

# АНГЛИЙСКИЙ ЯЗЫК

Методическая разработка  
для чтения специальных текстов  
по психологии  
для студентов 2 курса  
гуманитарного факультета  
специальности «Психология»

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А 64 АНГЛИЙСКИЙ ЯЗЫК: Методическая разработка для чтения специальных текстов по психологии для студентов 2 курса гуманитарного факультета специальности «Психология» / Сост. Е.В. Докучаева, Л.М. Лукина. – Бишкек: Изд-во КРСУ, 2011. – 76 с.

Основная цель пособия – способствовать эффективному развитию навыков чтения текстов по специальности, умение вести беседу, дискусию или полемику.

Состоит из трех текстов для чтения, лексического минимума, содержит вопросы по содержанию текста, лексические упражнения, направленные на понимание содержания текстов, извлечение информации, развитие навыков чтения и говорения, а также дают возможность широко использовать лексику, словосочетания, идиомы, фразы, предложения, усвоенные в ходе работы над текстовым материалом. Тексты можно использовать для внеаудиторного чтения.

Предназначено студентам 1, 2 курсов гуманитарного факультета, изучающим психологию.

## Text 1

### THREE KINDS OF MEMORY

#### *How does Norman live without remembering?*

Norman, in his mid forties, is an impressive six feet one inch tall and weighs 240 pounds. Although you spent two hours visiting with him yesterday, Norman remembers neither your visit nor your name. If you ask him what he did yesterday, he will remember almost nothing. If you ask him about events before his accident, however, he can remember them quite well. Norman is very friendly and can carry on a simple conversation. But if he has to answer the phone in the middle of a conversation, when he returns he will not remember what you were talking about. He doesn't watch television too often because the commercial interruptions cause him to forget what the show is about. Although he has attended an outpatient treatment center for many years, he does not remember the names of the other patients. He can only carry out those routines that he has learned through years of constant practice. For example, after four years of traveling the same route, Norman can drive to the hospital, although he doesn't remember the names of any of the streets. Norman lives with his mother, who notices that he is constantly misplacing things and losing money. Norman's mother does all the cooking because if Norman puts something on the stove to cook, he usually forgets about it. Norman's memory deficit has caused problems in almost every area of his life.

In 1960, at age 22, Norman had a one in a million accident. A fencing sword entered his nose, penetrated his brain, and destroyed an important area involved in memory. Since that day, Norman has lost much of his ability to store permanent memories – that is, to remember events from day to day. If you carried on a conversation with Norman, you might not notice his problem. He can register sensory information and remember immediate events well enough to do simple chores and talk with others. He can also remember events that happened over twenty years ago, before his accident. Why, then, will he not remember your conversation tomorrow? To answer this question, you must understand the difference between three kinds of memory: sensory memory, short-term memory, and long-term memory.

## SENSORY MEMORY

To demonstrate sensory memory to yourself, have someone make a rapid circular motion with a lighted cigarette in a totally dark room. As the glowing tip moves, you will have the sensation of seeing a continuous circle of light. This sensation occurs because the image of the tip in each of its various positions is being held briefly in sensory memory; the momentary lingering of sensory information after a stimulus has been removed. In this case, new images are being registered before the old ones fade, and so you see the outline of a circle.

Researchers have established the existence of sensory memory for vision and hearing, and they assume that it exists for the other senses as well. You have no voluntary control over the information that enters sensory memory, and its capacity seems unlimited. Any stimulation processed by your senses is held briefly in sensory memory. Why, then, aren't you overwhelmed by incoming data? The answer is that you do not attend to everything that enters sensory memory. If you fail to attend to the information, it simply fades away in a matter of a second or so.

Despite its very brief duration, sensory memory allows you to do several things. For example, sensory memory makes your visual world seem smooth and continuous despite frequent blinks of your eyes. Whenever you blink, your vision is momentarily interrupted. Sensory memory maintains the visual images so that you are not aware of these interruptions.

Sensory memory also gives you the moment or two that you need to determine if incoming data should be processed further. Have you ever been engrossed in reading a book or watching a movie when a friend suddenly asks you a question? Just as you are about to ask, "What did you say?" you realize that you did hear after all. In this case your friend's speech sounds were held in sensory memory long enough for you to shift your attention to them. In addition, by momentarily holding the string of speech sounds in sensory memory, you are able to group related ones together and recognize them as words. This is an example of how you use sensory memory to recognize complex patterns. Similarly, you can group facial features into the complex pattern of a face. Without sensory memory, the world would be a jumble of unrelated elements.

Returning to the case of Norman, you can clearly see that nothing is wrong with his sensory memory. Since he can recognize words, we know he is able to retain information in sensory memory and recognize patterns. In fact, Norman must be able to retain information for longer than just the fleeting duration of sensory memory, or he would not be able to carry on a conversation. When Norman attends to the words that are spoken during a conversation, he is processing them into what is called short-term memory.

## **SHORT-TERM MEMORY**

*What kind of memory are you using right now as you remember the words in this question?*

Norman lives in Southern California, an area inhabited by thousands of runners. It is not unusual for five or six runners to go by his home on any given day. What is unusual is for a naked runner to jog past Norman's house. But that is exactly what happened one warm summer night. As Norman looked out of his window he saw a runner approaching, and just for a moment the visual image was stored in his sensory memory. This brief sensory storage allowed Norman to notice something strange about the runner: the man was wearing nothing except his running shoes and socks. Ordinarily, Norman would not pay much attention to a jogger, and the image would fade quickly from his sensory memory. In this case, however, Norman paid attention, and the image was processed into short-term memory. Short-term memory refers to the process of attending to information in sensory memory or attending to your conscious thoughts and perceptions at any given moment. Like everyone else, Norman has some conscious control over what he holds in short-term memory: he can to some extent ignore the information, or he can selectively attend to it and think about it. In this case, Norman might have wondered about the runner's motivation.

### **Characteristics of Short-Term Memory**

Researchers have found that short-term memory has two characteristics. First, information that enters it is available for only a very limited time unless it is actively processed. This processing can take the form of maintenance rehearsal, as when you repeat a telephone number over and over to yourself. It can also take the form, as in Norman's case, of manipulating information – of wondering about the subject and its implications. Without some kind of active mental effort, however, information that enters short-term memory will fade in about 20 to 30 seconds.

Short-term memory also has a limited capacity. Most people can hold only about seven bits in it at any one time. For instance, if you were given a string of random numbers to remember and you came to the seventh one, you would be approaching the limits of your short-term memory. Given a short-term memory this limited in size, you may well be asking how we manage to process as much information as we do. For example, how can you remember the phrase "Do not chew bubble gum during examinations," which contains thirty-six individual letters, far more separate items than working memory can possibly hold? The answer is through a process called chunking. By chunking individual letters into seven meaningful words, you can easily keep this information active. In fact you may actually store the "idea" of this phrase as a single chunk, leaving room for still more information in short-term memory.

## **Forgetting from Short-Term Memory**

*Why is it so easy to forget a phone number?*

Just before Norman saw the naked runner, he was searching for a pencil in a desk drawer. When the runner jogged past the window, his attention was diverted, and soon he had completely forgotten about the pencil. This experience of losing something from short-term memory because other information interferes is not unique to Norman. You have the same experience when something distracts you before you can write down a phone number or before you learn the definition you just read. Some researchers believe that interference is the primary reason why information is forgotten from short-term memory.

Although we often forget things from short-term memory we very seldom have the experience that Norman repeatedly has. He loses all trace of what just happened before a brief distraction occurred. For instance, you may forget a phone number if the doorbell suddenly diverts your attention, but you usually do not lose all recollection that you wanted to make a call. This, however, is what happens to Norman. After the naked runner passed and captured Norman's attention, the prior search for a pencil was entirely lost from his memory. Even if Norman later noticed that the desk drawer was open, he would not remember how it got that way. In fact, if tomorrow you reminded Norman of the naked runner, he would not know what you were talking about. This is because Norman is totally unable to transfer new information to what is called long-term memory.

## **LONG-TERM MEMORY**

Norman's case demonstrates the existence of a long-term memory separate from short-term memory. In contrast to short-term memory, long-term memory stores information with relative permanence and has an almost unlimited capacity. Norman clearly has long-term memory stores, as evidenced by his recall of events from before his accident. He also has short-term memory, as shown by his ability to carry on simple conversations. What Norman lacks is the ability to enter new information into long-term storage.

Information is normally transferred into long-term memory through an attention-related process. One such process is rehearsal, which itself can take several forms. In maintenance rehearsal, you repeat information silently over and over, without giving it any real thought. Maintenance rehearsal is usually not enough to transfer information into long-term storage. If you are planning to use a number only once and so merely say it to yourself as you are reaching for the phone, the number probably will not be stored in your long-term memory. This mechanical sort of repetition will retain the number in short-term memory long enough for you to place the call, but very soon thereafter

the number will be lost. Much more effective at getting information into long-term memory are attention-related processes that involve making associations between aspects of the new information and things you already know. For instance, if you can associate a phone number with someone's date of birth, or with a year in which some famous event happened, you are much more apt to enter the number into long-term storage. We will say more about this later.

### **How Long-Term and Short-Term Memory Work Together**

#### ***Can you remember the thirty-first flavor of ice cream?***

Suppose you read a list of thirty-one flavors of ice cream and are then asked to recall as many as you can. For each one you remember, you receive a coupon for a free quart. This is an example of a free recall test, in which you are asked to remember a string of previously presented items in any order you wish. You would probably remember common flavors like vanilla and chocolate regardless of where they appeared on the list, and you might also have a good recall of your own favorite flavors. But aside from these, which flavors would you remember best? Tests like these show that you have the best recall for items presented at the beginning of a list, which is known as the primary effect, and for items presented at the end, which is known as the recency effect. Psychologists explain these effects by pointing to the different functions of short-term and long-term memory. On the one hand, you show good recall of items at the end of the list because these items are still in short-term memory when the free recall test begins. On the other hand, you also have good recall of items at the beginning of the list because you have had more time to rehearse them and transfer them into long-term memory. Your poorest recall would be for items in the middle of the list. These items were not yet placed in long-term storage, and at the same time new items have displaced them from short-term memory.

#### **Kinds of Long-Term Memory**

Why can you so easily perform a number of skills, such as driving a car, riding a bike, roller skating, skiing, or playing tennis? It is because you have stored the necessary knowledge to perform skills in one type of long-term memory that is called procedural memory. You can perform a skill, even if you have not engaged in it for many months or years, by recalling the knowledge from procedural memory.

Why can you so easily remember hundreds of daily events, such as getting up late, spilling cola on your shirt, ordering a tuna sandwich, and seeing a particular movie? It is because you have stored distinct episodes you personally experienced in a type of long-term memory that is called episodic (EP-ih-SAH-dik) memory. You can answer the question, "How was your day?" by recalling this information from episodic memory.

Why can you remember the definition of classical conditioning, the first president of the United States, and the reason that you must study to get good grades? It is because you have stored knowledge of facts or relationships between things in a type of long-term memory that is called semantic memory. When you take an exam, you recall information about mental representations of objects, facts, and relationships from semantic memory. You are able to transfer information from short-term memory into various kinds of long-term memory by using a number of attention-related processes. The general act of attending to new information, perhaps using old information to analyze or manipulate the new, and then placing the result in long-term memory, is called encoding. Let's see why you encoded certain information today but not everything you wished.

#### **Types of Encoding**

"I remember that I ate five times today (including snacks) and I can tell you everything I ate." "I can't remember the difference between operant and classical conditioning, which I studied this morning."

Most of the personal episodes in your life are encoded automatically in long-term memory. When you store information very quickly and without deliberate effort, such as how many times you ate and what you ate, it is called automatic encoding. If you were to read a list of words, you would be able to recall how many times you saw a certain word on that list because information about frequency is encoded automatically. You can recall how often you heard your name today for the same reason. Your ability to recall dozens of events at the end of each day indicates that recent memories that are automatically encoded are often very easy to recall.

Other information, such as the differences between operant and classical conditioning, must be encoded through attentional processing: you deliberately attend to and make an effort to put something into long-term memory. Let's look at why efforts at attentional encoding may or may not be successful.

Attentional processing of the differences between conditioning procedures can involve a number of different encoding strategies. One common strategy is rehearsal, in which you repeat something to be learned either out loud or to yourself. There are two kinds of rehearsal and only one kind is likely to encode information in long-term memory. If you were to repeat the differences between conditioning procedures so that you could write them down in your notes, you are probably engaging in maintenance rehearsal. This type of rehearsal, which involves little thought or effort, is very useful for maintaining information in short-term memory. However, maintenance rehearsal is not very effective for encoding information into long-term memory. To encode information into long-term memory, you would want to repeat the information in a way that will make new associations. Repeating and making new associations is called elaborative rehearsal and will likely result in encoding the in-

formation into long-term memory. For example, students who used elaborative rehearsal to make new associations were significantly better at word recognition than those who did not. Besides using words to encode information, we also use images. Researchers found that our earliest childhood memories, usually from age 3 or 4, are often visual. First, let's look at an interesting form of visual imagery found in children.

### ***Special Memory Abilities***

The subject in this study, an 11-year-old girl, had been shown the picture a few minutes before and then the picture was removed. Now she is describing the picture to the researcher. What is unusual about her description is not so much its amount of detail but the fact that she seems to be examining a visual image of the drawing that still lingers before her eyes. This is not an example of normal sensory memory, because the image lasts for several minutes before it fades away. As you probably remember, sensory memories disappear almost instantaneously.

Research suggests that about 5 percent of children between the ages of 6 and 12 have this distinctive visual memory capacity, called eidetic imagery (eye-DET-ik IM-ij-ree). After examining a complex picture for 10 to 30 seconds, these children appear to retain the image for at least a few more minutes. Some skeptics have wondered if perhaps the children are simply recalling the pictures from normal long-term memory but using active descriptive words such as "I see." This does not appear to be the case, however. In recent studies, children with eidetic capabilities have been presented with two separate images – images that when superimposed form a third image, different from the others. These youngsters seem able to retain the first of the images in eidetic storage long enough to superimpose it mentally on the second even when presentation of the second image is delayed. As a result, they are able to see the "hidden" image, something that could not be done with long-term memory alone.

In the small percentage of children who can form eidetic images, the ability almost always disappears as the child enters adolescence. Adults who can form eidetic images are very rare indeed. However, a few researchers have reported adults who possess what is commonly called a photographic memory. These individuals seem able to form very sharp and detailed visual images that they can recall at will, even after substantial time has passed since the image was first encoded. For example, a woman could view a pattern of dots in her right eye and fuse them with a pattern of dots in her left eye, which resulted in her seeing a new image, in this case the letter T. There are also cases of people who probably do not have photographic memories but who nevertheless can perform amazing memory feats. One man had memorized an

entire book and could tell you the exact word that appeared four lines down, next to the right-hand margin of every page. Although most of us do not have photographic memories and many people complain of having poor memories, we can all improve our ability to recall what we have learned by practising some of the memory techniques.

Besides eidetic imagery, another kind of unusual encoding exists. In this case, the encoding is associated with very vivid events.

### **Explaining Flashbulb Memories**

#### ***Why do you easily remember terrifying events?***

The motorcycle driver who walked away with minor cuts and bruises from the spectacular accident will probably remember every detail. He will be able to recall the sensation as he started to lose control and the feeling of flying through the air and hitting the dirt.

The very vivid recollections we sometimes form of dramatic incidents are often called ***flashbulb memories***. Flashbulb memories usually deal with events that are extremely surprising, emotionally arousing, or very important in their consequences. You may have experienced something similar to a flashbulb memory yourself. For example, when people were questioned about what they were doing when they heard President Reagan had been shot, 94 percent could recall the exact details even seven months later. Events involving deaths, accidents, sports, and sex are among those people say they remember most vividly. These are all very emotional experiences that people are apt to dwell on long after the actual occurrence.

What happens in your body when a flashbulb memory is formed? The answer comes partly from research on animals. When rats are placed on elevated, well-lighted platform, their natural response is to step down and go to a dark corner. However, if the rats receive a shock to their feet whenever they step down, they learn within one or two trials to remain on the platform. Since this experience involves being shocked, it produces physiological arousal, which in turn triggers the release of several hormones (epinephrine, ACTH, and vasopressin). Apparently, these hormones are important for rapid learning. When the hormones are eliminated by removal of the glands that produce them, the rats require significantly more trials to learn to remain on the platform. This finding suggests that secretion of the hormones somehow facilitates memory formation. Like rats, humans also secrete hormones when physiological arousal occurs, and these hormones may contribute to the formation of flashbulb memories.

### ***Mood Affects Memory***

Jeremy was unhappy because he had received a low grade on his math exam. When the math class ended at 11:00A.M., Jeremy discussed his grade with the other students standing around the corridor. Some complained of getting low grades and of disliking the class and the teacher. Others said that they were happy with their grades and liked the class and the teacher. Later, Jeremy met his friends for lunch in the cafeteria. They talked about the fun of going to a Saturday football game, the high cost of textbooks, a great party the night before, the pain of writing papers, the excitement of an upcoming rock concert, and the number of exams coming up. After his two afternoon classes, Jeremy stopped at the library for a minute. He talked to a friendly librarian about how to find a book he needed. The book was out but the librarian said it could be recalled in a few days. Jeremy left the library, walked to the bus stop, and sat down and waited. Not far away, a person was playing frisbee with his dog. Some of the dog's catches were amazing. On Jeremy's bus-trip home, the bus passed a funny-looking 50-foot balloon shaped like a gorilla, which was advertising a new shopping center. The bus ride took almost twice as long because the traffic was very heavy.

When Jeremy got home he studied for a while and then watched a movie on television. The movie had a sad ending. At the end of the movie, his roommate came home and asked, "How was your day?" Jeremy said, "Most of the students in my math class got low grades and hate that class. I wish I could drop it. All my friends are mad about how much they had to spend on textbooks. I've got two exams coming up and another paper due and the book I need isn't in the library. I don't know what I'll do. Besides, I'm tired of waiting for that stupid bus. The traffic was so bad today I thought I'd never get home. I've had an awful day."

