

編入学試験 専門（英語）問題

注意事項

- 1 試験開始の合図があるまでは、この問題冊子を開かないこと。
- 2 この問題冊子は 4 ページあります。
- 3 「問題 1」「問題 2」すべてに解答すること。
- 4 解答用紙は、「問題 1」「問題 2」それぞれ 1 枚あります。
- 5 解答は解答用紙に横書きとする。
- 6 受験番号は、解答用紙の指定欄に記入すること。
- 7 解答用紙 2 枚を提出し、問題冊子は試験終了後持ち帰ること。なお、いかなる理由があっても解答用紙以外は受理しません。
- 8 試験中に、問題冊子の印刷不鮮明、ページの落丁・乱丁および解答用紙の汚れ等により交換を必要とする場合は、手を挙げて監督者に知らせること。

問題1 次の英文は「古典的条件付け (classical conditioning)」に関する文章です。この英文を読んで、後の問1、問2、問3に答えなさい。(90点)

Classical conditioning is a learning process in which a previously neutral stimulus becomes associated with another stimulus through repeated pairing with that stimulus. The study of classical conditioning began in the early years of the 20th century, when Ivan Pavlov, a Russian physiologist who had already won the Nobel Prize for research on digestion, turned his attention to learning. While studying digestion, Pavlov noticed that a dog began to salivate at the mere sight of a food dish. Although any dog will salivate when food is placed in its mouth, this dog had learned to associate the sight of the dish with the taste of food. Pavlov had happened upon a case of associative learning, in which relationships between events are learned, and he decided to see whether a dog could be taught to associate food with other things, such as a light or a tone.

PAVLOV'S EXPERIMENTS

In Pavlov's basic experiment, a researcher first attaches a tube to the dog's salivary gland to measure salivary flow. Then the dog is placed in front of a pan into which meat powder can be delivered automatically. A researcher turns on a light in a window in front of the dog (or, in some forms of the experiment, rings a bell or turns on a metronome). After a few seconds, some meat powder is delivered to the pan and the light is turned off. The dog is hungry, and the recording device registers copious salivation. This salivation is an unconditioned response (UCR, an innate or unlearned response elicited by the UCS), for no learning is involved in order for meat to evoke salivation. By the same token, the meat powder is an unconditioned stimulus (UCS, a stimulus that automatically elicits a response without prior conditioning). After a few presentations of the light followed by meat powder, the dog will salivate in response to the light, even if no meat powder is delivered. This anticipatory salivation is a conditioned response (CR, learned response), and the light is a conditioned stimulus (CS, learned stimulus). In other words, the CR is a learned response evoked by a CS that has come to predict the occurrence of the UCS. Although the light was originally a neutral stimulus—one that would not ordinarily trigger a salivary response—the dog has learned to associate the light with food and to respond to it by salivating.

In Pavlov's experiments, the form of the CR often mimicked the form of the UCR—it was salivation in both cases. Some investigators concluded that the CS simply substitutes for the UCS in order to generate the CR. However, in addition to salivating to the CS, Pavlov's dogs also showed other responses to the light, such as tail wagging, jumping, and barking. These responses are not similar to the UCR and indicate that the dogs learn much more than a simple stimulus-response (light-salivation) association. Indeed, evidence indicates that the animals learn a predictive relationship between the CS and UCS, which allows the CS to generate many different behaviors that anticipate UCS delivery.

LEARNING CURVES: ACQUISITION AND EXTINCTION

Each paired presentation of the conditioned stimulus (CS) and the unconditioned stimulus (UCS) is called a *trial*. The trials when the organism is learning the association between the two stimuli are the *acquisition stage* of conditioning. During this stage, repeated pairings of the CS (light) and UCS (food) strengthen the association between the two, as illustrated by the increase in the magnitude of the CR in the left-hand curve of Figure 1. The largest change in the magnitude of the CR happens in the earliest conditioning trials, and there is little change in the CR late in training. If the UCS is subsequently omitted, the CR will gradually diminish, and extinction occurs, as illustrated by the right-hand curve in Figure 1.

Extinction represents learning that the CS no longer predicts the UCS. Extinction is not the "unlearning" of the original CS-UCS association; in fact, extinction involves the formation of a new CS- "no UCS" memory that inhibits expression of the CS-UCS association. The preservation of the original CS-UCS association after extinction training is reflected by **spontaneous recovery**. The original CR returns as time passes following extinction.

