of them
   b) 7 of them
   c) all 8 of them

9. The lecturer’s final approach to defining intelligence focuses on
   a) general abilities
   b) solving problems
   c) specific abilities
   d) step-by-step processes or strategies

10. The lecturer believes that intelligence is a product of
    a) heredity
    b) the environment
    c) both a and b
    d) neither a nor b

11. The lecturer provides data that estimates heredity to account for
    a) 40% of the variation in IQ scores
    b) 60% of the variation in IQ scores
    c) 40% to 60% of the variation in IQ scores
    d) 14% to 16% of the variation in IQ scores

12. The lecturer believes that environment has little impact on intelligence.
    a) true
    b) false

13. The lecturer provides the example about infants from disadvantaged homes in order to
    a) illustrate that there is inconclusive evidence concerning the importance of environment in determining intelligence
    b) refute the importance of environment in determining intelligence
    c) support the importance of environment in determining intelligence
14. According to studies cited by the lecturer, the tested IQ of blacks is, on average,
   a) 15 points lower than that of whites
   b) 50 points lower than that of whites
   c) 15% lower than that of whites
   d) mainly at the lower end of the scale

15. Research mentioned by the lecturer emphasises the role of
   a) cultural factors
   b) educational factors
   c) nutritional factors
   d) a, b, and c

16. One study cited by the lecturer suggests that a decrease in IQ scores of black children aged 5 to 16 reflects
   a) genetic differences between races
   b) opportunities to develop intellectual skills
   c) the impact of a limiting environment

17. According to the lecturer, an IQ score of 135 is
   a) at the top of the normal range
   b) in the normal range
   c) indicative of intellectual giftedness

18. In the U.S., according to the lecturer, mental retardation is diagnosed in
   a) 3% of all cases tested
   b) 3% of all children born
   c) one thirtieth of children at sometime in their lives

19. The category of moderate retardation mentioned by the lecturer includes those with an IQ score of
   a) 55 to 69
   b) 40 to 54
   c) 25 to 39
   d) 0 to 24

20. Clinical retardation, according to the lecturer,
   a) accounts for 25% of all retarded individuals
   b) can be diagnosed at anytime
   c) is commonly caused by a genetic or biological disorder
   d) ranges from mild to profound
ANSWER KEY

SECTION 1: SCOPE AND OVERVIEW (20 marks)

1. b
2. d
3. b
4. a

SECTION 2: SPECIFIC INFORMATION (80 marks)

5. c
6. b
7. a
8. b
9. d
10. c
11. c
12. b
13. c
14. a
15. d
16. c
17. a
18. b
19. b
20. c
Good afternoon – intelligence is the general theme of the lecture today, and in particular the nature of intelligence. I want to look at different views of this today, as well as explore briefly the heredity versus environment factor and then move on finally to consider extremes of intelligence, focusing on that of the mentally retarded.

Firstly, the, the nature of intelligence.

Just what is the capacity called intelligence? Is it a single, unitary entity, or is it a mixed bag of abilities that are only slightly related to one another? Charles Spearman, a British psychologist, took the view that intelligence is a single entity. He proposed that a single general-intelligence factor – which he labelled \( g \) – accounted for correlations that are regularly found between different measures of mental ability. He described \( g \) as a wellspring of mental energy that flows into everything an individual does.

In contrast, Thurstone proposed that intelligence consists of eight primary abilities that are relatively independent of one another, including verbal comprehension, numerical ability, spatial visualization, and deductive reasoning. Excelling in any one of these, Thurstone believed, has little to do with excelling in any other.

Most of the evidence suggests that a compromise between these two positions is probably closer to the truth. Intelligence – at least as it is measured on intelligence tests – seems to include a general ability that underlies scores on a wide variety of subtests (such as those of the WAIS). The higher a person scores on any one subtest, the higher she will probably score on any of the other subtests. But there also seem to be clusters of intellectual abilities that are somewhat independent of one another; thus, some people are better at visual tasks, others at verbal ones.

In recent years researchers have been reconsidering the basic question of just what skills are to be included in the domain of “intelligence. In day-to-day situations, “intelligent behaviour” seems to involve far more than the verbal, spatial, and logical skills identified by Thurstone. One leading researcher, Robert Sternberg, favours a view of intelligence that recognizes the ability to adapt to one’s environment. By this definition, what is considered “intelligence” may vary from one situation to another according to what skills are required and how well the person matches his particular skills to the demands of the situation.