### ***When you're sad, what kind of things do you remember?***

One reason that Jeremy especially noticed and encoded unpleasant events was that he was in a sad mood that day. You can understand why this happens if you look at the research on mood and memory by Alice Isen and her associates, John Teasdale and Louise Russell, and Paul Blaney. For example, Teasdale and Russell asked college students to read a list containing negative words (dishonest, unfriendly, heartless), positive words (friendly, pleasant, likable), and neutral words (cautious, shy, excitable). Next a depressed mood or a happy mood was induced by having the students read either a list of depressed statements (I feel unhappy, I feel sad and blue) or happy statements (I feel happy, I feel cheerful and confident). When the students were then asked to recall as many words as they could, the "depressed" students recalled more negative words, while the "happy" students recalled more positive ones.

This phenomenon, which is called mood convergence, means that you are more likely to attend to, encode, and recall information and events that are consistent with your present mood. If, for instance, you are in a sad mood, you will especially notice, encode, and recall unpleasant things; if you are in a happy mood, your memories will likewise be pleasant. According to the concept of mood convergence, Jeremy especially noticed and encoded unpleasant events because these events matched this negative mood.

Later that night, when Jeremy watched a sad movie, his unpleasant memories of that day came flooding back. To further explore this phenomenon, experimental psychologist Gordon Bower used hypnosis to create a happy or sad mood in the laboratory. After hypnotizing subjects, Bower asked them to imagine a happy scene, which resulted in a happy mood, or to imagine a sad scene, which resulted in a sad mood. The hypnotized subjects then were asked to write down as many childhood incidents as they could recall in a 10-minute period. The next day, when the subjects were not hypnotized, they were asked to rate the childhood incidents as being pleasant, unpleasant, or neutral. Not surprisingly, the hypnotized subjects who were in a happy mood remembered more pleasant childhood incidents, while those in a sad mood remembered more unpleasant incidents. Bower concluded that what subjects recalled at a later time was enormously dependent upon what mood they were in.

Let's apply Bower's results to our example. As Jeremy watched a sad movie, he began thinking about the unpleasant incidents of the day because the movie had put him in a sad mood. This phenomenon, which is called mood-state-dependent memory, means that while you are in a certain mood-state, you are most likely to remember events that were learned previously in that particular mood-state. Researchers on mood and memory tell us that being in a particular mood will influence what events you notice, encode, and recall and what events you will remember at a later date when you are in that same mood again.

### **Vocabulary**

1. **attend (to)**, *v* уделять внимание, быть внимательным (к кому-л., чему-л.)
2. **attention**, *n* внимание  
**selective attention**, *n* избирательное внимание
3. **attention-related process**, *n* процесс, связанный с вниманием
4. **attentional processing**, *n* контроль, связанный с процессом внимания
5. **capture**, *n* 1) захватывать силой, брать в плен; 2) захватить, увлечь;  
**to ~ the attention** – привлечь внимание, увлечь

6. **chunking**, *n* укрупнение информации  
**chunk**, *n* чанк (доза информации)
7. **deliberate**, *a* 1) преднамеренный, умышленный; 2) обдуманый; 3) осторожный, осмотрительный; 4) неторопливый
8. **distract**, *v* 1) отвлекать, рассеивать (внимание и т.п.; **from**); 2) сбивать с толку; смущать; расстраивать  
**distraction**, *n* 1) отвлечение внимания; 2) то, что отвлекает внимание; 3) рассеянность; 4) раздражение
9. **divert**, *v* 1) отводить, отклонять; 2) отвлекать (внимание); 3) забавлять, развлекать  
**diversion**, *n* 1) отклонение; 2) отвлечение внимания; 3) развлечение
10. **dwelt**, *v* (**dwelt**) 1) жить, обитать, находиться, пребывать (**in, at, on**); 2) подробно останавливаться, задерживаться (**on, upon** – на чем-л.)
11. **eidetic imagery**, *n* эйдетические образы
12. **elaborative rehearsal**, *n* осознанное повторение (для сохранения информации в долговременной памяти)
13. **eliminate**, *v* 1) устранять, исключать (**from**); 2) уничтожать, ликвидировать; 3) игнорировать, не считаться; 4) очищать; выделять; удалять из организма  
**elimination**, *n* исключение
14. **encode**, *v* кодировать, шифровать  
**encoding**, *n* кодирование
15. **engross**, *v* 1) поглощать (время, внимание и т.п.); завладеть (разговором); 2) (pass.) быть поглощенным (чем-л.), углубляться (во что-л.)
16. **episodic memory**, *n* эпизодическая память
17. **facilitate**, *v* облегчать; содействовать; способствовать, продвигать  
**facilitation**, *n* облегчение, помощь
18. **fail**, *v* 1) потерпеть неудачу; не иметь успеха; 2) провалиться на экзаменах; 3) не сбываться, не удаваться; 4) изменить; покинуть; 5) не исполнить; не сделать; 6) недоставать; иметь недостаток в чем-л.; 7) ослабевать, терять силы; 8) перестать действовать
19. **flashbulb memories**, *n* яркие воспоминания
20. **free recall test**, *n* тест на свободное припоминание
21. **implicate**, *v* 1) вовлекать, впутывать; 2) заключать в себе намек, означать; 3) спутывать; 4) быть органически связанным (с чем-л.)  
**implication**, *n* 1) вовлечение, впутывание; 2) (скрытый) смысл, значение
22. **incoming data**, *n* входящие данные  
**outcoming data**, *n* выходные данные

23. **interfere**, *v* 1) мешать, служить препятствием, помехой; 2) (in) вмешиваться, вторгаться; 3) надоедать, докучать; 4) сталкиваться, противоречить друг другу; 5) интерферировать
- interference**, *n* 1) вмешательство; 2) интерференция
24. **involve**, *v* 1) включать, содержать, подразумевать; 2) вызывать, приводить (к чему-л.); 3) вовлекать, втягивать; 4) привлекать к участию; 5) углубляться во что-л.
25. **long-term memory**, *n* долговременная память
26. **maintain**, *v* 1) поддерживать, сохранять; 2) содержать  
**maintenance**, *n* 1) поддержание; сохранение; продолжение; 2) содержание; средства к существованию
27. **maintenance rehearsal**, *n* механическое повторение (для сохранения информации в кратковременной памяти)
28. **mood convergence**, *n* эмоциональная конвергенция, конвергенция настроения
29. **mood-state-dependent memory** *n* память, зависящая от настроения и состояния
30. **overwhelm**, *v* 1) преодолевать; подавить; погубить, разорить; 2) овладевать, переполнять; 3) потрясать, поражать
31. **photographic memory** *n* фотографическая память
32. **primary effect**, *n* эффект первичности
33. **procedural**, *a* процедурный  
**procedural memory** *n* процедурная память
34. **process**, *v* подвергать обработке, обрабатывать, перерабатывать  
**processing**, *n* обработанный  
**processed**, *a* обработка, переработка
35. **recency effect**, *n* эффект вторичности, эффект новизны
36. **recollection**, *n* 1) память, воспоминание; 2) pl. воспоминания (memories)
37. **rehearse**, *v* 1) репетировать, тренировать; 2) повторять, перечислять
38. **repository**, *n* вместилище, хранилище, склад
39. **retain**, *v* 1) удерживать, сдерживать, поддерживать; 2) сохранять; 3) помнить, хранить в памяти  
**retention**, *n* 1) удерживание, сохранение; 2) способность запоминания
40. **semantic memory**, *n* семантическая память
41. **sensory memory**, *n* сенсорная память
42. **shift**, *v* 1) перемещать, передвигать; 2) менять, изменять; 3) переключать
43. **short-term memory** *n* кратковременная память
44. **superimposed**, *a* 1) наложенный; 2) впечатанный, дважды экспонированный

45. **transfer**, *v* 1) переносить; 2) передавать (информацию); 3) (**into**) преобразовывать, превращать  
**transfer**, *n* перенос, перенесение, перемещение
46. **voluntary control** произвольный контроль

**Exercise 1. Find in the text the explanation of the following terms and convey their meaning in your own words.**

Sensory memory, short-term memory, maintenance rehearsal, chunking, long-term memory, procedural memory, episodic memory semantic memory, automatic encoding, attentional processing, elaborative rehearsal, photographic memory, flashbulb memories, mood convergence, mood-state-dependent memory.

**Exercise 2. Read and translate the sentences from the text paying attention to the use of the Complex Subject.**

1. There are two kinds of rehearsal and only one kind is likely to encode information in long-term memory 2. What is unusual about her description is not so much its amount of detail but the fact that she seems to be examining a visual image of the drawing that still lingers before her eyes. 3. After examining a complex picture for 10 to 30 seconds, these children appear to retain the image for at least a few more minutes. 4. This does not appear to be the case, however. 5. These youngsters seem able to retain the first of the images in eidetic storage long enough to superimpose it mentally on the second even when presentation of the second image is delayed. 6. Later that day or week, when you are again in a sad mood, you are likely to remember the unpleasant things that you experienced in a sad mood. 7. These individuals seem able to form sharp and detailed visual images that they can recall at will, even after substantial time has passed since the image was first encoded. 8. These are all very emotional experiences that people are apt to dwell on long after the actual occurrence. 9. This phenomenon, which is called mood convergence, means that you are more likely to attend to, encode, and recall information and events that are consistent with your present mood.

**Exercise 3. Suggest the Russian for:**

you realize that you did hear after all;  
 you can group facial features into the complex pattern of a face; he would not be able to carry on a conversation; without some kind of active mental effort;  
 if you were given a string of random numbers to remember; leaving room for still more information in short-term memory; before a brief distraction occurred;  
 the prior search for a pencil was entirely lost from his memory;  
 to transfer new information to what is called long-term memory with relative permanence;

you can perform a skill, even if you have not engaged in it for many months or years;  
 as the child enters adolescence;  
 detailed visual images that they can recall at will.

**Exercise 4. Answer the following questions on the text.**

1. What are the main kinds of memory?
2. How do you use sensory memory to recognize complex patterns?
3. What characteristics of short-term memory do you know?
4. How do long-term and short-term memories work together?
5. What does a free recall test show?
6. Can you remember the kinds of long-term memory?
7. What do you understand by automatic encoding?
8. Why may efforts at attentional encoding be unsuccessful?
9. Which events do flashbulb memories usually deal with?
10. What does the phenomenon which is called mood-state-dependent memory mean?

**Exercise 5. Arrange the following words in pairs of a) synonyms and b) antonyms:**

- a) to distract, to eliminate, to divert, to engross, to maintain, mark, to practice, to deal with, to convey, to remove, to retain, grade, to attend to, to rehearse, to capture, to transfer;
- b) short-term memory, to forget, incoming, to distract, to fail, primary effect, outcoming, long-term memory, to succeed, to capture, recency effect, to remember.

**Exercise 6. Add negative prefixes to the following words:**

related, effective, to place, to engage, encoding, capabilities, active, experienced, pleasant, certain.

**Exercise 7. Match each word in column A with the meaning in column B that suits it best.**

A	B
engross	continue to have or hold
interfere	done on purpose
recollect	break in upon (other person's affairs) without right or invitation
memory	call back to the mind
attention	cause to feel embarrassed or confused
deliberate	make easy
facilitate	take up all the time or attention of
overwhelm	change position or direction



retain power of keeping facts in conscious mind  
 shift act of directing one's thoughts to smth.

**Exercise 8. Write a review of the text in English.**

**Exercise 9. Below are some statements about three basic kinds of memory.**

**Indicate in each case which type is being described.**

		Sensory memory	Short-term memory	Long-term memory
1.	Stores information with relative permanence, often over a lifetime.	—	—	—
2.	The kind of memory you are using when you repeat the number 2485 over and over to yourself.	—	—	—
3.	Allows the second or so that is needed to determine if incoming information deserves further processing.	—	—	—
4.	Involves attending to information in sensory memory or attending to conscious thoughts and perceptions.	—	—	—
5.	Is thought to have unlimited capacity.	—	—	—
6.	Information can be placed in it by automatic encoding or by attentional processing.	—	—	—
7.	One way to hold things here for as long as you want is to engage in maintenance rehearsal.	—	—	—
8.	Is the repository of numerous episodic, semantic, perceptual, and procedural memories.	—	—	—
9.	Is responsible for the primary effect in a free recall test.	—	—	—
10.	Is responsible for the recency effect in a free recall test.	—	—	—
11.	One way to encode things here is to use elaborative rehearsal.	—	—	—

**Exercise 10. Speak on the topic “Different kinds of memory.”**

**Exercise 11. Read the text and fill in the gaps with the appropriate words given in the box.**

Flashbulb	attentional	episodic
mood-state	long-term	maintenance
convergence	encoding	sensory
short-term	procedural	automatic
association	elaborative	semantic
hormones		

As you are walking to the drugstore you pass an apartment with a “For Rent” sign in the window. The first type of memory this stimulus enters is known as (1) \_\_\_\_\_ memory. This kind of memory involves a momentary lingering of sensory information, even after a stimulus is removed. It gives you the second or so you need to determine if a particular stimulus deserves further processing. In this case, your attention is captured by the sign in the window, since you happen to be looking for an apartment to rent.

As you focus your attention on the sign, you are putting its information into what is called (2) \_\_\_\_\_ memory. This memory refers to the process of attending to information in sensory memory or of attending to your conscious thoughts and perceptions at any given moment. You read the sign and notice that underneath the words “For Rent” is a handwritten telephone number. You search your pockets for a paper and pencil to copy the number but discover you have neither. You know that if you want to remember the number later that day, you must transfer it to (3) \_\_\_\_\_ memory. The process of attending to new information, using old information to analyze or manipulate it in some fashion, and then storing the result in long-term memory is called (4) \_\_\_\_\_

As you walk on down the streets, still repeating the numbers to yourself, a man rushes out of a liquor store and nearly knocks you down. As you turn around to get a better look at him, he jumps into a waiting car. All you noticed clearly was that he was carrying a gun and a large wad of money. It flashes through your mind that you must be witnessing a holdup and you rivet your eyes on the car's license plate.

You realize that the license plate will not stay in short-term memory for very long, so you begin to repeat the numbers to yourself, a process called (5) \_\_\_\_\_ rehearsal. Your experiences of the last few minutes illustrate several of the different kinds of long-term memories a person can

form. First, your memories of the events that happened to you are called (6) \_\_\_\_\_ memories because they pertain to distinct episodes in your life. Episodic memories are usually encoded quickly and with little conscious effort, a process known as (7) \_\_\_\_\_ encoding. Forming long-term memories of the phone and the license plate, in contrast, requires more deliberate thought and attention. This type of encoding involves what is generally called (8) \_\_\_\_\_ processing. The numbers, moreover, are pieces of factual information that fall into the category of (9) \_\_\_\_\_ memories. You would be able to write down the numbers on a piece of paper as well as perform other skills because you have (10) \_\_\_\_\_ memories.

One way to keep the license number in short-term memory is by using maintenance rehearsal. One way to encode the license number into long-term memory is to form an (11) \_\_\_\_\_ between the number and something you already know. You can form new associations by using (12) \_\_\_\_\_ rehearsal.

Looking for an apartment has put you into a sad mood. Being in a sad mood means that you will especially notice things that are unpleasant and match your mood. This phenomenon is referred to as mood (13) \_\_\_\_\_. Later that day or week, when you are again in a sad mood, you are likely to remember the unpleasant things that you experienced in a sad mood. This phenomenon referred to as (14) -dependent memory.

If several months later your recollection of the holdup is extremely vivid, psychologists might say that you are experiencing something similar to a (15) \_\_\_\_\_ memory. A flashbulb memory typically involves events that are surprising, emotionally arousing, or very important in their consequences. One reason for the vivid recall may be that you hold thoughts of the incident in short-term memory for a long time. This repeated “replay” is a form of rehearsal. In addition, the release of certain (16) \_\_\_\_\_ associated with physiological arousal may help to make flashbulb memories unusually strong.

**Exercise 12. Retell the text above.**

**Exercise 13. Render the following text into English using your active vocabulary.**

*Память* — это запоминание, сохранение и последующее воспроизведение индивидом его опыта. Это одна из самых популярных психических особенностей человека. Именно *память* позволяет человеку быть тем, чем он является, действовать в окружающем мире, осознавать свое собственное «я», учиться, любить... Память начинается с того, что наши органы чувств принимают информацию, поступающую из окружающего

мира, а мозг производит ее запись в виде биохимических изменений в составе клеток, в виде электрических импульсов, которые циркулируют по нервным цепям. Впрочем, все, что сегодня можно об этом написать, — результат огромной исследовательской работы ученых многих специальностей и, тем не менее, все еще гипотезы.

В памяти существует и очистительный, а может быть, и разрушительный процесс — *забывание*. *Запоминать* можно быстро и медленно, много и мало. К *сохранению* предъявляют требования, которые верны по отношению к любому складу или архиву — хранить надежно и долго.

В отличие от *долговременной памяти*, для которой характерно длительное *сохранение* материала после *многократного* его *повторения* и *воспроизведения*, *кратковременная память* характеризуется очень *кратким сохранением* после *однократного* очень *непродолжительного восприятия* и немедленного *воспроизведения*.

**Exercise 14. Read and learn idioms based on the words “memory” and “mind”**

**1. commit something to memory** *make yourself remember something*

He never writes phone numbers down – he just commits them to memory.

**2. take a stroll/trip down memory lane** *remember some of the happy things you did in the past*

They went back to the place where they’d spent their honeymoon and took a stroll down memory lane.

**3. jog someone’s memory** *make you remember something*

The police are reconstructing the crime to try to jog the memory of possible witnesses.

**4. in/within living memory** *can be remembered by people still alive*

Streets lit by gas lamps are still within living memory.

**5. come/spring to mind** *immediately think of something*

I would like to get him a special birthday present, but nothing springs to mind.

**6. slip your mind** *forget about something*

I was going to ring her to wish her happy birthday, but it slipped my mind.

**7. bear/keep something in mind** *remember information when making a decision or thinking about a matter*

Bearing in mind that it was your first attempt, I think you did very well.

**8. your mind goes blank** *you can’t think of anything to say*

When I looked at the exam questions my mind went blank.