CONDITIONING IN HUMANS

Numerous human responses can also be classically conditioned. To illustrate, consider the plight of cancer patients who are undergoing chemotherapy to stop the growth of their tumors. Chemotherapy involves injecting toxic substances (the UCS) into the patient, who as a result often becomes nauseated (the UCR). After a number of chemotherapy sessions, patients sometimes become nauseated and sick upon entering the treatment room. The repeated pairing of the chemotherapy (the UCS) and the sight, of the treatment room (the CS) has led them to associate the room with the chemotherapy, which results in the intestinal upset before their treatment even begins (the CR). A related phenomenon arises with young cancer patients who are given ice cream before the chemotherapy session. The ice cream may have been intended to lighten the child's distress about the impending treatment, but unfortunately the ice cream becomes conditioned to the chemotherapy experience. Now the ice cream is the CS and the chemotherapy the UCS. The result is that the children become less likely to eat ice cream, even outside the chemotherapy setting (Bernstein, 1978, 1999).

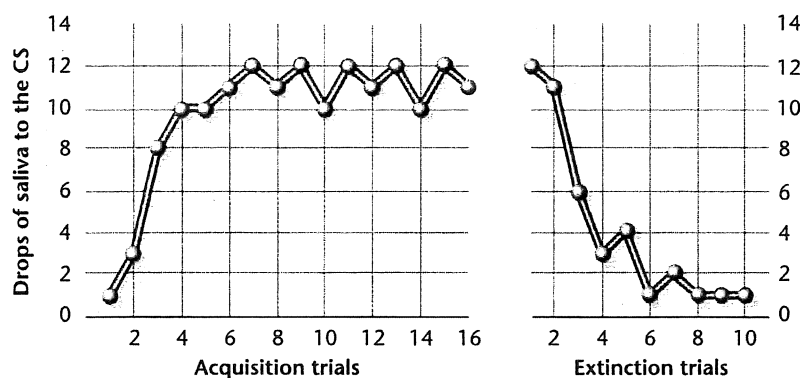


Figure 1. Acquisition and Extinction of a Conditioned Response (Pavlov, 1927)

The curve in the panel on the left depicts the acquisition phase of an experiment. Drops of saliva in response to the CS (before the onset of the UCS) are plotted on the vertical axis; the number of trials is plotted on the horizontal axis. After 16 acquisition trials, the experimenter switched to extinction; the results are presented in the panel at the right.

Smith, E., et. al (2003). *Atkinson & Hilgard's Introduction to Psychology 14th Edition* より一部改変

問1. ア～オの5つの文それぞれについて、本文第1～第3段落までの内容に一致している場合は、解答欄に「○」を、一致していない場合は「×」をつけなさい。(各5点×5=25点)

- ア. 古典的条件づけは、もともとは中性刺激であったものが別の刺激と一対で繰り返し提示されることによって、その刺激と連合されるようになる学習過程である。
- イ. パブロフは、消化の研究中にイヌが食器皿を見ただけで涎を垂らしはじめることに気づき、イヌが食器皿と食物の味とを連合させる「連合学習」を行っていると考えた。
- ウ. パブロフの基本的な実験では、イヌの前の食器皿に肉粉を与えた後、イヌの眼前の窓に光を当て、唾液腺に取り付けた導管によって唾液の量を測定する。
- エ. パブロフの実験では、光は無条件刺激であり、光に対して生じた唾液分泌は無条件反応である。また、肉粉は条件刺激であり、肉粉によってもたらされた唾液分泌は条件反応である。
- オ. パブロフの実験では、条件刺激は条件反応を生起するための無条件刺激の単なる代用であると言える。

問2. Figure 1 のグラフは実験のどのようなデータを示したものですか。また、左パネル、右パネルのグラフはどのような現象を表していますか。本文中の記述と図の説明に基づいて、それぞれ説明しなさい。グラフの横軸と縦軸が何かについても言及すること。(35点)

問3. 下線で示した文について、なぜこのようなことが起きてしまうのか、本文中の記述に基づいて説明しなさい。(30点)

問題2 次の英文は「道具的条件づけ (instrumental conditioning)」を説明した文章です。この英文を全訳しなさい。(60点)

In classical conditioning, the conditioned response is a response that was part of the animal's natural repertoire like salivation. But how do dogs learn new 'tricks', like rolling over and playing dead? If you have ever trained a dog to perform such tricks, you know that it involves rewarding the dog whenever it does what you want it to do. Initially, you will reward the dog for approximating the desired behavior, but eventually you will only reward it if it performs the entire trick. In instrumental conditioning, certain behaviors are learned because they operate on the environment. Your dog learns that performing the trick results in food: the behavior is instrumental in producing a certain change in the environment. If we think of the dog as having food as a goal, instrumental conditioning (which is also called operant conditioning) amounts to learning that a particular behavior (called the 'response' — in this case rolling over) leads to a particular goal. Classical conditioning involves learning the relationship between events; instrumental conditioning (also called 'operant conditioning') involves learning the relationship between responses and their outcomes.

Nolen-Hoeksema, S., et. al (2009). *Atkinson & Hilgard's Introduction to Psychology 15th Edition* より引用