Thyroid hormone

There are two thyroid hormones produced and secreted by the thyroid gland, these being thyroxine (T4) and triiodothyronine (T3). Thyroxine is a hormone produced from tyrosine, having either four (T4) or three (T3) iodine atoms on the tyrosine ring. Low dietary intake of iodine will lower the production of these two hormones.

The production and secretion of these hormones are initiated by the hypothalamus, which secretes thyrotropin-releasing hormone (TRH). The messenger neurohormone TRH enters the hypothalamic portal system to reach the anterior pituitary gland to bind to membrane receptors on thyrotrhons – cells in the anterior pituitary gland that produce thyroid-stimulating hormone (TSH). TSH then causes the anterior pituitary gland to secrete TSH and T4. Upon thyroid stimulation, thyroglobulin - which is the storage form of T3 and T4 - is secreted from the follicles, and dispersed in the follicular cells of the thyroid gland. In these cells, the large protein, thyroglobulin, is hydrolyzed into T3 and T4, and secreted into the peripheral circulation. The majority of thyroxine hormone produced and in circulation is T4. The majority of T3 and T4 concentrations are then bound by thyroxine-binding globulin, whereas the remaining 30% is bound to albumin or thyroxine-binding pre-albumin. Only a fraction of 1% remains unbound in the peripheral circulation. The large percentage of bound hormone supplies the body with a large pool from which to draw and prevents its degradation until it reaches its target tissue. Of the two thyroid hormones it is T3 that is considered the biologically active hormone, although T4 to a lesser extent can bind to thyroid receptors. After entering the peripheral circulation, T3 is converted to T4, in organs such as the brain, and then often measured over 24 h periods. Some behaviours may occupy a large amount of an animal’s available time while others may take very little time and be considered a minor aspect of an animal’s activity. Thyroid hormones affect the relative importance of the animal’s time. Thyroid hormones affect the relative importance of an animal’s time.

Thyrotropin-releasing hormone

Thyrotropin-releasing hormone (TRH) is a peptide hormone produced by the hypothalamus that stimulates the pituitary gland to produce thyroid-stimulating hormone (TSH), which stimulates the production of thyroid hormones. The action of TRH is antagonized by growth hormone-inhibiting hormone. The relationship between these hormones and the specific stressor and species concerned. TRH can also stimulate protein production.

Tid-bitting

Tid-bitting is a behaviour performed during courtship displays in many species of galliformes, in which the male pecks repeatedly at the ground, in which he pecks at a food source to attract females. Tid-bitting may also be performed as a threat during competition between males. Tid-bitting is associated with survival and reproduction. However, in captive environments, where predators are not present, anti-predator behaviour is not important and thus rarely shown. In addition, some animal patterns may be performed when possible to the behaviour does not suffer if the behaviour is prevented, i.e. the animal needs to perform the behaviour but does not need to perform the behaviour.

Time budget

Time budgets measure the amount of time an animal spends performing a particular activity and are often measured over 24 h periods. Some behaviours may occupy a large amount of an animal’s available time while others may take very little time and be considered a minor aspect of an animal’s activity. Thyroid hormones affect the relative importance of an animal’s time. Thyroid hormones affect the relative importance of an animal’s time.
field of genomics identifies these genes. Studies of behavioral endocrinology reveal complex neural circuitry and regulation of behavior. These three examples illustrate causative questions. By answering them, we learn about how behavior functions. A logically distinct type of causative question focuses on the evolution of behavior (or ontogeny) of behavior. Ontogenetic questions might ask about the degree to which a particular behavior requires specific life experiences to be properly performed, and address the timing of an event.

Ultimate questions are those employed to explain why we see the diversity of behavior. For instance, studies that focus on the evolution of behavior ask which is the most likely explanation for a particular behavior evolved. They might also tell us how many times a behavior evolved. To do so, evolutionary biologists construct phylogenetic trees (hypotheses about the relationships between species) and then ‘optimise’ (i.e. map) behavioural traits on these trees. A logically distinct type of ultimate question focuses on the current adaptive utility of a trait. Only traits that increase the fitness of individuals who possess them will evolve or be maintained by natural selection. For instance, if long legs aid in escaping predators, we will expect natural selection for leg length and running speed to evolve. Importantly, these four types of questions (of levels of analysis) produce different questions that are mutually exclusive only within a level. Consider birdsong: we can ask about the evolutionary history of song learning. Song learning has evolved in parrots, hummingbirds and passerine birds. Among passerines, it is seen in a broad group called the oscine birds. There are questions about the evolutionary history of birdsong. We can ask about the phylogenetic tree of birdsong, or the function, or of birdsong. Male birds may sing to attract females or to defend their territory from other males. In some species, males that sing more often are more attractive to females, and therefore have higher fitness. It would be illegal to use this evidence that, because male birds sing to defend territories, song learning has evolved on the basis of higher fitness rather than a level of analysis are mutually exclusive only with other questions within that level. We can ask proximate questions about birdsong as well. For instance, research works on the genetics of song has discovered a genetic approach to understanding individual variation in song. The next question asks whether individuals and birds both express the FoxP1 and FoxP2 genes. In birds, these genes are specifically expressed during song learning. A set of neurons, called the vocal centre, produces the song. In other species such as the HVC, it is called the HVC, which is correlated with the number of songs these animals produce, while in other species such as the HVC, which is the vocal centre, becomes larger when song learning is required. Finding evidence that the HVC does not change seasonally has not direct bearing on the correlation between brain size and song size. The brain size of the animal has been found to be related to the function of song learning; nor does it directly bear on hypotheses about the evolution of song-learning abilities, or about whether or not males that express a greater rate of song learning are of higher fitness. Again, these questions are mutually exclusive.