**9. cross your mind** *think about something for a short time*

Of course, I do not think you broke the window. The thought never even crossed my mind.

**10. out of sight, out of mind** *something you say which means that, if you do not see someone, you forget about them*  
Annie has not thought of her boyfriend since he went abroad. Out of sight, out of mind.

**Other idioms to the topic of “memory”**

**1. something is on the tip of your tongue** *you know it, but can't quite remember it*

Her name is on the tip of my tongue what is it?

**2. ring a bell** *think you have heard something before*

Jill's face rings a bell, but I do not think we have ever met.

**3. a train of thought** *a series of consecutive thoughts*

Oh no! I have just lost my train of thought.

**4. rack your brains** *think very hard*

I racked my brains, but could not think where I had left the book.

**Exercises 15. Complete each of these idioms with memory or mind.**

1. Out of sight, out of \_\_\_\_\_ .
2. The class reunion gave us a great opportunity for a trip down \_\_\_\_\_ lane.
3. I am sorry I forgot to post your letters. It just slipped my \_\_\_\_\_ .
4. You can't remember what you did last night? Let me jog your \_\_\_\_\_ .
5. Please bear me in \_\_\_\_\_ if you need someone to work on this project.
6. I was so embarrassed that my \_\_\_\_\_ just went blank.
7. In never crossed my \_\_\_\_\_ to tell Nigel about our meeting.
8. Streets full of horse-drawn carriages are still within living \_\_\_\_\_-just!
9. I wanted to give her a surprise, but nothing suitable came to \_\_\_\_\_ .
10. Try to commit your mobile phone number to \_\_\_\_\_ .

**Exercise 16. Complete each of these idioms.**

1. I do not think I know him, but his name rings \_\_\_\_\_ .
2. What is the word for it? I can't remember it. Oh dear, it is on \_\_\_\_\_ .
3. If I try, I should be able to remember the recipe for you. Let me rack \_\_\_\_\_ .
4. Try not to interrupt his train \_\_\_\_\_ .
5. My son is much more adventurous than I was. At his age the thought of travelling abroad alone would never \_\_\_\_\_ .

**Exercise 17. Complete each of this idioms with the correct form of a verb.**

I was told to speak for five minutes on the subject of elephants. A few ideas \_\_\_\_\_ (1) to mind and I reminded people a well-known fact that elephants have a very good memory. Then, after a minute or so my mind \_\_\_\_\_ (2) blank. I knew I'd read an article about elephants recently, but everything I'd read had \_\_\_\_\_ (3) my mind. I \_\_\_\_\_ (4) my brains, but nothing \_\_\_\_\_ (5) to mind. A friend \_\_\_\_\_ (6) my memory by calling out 'ears' from the back of the room, but soon I had completely dried up. If only my memory were as good as an elephant's!

**Exercise 18. Write an essay on one of the following topics.**

1. Sensory memory
2. Characteristics of short-term memory.
3. Kinds of long-term memory
4. Types of encoding.
5. Flashbulb memories.

**Text 2**

**RETRIEVAL FROM LONG-TERM MEMORY**

*A television station showed a short film of a young woman walking down a hallway. Suddenly, a man in a brown leather jacket jumped out of a doorway, ran toward the woman, grabbed her purse, and knocked her down. As the assailant ran away, his face was visible for several seconds. The entire film lasted 12 seconds. TV viewers were asked to look at a lineup of six men to decide if the assailant was among them, and if so to pick him out and call in the correct choice to the station. Of the more than 2,000 viewers who called in to identify the assailant, only a small proportion (14 percent) were correct. The remaining 1,800 viewers identified the wrong man.*

Why did so many people identify the wrong man as the assailant? Before we answer this question, let's see how many details you can recall. Without looking back at the description above, answer the following questions:

1. What was the color of the mugger's coat?
2. Where had the mugger been hiding?
3. The mugger knocked the woman down. (yes / no)
4. The film lasted for 30 seconds. (yes / no)

Questions 3 and 4 ask you to retrieve information from long-term memory through a process called **recognition**. In recognition, you basically decide whether a particular stimulus “matches” what you have in memory. Is knocking the woman down part of the original memory you formed of this mugging? If so, you will recognize this statement as correct. Picking an assailant out of a police lineup also involves recognition because the witness simply

has to match one of the faces that are presented with the face stored in long-term memory.

Questions 1 and 2, in contrast, do not present you with stimuli you may have seen before. Instead, these questions require you to search through long-term memory and find specific pieces of information. This process is called recall. Recall is generally more difficult than recognition because it entails an extra step. Before you can decide whether an answer “matches” the correct one, you must first retrieve a possible answer of some kind. What color was the mugger’s coat? Was it black? ... No. Brown? Yes. You may have noticed this difference between recall and recognition yourself. Most students find that fill-in-the-blank tests (recall) are harder than true-false or multiple choice (recognition).

### **HOW IS MEMORY ORGANIZED?**

*Donald Norman, a cognitive psychologist, was taking a shower in a motel room in Champaign, Illinois. In the middle of his shower, he remembered the name of the store in his hometown city of San Diego where he could buy trays to hold his slides. How is his memory organized so that he could go from taking a shower in Illinois to recalling a particular store in San Diego? If we asked this question in a more general way, it would be “How did Norman recall things from long-term memory?” By examining Norman recall process, you will get a glimpse into one way that long-term memory might be organized.*

Norman’s recall process began with his taking a shower. As his thoughts wander, he thinks of a party he was at in a house he visited during a tour and the house contained a smoke detector which needed batteries which he had searched for in San Diego in a department store which also sells trays for slides. Notice how he jumps from one concept – which can be a thought, image, or idea – to another concept. Each concept in this chain is referred to as a node. At first, his jump from one node to another seems haphazard. However, as Norman planned in his book, he jumped from *party-node* to *house-node* to *tour-node*, and so forth, because he has personal associations between the particular nodes. By following his personal associations between a series of different but related nodes, Norman was able to recall a particular store in San Diego while taking a shower in Champaign, Illinois.

Norman’s example illustrates one of the more popular theories of how long-term memory is organized. According to this theory, called the semantic network model, concepts are represented by nodes and there are connections or associations between the related but different nodes. Now though experts are still not sure exactly how information is organized in long-term memory, many psychologists believe that some type of semantic network is involved.

If you have difficulty retrieving items from long-term memory, the semantic network model has some good advice. You will be more likely to retrieve information if you have encoded the information with many associations. That is, you will be more likely to recall a particular concept such as mood convergence, if you encoded this concept by associating it with an old concept. For example, you might recall a particular time you were in a bad mood and associate this experience with the term mood convergence. Or, you can make up new associations. You might imagine a moving van called “mood convergence” which carries emotional experiences. By encoding the term mood convergence with many associations you will have many retrieval cues to recall the term from long-term memory. On the other hand, if you just write the term down in your notes, repeat it to yourself without any other associations, you will have very many retrieval cues and may find the term difficult to recall.

If you want to be able to retrieve information efficiently, you should encode it with as many associations as possible, thereby linking it to many nodes. Forming associations between new and old information is exactly what happens when you create visual images, wonder about implications, think up concrete examples, and rephrase or outline information. Let’s look at some very practical suggestions about how to encode information with many retrieval cues.

### ***Mnemonic Techniques***

#### **Improving Recall of Individual Facts**

Like most people, you have probably found it difficult, at one time or another, to remember phone numbers or people’s names. If you were to take a memory course, you would probably learn one of several proven methods for remembering such things. These methods, called **mnemonic** (nee-MON-ik) **devices**, help you store and retrieve facts better by providing organization for your encoding.

One of the easiest ways to encode fairly long numbers is through chunking. As you may recall, **chunking** involves grouping a number of items into a unit that is then processed as a whole. For instance, if you wanted to remember the number 6524518, you could divide it into three chunks: 65,245,18. These three chunks would be easier to encode than seven separate digits. In addition, you could try to think of an association for each of the chunks you had created. For example, you might think to yourself “65, the year I was born; 2:45, the middle of the night; 18, my age at graduating from high school.” These associated thoughts will later serve as retrieval cues when you want to recall the numbers.

If you think this technique sounds too simple to be very effective, consider a study in which memory researchers worked for several years with a college student of average intelligence. They gave him repeated practice in the recall of random numbers until after 20 months he was able to remember a string of up to eighty digits presented at the rate of one every second! How did he do it? By means of clever chunking and association. The student was an accomplished long-distance runner, and he hit upon the scheme of categorizing digits whenever possible according to running times. Thus, he would encode the sequence 3492 as “3 minutes and 49.2 seconds, near the world record mile time.” Several additional similar strategies give him his remarkable powers of recall.

Memory experts have also devised a number of techniques to help people memorize lists of terms. One of these, called **the method of loci**, allows you to encode and retrieve information in a certain order. First, you must memorize a series of places (*loci* in Latin means “places”), such as buildings along a certain street or places you encounter on a walk through your apartment. It is important to visualize and learn these locations in a specific order. Second, you must develop a vivid image for each of the items to be memorized. Suppose, for example, that you were memorizing the American presidents in order of their terms in office. You would have to associate each one with a vivid mental image of some kind. George Washington, for instance, might be pictured with his necktie caught in a washing machine. Once this series of images was formed, you would mentally place the image of each president in one of your memorized places, working from first to last. If the first location on your list was the front door of your apartment, you would place George Washington, straining to free his tie from the washer, at the door. The forty other presidents would be placed in your other locations in the correct order. Later, to recall the presidents, you would simply take an imaginary stroll through your apartment and note the image stored in each of your special places.

A mnemonic device that serves much the same purpose as the method of loci is the **pegword system**. It required that you memorize a set of number-word rhymes, which act like pegs on which other ideas can be hung. Commonly used pegwords are: one is a bun; two is a shoe; three is a tree; four is a door; five is a hive; six is sticks; seven is heaven; eight is a gate; nine is a line; and ten is a hen. Your next step would be to associate each of the terms you wanted to memorize with one of the pegwords. For instance, if you wanted to remember to pick up coffee, bread, potatoes, milk, eggs, and breakfast cereal at the store, you might picture a bun being dunked in a steaming cup of coffee, a loaf of French bread protruding from the inside of a shoe, clusters of potatoes growing on a tree, and so forth. When you get to the store, you would then re-

trieve your list of pegwords and the associated images.

Both the method of loci and the pegword system are time-consuming to learn, but each is very effective for retrieving lists in a specific order. One individual, using the method of loci, could remember a list of fifty words backward and forward even fifteen years after he first stored it in long-term memory. There have also been many cases of “ordinary” people developing impressive memory skills using these mnemonic devices. Apparently, most of us could improve our memories greatly if we took the time to improve our methods of encoding information.

### **The Use of Visual Imagery**

You probably noticed that both the method of loci and the pegword system depend not just on forming associations but also on creating visual images. Research shows that people can remember verbal material better if they can relate the words to be learned to visual images of some kind. When two or more words must be remembered together, interactive images appear to be most effective. By **interactive images**, psychologists mean mental pictures where the key elements involved are somehow actively related. In one study, for instance, some students were asked to remember pairs of nouns by creating interactive images. If given the noun pair apple-clock, for example, they might imagine a large red apple with the hands of a clock extending from it. Other students were asked to remember the same noun pairs, but without forming interactive images. At the end of the learning session, those who had employed interactive images recalled about 50 percent of the noun pairs, compared with a recall rate of only about 10 percent among those who had not used such imagery.

These findings suggest that a good way to remember a name and the face that goes with it is to make up an interactive image between the two. If you are trying to remember a woman named Price, for example, you might picture her with a price tag attached to one ear. Or if you are trying to remember a man by the name of Barber, you might visualize him leaning against an old-fashioned barber pole.

One reason that visual images serve as such good memory aids is because they create distinctive associations. Researchers Mark McDaniel and Gilles Einstein asked students to remember three words – dog, bicycle, and street – using bizarre associations, like “The *dog* rode the *bicycle* down the *street*” or common associations, like “The *dog* chased the *bicycle* down the *street*.” They found that bizarre associations made the words more distinctive, and thus easier to remember. Mc Daniel, Einstein, and other researchers

have concluded that it is *the distinctiveness* of associations, rather than their bizarreness, that leads to better recall of information.

## REASONS FOR FORGETTING

### Selective Attention

If you look at the picture of several roubles and try to decide which is the correct one, you will find this task quite difficult. Although you have looked at coins thousands of times, you have never paid attention to the details of the coin and so cannot remember precisely how a rouble is designed. The process of attending actively to only some of the information received by one of our senses is called selective attention. Without selective attention, we would soon be overwhelmed by sensory data. But as we attend selectively to some details, others are forgotten. Selective attention probably explains much of the forgetting of the mugger's face in the TV film we mentioned earlier. The viewers' attention was probably captured by the dramatic actions of the attacker, making it unlikely that they would process his features well enough to remember them later.

### Interference

When Marigold Linton regularly tried to remember her personal experiences, she found that she slowly but steadily forgot almost a third of the events she had considered memorable enough to record in a file six years earlier. One reason for her forgetting was a kind of confusion called interference, in which old memories become blended with new ones similar in content. For example, after Linton ate at a new restaurant, she was unable to remember a restaurant she ate at three weeks before. When new information interferes with previously learned information, it is called *retroactive interference*.

In addition, the more professional conventions Linton attended and the more colleagues she met, the more difficulty she had in remembering the names of new colleagues. When old information interferes with the learning of new information, it is called *proactive interference*. Psychologists think that proactive and retroactive interference are common causes of forgetting.

### Inadequate Retrieval Cues

We have all had this problem. Where do you hide something valuable so that it will be in a safe location but one that you will certainly remember? I remember hiding the key to my safety deposit box in a very unlikely location, but one I was sure I would remember. Six months later, when I needed the key, I could not remember the unlikely location that I thought I would never forget. A study by Winograd and Soloway reports that I made a common mistake. One group of students was asked to hide objects by putting them in common places. A second group was asked to hide objects by putting them in unusual places. When asked, the students reported that they would surely remember the unusual places. However, when they were asked later to

recall where the objects were, students remembered the locations of more objects hidden in common places than in unusual places. One of the reasons that we forget unusual hiding places is that we do not have enough retrieval cues, which, as we noted earlier, are associations between new and old information. Just as lack of retrieval cues keeps us from remembering where we hid something, a similar lack of cues may interfere with our remembering a name or some information that we are sure we know. This frustrating experience, which is called the **tip-of-the-tongue phenomenon**, is thought to result from having too few retrieval cues. In many cases, it is our lack of retrieval cues that causes us to forget terms, formulas, concepts, dates, and other information. Remember that you can increase retrieval cues by using visual images, concrete examples, mnemonic devices, or by rephrasing and outlining.

### Repression

Suppose your grades were suffering and you decided to keep track of how much time you actually spend studying. Unknown to you, a psychologist was secretly observing and keeping track of your study time. At the end of a week, your record showed that you studied an average of four hours a day. The psychologist's record showed a much daily average of only two hours. One reason for this discrepancy might be a process called repression. According to Sigmund Freud, repression occurs when feelings or information that is threatening to our self-concept is prevented from reaching consciousness. Because these threatening occurrences do not reach consciousness, they are not remembered. In our example, you may want to protect your self-concept of being a good student by repressing the knowledge that you are often either watching television or partying when you should be studying.

### Test Anxiety

For some students, taking an exam creates so much distress that they are unable to remember material that they have studied. This problem, known as **test anxiety**, can be so severe that the student's mind "goes blank" during an exam. Researchers have found that a combination of treatments, rather than a single treatment, decreases test anxiety and improves test performance. Students with test anxiety need one program to decrease their feelings of psychological arousal (heart pounding, dry mouth, sweaty palms), a second program to improve their study skills, and a third program to decrease negative self-statements that increase worrying.

To decrease physiological arousal, psychologists taught students to relax their muscle groups, beginning with their toes and working up to their heads. This technique, called *progressive relaxation*, must be practised about 20 to 30 minutes a day for a week or two. Students were then taught study strategies, such as setting study goals, managing time, taking notes, studying for and taking tests. The last program, aimed at eliminating negative self-

statements, presented students with examples of irrational beliefs – such as “I’m a failure for doing poorly on an exam” – that might lead to feelings of worthlessness and heightened anxiety. The students were encouraged to substitute rational beliefs, like “If I don’t study enough, I probably won’t do well.” Students who completed only one of these programs reported less anxiety but did not necessarily perform better on exams. Those who completed all three programs, however, reported less anxiety and, more important, performed significantly better on exams.

Let’s next look at a situation in which forgetting may have very important social consequences.

### **Eyewitness Testimony**

Several years ago a series of armed robberies occurred in the Wilmington, Delaware, area. The robber was dubbed the “gentleman bandit” because of his very polite manners and well-groomed appearance. The police had few leads on the gentleman bandit until a local citizen informed them that a Roman Catholic priest Father Bernard Pagano, looked remarkably like the sketch of the robber being circulated in the media. Seven eyewitnesses positively identified Father Pagano as the culprit. At *his* trial, the case against him seemed airtight. But at the last minute another man, Ronald Clouser, stepped forward and confessed to the robberies. He knew details about them that only the true gentleman bandit could have known. The case against Farther Pagano was dropped immediately and Clouser was charged with the crimes.

It’s a wonder how this case of mistaken identity could possibly have happened. Ronald Clouser is shorter than Farther Pagano, fourteen years younger, and not nearly as bald. Their facial features are dissimilar. Why, then, did seven eyewitnesses say with certainty that Farther Pagano was the robber they had seen?

The explanation has to do with how the witnesses were questioned. Before showing pictures of suspects to witnesses, the police apparently had suggested the possibility that the robber was a priest. Since Farther Pagano was the only suspect wearing a clerical collar, the witnesses concluded that he must be the robber. As a result, their recall was influenced, and they began to focus on the few similarities Farther Pagano had to the real robber. Soon they were remembering him as the person who had committed the holdups.

