asgn4l -- Motivation:  
Approaches to Motivation I

Motivation is a concept used to explain why behavior changes over time, why behaviors are persistent (or not persistent), and why behavior is directed toward different goals at different times. This exercise and the following describe five complementary approaches to motivation. Each emphasizes a different feature of motivation. These approaches motivation in terms of:

1. Species-Typical (instinctive) Behaviors. This approach reflects the influence of ethology
2. Drives. This approach emphasizes the role of behavior in maintaining the stability of the body's internal environment (temperature, blood sugar, etc.). Many behaviorists adopted this approach in the middle of the 20th century.
3. Incentives. This approach emphasizes the attractiveness of external stimuli. For example, a swim in a lake is very attractive on a hot, muggy July day but not at all inviting on a cold, raw November day. This approach evolved in response to findings that the drive approach could not explain easily.
4. Arousal. This approach emphasizes the feature that is common to all forms of motivation: The more highly you are motivated, the more aroused you are, as shown by how much you move around and how active your autonomic nervous system -- especially its sympathetic division -- is.
5. Opponent Processes. This approach contrasts the effects of giving an external motivating stimulus and removing it. Giving and removing motivating stimuli have opposite valences (~attractiveness): if a stimulus is positive (for example, a chocolate chip cookie), removing it is negative (the fading trace of its taste after you swallow it is negative you want to get rid of it by having another cookie).

When you have finished these two exercises, you should know the definitions of these approaches and understand how they differ. You should also be able to recognize examples of each approach.

Basic Features of Motivation

Motivation is the label we give to processes that energize and direct behavior toward particular goals. Motivation affects the strength of behaviors, persistence of behaviors, and direction of behavior (direction = choosing which behavior to make).

Motivation changes over time as conditions inside the body and in the external environment change. With these changes, behavior changes. For example, late in the day (or night) most people get tired and slow down. As the time since you last ate increases, you are more likely to feel hungry. When an interesting person walks in the room, you may stop what you are doing and go to meet her/him. Motivation is used to explain how and why such changes in behavior occur.

Motivation and reinforcement are very closely linked. A high level of motivation for something (food, social power, cigarettes, etc.) will make it easy to use it as a reinforcer. For example, a hungry pigeon will work very hard to get a bite of food, and smokers will expend a lot of effort to get cigarettes. This feature of motivation is the basis of Premack's (1959, 1965) and Allison and Timberlake's (1974) models of reinforcement.

Match the following behaviors with the processes related to motivation listed below.

1. strength of behavior  2. persistence of behavior  3. direction of responding  
4. motivation and reinforcement are closely linked  5. variability of behavior

Q1A. A rat presses a lever 50 times a minute to turn on stimulation to its brain  
Q1B. Tracy spends four hours a day practicing the clarinet  
Q1C. Sometimes Carrie goes bowling; other times she hikes in the woods.  
Q1D. Increasing motivation for food makes food a reinforcer  
Q1E. Mark prefers playing basketball to reading his psychology text

Motivation determines what will work as reinforcement. The more attractive something appears (motivation), the more likely someone will do something to get some (reinforcement). In fact, some psychologists, especially those who use Skinner's behavior theory approach, claim that the only thing motivation does is to establish the conditions for reinforcement. For example, if Alan does not spend much time studying, most people would say he is not motivated to study. Behavior theorists would say that Alan has not been reinforced for studying.
Q2. If Joe exercises only rarely, most people would say that Joe is not ___ exercise. Psychologists who adopt Skinner's behavior theory would say that Joe is not ___ exercise.
A. active enough to; energetic enough to       B. rewarded for; motivated to
C. motivated to; reinforced for               D. hungry enough for; health-conscious enough to

Several different models of motivation have been proposed. Each model captures some aspect of motivated behavior that the others do not address. So the different models complement more than compete with the others. Five of these models are:

1. **Instinct** models emphasize the importance of species-typical behaviors, such as attachment between baby and mother, parent animals feeding babies, or courting (mate selection) behavior.
2. **Drive** models emphasize the role of disturbed homeostasis in energizing and directing behavior. Homeostasis refers to processes that keep body's internal environment within normal limits. For example, blood sugar is normally about 100mg/ml, salt concentration in body fluids is normally about 0.9%, body temperature is normally about 37.5 degrees Celsius (98.6 degrees Fahrenheit), etc.
3. **Incentive** models emphasize the attractiveness of different goals.
4. **Arousal** models emphasize achieving an optimal level of arousal (neither too high nor too low). The optimal level of arousal differs for different situations and for different people.
5. **Opponent Process** model emphasizes the opposing effects of getting and removing motivating stimuli. For example, people work to escape or avoid painful stimuli, and successful removal or avoidance produces the positive feeling of relief.