By taking a Tinbergenian approach to studying behaviour, it focuses on explaining different qualities of different questions. By doing so, we generate considerable knowledge about the diversity of behaviour. Recognizing that these are qualitatively different questions is, however, not enough as well as knowing that arguments about explanation are contrasting different hypotheses at the same level of analysis.

A fifth question to help extend the scope of behavioral research might also be proposed: What is the applied value of a particular behavioristic approach? Can it be generalized to a phenomenon? However, we expand the scope of ultimate questions. Questions might ask about the degree to which a particular behavior requires specific life experiences to be properly performed, and address the timing of an event.

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T-Maze

A T-maze is an apparatus employed to examine spatial memory in animals. The animal is placed at the bottom of the T-shaped apparatus in a start box, is required to move along the apparatus and then to turn either right or left to win a reward. After that the animal is taken back to the start box, where it is retained for a period of time (termine the retention interval). The animal is then placed at the start box, is the apparatus to be repeated. After that the animal is placed at the start box, where it is retained for a period of time (termine the retention interval). The animal is then placed at the start box, where it is retained for a period of time (termine the retention interval). The animal is then placed at the start box, where it is retained for a period of time (termine the retention interval). The animal is then placed at the start box, where it is retained for a period of time (termine the retention interval).

Knowledge of animals’ spatial memory abilities is necessary in many species and, in particular, for farmed animals in extensive production systems, such as animals would need to locate and identify conspecifics. For example, laying hens in large systems are not always in sight of resources such as food, water, litter and nesting boxes, and may need to travel to different locations to reach these resources, as well as to navigate to them. Clearly, a failure to find resources would severely compromise the welfare of animals in production systems.

References

Mano, M., Erhardt, H.W., Hackett, M., Vennfors, S. and Lawrence, L. (2001). “Spatial memory and comparative psychology: the results of the research on non-human primates and the behavioral basis of human behavior. In many cases, the applied benefits of said study are the central question. Not all researchers will desire to apply behavioral knowledge, just as not all evolutionary biologists are interested in studying proximate questions about causation. The fact, in itself, is no reason not to recognize the study of applied behavior as a formal, logically distinct field of enquiry. It is essential to value high-quality research at whatever level of analysis it is conducted, not to dismiss the importance of focused studies operating only at a single level. By bringing together the hypothesis of applied value, we can clearly identify applied benefits and this may help [market] behavior research to the public. Formal acknowledgement of the applied value of behavior should make the future of bio-behavioral study even richer.

Reference and further reading


T-Maze

A T-maze is an apparatus employed to examine spatial memory in animals. The animal is placed at the bottom of the T-shaped apparatus in a start box, is required to move along the apparatus and then to turn either right or left to win a reward. After the animal is taken back to the start box, where it is retained for a period of time (termine the retention interval of the animal). The animal is then placed at the start box, while it is retained for a period of time (termine the retention interval). There are several types of tests. For example, in a match-to-sample procedure, the animal has to choose the same arm that it visited recently in order to receive a reward. The animal has to choose the same arm that it visited recently in order to receive a reward. The animal has to choose the same arm that it visited recently in order to receive a reward. The animal has to choose the same arm that it visited recently in order to receive a reward.

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Tonic immobility

Tonic immobility is an unlearned response to a brief period of physical restraint and is characterized by a reduced-activity, "atonal-like" state (Jones, 1968). Tonic immobility can also be produced by a seemingly immobile state, or "freezing", response to the presence of a predator or other dangerous stimuli. It was initially characterized by Daniel Schuurmans and his colleagues (1960) who described it as a form of extreme immobility in which the animal appears unable to move or react. Tonic immobility is a common phenomenon in a variety of species, including mammals, birds, and reptiles. It is often observed in response to a variety of stimuli, including physical restraint, and is thought to serve as a mechanism for reducing stress or fear.

Tonic immobility is not a rare phenomenon, occurring in a wide variety of species, including birds, mammals, and reptiles. In birds, tonic immobility is frequently observed during courtship and mating behavior. In mammals, tonic immobility is frequently observed during physical restraint, such as when capturing or handling animals. It is also observed in response to a variety of stimuli, including physical restraint, and is thought to serve as a mechanism for reducing stress or fear.

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