In a series of clever experiments, Elizabeth Loftus and her colleagues have shown that we are all susceptible to the same kinds of memory distortions. In one experiment, for instance, subjects watched a film of an automobile accident and then were asked questions about it. One of the questions the experimental subjects were asked contained a false piece of information: “How fast was the white sports car going when it passed the ban while traveling along

the country road?” In fact, no barn was shown in the movie. But for many of the experimental subjects, this very plausible suggestion was enough to cause them to infer the existence of one. When asked a week later about the film, over 17 percent of them answered “yes” to the question “Did you see a barn?” In contrast, only about 3 percent of control subjects answered “yes” to the same question.

In another series of experiments, Loftus asked subjects to estimate the speed of two cars involved in an accident. The wording of the question differed in only one verb. Some of the subjects were asked, “How fast were the cars going when they contacted?” For others, the verb “contacted” was replaced with “hit,” “bumped,” “collided,” or “smashed.” Estimates of the speed of the cars increased with each verb, “contacted” producing the lowest estimates and “smashed” the highest. Based on many such studies, Loftus and others have concluded that information introduced at the time of questioning a witness can prompt inferences that actually alter the original memories. Furthermore, a person’s confidence about the accuracy of a recollection is *not* a good barometer of how correct the memory actually is. As the case of Farther Pagano illustrates, eyewitnesses can be absolutely confident and yet be absolutely wrong.

Not only can witnesses be influenced by misleading questions, they can also be swayed by misleading visual information. Felicity Jenkins and Graham Davies showed subjects a film of a staged shoplifting crime and asked them to remember the face of the shoplifter. Next, one group of subjects saw a police artist’s composite drawing of the shoplifter on which a moustache had been added. A different group saw a composite drawing on which the shoplifter’s hairstyle had been changed. Finally, subjects were asked to pick out the composite drawing of the shoplifter they saw in the film. Subjects who had been shown a “doctored” drawing of the shoplifter made significantly more errors than a group that was not shown the misleading visual information. The implications of this study are clear: misleading visual information may distort eyewitness testimony in the same way that misleading questions do.

Are children more susceptible to misleading information than adults? Stephen Ceci and his colleagues found that 3- and 4-year-old children were more susceptible than older children, and that children were more easily misled if the questions were asked by adults rather than other children. Other researchers have also found that children’s eyewitness testimony may be less reliable than adults’.

Psychologists have studied ways to make the interrogation of eyewitnesses more reliable. As the studies above indicate, the police should avoid asking misleading questions or showing misleading photos. Police should refrain

from pressuring witnesses to make “yes / no” decisions. Witnesses under pressure may be even more susceptible to misleading cues. Researchers also recommend that the standard police procedure of asking open-ended questions be replaced with a cognitive interview method. In the cognitive interview, witnesses are told to go back in their memory and reconstruct the environment in which the crime occurred. After asking the witnesses to report everything they can remember, the interrogators then ask them to recall the events in a different order and to envision the crime from a different perspective, such as adopting the role of a prominent character at the scene of the crime. According to researchers, the cognitive interview resulted in significantly more correct information than the standard police interview.

### THE PUZZLE OF AMNESIA

*A middle-aged man of normal intelligence has undergone radical brain surgery in an effort to control his frequent and severe epileptic seizures. After the surgery, he is given a number of psychological tests, including a game called the Tower of Hanoi. The game consists of three pegs plus five wooden blocks of different sizes, each with a hole in the center. At the start, the blocks are stacked in a pyramid on the left-hand peg. The object is to move all five blocks to the peg on the right. Only one block at a time can be moved, and it must be placed on one of the three pegs. In addition, no block can ever be put on a block smaller than itself. This man, who is known in medical journals as H.M., makes a few hesitant moves and announces: “I’m stuck. It can’t be done.”*  
*“Yes, it can,” says a watching scientist. “Just guess.” “H.M. makes a few more moves and then stops again. “I can’t do it,” he says. “Of course you can,” answers the scientist. “You’ve done this many times before.” H.M. is incredulous. “I have?” he says.*

### Kinds of Amnesia

H.M. is suffering from **amnesia**, a persistent total or partial forgetting of past experiences often due to some kind of brain disorder, but occasionally caused simply by severe psychological stress. The form of amnesia H. M. has is called **anterograde amnesia** because he has lost the ability to recall events occurring *after* his operation.

From brain-damaged patients like H.M. and others of this kind, we have learned about some of the brain structures involved in organically caused amnesia. One of these is the hippocampus, a part of the brain that lies below the temporal lobes of the cortex. H. M., for instance, had part of his temporal lobes removed, along with the hippocampus beneath them. From alcoholics who have engaged in years of heavy drinking, we have learned that brain structures linked to the hippocampus are also important for memory. Such people often suffer damage to these hippocampus-related regions. The damage causes them to display *Korsakof’s syndrome*, a disorder that includes the

inability to learn new information. From people who suffer from the form of senility called *Alzheimer’s disease* we have discovered the importance to memory of the neurotransmitter acetylcholine. Alzheimer’s patients show a loss of acetylcholine, and as the disease progresses, they lose all ability to form new memories. Finally, from people who have suffered severe blows to the head or concussions, we have learned that temporary injury to the brain may result in loss of memories immediately preceding the accident. This type of amnesia is called **retrograde amnesia**. Some scientists suspect that in cases of severe concussion, the blow disrupts the brain processes needed to consolidate memories into long-term storage. In cases of milder concussion, in contrast, retrograde amnesia may be only temporary.

### Where Are Memories Stored and How Are They Formed?

Mortimer Mishkin and his colleagues have been studying the location of memories in the brain for over 20 years. To understand where memories might be stored, the researchers removed different brain areas from monkeys and then tested the monkeys for memory deficits. Based on this study, Mishkin and Appenzeller reported that memories are formed and stored in at least six major and different structures in the brain.

Knowing that six different brain areas are involved in forming and storing memories helps us explain some of the behaviors of H. M., who lost the ability to transfer short-term semantic memories into long-term memories after his hippocampus was removed. According to Mishkin and Appenzeller, the hippocampus is one of the major areas involved in forming and storing semantic memories. However, H. M. retained the ability to remember events that happened before his surgery, and he also was able to form and store procedural or skill memories. This is because previously formed long-term memories, as well as skill memories, are located in areas other than the hippocampus. New research shows there are at least two broad types of memory circuits in the brain. One is devoted to fact memories – explicit information such as telephone numbers, dates, and faces – that can be rapidly learned and rapidly forgotten. The other, skill memory, is concerned with less conscious learning, ranging from simple motor skills to certain types of problem solving. Skill memories are learned by repetition and are hard to unlearn. They are not “remembered” except in the doing of them. Besides tracking down the brain areas responsible for storing and forming memories, researchers are studying exactly how memories are formed. One of the ways they study the formation of memories is by looking at how memories are formed in a very simple nervous system.

The sea slug is an ideal subject for studying the formation of memory because, even though it has only about 20,000 cells compared to our billions, it can form and store simple memories. For example, slugs can form and store the memory that a touch is associated with a shock, an example of classical



conditioning. After being classically conditioned, the slug's nervous system is explored for any chemical or structural changes that might accompany the formation and storage of memories. Researchers have also explored the nervous system of snails as well as tiny pieces of rat brain tissue which are removed and kept alive in petri dishes. From these studies, researchers have discovered that the formation of memories involves *structural* changes in the neuron, including changes in the amount of neurotransmitter secreted, as well as *chemical* changes, including changes, in the amount of enzymes needed to make neurotransmitters. Scientists assume that since snail, slug, and rat neurons are similar in structure and function to human neurons, human memories are formed through similar structural and chemical changes.

### Vocabulary

1. **amnesia**, *n* потеря памяти (амнезия)  
**anterograde** ~ – антероградная амнезия  
**retrograde** ~ – ретроградная амнезия
2. **anxiety**, *n* тревога, тревожность, беспокойство, боязнь, страх  
**anxious**, *a* (**heightened** ~ – повышенная тревожность) беспокоящийся, тревожащийся, волнующийся
3. **arousal**, *n* активация ц.н.с.
4. **bizarre**, *a* странный, эксцентричный (~ **associations** – странные ассоциации)
5. **blend**, *v* смешиваться, сливаться, объединяться  
**to be blended with** смешиваться с  
**blend**, *n* смесь, смешивание  
**blend**, *a* смешанный  
**blended**, *a* смешанный
6. **composite drawing**, *n* составной рисунок, части которого можно заменить
7. **converge**, *v* сходиться в одной точке, сводить воедино  
**convergence**, *n* конвергенция, сходимость
8. **cue**, *n* сигнал (**retrieval** ~ **s** – сигналы воспроизведения; **lack of** ~ **s** – отсутствие сигналов)
9. **device**, *n* прием, способ, схема, план  
**devise**, *v*, разрабатывать, придумывать (~ **a test** – составить контрольную работу)
10. **distinctive**, *a* четкий, определенный (~ **associations** – четкие ассоциации)  
**distinctiveness**, *n* четкость, определенность
11. **distress**, *n* дистресс, беда, страдание, боль

- distress**, *v* причинять страдание, боль; мучить
12. **disrupt**, *v* разрушать, разрывать  
**disruptive**, *a* подрывающий, разрушительный  
**disruption**, *n* подрыв, крушение, раскол  
**disrupt**, *a* разорванный, разрушенный
13. **entail**, *v* вызывать, влечь за собой, навлекать
14. **envision**, *v* представлять себе, предвидеть
15. **epileptic seizure**, *n* эпилептический приступ
16. **frustrating**, *a* фрустрирующий, разочаровывающий, создающий неверие в свои силы (~ **experience** – фрустрирующий опыт)  
**frustrate**, *v* фрустрировать, расстраивать, сводить на нет  
**frustration**, *n* фрустрация, расстройство, срыв, истощение нервной системы  
**frustrative**, *a* расстраивающий, разочаровывающий
17. **haphazard**, *a* случайный
18. **hippocampus**, *n* гиппокамп, аммонов рог (~ **related regions** – области, связанные с гиппокампом)
19. **image**, *n* мысленный образ, мысленное представление (**visual** ~ – зрительный образ; **vivid** ~ – яркий образ; **to create** ~ – создать образ)  
**image**, *v* изображать, отражать, воображать  
**imagine**, *v* воображать, представлять себе  
**imaginable**, *a* вообразимый, мыслимый  
**imaginary**, *a* воображаемый, мнимый, нереальный  
**imagination**, *n* воображение, фантазия  
**imaginative**, *a* обладающий воображением, образный, художественный
20. **inference**, вывод, заключение, предположение  
**infer**, *v* делать выводы, заключения; предполагать
21. **interactive**, *a* интерактивный, взаимодействующий, воздействующий друг на друга (~ **images** – интерактивные образы)
22. **irrational**, *a* иррациональный, неразумный, нелогичный противоречащий здравому смыслу (~ **beliefs** – нелогичные, неразумные убеждения)  
**irrational**, *n* неразумное существо; человек, лишенный здравого смысла; слабоумный  
**irrationality**, *n* иррациональность, неразумность, абсурдность
23. **link to**, *v* соединять, связывать, соединяться  
**link**, *n* звено (цепи), связь (**a ~ in a chain of evidence** – звено в цепи доказательств)
24. **location**, *n* местоположение (**unlikely** ~ – маловероятное местоположение)  
**locus** (*pl.* **loci**) локус, *лат.* местоположение; место, точка или орган

25. **method of loci** метод «местоположения» (установление связей между запоминаемыми объектами и их мысленным размещением в воображаемом знакомом пространстве)
26. **mislead**, *v* вводить в заблуждение  
**misleading**, *a* вводящее в заблуждение, уводящее в сторону (~ **questions** – уводящие в сторону вопросы; ~ **cues** – неверные сигналы; ~ **visual information** – неверная зрительная информация)
27. **mnemonic device**, *n* мнемонический метод (совокупность правил и приемов, помогающих запомнить информацию)
28. **node**, *n* узел, пункт
29. **network**, *n* сеть
30. **neurotransmitter**, *n* нейротрансмиттер
31. **outline**, *n* набросок, схема, очертание (~ **of information** – информация в общих чертах)  
**outline**, *v* наметить в общих чертах
32. **open-ended**, *a* незаконченный, открытый (~ **question** – открытый вопрос)
33. **peg**, *n* крючок, вешалка, колышек
34. **pegword system**, *n* система «пегверд», основанная на наборе рифмованных словосочетаний; метод «нанизывания» образов
35. **proactive**, *a* проактивный (~ **interference** – проактивная интерференция)
36. **proven**, *a* доказанный (~ **method** – доказанный метод)
37. **random**, *a* случайный, взятый наобум, наугад (~ **numbers** – числа, взятые наугад)  
**random**, *n at* ~ – наобум, наудачу (**chosen at** ~ – выбранные наудачу)
38. **recall**, *n* воспроизведение, воспоминание, память (**past /beyond/** ~ окончательно забытый, не восстановимый в памяти)  
**recall**, *v* вспоминать, припоминать, воспроизводит (**to** ~ **old faces** – вызывать в памяти старые лица; ~ **to mind or to one's memory** – воскрешать в памяти)  
**recall rate**, *n* скорость припоминания  
**recall process**, *n* процесс вспоминания, воспроизведение
39. **recognition**, *n* узнавание, опознавание, осознание (~ **of danger** – осознание опасности)  
**recognize**, *v* узнавать, опознавать, осознавать
40. **refrain from**, *v* воздерживаться от, сдерживать
41. **remove**, *v* удалять, перемещать, убирать  
**removal**, *n* перемещение, устранение  
**removable**, *a* передвижной, сменяемый, устранимый

42. **repress**, *v* подавлять, сдерживать, обуздывать  
**repression**, *n* подавление; вытеснение (**conscious/unconscious** ~ – сознательное / бессознательно подавление)  
**repressive**, *a* репрессивный (~ **measures** – репрессивны меры)
43. **retrieving**, *v* извлечение из памяти, воспроизводство (~ **item** – единица воспроизводимой информации)  
**retrieve**, *v*, восстанавливать в памяти, воспроизводить
44. **retroactive**, *a* ретроактивный (~ **interference** – ретроактивная интерференция)
45. **selective**, *a* селективный, избирательный (~ **attention** – избирательное внимание)  
**select**, *v* отбирать, проводить отбор  
**selected**, *a* отобранный, выбранный  
**selection**, *n* отбор, подбор, набор, селекция
46. **semantic network model** модель семантической сети
47. **temporal**, *a* височный (~ **lobes** – височные доли)
48. **test anxiety** тестовая тревожность, боязнь экзамена, предэкзаменационное волнение
49. **time-consuming**, *a* требующий больших временных затрат
50. **tip-of-the-tongue phenomenon** явление «на кончике языка» («вертится слово на кончике языка», но не вспоминается)

**Exercise 1. Translate the following sentences into Russian paying attention to your active vocabulary.**

- There are known different types of amnesia – anterograde amnesia and retrograde amnesia.
- Mnemonic devices help you store and retrieve facts better.
- Method of loci allows you to encode and retrieve information in a certain order.
- By interactive images, psychologists mean mental pictures where the key elements involved are actively related.
- Without selective attention we would never remember the details of some information.
- According to the theory, called the semantic network model, concepts are represented by nodes and there are associations between the related but different nodes.
- Progressive relaxation is a technique to decrease students' ti anxiety.
- When we can't remember a name or some information that we are sure to know we have the so-called tip-of-the-tongue phenomenon.
- Retrieval cues are associations between new and old information.
- The process of retrieving information from long-term memory is called recognition.

**Exercise 2. Translate the following sentences into English using the indicated words from the vocabulary list.**

**devise** 1. Эксперты в области памяти разработали целый ряд методов для запоминания большого количества терминов.

**method of loci encode retrieve** 2. Один из таких методов, именуемый «методом местоположения», позволяет кодировать и извлекать из памяти информацию в определенном порядке.

**mnemonic device pegword system** 3. Одним из мнемонических приемов, который служит той же цели, что и «метод местоположения», является использование «системы пегверд».

**hippocampus temporal lobes** 4. Гиппокамп – это часть мозга, расположенная ниже височных долей.

**visual image** 5. И «метод местоположения», и «система пегверд» основаны не только на образовании ассоциаций, но и на создании зрительных образов.

**composite drawing** 6. Составной рисунок – это один из приемов, используемых для опознания преступника.

**bizarre** 7. Исследователи обнаружили, что странные ассоциации делают слова более четкими и, таким образом, более легкими для запоминания.

**repression** 8. По З. Фрейду подавление возникает тогда, когда информация, угрожающая нашему самосознанию, не допускается в сознание.

**test anxiety** 9. Тестовая тревожность – это состояние тревожности, вызванное тестовой ситуацией; неспособность сконцентрироваться на тестовых заданиях.

**recall recognition** 10. Воспоминание вообще сложнее, чем узнавание, поскольку требуется дополнительное усилие.

**interactive images** 11. Под интерактивными образами психологи подразумевают умственные картинки, где все ключевые элементы активно взаимосвязаны.

**distress** 12. Для некоторых студентов сдача экзаменов представляет собой такое страдание, что они не в состоянии вспомнить материал, который выучили.

**Exercise 3. Express your opinion on the following questions.**

1. Do you know any mnemonic devices or special methods which can help you remember things better?
2. What are the reasons for forgetting to your mind?
3. Does your mind “goes blank” during an exam?
4. What are your ways of overcoming the nervousness before a test?
5. Have you ever heard the term “amnesia?”
6. What do you think can cause amnesia?

**Exercise 4. Arrange the following words in pairs of a) synonyms b) antonyms.**

- a) to recall, device, location, loss of memory, method, amnesia, to retain, to retrieve, cues, to disrupt, locus, to memorize, a chunk, signals, to bump, a huge piece of smth., to hit, interference, to destroy, intervention;
- b) forgetting, an accomplished (runner), distinctive, adequate, recollection, indistinctive, unexperienced (runner), inadequate, anxious, incredulous, confusion, rational, trustful, order, irrational, to precede, abstract, concrete, to follow, unanxious.