Howard Gardner proposes a particularly broad view of intelligence. Drawing from a wide range of biological, psychological, and cross cultural studies, Gardner has concluded that there are eight different and independent “intelligences”: linguistic intelligence, musical intelligence, logical-mathematical intelligence, spatial intelligence, bodily kinaesthetic intelligence (control of the body), interpersonal intelligence (knowledge of others), and intrapersonal intelligence (knowledge of self).

Gardner’s suggestion that each of these abilities should be called an “intelligence” is a controversial one; others might call them “talents.” But his suggestion helps to challenge the prevalent assumption that the verbal, spatial, and logical reasoning skills are somehow more basic than other human capacities.

Still another approach to defining intelligence is to shift attention from “abilities,” whether general or specific, and to look more closely at the step-by-step processes people use when they tackle intellectual problems. In such an information-processing approach to intelligence, researchers attempt to analyse what happens to the information in an intelligence test problem, from the time the test-taker perceives it until he provides a response. Consider, for example, the following analogy problem, similar to those found on intelligence tests:
LAWYER is to CLIENT as DOCTOR is to (a) Patient or (b) Medicine

It took subjects an average of 2.4 seconds to solve a form of this problem used by Robert Sternberg. These subjects were timed from the moment the choices were displayed on a screen until the moment they pressed a button to signal their response.

Some people can solve such problems more quickly and more easily than others can. Sternberg notes that solving such an analogy problem involves several different steps, or components. First, the subject must encode the terms of the analogy – he must identify what each of the words means, together with their various connotations. For example, a subject might retrieve from his memory the facts that lawyers provide legal services to their clients in offices and courtrooms and that doctors provide services to their patients in offices and hospitals. Next, the subject must infer the relationship between the first two terms of the analogy (lawyers serve clients) and then apply this relationship to the second half of the analogy (doctors serve patients). At this point, the subject is ready to respond with the right answer.

Sternberg has devised ways to estimate the time taken by subjects to perform each of the problem-solving components. He has found that with certain sorts of problems people who have high IQs actually take longer than people with lower IQs to perform the first step in the process, encoding. They are then able to perform the remaining steps more quickly and efficiently. As I said previously, categorizing or mentally representing a problem is a crucial part of problem solving. From Sternberg’s point of view, g – the general factor in intelligence that Spearman described – may refer most fundamentally to people’s ability to decide ahead of time what sort of problem they are faced with and what sorts of strategies are needed to solve it.

Now I’d like to move on and touch briefly on the Heredity and Environment question.

One extreme view of intelligence is that it is a part of one’s inheritance, transmitted from one’s parents through the genes, much like eye colour or blood type. Another extreme view is that heredity has nothing to do with one’s intelligence that it is totally a function of one’s environment and experience. Neither of these extreme views is correct. In fact, intelligence is a product of both heredity and environment. But although virtually all psychologists would agree with this statement, there is still a great deal of controversy – and some confusion – about the relative importance of each of these factors in determining intelligence.

The heritability of a trait is an estimate of how much of the variation between individuals in that trait is due to genetic factors. To make estimates of heritability, researchers study the similarities between the traits of individuals who stand in different degrees of kinship to one another. Most scientists conclude that IQ has a substantial heritability. One revealing comparison is between similarities of IQ scores for pairs of identical twins and for pairs of fraternal twins. If IQ is highly heritable, then we would expect the IQs of identical twins (who are genetically identical) to be more highly correlated than the IQs of fraternal twins (who are no more similar genetically than ordinary siblings). This turns out to be the case. On the basis of such data, it is estimated that heredity accounts for 40 to 60 percent of the variation in people’s IQ scores within the populations that have been studied.

The fact that IQ has a substantial heritability does not imply that environment has little impact on intelligence or that one’s IQ score cannot be changed. Many studies have indicated that people’s experiences – especially early in life – can influence their intelligence. In one successful program at Yale University, a group of infants from disadvantaged homes were provided with special help from the time they were 3 months old until they were 2 and a half years old. Some of the infants, whose parents provided little intellectual stimulation, were put into a special day-care centre where they had toys, the freedom to explore, and time with adults that was not available at home. For other families, in which the parents were willing and able to give their children attention but faced too many outside pressures to do so, financial, employment, and marital were provided. It turned
out that the children in this program scored higher on measures of intelligence than did a comparable group of children not given the extra stimulation and support. And the program had long-lasting effects. The children’s scores were higher than the comparison group not only at the end of the program but even when they were 8 years old.