**Exercise 5. Define how the following words are formed, what parts of speech they belong to and translate them into Russian.**

Retrieving	rephrase	time-consuming
recognition	temporary	retroactive
cognitive	chunking	irrational
distinctiveness	pegword	procedural
incredulous	unusual	heightened
consciously	processing	decrease

**Exercise 6. Here is a list of some of the factors that can cause forgetting. Match each one with its description.**

1. Retrograde amnesia
  - a) \_The eyewitness is being questioned by the police about a crime. The police have a suspect in mind and ask questions that fit their suspect. The eyewitness looks at a lineup and picks out the police’s suspect, who later turns out to be innocent.
2. Selective attention
  - b) \_Your previous course in biology makes it difficult for you to learn the terms in the physiological psychology class you are presently studying.
3. Proactive interference
  - c) \_You go to the large parking lot where you left a rented car and realize that all you remember was that the car was red.
4. Anterograde amnesia
  - d) \_A woman is in a car crash and, after recovering from the accident, she cannot remember events right before the crash.

5. Test anxiety e) \_After studying for a psychology test, you realize that you have forgotten many of the terms you learned previously for a history test.
6. Repression f) \_When taking an exam you become so worried, aroused, and upset that you have difficulty remembering the material.
7. Retroactive g) \_Because of a tumor, a person has an interference part of her brain removed. After the surgery, she had great difficulty forming new long-term memories.
8. Misleading questions h) \_You see yourself as a very friendly, considerate person. However, your friend notices that when you meet someone new, you tend to be unfriendly. When your friend asks you about your unfriendliness to strangers, you can't remember being that way.

**Exercise 7. Fill in the blanks with the verbs to recall, to memorize, to retrieve, to remember in corresponding forms, translate the sentences from English into Russian, find them in the text.**

- Questions 3 and 4 ask you \_\_\_\_\_ information from long-term memory
- By following his personal associations between a series of different but related nodes, Norman was able \_\_\_\_\_ a particular store in San Diego.
- You will be more likely \_\_\_\_\_ information if you have encoded it with many associations.
- You have probably found it difficult \_\_\_\_\_ phone numbers or people's names.
- Memory experts have devised a number of techniques to help people \_\_\_\_\_ lists of terms.
- When they were asked later \_\_\_\_\_ where the objects were, students \_\_\_\_\_ the locations of more objects hidden in common places than in unusual places.
- The pegword system requires that you \_\_\_\_\_ a set of number word rhymes.
- H.M. retained the ability \_\_\_\_\_ events that happened before his surgery

**Exercise 8. Are the following statements true (T) or false (F)?**

- Recall is generally more difficult than recognition because it entails an extra step.
- According to the semantic network model, concepts are represented by nodes and there are connections or associations between the related and similar nodes.
- Forming associations between new and old information is exactly what happens when you create visual images.
- One of the easiest ways to encode fairly long numbers is through chunking.
- Associating an image of each item to be remembered with one of the places in a previously memorized set of places is a mnemonic device called pegword system.
- The technique, called progressive relaxation, must be practised about 30 minutes to an hour a day for half a month.
- Psychologists have studied ways to make the interrogation of eyewitnesses more reliable.
- Korsakoff's syndrome is a disorder that includes inability to remember old information.
- Knowing that six different brain areas are involved in forming and storing memories help us explain some of the behaviors of people.

**Exercise 9. Read the text and fill in the gaps with the appropriate words given in the box.**

semantic	retroactive	proactive
selective	mnemonic	anxiety
retrieval	neurons	brain
recall	pegword	misleading
anterograde	repression	recognition
node	retrograde loci	chunking

As you stand in line to deposit your money at the bank, a man runs past holding a gun and a bag of money. You were one of a dozen people who had witnessed a bank robbery. Later, police will ask you questions about the robbery.

When you search for and retrieve a specific piece of information about the robbery it is called (1) \_\_\_\_\_. When you retrieve information by matching the robbery's gun with ones the police show you, it is called (2) \_\_\_\_\_.

In describing what you saw, your memory jumps from going to the bank, standing in line, thinking about an exam, seeing a man running, being afraid of a gun, and wishing you had put off going to the bank until tomorrow. According to one theory of how memory is organized, each of these concepts would be considered a (3) \_\_\_\_\_ among which you have personal associations. This theory is called the (4) \_\_\_\_\_ network model of memory. You will be better at retrieving information from long-term memory if you have many associations between the nodes.

If you have difficulty recalling exactly how the robber looked, it may be because this information was stored with very few associations or (5) \_\_\_\_\_ cues. Perhaps your attention was captured by the sight of a gun and you did not notice his face. This tendency to attend only to some of the information available to your senses is called (6) \_\_\_\_\_ attention. If being taken downtown and questioned by the Police disrupts your memory of how much money you deposited in the bank, this would be an example of (7) \_\_\_\_\_ interference, in which new information interferes with the recall of old information. If watching many police shows and robberies on television disrupted your memory of this particular robbery, this would be an example of (8) \_\_\_\_\_ interference, in which old information interferes with the learning of new information.

You forget that you tried to leave the bank before you answered questions about the robbery. Freud would say that your action of not helping may threaten your self-concept of being a responsible citizen and therefore this information is kept from consciousness through a process called (9) \_\_\_\_\_.

You are having trouble describing the robber to the police. The questioner keeps asking whether the robber had a beard. After a while you think the robber did have a beard, when in fact the robber was clean shaven. This would be an example of your eyewitness testimony being distorted by (10) \_\_\_\_\_ questions.

Later you hear that the robber's car crashed after a high-speed chase and the robber was knocked unconscious. When the robber woke up in the hospital later that day, he had no memory of the car crash. This is called (11) \_\_\_\_\_ amnesia, in which a blow or damage to the brain disrupts previously learned information.

In the bed next to the robber, there is a woman who had part of her brain removed because of a tumor. The woman was told about the bank robber and the high-speed chase. However, the next day she did not remember any of this

information. This is an example of (12) \_\_\_\_\_ amnesia, in which some form of brain damage interferes with the learning of new information. Although this woman could not remember new information about the robber, she had no difficulty learning how to operate the switches to control her hospital bed. Data like this suggest there are several kinds of long-term memories that are stored in at least six different areas of the (13) \_\_\_\_\_. The actual formation of memories involves both structural and chemical changes in (14) \_\_\_\_\_ in the brain.

Some students become so worried and physiologically aroused when they take a test that they cannot remember or think clearly. This problem, called test (15) \_\_\_\_\_, can be helped through a combination of programs that teach relaxation, study skills, and elimination of negative self-statements.

Techniques that help people store and retrieve facts by providing strategies for organizing and encoding information are called (16) \_\_\_\_\_ devices. For example, if you memorized the number 16411543 by forming two groups of 1641 and 1543, you would be using a technique called (17) \_\_\_\_\_. If you had to learn a list of items in a specific order, you might use the method of (18) \_\_\_\_\_ or the (19) \_\_\_\_\_ system.

#### **Exercise 10. Retell the text above.**

#### **Exercise 11. Answer the questions using your active vocabulary.**

1. What is the difference between recall and recognition? Which is easier?
2. Should you always believe an eyewitness?
3. How is memory organized?
4. What can you say about the semantic network model?
5. What should you do to retrieve information efficiently?
6. What mnemonic devices help you store and retrieve facts better?
7. How can you improve your recall of numbers?
8. What will help you remember lists of facts?
9. What do psychologists mean by interactive images?
10. What kind of associations do visual images create?
11. Without what kind of attention would we be overwhelmed by sensory data?
12. What is the difference between retroactive and proactive interference?
13. What is "repression" according to Sigmund Freud?
14. What combination of treatments decreases test anxiety and improves test performance?
15. How reliable is eyewitness testimony?
16. Could you be influenced by misleading information?
17. Who is more susceptible to misleading information children or adults?

18. What kinds of amnesia do you know?
19. Is it possible that someone really remembers almost nothing?
20. Where are memories stored and how are they formed?

**Exercise 12. Prove that the following statements are true.**

1. Mnemonic devices help you store and retrieve facts better by providing organization for encoding.
2. Visual images are good memory aids.
3. Selective attention probably explains much of the forgetting of some facts.
4. It is easier to remember the locations of more objects hidden in common places than in unusual places.
5. Students with test anxiety need more than one program to decrease their feelings of physiological arousal.
6. Witnesses can be influenced both by misleading questions and misleading visual information.

**Exercise 13. Express your opinion on:**

- why Donald Norman was able to recall a particular store in San Diego while taking a shower in Champaign, Illinois;
- how a college student of average intelligence managed to remember a string of up to eighty digits presented at the rate of one every second;
- why the more Marigold Linton attended professional conventions and the more colleagues she met, the more difficulty she had in remembering the names of new colleagues;
- how it happens that eyewitnesses can be absolutely confident and yet be absolutely wrong;
- who suffers from amnesia;
- why H.M. retained the ability to remember events that had happened before his surgery and was able to form and store skill memories.

**Exercise 14. Translate the following text into Russian and be ready to discuss it.**

**Beating Exam Nerves**

It was the psychologists Yerkes and Dodson who first demonstrated that high levels of anxiety cause disorganized behavior and have a negative affect on performance. Some 80 years later, it seems incredible, therefore, that students are still not emotionally prepared for exams.

Of the seven “*How to Pass Exams*” books which we reviewed for this article, six were rejected because apart from rather obvious advice like “read the questions carefully” or “eat a good breakfast,” they seemed to have little

to offer. Only one, “*Maximizing Exam Performance: A Psychological Approach*” by Don Davis, a principal lecturer and former examiner for Birmingham University, looked at the question of why performance in exams is not necessarily related to ability and why good students occasionally do badly.

Before progressing any further, however, it’s worth saying that the advice Davis offers is only useful for overcoming anxiety about exams. He does not offer a substitute for knowing your subject, only practical suggestions for those who know they react badly to stressful competitive situations.

The outcome of his book is extremely encouraging. As anxiety reactions are learned from past experiences, he says, so they can be unlearned. Ability to perform well under pressure is a skill that can be acquired. A technique proposed by Davis is to learn “positive self-talk.” He suggests replacing such sentences as “I never have any luck with the question” and “I’m hopeless at exams” with “Now I know how to relax I shall do better” or “I’m gaining confidence every day.” Every time you hear yourself making one of those negative statements in your mind, he says, replace it with a positive one, until it becomes an automatic response.

Davis also suggests that as uncertainty can cause anxiety, we should keep uncertainty about the event to a minimum. As well as checking the date, time and duration of the exam, check out the location of the exam and become familiar with the place, if possible. As far as study is concerned, the more skilled you become at answering exam questions, the less likelihood there is of your performance breaking down on the Big Day. Doing your own practice tests, sticking rigidly to actual procedures, particularly time limits, makes exams lose some of their strangeness and therefore their stress.

These and other techniques, including simple methods of relaxation, are described in detail in Davis’s book. The author promises that after 10 years of using them on his own undergraduates, they do work if practised regularly.

They may not be a substitute for study but they do offer a more positive approach to overcoming exam nerves than simply watching television. And if this book helps just one of our readers to improve their exam performance, then the money we spent on the six discarded books was well worth it!

**Exercise 15. Render the following text into English using your active vocabulary.**

**ИНТЕРФЕРЕНЦИЯ**

Понятие *интерференции* лежит в основе ряда психологических теорий забывания.

В зависимости от последовательности заучиваемого материала различаются *ретроактивная* и *проактивная интерференции*.

Чаще всего *интерференция* возникает тогда, когда одни и те же воспоминания ассоциируются в памяти с одинаковыми событиями и их появление в сознании порождает одновременное припоминание конкурирующих (интерферирующих) событий.

*Интерференция* нередко имеет место и тогда, когда вместо одного материала заучивается иной, особенно на стадии запоминания, где первый материал еще не забыт, а второй недостаточно хорошо усвоен. Например, когда запоминаются слова иностранного языка, одни из которых еще не отложились в долговременной памяти, а другие в это же время только начинают изучаться.

### Exercise 13. Read and learn idioms describing behavior to yourself and others

1. **look right/straight through someone** *behave as if you do not see someone either because you do not notice them or because you are ignoring them*

Ann often looks straight through you, but I think it may be because she's short-sighted.

2. **leave someone in the lurch** *leave someone at a time when they need you to stay and help them*

I'm sorry I'm leaving you in the lurch but I've got to get to a meeting by 10 a.m.

3. **give someone a hard/rough/tough time** *make things difficult for someone*

The teacher will give you a rough time if you don't finish the book.

4. **keep a lid on something** *control the level of something in order to stop it increasing*

Rolf's been trying to keep a lid on his emotions, but every now and then his anger erupts.

5. **let (yourself) go** *either take less care of your appearance or relax completely and enjoy yourself*

Sophie used to be so elegant, but now she's really let herself go.

6. **blow something out of (all) proportion** *behave as if something that has happened is much worse than it really is*

The newspapers have blown the dispute out of all proportion.

### Exercise 14. Read the story and pay attention how attitudes towards events are expressed with the help of idioms.

When we got to our holiday destination, it was a very long climb up to the cottage that we were renting. John **thought nothing of (1)** it, but I found it

quite difficult. However, when we got to the top, the view was so beautiful that it **brought a lump to my throat (2)**. We were only going to be there for two weeks, so we were determined to **make the most of (3)** it. Then my mother rang to say that my grandmother had been taken ill and her life was **hanging in the balance (4)**. Of course, everything else **faded/paled into insignificance (5)** then and we agreed that we **wouldn't dream of (6)** staying away in those circumstances. We caught the next plane home and spent the flight trying to **come to terms with (7)** the thoughts that she might die. However, thank goodness, when we got to the hospital, she was sitting up completely recovered and very apologetic that she had spoiled our holiday.

1. did something that other people found difficult very easily
2. found it so moving that I wanted to cry
3. take full advantage of something because it may not last long
4. no one knows what will happen to it in the future
5. did not seem at all important when compared or something else
6. would never do something because we think it is wrong
7. start to accept emotionally and to deal with a difficult situation

### Exercise 15. Which of these sentences describe basically positive behaviour or attitudes and which describe behaviour or attitudes that are negative (at least from the speaker's point of view)

1. Mark looked straight through me when I walked into a hall.
2. Rachel left me in the lurch as she usually does.
3. Sam has really let himself go since his wife died.
4. Let's make the most of this beautiful weather.
5. The boy's soprano ringing through the church brought a lump into my throat.
6. Rita's husband has blown the arguments out of all proportion.
7. It'll be great to be able to let ourselves go once term ends.
8. They are gradually coming to terms with their loss.

### Exercise 16. Complete each of these idioms with one word.

1. The government has been quite successful at keeping a \_\_\_\_\_ on inflation.
2. Her boss is still giving her a \_\_\_\_\_ time for forgetting to circulate his report. (Give three answers.)
3. In the light of what has happened since, our problems then have paled into \_\_\_\_\_.
4. Jeremy thinks nothing \_\_\_\_\_ being interviewed on TV.

5. The newspapers often \_\_\_\_\_ minor stories out of all proportion.
6. The beauty of the sunset brought a \_\_\_\_\_ to my throat.
7. The fate of my application is hanging in the \_\_\_\_\_ until my exam results come through.
8. I wouldn't \_\_\_\_\_ of telling anyone your secret.

**Exercise 17. Answer these questions.**

1. Have you ever been left in the lurch? If so, when?
2. Has anyone ever given you a rough time? If so, why?
3. Is there anything difficult that you think nothing of doing? If so, what?
4. What was once a big problem for you that has now paled into insignificance?
5. What sorts of things bring a lump to your throat?
6. Can you think of something that you have had to come to terms with? If so, what?
7. What would you never dream of doing?

**Exercise 18. Write an essay on one of the following topics.**

1. Mnemonic techniques as means of memory storing and retrieving.
2. The use of visual imagery
3. Reasons for forgetting.
4. Reliable eyewitness testimony.
5. The puzzle of amnesia.

**Text 3**

**INTELLIGENCE**

*Who do you consider exceptionally smart?*

When at the age of four Charlie was in a store with his father, the clerk thought it quite funny to see him looking through a “grown-up” book. “I’ll give you that book if you can read it,” the clerk teased. To his surprise, Charlie began to read fluently. When Charlie started school at the age of six, he was far ahead of his class. By age nine he had decided to become a doctor instead of an astronomer or a Standard Oil executive, two professions he had also considered. Astronomers, Charlie reasoned, didn’t earn enough money, and corporate executives led lives that were too dull. At this young age most

of Charlie’s peers were still dreaming about becoming cowboys, baseball players, and firefighters. In high school, Charlie was placed in a special class for very bright students. His classmates admired Charlie’s intelligence and agreed that he seemed to know everything. But they also agreed that Charlie was not very likable. He was tactless, unsympathetic, and very impatient when other people made any kind of error.

Michael is 19. He has never spoken an intelligible word in his life, yet he seems to know what is going on around him. His eyes are both penetrating and strangely preoccupied. It is as if he is thinking about something profoundly important that he can’t convey to others. Michael has a habit of rocking his muscular body back and forth in his chair, often with grunting sounds or quick, nervous gestures. Michael suffers from autism, a mysterious and disabling disorder that affects communication, concentration, learning, and emotions. Its cause is unknown. While Michael is in many ways typical of autistic young adults, he has some extraordinary talents most of them don’t have. For example, on his first try, Michael managed to solve a scrambled Rubik’s cube in less than 40 seconds! This puzzle is so difficult that many people work on it for days without success. An entire book is needed to describe the steps involved in the solution. No one knows how Michael solved the Rubik’s cube as quickly as he did because Michael does not speak. He is among the 10 percent of autistic persons who exhibit genius in one tiny area.

Charlie is very unusual. He has an IQ of over 180, a score obtained by less than 1 percent of the population. His extremely high IQ predicted that he would do very well in academic settings, which he does. But his high IQ could not predict whether he would be likable, which he is not. Michael is too unusual. He can solve a puzzle that very few people with high IQs can solve. In this one area, Michael is a genius. In almost every other area, however, he is retarded. What Charlie and Michael illustrate is that many different factors are involved in what we call intelligence. As you will see, IQ tests measure only certain aspects of intelligence.

**HOW WOULD YOU DEFINE INTELLIGENCE?**

You probably use the term intelligent to mean something different than psychologists do. When most people are asked to name the qualities of an intelligent person, they tend to list first practical problem-solving skills. Next they list verbal ability (speaking clearly, having a good vocabulary, reading widely), and then social competence (getting along with others and having a social conscience). When psychologists were asked the same question, they placed these skills and abilities in a different order: they listed verbal ability first.