Even when there is no dramatic intervention in children’s lives, particular experiences can have a major impact on IQ scores. For example, having many opportunities to explore one’s environment may boost IQ scores; a long illness or living under stressful conditions may lower scores. Our genetic endowment may set a certain potential range of intelligence, but with in that range, IQ may vary considerably depending on the individual’s experience.

Many studies have shown that there are social-class differences in IQ. James Coleman and his colleagues for example, reported that children from lower socio-economic backgrounds scored below the national averages on both verbal and nonverbal tests at all grades tested. There are also racial differences in IQ scores. On the average, the tested IQ of blacks is about 15 points lower than that of whites. Both whites and blacks score at all points along the IQ continuum, but there are proportionately more blacks at the lower end of the scale and more whites at the higher end.

How can we account for these relationships between IQ and social class, and between IQ and race? Hereditary influences can’t be entirely discounted. It is important to note, however, that estimates of heritability of a trait refer only to the genetic influence on variations within the group that has been studied. These estimates do not shed any direct light on differences between groups – for example, different races – in the general population. To account for the relationships between social class, race, and IQ, most researchers have emphasized the role of the environment, including the nutritional, educational, and cultural factors that may determine the extent to which intellectual skills flourish. One study that helps to document the enormous role that environment can play in black-white IQ differences was conducted by Sandra Scarr and Richard Weinberg. They measured the IQs of black children who were adopted and raised by white families in Minneapolis. In all cases, the children were reared in a more affluent environment than the one they were born in. The researchers found that the children’s IQs were considerably higher than would have been expected if they had remained in an impoverished environment. Moreover, the earlier in life the children were adopted, the higher their IQs tended to be, pointing to the influence of experiences in early life.

Another study that attests to the impact of environmental factors on intelligence was conducted by Arthur Jensen. He analysed the IQ scores of black and white schoolchildren in a rural area of Georgia, a section in which blacks are greatly disadvantaged, both economically and educationally. Jensen found that as the black children grew older, from age 5 to 16, their IQ scores tended to decrease, whereas no such decline was found for whites. As Jensen points out, it is difficult to account for this pattern (which he calls a cumulative deficit) in terms of any genetic differences between the races. Rather, it seems to reflect the impact of an environment that limits the opportunities for disadvantaged people to develop their intellectual skills.

Finally today, I want to consider Extremes of Intelligence

Most people have intelligence that is in the “normal” range, with IQs between 70 and 135. But there is also a significant minority of people whose intelligence is higher or lower than this range. Although the specific IQ cut-off points are rather arbitrary, those people with IQs lower than 70 are regarded as mentally retarded and those with IQs higher than 135 are regarded as intellectually gifted. Each of these groups of people presents special challenges for society and deserve our attention equally.

However, there is only enough time to consider one of them today and I now want to focus on the mentally retarded.
About 3 out of every 100 children born in the United States are diagnosed as mentally retarded at some time in their lives. The range of intellectual abilities included under this label is extremely broad. Some mentally retarded individuals are so profoundly handicapped that they have no speech and must be cared for as if they were infants. Others have no noticeable intellectual impairment until they are confronted with mathematical problems or reading. Some mentally retarded individuals have physical handicaps as well, but many others are physically normal. However, some retarded persons also have exceptional talents in specific areas. Thus, no one description can encompass all persons with the label of mental retardation.

Most diagnoses of mental retardation are based on IQ scores. The classification of retarded persons commonly employed includes four categories: mild retardation (IQ of 55 - 69), moderate retardation (IQ of 40 -54), severe retardation (IQ of 25 - 39), and profound retardation (IQ below 25). Whereas the profoundly retarded require constant medical supervision (only about 1.5 percent of the retarded are in this category), mildly retarded persons can be educated, can hold jobs, and in many respects can lead normal lives.

An important distinction among retarded persons is between the clinically retarded and the socioculturally retarded. Clinical retardation, accounting for 20 to 25 percent of all retarded individuals, is a condition that is usually diagnosed at birth or in the first few years, and the retardation ranges from moderate to profound. Clinical retardation usually has an identifiable biological or genetic cause. The most common cause of clinical retardation, is a genetic disorder called Down’s syndrome (formerly known as “mongolism”). Most people with Down’s syndrome have IQ s between 35 and 54 (moderately retarded), but some have IQ s near 70 and a few have normal intelligence.

Well, that’s all we have time for today. In the next lecture we’ll explore the other extreme of intelligence, that is the intellectually gifted. Thank you.