What would happen if we compared your self-rating of how intelligent you think you are with your IQ score? Researchers found a low correlation (0.23) between people's self-ratings and their actual IQ scores. This study indicates that IQ scores are not measuring what most people consider intelligence. In trying to define intelligence, psychologists have used two different approaches.

### The Psychometric Approach

You have a number of cognitive abilities that are different from someone else's and that influence your intellectual performance. The exact number of cognitive factors has been debated: estimates range from 2 to 120. These cognitive factors might include verbal comprehension, memory ability, perceptual speed, and reasoning. Psychologists who take the psychometric approach decide on a list of such factors and then develop tests to measure each of them. By combining scores on the various tests, they determine overall IQ. According to the psychometric approach, then, intelligence is defined as performance on intelligence tests: it does not claim to measure natural intelligence or to explain intelligence. The major advantage of this approach is that it measures individual differences in cognitive abilities, and these differences have proved useful in predicting performance in school. The major disadvantage is that the psychometric approach does not really explain what differences in IQ scores mean.

### The Cognitive Components Approach

Typically, the solution of a problem involves breaking it down into smaller cognitive components, finding the rule that underlies the relationship between them and then making your response.

Psychologists who take the cognitive components approach focus on just such underlying mental processes. They believe it is not so much your answer that is important, but the process you use to arrive at the answer. According to this approach, differences in intelligence are reflected in differences in the cognitive components involved in solving problems. A person with high verbal ability, for example, would probably spend a great deal of time encoding and analyzing problems with words. A person with excellent visual-perceptual ability, in contrast, would be more inclined to process problems through mental imagery. In this way, the cognitive components view can begin to explain how people differ in their thinking. Unfortunately, however, no standardized tests yet exist to identify various cognitive components. Until such tests are developed, the cognitive components approach will not be widely used to measure intelligence. That is why we will focus on tests of intelligence that come from the psychometric tradition.

## Contemporary IQ Tests

### *Do the smartest people have the largest brains?*

The time is the early 1900s, and you are hired as an assistant to a gifted French psychologist named Alfred Binet. Unlike many of his predecessors, Binet does not believe intelligence can be assessed by measuring skull size, which in turn reflects the size of the brain. There is simply too much evidence that the size of the brain is not closely related to powers of intellect. Instead, Binet suspects that intelligence can best be measured by assessing a person's ability to perform certain cognitive tasks, such as understanding the meaning of words or being able to follow directions.

### The Beginnings of Modern Intelligence Testing

The Paris public schools have commissioned Binet and a psychiatrist named Theodore Simon to develop a test that can differentiate children of normal intelligence from those who need special help. In 1905 they succeed in introducing the world's first standardized intelligence test. Binet's test consists of items arranged in order of increasing difficulty, with different items designed to measure different cognitive abilities. For each item, Binet has determined whether an average child of a certain age can answer the question correctly. For example, at age 2 the average child can name certain parts of the body, while at age 10 the average youngster can define abstract parts of the body, such as "quickly." Suppose a particular child passed all the items that can be answered by an average 3-year-old, but none of the items deemed appropriate for older children. That child would be said to have a *mental level* of 3. In Binet's view, the concept of mental level is a means of estimating a youngster's intellectual progress relative to the average child of his or her age. For example, if a child is 6 years old but has a mental level of only 3, that child would be considered retarded in intellectual development.

It is still the early 1900s, but now you are at Stanford University in California. Professor Lewis Terman and his associates are revising Binet's test and have devised a formula to calculate the now famous **Intelligence Quotient**, or **IQ**, score. What they have done is to change mental level to mental age. A child's **mental age** is determined by the number of test items passed. For example, if a 4-year-old girl passes the test items appropriate for a 5-year-old, she is said to have a mental age of 5. Terman's formula for IQ uses the terms MA, meaning **mental age**, and CA, meaning **chronological age** or the child's age in months and years. The formula is:

$$MA/CA \times 100 = IQ$$

To figure out the IQ of the child in our example, substitute 5 for MA, 4 for CA, and multiply by 100. You would get:

$$5/4 = 1.25 \times 100 = 125$$

An IQ of 125 is relatively high. Only a little over 2 percent of the population have IQs above 130, and only about 1 percent have IQs above 145. Charlie, whom we described earlier, has an IQ of 180: Michael, the autistic young man who is a whiz at Rubik's cube, has an IQ well below 100, which is considered a sign of severe mental retardation.

Although Binet saw the benefits of identifying children in need of special educational classes, he realized that his intelligence tests were potentially dangerous. He warned that they did not measure innate abilities and that they should not be used to label people. History shows that neither of his warnings was heeded. In the early 1900s it became common practice to treat IQ scores as measures of inborn intelligence and to label people from moron to genius. Later we will consider whether IQ tests are still being misused.

### Some Widely Used IQ Tests

One of the most widely used IQ tests in America today is the Stanford-Binet. Developed by Terman and his associates from the original Binet test, it has since been revised several times. It can be given to children and young adults aged 2 through 18. A trained examiner administers the test on an individual basis. It consists of a number of test items, some *verbal* such as naming things and understanding instructions, and some *performance*, such as completing a picture or using colored blocks to reproduce a pattern. The test items are arranged in order of increasing difficulty and are designated appropriate for certain age levels. A child continues through the series until he or she reaches the age level at which he or she can answer none of the questions.

Another widely used series of IQ tests are the **Wechsler scales**, which are also administered individually by trained examiners. The Wechsler scales consist of separate tests for preschool children aged 4 to 6, for school age youngsters from 6 to 16, and for adults 16 and older. Unlike those in the Stanford-Binet tests, items on the Wechsler scales are organized into various subtests. In the verbal section, for instance, there is a subtest of general information, a subtest of vocabulary, a subtest of verbal comprehension, and so forth. In the performance section, there is a subtest that involves arranging pictures in a meaningful order, a subtest that requires assembling objects, and a subtest that involves using codes, among others. The test-taker receives a separate score for each of the subtests, which are then combined to yield overall scores for verbal and performance abilities. Finally, the verbal and performance scores are combined to produce a general IQ.

If you took the Wechsler Adult Intelligence Scale as a senior in high school and then took the test again as a freshman in college, you would find that your score would probably be much the same. This is another way of saying that the Wechsler scales, like other standardized IQ tests, are *reliable*.

A test is reliable if it produces reasonably consistent results for any given person. Inconsistent test scores, in contrast, are a sign of unreliability. If your IQ were to fluctuate widely (high one month, low the next, and somewhere in the middle the third), psychologists would suspect that the test was not reliable. They have found that a person's scores on both verbal and performance sections of standardized IQ tests tend to remain quite stable over many years, even into old age.

## INTERPRETING IQ SCORES

### *What does an IQ score predict?*

An IQ score, of course, is nothing more than a number that tells if you scored average, above average, or below. So why do educators in this country and others devote so much effort to IQ testing? The answer is that scores on IQ tests have been found to be quite good predictors of success in school.

### **Predictions Based on IQ**

The correlation between IQ score and performance in academic settings is as high as 0.60–0.70 which is a very high correlation coefficient. It tells us that in most cases, the higher the IQ, the higher the grades a student earns. Nevertheless, the cognitive abilities that IQ measures account for only about half of a person's performance in school, according to some estimates. The other half is attributed to personality factors and to motivation. Thus, if a person lacks persistence, is unable to concentrate, or for some reason simply does not care about schoolwork, that person's academic grades may be very poor despite a high IQ.

Although IQ is in general quite a good predictor of success in academic settings, it is not a good predictor of success in other areas of life. Based on IQ alone, it would be very difficult to predict whether a person will have a successful career after graduating from college. Based on IQ alone, it would also be difficult to predict someone's personality or how effective that person will be in adjusting to life's problems. How then does a high IQ affect an individual's life?

This question was answered in a classic study begun in the early 1920s by Lewis Terman. He selected a sample of almost 1,500 children with IQs ranging from 135 to 200. (The average IQ for the group was 151.) Over the next 35 years, he followed these people to see how they did in life. He found that in general they enjoyed health, adjustment, and achievement above that of people with average IQs. But not all Terman's subjects were success stories. Although 80 percent of those who finished college earned an average grade of B or better, 30 percent of the total never earned a college degree, and 2 per-

cent actually flunked out of school. And, although 85 percent of the men became professionals or managers, only about 10 percent of them were dissatisfied with their work. In keeping with the times, about 50 percent of the women sought careers outside the home, and they were generally limited to secretarial and teaching posts. Finally, although 91 percent of the Terman sample reported satisfactory mental health, the remaining 9 percent had serious emotional problems and in some cases had to be hospitalized. Of these, about 1 percent committed suicide, and 1 percent became alcoholic. A high IQ, in other words, helps but is no guarantee against academic, career, and mental health problems.

### **The Misuse of IQ Tests**

Larry, a black child, was assigned to special classes for the educable mentally retarded. His assignment was based on his having scored below 85 on an IQ test. However, several years later, a black psychologist retested Larry and found that his IQ score was higher than originally thought. Larry was taken out of the special classes, considered a dead end, and placed in regular classes that allow for more advancement.

On the bases of Larry's experience, a class action suit was brought against the San Francisco school system on behalf of all black schoolchildren in the district. The suit was based on the finding that while black youngsters made up 27 percent of all the students enrolled in classes for the mentally retarded, they comprised only 4 percent of the entire school population. Black parents wanted to know why their children were so overrepresented in these special classes. They felt there must be a bias against black children in the selection process. The federal court of appeals agreed with them. It argued that the IQ test, the schools were using to determine mental retardation, was biased against ethnic minorities. The court ruled that California schools could not place minority children in classes for the mentally retarded on the basis of this test alone. The schools must come up with an intelligence test that does not favor whites or refrain from using a standardized test to identify slow learners.

The differences in scores between whites and blacks are often due not to intelligence, but to cultural bias in the test. **Cultural bias** means that the wording of the questions and the experiences on which they are based are more common for members of some social groups than for others. Many psychologists believe that current IQ tests are significantly biased in favor of the white middle class.

Cultural bias is seldom obvious but it is obviously unfair. Consider the following question from the Wechsler Intelligence Scale for Children: "What would you do if you were sent to buy a loaf of bread and the grocer said he did not have any more?" If you think the answer is "Go to another store," you

are correct according to the developers of the Wechsler scale. However, when 200 minority children were asked this same question, 61 said they would go home. When asked to explain their answers, they gave reasonable explanations. Some children answered "Go home" because in their neighborhood there were no other stores. Yet the answer "Go home" would be scored "incorrect," even though it was correct from the child's experience. Because minority children often lack the experiences that white, middle-class test developers take for granted, they are often penalized on standardized tests of intelligence.

What can be done about cultural bias in IQ tests? One answer is to develop a culture-free test. Although psychologists have attempted to do this, to date they have not been successful. Another possibility is to use other measures to assess intellectual skills. For instance, suppose a minority student scored low on an IQ test, but showed the ability to function well in his or her environment. Based on ability to function, the child might be placed in regular school classes, rather than in a special program for the mentally retarded. This approach is likely to be hard on the child unless he or she is given remedial help to "catch up" on the cognitive skills that are needed to earn a higher IQ score and to perform well in the classroom.

If IQ tests are culturally biased, are they nevertheless valid? Surprisingly, the answer is "yes." **Valid** means that a test measures what its users want it to measure. Remember that psychologists do not think IQ tests measure innate intelligence. Rather, they measure how you perform on a number of cognitive abilities. Since your performance on IQ tests can predict future academic performance, those tests are said to be valid.

In the past, some have mistakenly interpreted IQ score as a measure of innate potential. In fact, though, an IQ score reflects both inherited potential and learning experiences. If a child comes from a disadvantaged environment, with few opportunities for acquiring the cognitive skills important on such tests, that child's IQ score will be low. However, placing the child in special classes for the mentally retarded is clearly not the solution. That practice merely continues the youngster's history of environmental disadvantage. The solution is to counteract the restricted opportunities for learning that have led to both low IQ and poor academic performance. We will explore some of the efforts to do just that a little later.

Now that you know something about intelligence and IQ tests, let's take a closer look at how intelligence is defined and how it is related to IQ tests.

## *Intelligence and IQ Scores*

### **REDEFINING INTELLIGENCE**

#### *Who is more intelligent, Alice, Barbara, or Celia?*

Alice had almost a 4.0 average as an undergraduate, scored high on the Graduate Record Exam (GRE), and was supported by excellent letters of recommendation. She seemed to have everything that smart graduate students need and was admitted to graduate school as a top pick. During her first year or two in graduate school, which involved mostly taking classes and exams, she was at the top of her class. This outstanding performance would be predicted from her proven ability to think critically and logically. However, by the time she finished, she was in the bottom half of her class. What happened to Alice? During her last two years of graduate school, she was involved in doing research, which demanded that she think creatively. Although Alice was a logical and critical thinker, she was not a creative or innovative thinker. As a result, she did not perform as well doing research as she did taking exams.

Unlike Alice, Barbara rarely did well on tests. She barely passed most of her undergraduate courses, and her GRE scores were quite low. But Barbara had superlative letters of recommendation that said she was extremely creative, had good ideas, and was a top-notch researcher. Because of her weak academic performance, Barbara was not admitted to graduate school, but one of the professors on the admissions committee was so impressed with Barbara's letters of recommendation that he hired her as a research associate. As it turned out, she proved to be a very creative and innovative thinker who helped the professor do some of his best work. As the professor said, "Alice had academic smarts, but Barbara had creativity." Then there was Celia.

Celia's grades, GRE scores, and letters of recommendation were good but not great. She was admitted to graduate school, where her performance was no more than satisfactory. When it came time to look for a job, however, Celia was the easiest to place. Although she didn't have Alice's superb logical thinking ability or Barbara's creativity, Celia had what might be called "academic street smarts." Her research projects dealt with topical issues and impressed others in her field, and she was able to get her results published in prominent journals. So who would you say is more intelligent, Alice, Barbara, or Celia?

Robert Sternberg (1985), who created these examples, points out that traditional IQ tests primarily measure Alice's kind of intelligence, which is described as logical or analytical thinking. IQ tests do not indicate whether these abilities will result in her being a creative researcher or enable her to get a good job. For this reason, Sternberg and others believe that the traditional

psychometric model of intelligence – which focuses on describing thinking processes or mental structures – should be revised to reflect how this structure relates to the real world. That is, future models should take into consideration the intelligence shown by Barbara's creativity, Celia's practicality, and, of course, Alice's analytical thinking. Sternberg, who has developed such a model of intelligence, would conclude that Alice, Barbara, and Celia are all intelligent, but in different ways.

The question asked by Sternberg, "How are IQ scores related to real-world intelligence?" was partially answered by Stephen Ceci and Jeffrey Liker (1986). They studied the thinking and computational skills of racetrack handicappers, who show an amazing kind of real-world intelligence. First, handicappers analyze an incredible amount of factual information about horses, tracks, and jockeys. Second, they combine all this information into a sophisticated model that will be used to predict how racehorses will finish. When the handicapper's success at picking winning horses was correlated with IQ score, the correlations turned out to be very low (.04–.07). This means that IQ scores would not predict the computational abilities of handicappers. The researchers concluded that there are many kinds of cognitive functions, not all of which are measured by IQ tests – and IQ tests are limited in predicting how people will react to life's challenges.

Because of this discrepancy between IQ scores and real world intelligence, Sternberg has redefined intelligence. He says intelligence consists of those mental functions that you use intentionally when you adapt to, shape, and select the environment in which you live and function. Notice that Sternberg's definition includes but goes beyond the traditional, psychometric model's definition of intelligence, which focuses on describing thinking processes or mental structures. Sternberg and others believe that it is time for a new model of intelligence, one that includes how a person functions in the real world.

One of the problems with the traditional, psychometric view of intelligence is interpreting IQ scores. For example, do increases in IQ scores mean that people have become more intelligent? To answer this, we need to look closely at what IQ tests measure.

#### ***What Do IQ Tests Measure?***

In the Netherlands, almost all 18-year-old men are tested by the military. When James Flynn (1987) compared the IQ scores of the men tested in 1952 with those tested in 1962, 1972, and 1982, what he found was an event that he says is unique in the literature. He reported that in the 30-year period between 1952 and 1982, IQ scores rose a whopping 21 points. In addition, Flynn reported that similar large gains in IQ scores (15–20 points) also occurred in France, Australia, Japan, West Germany, and to a lesser extent in the United States (12 points between 1932 and 1972).

Flynn described what such large gains in IQ scores mean in practical terms. Individuals with IQs above 130 should find school easy and have the potential to succeed at virtually any occupation: those with IQs above 140 have the potential to make the kinds of contributions that are internationally recognized; an IQ above 150 indicates the potential to become the kind of creative genius who makes an important contribution to civilization. With the increase in IQ scores in the Netherlands alone, there would be over 300,000 people who qualify as potential geniuses.

In spite of the dramatic increase in IQ scores in the Netherlands and other countries, there has not been an equivalent rise in the performance of school-children, in the incidence of geniuses, or in mathematical or scientific discoveries.

Because the massive increase in IQ scores was not accompanied by other evidence of increases in intelligence, Flynn reached two important conclusions. First, based on the best available data, he estimated that about 5 points of the 20-point rise in IQs resulted from a combination of genetic and environmental factors, such as higher levels of education, social and economic gains, and increased sophistication at taking tests; the remaining 15 points of the gain were attributed to unknown environmental factors. Second, Flynn cast doubt on the widely held assumption that IQ tests measure general intelligence. According to Flynn, these tests only measure something that is weakly linked to intelligence, such as the ability to solve abstract problems. This conclusion is contrary to the belief that IQ tests measure general intelligence, which is held by some psychologists (Eysenck, 1971; Jensen, 1978). Flynn points out that the data on huge increases in IQ scores clearly indicate that IQ tests do not measure general intelligence but only something weakly related to it, such as abstract problem-solving ability.

Although psychologists have not identified the environmental factors that caused the 15–20 point increase in IQ scores in many parts of the world, they have identified some of the factors that contribute to an individual's IQ score.

### **CONTRIBUTIONS OF HEREDITY AND ENVIRONMENT TO IQ**

Psychologists have long been curious about the relative contributions of heredity and environment to individual differences in IQ. If you have ever wondered why one friend has a high IQ and another an IQ around average, you are asking a question many psychologists have tried to answer. What they have done is to study people whose genetic and environmental similarities can be reasonably estimated. Studies of twins have been particularly useful for this purpose. Such studies show that when considering members of the

white middle class, heredity makes a relatively large contribution to IQ differences. This makes sense when you stop to think that one white middle-class environment is often very much like another. Therefore, IQ differences within this social group are bound to be rather heavily influenced by genes.

However, the causes of differences within a social group tell us nothing whatever about the causes of differences between groups. Although the difference in IQ between two middle-class white children may be explained to a large extent by heredity, this is not to say that the IQ difference between the average black and average white American child is equally attributable to genes. The reason is that the average black and the average white have very different environments, which are also contributing to their test scores. Many psychologists believe these environmental differences alone are enough to account for any IQ gap between the two groups.

What would happen if lower-class children were given the same advantages as upper-class children? To answer this question, a group of French researchers studied children who had been abandoned as babies by their lower-class parents and adopted during the first 6 months of life into upper-middle-class families. The IQs of these children were compared with those of other lower-class youngsters who had been raised by their natural parents. Any average differences between the two groups could be assumed to be caused by differences in environment. The researchers found that the mean IQ of the adopted children was 14 points higher than that of the children born and raised in lower-class settings. The adopted children also failed in school four times less often. Apparently, changes in environment can go a long way toward boosting both IQ scores and performance in the classroom.

Knowing this, what would you guess would happen if black children from disadvantaged families were adopted and raised by white, middle-class parents? Researchers who studied just such children found that their IQs were as much as 20 points higher than those of black children raised in disadvantaged homes (Scarr & Weinberg, 1976). Once again, we see how strongly environment can affect IQ level. It has been estimated that, depending on environment, IQ can vary as much as 20 to 25 points (Zigler & Seitz, 1982).

Based on these findings, many developmental psychologists now believe that the debate over the relative importance of heredity and environment in determining intelligence is no longer useful or meaningful. Instead, they recommend that psychology focus on measuring what they call the reaction range for intelligence. Reaction range refers to the degree IQ scores may vary as a result of environment. Since the reaction range may be as much as 20 to 25 points, heredity establishes a very broad range for intellectual development. Within that range, a child's IQ may vary greatly depending on his or her environment. Thus, instead of asking whether heredity or environment is

more important, we should ask, "How much does the environment raise or lower IQ scores?" Let's look at how a change in environment affects IQ scores.

### **Intervention Programs**

Nancy, in her mid-twenties, is pregnant. She lives in a lower-class black neighborhood and earns less than \$1,500 a year. She has completed only two years of high school, and her IQ is 85. Given this background, psychologists would predict that Nancy's child is unlikely to acquire the kind of cognitive skills needed to do well in school. The youngster is a good candidate for an intervention program.

The intervention program in which Nancy enrolled her child was called the Abecedarian Project (Ramey et al., 1982). After birth, the baby spent 6 or more hours daily, 5 days a week, in a carefully supervised day-care center. The day care continued until the child entered public school. The goal of the program was to teach youngsters from disadvantaged environments the cognitive and social skills needed for success in academic settings. Stress was placed on language skills, including the use of daily routines to help master concepts. For example, as a child helped to set the table for lunch, he or she might be encouraged to count the utensils or name the shapes of the dishes. At the end of the fourth year, children in the intervention program had IQ scores that were 12 points higher than control children from disadvantaged environments. This difference clearly showed that intervention programs could raise IQ scores. However, by the end of the fifth year the difference in IQ scores was reduced to 7 points. Apparently the disadvantaged children who were not in the intervention program were benefiting from having started public schooling. Herman Spitz (1986) reviewed a number of intervention programs and concluded that, in most of the programs, IQ increases were transitory and difficult to maintain. The reason for the transitory increase in IQ scores is not clear. Some believe that when the child leaves the intervention program and is no longer provided with the proper environment, the IQs start to decline. Others believe that young children do learn skills that lead to IQ gains but that these skills do not generalize to different IQ tests and thus scores decline.

At the same time, no one denies that intervention programs, such as the Abecedarian Project or the well-known Head Start program, can be positive experiences for the child and parents. For example, adolescents who had been in the Head Start program were more likely to be in classes appropriate for their ages rather than to have had to repeat a class, were less likely to show antisocial or delinquent behavior, and were more likely to hold jobs (Zigler & Seitz, 1982). Mothers who had been in the Head Start program reported fewer

psychological symptoms, greater feelings of mastery, and greater current life satisfaction (Parker et al., 1987). These data indicate that although IQ increases may be transitory, there are long-term positive benefits to both the participating children and mothers in terms of social and personal well-being.

### **Vocabulary**

1. **abandon**, *v* 1) отказываться, оставлять; **to ~ a child, an attempt, hope, one's native language**  
2) предаваться чему-л.; **to ~ oneself to grief, passion, despair**
2. **adopt**, *v* 1) усыновлять, удочерять; **to ~ a child**; 2) принять, голосовать за что-л.; **to ~ a resolution**  
**adoption**, *n* усыновление  
**adopted**, *a* усыновленный, удочеренный; ~ **child** приемный ребенок
3. **advancement**, *n* 1) продвижение; 2) успех, прогресс; 3) продвижение по службе  
**advance**, *v* продвигаться, идти вперед  
**advanced**, *a* 1) передовой, прогрессивный, продвинутый; 2) немолодой; 3) подготовленный (об учащемся); 4) самый современный
4. **appropriate**, *a* соответствующий, подходящий  
**appropriate**, *v* присваивать  
**appropriateness**, *n* соответствие
5. **assess**, *v* оценивать, давать оценку  
**assessment**, *n* оценка; мнение, суждение
6. **assign**, *v* 1) давать, поручать (задание, работу); 2) приписывать, распределять;  
**to ~ to a special class** распределять в специальный класс  
**assignment**, *n* 1) назначение; 2) задание; 3) прикрепление, приписывание
7. **background**, *n* 1) задний план, фон; 2) (а) подготовка, квалификация (б) (биографические или анкетные) данные; происхождение, общественный и моральный облик; связи и окружение (человека)
8. **bound**, *predic* неперенный, обязательный; **it is bound to happen** это обязательно должно произойти
9. **challenge**, *n* 1) испытание, напряжение сил; нечто, требующее мужества, труда и т.п.; 2) сложная задача, проблема; 3) вызов  
**challenge**, *v* 1) бросать вызов, требовать усилий
10. **chronological age**, *n* хронологический возраст
11. **cognitive components approach**, *n* когнитивно-компонентный подход
12. **comprise**, *v* включать, составлять, охватывать, состоят из

13. **convey**, *v* сообщать, передавать, **to ~ ideas, thoughts, feelings, the meaning**
14. **cultural bias**, *n* культурные искажения, искажения (изменения) связанные с принадлежностью к определенной культуре.
15. **cultural-free test**, *n* тест, свободный от влияния культуры
16. **delinquent**, *a* преступный; ~ **behavior** преступное поведение  
**delinquency**, *n* преступление, преступность (преим. несовершеннолетних)
17. **disadvantaged**, *a*, не имеющий благоприятных условий; бедный немущий; ~ **family** неблагополучная семья; ~ **environment** неблагополучное (бедное) окружение
18. **discrepancy**, *n* несоответствие, расхождение; различие; несогласие  
**discrepant**, *a* несоответствующий, противоречащий; отличный (от чего-л.)
19. **enrol(ment)**, *n* 1) запись, прием, зачисление (в школу и т.п.); 2) набор, количество принятых (в университет организацию) **the school has a total ~ of 300** общее количество учеников в школе составляет 300 человек  
**enroll (I)**, *v* 1) вносить в список, регистрировать; **it took 2 days to – the new students** регистрация новых студентов заняла 2 дня; 2) записывать, зачислять **the school ~ ed about 800 pupils** в эту школу зачислено около 800 учеников.
20. **estimate**, *v* оценивать, делать оценку; выносить суждение судить (о чем-л.)  
**estimate**, *n* 1) оценка; 2) исчисление; предварительный подсчет  
**estimated**, *a* 1) предполагаемый, предположительный; примерный приблизительный; 2) планируемый, предполагаемый, теоретический, расчетный  
**estimation**, *n* 1) оценка, суждение, мнение; 2) уважение; 3) расчет, подсчет, вычисление, определение
21. **exhibit**, *v* показывать, обнаруживать, проявлять; **to ~ genius, bravery, ignorance**  
**exhibition**, *n* 1) выставка; 2) проявление **an ~ of courage, knowledge** проявление мужества, знаний  
**exhibitionism**, *n* 1) *мед.* Эксгибиционизм; 2) несдержанность в проявлении чувств; выставление напоказ своих переживаний  
**exhibitionist**, *n* 1) эксгибиционист, страдающий эксгибиционизмом; 2) тот, кто выставляет напоказ свои переживания
22. **fluctuate**, *v* колебаться, быть неустойчивым, нерешительным  
**fluctuating**, *a* 1) колеблющийся, неустойчивый, переменный 2) флуктуирующий; ~ **attention** скользящее внимание

- fluctuation**, *n* 1) колебание, неустойчивость; 2) неуверенность нерешительность; 3) отклонение (от заданного режима или параметра)
23. **gain**, *n* 1) выигрыш; 2) увеличение, рост, прирост  
**gain**, *v* 1) получать, приобретать; 2) выиграть; 3) извлекать пользу, выгоду
24. **incidence**, *n* сфера распространения или действия, число случаев (чего-л.)  
**incident**, *n* случай, происшествие, инцидент  
**incident(al)**, *a* 1) (to) свойственный, присущий, характерный; **diseases ~ to childhood** болезни, которыми болеют в детстве; 2) случайный; побочный; несущественный
25. **intelligence**, *n* интеллект, ум, умственные способности  
**intelligent**, *a* умный, разумный, соображающий, понятливый  
**Intelligence Quotient (IQ)**, *n* коэффициент интеллекта, «ай кью»
26. **intervention**, вмешательство с целью оптимизации психического развития  
**intervene**, *v* 1) вмешиваться; 2) находиться, лежать между  
**intervening**, *a* промежуточный; ~ **variable** промежуточная переменная
27. **item**, *n* пункт, параграф, вопрос, элемент
28. **label**, *v* назвать, обозначить, наклеить ярлык; относить к определенной группе, категории  
**label**, *n* название, обозначение, ярлык
29. **mental age**, умственный возраст
30. **peer**, *n* ровесник
31. **penalize**, *v* 1) наказывать 2) штрафовать  
**penalty**, *n* 1) наказание 2) штраф
32. **psychometric approach**, *n* психометрический подход
33. **raise**, *v* *амер.* растить, воспитывать (детей)
34. **reaction range**, *n* диапазон реакций
35. **remedial help**, *n* *зд.* помощь с целью ликвидации пробела (в знаниях)
36. **retarded**, *a* умственно отсталый  
**retardation**, *n* 1) **mental** ~ задержка умственного развития 2) замедленная умственная деятельность 3) замедленная реакция
37. **score**, *n* количество очков  
**score**, *v* подсчитывать очки, вести счет, считаться в очках
38. **seek (sought)**, *v* 1) (часто **for, after**) искать, пытаться найти; 2) добиваться;
- to ~ a career** добиваться карьеры
39. **self-rating**, *n* самооценка
40. **social conscience**, *n* общественное сознание

41. **sophistication**, *n* широкий кругозор, обширные познания, умудренность  
**sophisticated**, *a* умудренный опытом, искушенный  
**sophisticate**, *n* человек, умудренный опытом
42. **Stanford-Binet**, *n* тест Стенфорда-Бине на определение интеллекта
43. **transitory**, *a* преходящий, мимолетный
44. **valid**, *a* валидный  
**validity**, *n* валидность
45. **Wechsler Scales**, *n* серия тестов Векслера для исследования IQ

**Exercise 1. Translate the following sentences into Russian:**

**A (orally)**

1. It was an inappropriate display of emotions in that situation. 2. You'd better test the validity of other conclusions. 3. Most people find her advanced ideas difficult to accept. 4. After two failures the boy abandoned all his hopes to be enrolled into the University. 5. He prefers to stay in the background. 6. They had no children of their own, so they adopted the neighbour's boy. 7. The reason for his failure was not far to seek: he was ill during the examination. 8. He is bound to come. 9. I am sure your self-rating is somewhat biased. 10. The baby had a gain of half a pound in weight last week. 11. Test items should be well thought out beforehand. 12. His course of studies comprised Developmental Psychology, Anatomy, English and many other subjects. 13. Words fail to convey my feelings. 14. The twins were about to fight when their father intervened. 15. The child seemed quite sophisticated for his age. 16. Such conditions are not appropriate for our subjects. 17. This job is too dull; I want one with more challenge. 18. Lucy is 8, but she is very retarded and can't even read yet. 19. It was a hard test for which all the class made low scores. 20. His parents raised three children and gave higher education to each. 21. You can't give me a reason for breaking your promise. 22. Our teacher assigns us too much work to do. 23. I am new in the job but I am already gaining experience. 24. In this district there are many disadvantaged families. 25. Social conscience is a philosophical concept. 26. Older boys and girls tend to form groups. 27. His enrollment as a member of the APA (American Psychological Association) surprised everybody. 28. The judge scored him 15 points for the test. 29. I will convey the information to him. 30. My mood fluctuated between hope and fear. 31. There was a considerable discrepancy between the two interpretations of the test. 32. The University has an enrollment of 1,000 students. 33. We estimated that it would take us three months to finish the work. 34. His educational background leaves much to be desired. 35. The plan is bound to succeed.

**B (in written form)**

1. They sought to punish him for misbehavior but he escaped. 2. This difficulty challenges my mind to find the answer. 3. The conference seemed to be a good opportunity for the exhibition of his talents. 4. There is a high incidence of this disease here. 5. Delinquent behaviour is the one that is not in accordance with the accepted social standards or with the law. 6. First of all, you should estimate all the costs. 7. You don't know enough about the subject to question the validity of my statement. 8. One of the penalties of fame is that people point at you in the streets. 9. The School Board labelled the boy a juvenile delinquent. 10. I admire your methods of teaching maths and I adopt them in my school. 11. In the intervening years they had several accidental meetings. 12. The fluctuations of temperature were significant and were a cause of worry for the physician. 13. In my estimation the experiment is bound to give us valuable and reliable results. 14. Law penalizes the employment of children. 15. Has a day been assigned for the experiment? 16. Our subjects exhibited great patience and persistence during the experimental procedure. 17. He put forward very sophisticated arguments to prove his viewpoint. 18. Though they may have normal intellectual capacities, children with a disadvantaged background are often recommended to have a remedial help course to bridge the gap between them and their luckier peers. 19. I don't know him well enough to form an estimate of his abilities. 20. He was pleased with his assignment to such an important position.

**Exercise 2. Translate the following sentences into English using the indicated words from the vocabulary list:**

**A (orally)**

**abandon** 1. Мы неохотно отказываемся от наших привычек.  
2. Настоящий друг никогда не бросит тебя в беде.

**adopt** 3. Мне бы хотелось удочерить эту девочку.

**advance** 4. Наука быстро движется вперед.

**advanced** 5. Он человек передовых взглядов и идей.

**advancement** 6. Нельзя говорить о прогрессе науки без прогресса образования.

**appropriate** 7. Ты можешь дать подходящие примеры, иллюстрирующие разные значения этого слова.

**assess** 8. Как бы вы оценили его поведение в этой ситуации?

**assessment** 9. Какова ваша оценка (мнение) его исполнения по этим тестам?

**assign** 10. двум ученикам было поручено приготовить доклады по этой теме.

**assignment** 11. Его задание было выписать новые слова, прочесть их и перевести текст.



**background** 12. для этой работы у него хорошая подготовка.  
13. Что он собой представляет?  
**bound** 14. Он обязательно победит.  
**challenge** 15. Моя новая работа нелегка, но она будет для меня пробой сил.  
**comprise** 16. Экзамен включает несколько вопросов.  
17. В экзаменационной комиссии – три человека.  
**convey** 18. Воздух является проводником звуков.  
**delinquency** 19. К сожалению, рост детской преступности наблюдается во всем мире.  
**disadvantaged** 20. Я знаю несколько малолетних преступников и все они из неблагополучных семей.  
**discrepancy** 21. Есть некоторое расхождение в наших данных.  
**enrollment** 22. Его зачисление в университет обрадовало всех.  
**enroll** 23. Я был зачислен в университет после первого экзамена как окончивший школу с золотой медалью.  
**estimate** 24. Пока нельзя оценить его способности.  
**estimation** 25. Я абсолютно согласен с оценкой его характера.  
**exhibit** 26. Скрытый человек старается не выражать открыто свои чувства.  
**exhibition** 27. Проявление эмоций у взрослых ограничивается общепринятыми нормами поведения.  
**fluctuate** 28. У него по разным причинам меняется настроение.  
**fluctuation** 29. Не знаю, чем объяснить столь быструю смену твоих настроений.  
**gain** 30. Эта работа мне не нравится, но я приобретаю на ней много полезного.  
**incidence** 31. Число случаев невроза (neurosis) постоянно растет.  
**incidental** 32. Эта случайная встреча повлияла на всю его дальнейшую жизнь.  
**intervene** 33. Зачем ты вмешиваешься в наш спор?  
**intervening** 34. Следует сначала определить промежуточную переменную.  
**item** 35. В своем докладе он сосредоточился на двух моментах.  
**label** 36. Первую группу испытуемых назвали (обозначили) «медленно думающие».  
**peer** 37. Для эксперимента нужна была группа ровесников.  
**penalize** 38. Применение телесных наказаний в школе карается законом.  
**penalty** 39. Для ребенка наказание за невнимательность было неожиданным.  
**raise** 40. Она воспитала пятерых детей одна, без мужа, без какой-либо поддержки со стороны.  
**retarded** 41. Его запоздалое развитие связано с неблагоприятной обстановкой, в которой он растет.  
**retardation** 42. Тест на коэффициент интеллекта выявил у него умственную отсталость.

**score** 43. Какая у тебя оценка по математике?  
**seek** 44. Следует попытаться найти объяснение его поведению.  
**self-rating** 45. Его самооценка оказалась близкой к мнению его учителей.  
**sophisticated** 46. Его утонченный вкус – результат тонкого воспитания.  
**transitory** 47. Наша жизнь столь мимолетна, что надо ценить каждое ее мгновение.  
**valid** 48. Эксперимент – надежный метод проверки гипотезы.  
**validate** 49. Тестовые результаты подтверждают мои идеи.

### **B (in written form)**

1. Он оставил всякую надежду найти работу по специальности.  
2. Мы часто перенимаем идеи и установки наших родителей. 3. Он высказал (выдвинул) мнение, что такой эксперимент надо сначала проводить на животных. 4. Нам нужно найти пять испытуемых, подходящих для эксперимента. 5. Ему суждено умереть. 6. Мне нравится учить только то, что представляет настоящую трудность. 7. Общая психология включает несколько разделов. 8. Я не могу передать смысл этого предложения по-английски. 9. Неблагополучное окружение повлияло на его поведение. 10. Из-за нее он оказался в очень невыгодном положении. 11. Как ты можешь объяснить несоответствие в результатах первой и второй экспериментальной серии? 12. Прием в наш университет растет. 13. Мы сможем оценить результаты только тогда, когда закончим эту серию. 14. В младенчестве люди открыто выражают свои эмоции. 15. Его чувства переходили от страха к надежде. 16. В любом деле могут быть потери и приобретения. 17. Каждый тестовой вопрос должен быть тщательно сформулирован. 18. Это название позднее использовали в других работах. 19. Он мой ровесник, и у нас общие интересы. 20. Воспитание детей связано с бессонными ночами, адским терпением и самопожертвованием. 21. Общий балл у экспериментальной группы был выше, чем у контрольной группы. 22. Ребенок искал помощи у ровесников. 23. Судя по твоей самооценке, ты не очень высокого мнения о себе. 24. Чтобы провести этот эксперимент, нужна сложная исследовательская техника. 25. Мимолетные удовольствия не принесут счастья. 26. Мне кажется, ты не можешь выдвинуть надежного аргумента в поддержку своей точки зрения.

### **Exercise 3. Express your opinion on the following questions:**

1. Whom would you consider to be a smart person? What are the main criteria for you to label a particular person smart?
2. Why do different people have different Intelligence Quotients?

3. Do the smartest people have the largest brains?
4. Are there any ways to raise one's IQ?

**Exercise 4. Translate the following sentences into Russian.**

1. Suppose a particular child passed all the items that can be answered by an average 3-year-old, but none of the items deemed appropriate for older children.
2. On the basis of Larry's experience, a class action suit was brought against the San Francisco school system on behalf of all black schoolchildren in the district.
3. This approach is likely to be hard on the child unless he or she is given remedial help to "catch up" on the cognitive skills that are needed to earn a higher IQ score and to perform well in the classroom.
4. Sit turned out, she proved to be a very creative and innovative thinker who helped the professor do some of his best work.
5. This (explanation) makes sense when you stop to think that one white middle-class environment is often very much like another.
6. Given this background, psychologists would predict that Nancy's child is unlikely to acquire the kind of cognitive skills needed to do well in school.
7. Apparently, the disadvantaged children who were not in the intervention program were benefiting from having started public schooling.
8. The data indicate that although IQ increases may be transitory, there are long-term positive benefits to both the participating children and mothers in terms of social and personal well-being.

**Exercise 5. Paraphrase the following sentences.**

1. His eyes are both penetrating and strangely preoccupied.
2. Larry was taken out of the special class, considered a dead end, and placed in regular classes that allow more advancement.
3. They felt there must be a bias against black children in the selection process.
4. Although psychologists have attempted to answer the question, they have not been successful.
5. She was admitted to graduate school as a ton nick.
6. Although she didn't have Alice's superb logical ability or Barbara's creativity, Celia had what might be called "academic street smarts."
7. Flynn cast doubt on the widely held assumption that IQ tests measure general intelligence.
8. Apparently changes in environment can go a long way toward boosting both IQ scores and performance in classroom.

**Exercise 6. Arrange the following words in pairs of a) antonyms and b) synonyms.**

- a) advanced, to advance, to comprise, to encourage, to seek, appropriate, backward, minority, valid, discrepancy, to discourage, to retreat, to exclude, inappropriate, majority, to lose, invalid, agreement
- b) to assess, to comprise, assignment, to heed, assessment, to exhibit, item, to intervene, incident, to penalize, to raise, to seek, to consist (of), to display, to look for, point, to evaluate, to pay attention to, to interfere, task, estimation, to punish, event, to bring up

**Exercise 7. Cross the odd word out in every line given below and explain your reasons.**

- to process – to store – to transmit – to discourage  
 peer – parent – penalty – daughter  
 sought – penalized – labeled – estimated  
 to exhibit – to conceal – to display – to show  
 incident – event – case – item  
 estimation – assessment – evaluation – self-rating  
 enrollment – encouragement – delinquency – advancement

**Exercise 8. Find the explanation of the following terms in the text and read it or convey their meaning in your own words.**

chronological age, cognitive components approach, cultural bias, culture free test, intelligence, Intelligence Quotient (IQ), intervention, mental age, psychometric approach, reaction range, Stanford- Binet, valid, Wechsler scale.

**Exercise 9. Read the text and fill in the gaps with the appropriate words given in the box.**

mental	Wechsler scales	valid
culture free	intelligence	world
biased	creative	abstract
Binet	intelligence quotient	Stanford-Binet
chronological	psychometric	cognitive components
logical	analytical	reliable
reaction range		

A time machine takes you back to the early 1900s, to the office of the Minister of Public Education in Paris. He is talking to a psychologist who has just produced for the Paris schools the world's first standardized intelligence test. The psychologist's name is Alfred (1) \_\_\_\_\_

The minister is listening to Binet tell how the new test will allow the schools to assess each child's ability to perform certain cognitive tasks, such as understanding the meaning of words and following directions. For each question, Binet has determined whether the average child of a certain age can get that item right. By seeing which age-level questions a particular youngster can answer, Binet has a yardstick for identifying students who lag behind their peers. You recognize Binet's name because it appears in a test you took in grade school called the (2) \_\_\_\_\_-\_\_\_\_\_. On this test, the number of questions you answered right determined what is called your (3) \_\_\_\_\_age. Then your mental age was divided by your (4) \_\_\_\_\_ age to yield (5) \_\_\_\_\_, \_\_\_\_\_, or IQ.

Having seen the great optimism with which Binet's new test is greeted, you are anxious to move into the future and see how intelligence testing develops. You reenter your time machine and set the dial for the year 1950. This time you emerge in the United States, in the office of a psychologist named David Wechsler. He and his colleagues have just introduced an intelligence test for adults, and they are now working on a similar test for school-age children. The series of IQ tests they are designing is collectively called the (6) \_\_\_\_\_. These scales illustrate the (7) \_\_\_\_\_ approach to measuring IQ. Another approach, which measures IQ by assessing underlying mental processes, is called the (8) \_\_\_\_\_ approach.

As you enter Wechsler's office, he and his associates are discussing the extent to which their IQ test for children has so far yielded consistent results. When the test is given to the same group of youngsters on two separate occasions, the scores they receive are very similar. This finding shows that the preliminary Wechsler Intelligence Scales for Children looks to be very (9) \_\_\_\_\_. Wechsler and his colleagues are also concerned that the test they are developing will in fact measure the cognitive abilities they want it to measure. In other words, they want to be sure that the test is also (10) \_\_\_\_\_.

As you move through the 1950s, you can see how popular intelligence testing has become in American schools. You set your dial for the year 1970 and touch down in the middle of a U.S. Senate hearing on a federally funded project called Head Start. A psychologist is giving the senators on the committee a progress report on Head Start's efforts to teach cognitive skills to preschool children from underprivileged homes. The psychologist explains that heredity alone does not determine a child's EQ. Instead, heredity gives a child a range of developmental possibilities that may then be fulfilled or thwarted, depending on the child's learning experiences. This range through which IQ may vary is called the (11) \_\_\_\_\_. According to the psychologist, studies show that the reaction range for intellectual development is usually quite broad. A person's IQ can vary by as much as 20 or 25 points, depending on environment.

You enter the time machine once again and move on to the year 1980. This time you are in a federal courtroom in the state of California. You eavesdrop on a suit being brought against a school system for placing black children in classes for the mentally retarded solely on the basis of IQ scores. You hear psychologists testify that EQ tests contain questions which favor the knowledge and experience of children from the white middle class. Standardized IQ tests, they say, are to some extent culturally (12) \_\_\_\_\_. In the opinion of many experts, it is very hard to produce a totally (13) \_\_\_\_\_ - \_\_\_\_\_ test.

At the present time, some psychologists believe that IQ tests measure general intelligence. However, in a number of countries, there have been huge increases in IQ scores without evidence of increases in general intelligence. From these data, Flynn concluded that IQ scores do not measure general (14) \_\_\_\_\_ but rather something that is weakly associated with it, such as the ability to solve (15) \_\_\_\_\_ problems.

Sternberg noted that traditional, psychometric IQ tests primarily measure (16) \_\_\_\_\_ thinking and do not relate this thinking to the real world. In light of this problem, he suggests a new model of intelligence. This new model takes into account analytical thinking, as well as innovative or (17) \_\_\_\_\_ thinking and how one function in the real (18) \_\_\_\_\_.

#### **Exercise 10. Retell the text above.**

#### **Exercise 11. Are the following statements true (T) or false (F)?**

1. IQ tests measure innate intelligence.
2. If a child receives a score of 65 on an IQ test, it definitely means that the child is retarded.
3. IQ tests are good predictors of success in school.
4. People with high IQs are virtually guaranteed to earn a lot of money.
5. Many psychologists believe that almost all the currently available IQ tests are to some extent culturally biased.
6. If an IQ test is reliable, it will provide reasonably consistent results for any given person.
7. An IQ test can still be valid even if it fails to measure the cognitive abilities it is intended to measure.
8. A person's scores on IQ tests usually change quite dramatically from one stage of life to another.
9. Heredity seems to establish a broad range within which IQ can vary, depending on the environment.
10. Most psychologists believe that the average difference in IQ scores between white and black Americans can be taken as evidence of genetic differences.

**Exercise 12. Speak on one the following topics.**

1. Manifestation of genius in a particular area by some persons with very low IQ scores. Give some examples to prove the point.
2. Qualities and abilities usually associated with an intelligent person.
3. Jerman's formula for determining a person's IQ.
4. IQ scores as good predictors of success in school.
5. Discrepancy between IQ scores and real world intelligence (take Alice, Barbara and Celia or race-track handicappers as examples).
6. Possible causes of 15–20 points increasing IQ scores in many parts of the world for the last 20–40 years.
7. The influence of heredity and environment on IQ scores.

**Exercise 13. Prepare dialogues around the following topics, so that one student will support the statement given and the other will put forward arguments to reject it.**

1. Self-rating is a reliable tool to determine one's own IQ score.
2. The future in studying intelligence belongs to the Cognitive Components Approach rather than to the Psychometric Approach.
3. Intelligence tests in school are potentially dangerous because they are often used to label children for good.
4. Placing a child with low IQ scores from a disadvantaged environment in special classes for the mentally retarded should be persecuted by law.
5. Intervention programs of all kinds are indispensable for children from disadvantaged environments.

**Exercise 14. Render the following text into English using your active vocabulary.**

Одаренные дети

Изучением особенностей одаренных детей занимался московский психолог Н.С. Лейтес. Самое ценное в исследовании Н.С. Лейтеса – это психологический анализ одаренности. Он *показывает* некоторые существенно важные способности, которые образуют в совокупности общую умственную одаренность девятилетнего мальчика Шуры. Они включают следующие особенности личности.

Первая особенность – это внимательность, собранность, постоянная готовность к *напряженной работе*. На уроке Шура *не отвлекается*, ничего не пропускает, постоянно готов к ответу. Повышенная активность его проявляется не только в умственных занятиях. Он *отдает себя* целиком тому, что его заинтересовало.

Вторая особенность личности высокоодаренного ребенка, неразрывно связанная с первой, заключается в том, что готовность к труду у него перерастает в склонность к труду, в трудолюбие, в неумную потребность трудиться без усталости, срока и отдыха. Он не знает, что такое скука и что такое лень. Шура умеет работать в *неблагоприятных* условиях: его можно видеть занимающимся во время шумной, веселой перемены в школе, дома – среди громкого разговора. Он способен, занимаясь, не подниматься с места в течение 3–4 часов, хотя сидит очень беспокойно. Не менее замечательно его стремление доводить всякое дело до конца. Когда его отрывают для чего-нибудь от занятий, он просит подождать немного, торопясь завершить хотя бы часть работы... Шура сам *тянется* к умственной работе, испытывает удовольствие, трудясь.

Следующая, третья группа способностей, которую обнаруживает Шура, связана непосредственно с интеллектуальной деятельностью. Это особенности его мышления: быстрота *вычислительных процессов*, систематичность ума, повышенные возможности анализа и обобщения, высокая продуктивность умственной деятельности. Психологу, прежде всего, бросалась в глаза удивительная скорость мыслительных операций. Наблюдая Шуру на уроке у доски, он замечает, что ответы мальчика были готовы задолго до того, как учительница успевала до конца сообщить задание. Об этом *свидетельствовали* лицо и вся фигура ученика. Напряженность сосредоточенного внимания в начале вопроса сменялась выражением облегчения еще до конца его. Становилось заметно нетерпеливое ожидание окончания вопроса, желание поскорее ответить.

И, наконец, последняя группа способностей, которые отчетливо проявляются в психологическом анализе детской одаренности – широкий круг познавательных интересов, выступающий постоянным стимулом мыслительной активности ребенка.

**Exercise 15. Read and learn idioms expressing good and bad feelings**  
*good/positive feelings*

1. I am/feel **on top of the world** today. I've just passed all my exams. (*very happy indeed*)
2. She was **thrilled to bits** when I told her she had been picked for the team. (*very happy and excited*)
3. Jo was very **cool, calm and collected** just before the job interview. (*relaxed, prepared, in control, not nervous*)
4. When I saw how happy Nancy was with the present we gave her, it **made me day**. (*made me feel very happy/satisfied*)

5. I **jumped for joy** when they told me I didn't have to do the English test. (*felt very glad/happy about something, often a reaction to good news*)

*bad/negative feelings*

1. I've been (feeling) a bit **down in the dumps** lately. (*depressed / in low spirits*)
2. She's been/felt **on edge** all day. (nervous, agitated, anxious)
3. I just don't know what to do about the problem. I'm **at the end of my tether**\*. (am so tired or annoyed, I just can't deal with the situation any more)
4. I've **had my fill of** exams. I hope I never do another one for the rest of my life. (*had enough* (often in a negative sense))
5. I'm **sick and tired** of studying. I just want to get a job and earn money. (*have had enough* (always negative, much stronger than *have you fill*))

\* A tether is a rope used to limit an animal's movements and where it can feed. If the animal reaches the end of its tether, it can't find any more grass to eat, so becomes hungry and unhappy.

**Exercise 16. Read this letter to the *Problems* page of a magazine. The context should give you a good idea of the meaning of the idioms in bold.**

Dear Paula, I'm 22 and work in an office in London. I have been going out with a boy for the last six months, but lately it has all gone wrong. When I first saw him, he just **took my breath away** – I could hardly speak, he was so attractive and intelligent. We started going out, and after a while he said he loved me. I think this gave me a false sense of security, and I never thought anything bad could happen. But then someone told me he was dating a good friend of mine. The news was so terrible I just **didn't know what had hit me**, and I was so embarrassed I **didn't know where to put myself**. I asked him about it, but he **didn't take kindly to** the idea that I was suspicious of him. He got a bit angry, and told me that that side of his life had nothing to do with me. I **have mixed feelings** about this news, sometimes I feel positive, sometimes very down, and I **don't know which way to turn**. What should I do? Should I finish with him, or should I accept his right to have other dates apart from me? I still love him.

Yours, Diana Noe.

**Exercise 17. Complete each of these idioms with a preposition.**

1. I've had my fill \_\_\_\_\_ meetings. I hope we never have another. They're so boring.
2. She jumped \_\_\_\_\_ joy when they told her she had won a trip to Paris.
3. Jane has been \_\_\_\_\_ the dumps since her boyfriend went away.
4. He was thrilled \_\_\_\_\_ bits when I told him Sara was coming to stay.
5. I couldn't face all the problems any more. I was \_\_\_\_\_ the end of my tether.
6. I've been \_\_\_\_\_ edge lately, but I don't know why. Sorry if I sound impatient.

**Exercise 18. Answer these questions.**

1. Name something you are sick and tired of.
2. When was the last time you felt on the top of the world? Why?
3. Is there any place you have visited which is so beautiful it took your breath away?
4. In what kinds of situations do you feel on edge?
5. Have you ever been in a situation where you didn't know where to put yourself? What was it?

**Exercise 19. Complete each of these idioms. Use the keyword in brackets.**

1. Meeting her there when I wasn't expecting to see her \_\_\_\_\_. (DAY)
2. I'm not sure whether I want the job or not. I \_\_\_\_\_. (MIXED)
3. The good news made me \_\_\_\_\_. (JOY)
4. I got a chance to go to Canada for a week. I was \_\_\_\_\_. (BITS)
5. He doesn't like people using his computer, so he won't \_\_\_\_\_ the idea of sharing one. (KINDLY)
6. If you're feeling \_\_\_\_\_, why don't you come out with us tonight? (DUMPS)
7. I've \_\_\_\_\_ job interviews – six in just two weeks! I never want another one. (FILL)

**Exercise 20. Write an essay on one of the following topics.**

1. The study of intelligence by Russian psychologists.

2. Intervention programs in Russian schools.
3. The future of the IQ testing.

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### АНГЛИЙСКИЙ ЯЗЫК

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