Match the following descriptions of motivated behavior with the approach that best describes them:

1. drive  2. arousal  3. instinct or species-typical  4. incentive  5. opponent process

Q3A. Hunger makes food and food-related stimuli more attractive
Q3B. When you are bored, you look for something interesting to activate your body and mind
Q3C. Without specific training, a mother rat makes nest & carries pups to it
Q3D. A dog getting bath acts unhappy; after the bath, it acts very happy
Q3E. When your body temperature starts to fall, you put on a sweater to prevent further heat loss

Species-Typical (Instinctive) Behavior in Motivation

The modern name for "instinctive behavior" is species-typical behavior: normal members of a species exhibit species-typical behaviors under the appropriate conditions. Robins have a characteristic song, a characteristic method for feeding their young, etc., that differs from the same kind of behavior in herring gulls. These behaviors are as typical of robins and herring gulls as is the robin's red breast and dark grey back and the herring gull's body, beak, and wing shape and color. Even if gulls and robins looked alike, you could easily tell them apart by their species-typical behaviors.

Human language is a good example of species-typical behavior. A recent book on the subject is called "The Language Instinct" (Pinker, 1994). This name fits because humans develop language under almost all conditions, and earlier stages of language development appear to be very similar. These observations suggest to many researchers that the underlying features of language are universal. They are very similar regardless of the language the toddler is learning, even including sign language of the deaf. Language normally develops quite automatically; your caregivers did not set aside daily periods to teach you to speak. Instead, they automatically (instinctively?) adjusted their language to you according to your language abilities.

Q4. Cats all hunt in the same way. When they see a mouse, they creep up, body low to the ground. When they get close enough, they pounce, pin the mouse with one paw, and grab it by the back of the neck. This _______ behavior identifies cats as accurately as the shape of their head and body.
A. instinctive B. species typical C. motivated D. stereotyped E. eating

"Instinctive" does NOT mean independent of learning or experience. For example, the feeding behavior of herring gull chicks shown in Figure 1-41 is species-typical (all sea gull chicks do it the same way). Nevertheless, its development depends on experience and practice as much as on brain organization (Hailman, J. 1969). Female rabbits build nests and care for their young, but they get more successful at it after each successive birth, suggesting the role of experience (Sawin et al., 1957). Female rats fail to show normal maternal behavior if they cannot reach their genitals during development (Birch, 1956). These and many other findings show that "instinctive" behavior depends on both environmental and genetic factors.
Q5. The play of male and female juvenile rhesus monkeys is species-typical. Males do a lot of rough-and-tumble
play, whereas females do more chasing and running. But juvenile rhesus monkeys raised in isolation
from other juveniles fail to show this sort of behavior. This fact illustrates the idea that
A. species-typical behaviors are not the same as instincts
B. experience is important in development of normal species-typical behavior
C. parents teach species-typical behaviors
D. training can change behavior from one species type to another
E. B and D are both correct

The word "instinct" was and still is used as an explanation for some behavior, when it is often only a name. Many psychologists and biologists have avoided the word "instinct," because it has misleading associations. Early in this century, some psychologists "discovered" a new "instinct" every time they saw a behavior pattern that needed explaining. So if a cat took good care of her first litter of kittens, this was "explained" by saying she had a strong maternal instinct.

Q6. Queenie the cat is a skillful hunter. She regularly brings home mice, chipmunks, and an occasional young rabbit. Puff, who live next door, never catches anything. Her owner says that Puff must have a weak hunting instinct. Puff's owner is ___.
A. using what he was trying to explain as the source of the explanation he gives
B. making the nominal or naming-explaining fallacy
C. giving a theory of motivation the cat's behavior
D. A and B are both correct
E. A and C are both correct

In many species, a process called imprinting quickly and strongly attaches infants to their mothers. Attachment of newborn babies to mothers is an important species-typical behavior that is crucial for successful survival of young animals, including humans. For example, newly hatched ducklings, which walk as soon as they hatch, follow their mother almost immediately. The process by which attachment develops is called imprinting. This phenomenon was first described in the scientific literature in the late 19th century, but Konrad Lorenz is usually credited with making it an important subject for research.

Much of the research on imprinting has been done on ducklings, goslings, and other newly-hatched fowl. These birds can walk as soon as they hatch. They follow the first large moving object they see after hatching, especially if it makes duck sounds. The process of following is the basis of the attachment. The more effort they put into following this large moving object, the more strongly they become attached.

Normally baby ducklings imprint on their mother, because she is the first large, moving thing they see. But if ducklings hatch in an incubator, they imprint on the person who takes care of them. In experimental tests of imprinting, ducklings have imprinted on a large, moving orange ball, or almost anything else that is the first large moving object they see. Clearly this is highly motivated behavior. It has the features of motivated behavior: strength, persistence, and direction. The effects of attachment show up even in adults, long after they no longer stay with their mothers. For example, adult ducks will try to mate with the object or person on which they were imprinted.

For more information about imprinting, click HERE. To go to a description of imprinting and an experimental simulation, click HERE.
Q7. Imprinting
A. is the process that attaches many kinds of baby animals to their mothers
B. affects adult behavior as well as behavior during infancy
C. is a behavior that is inherited
D. is a species-typical behavior
E. A, B, and D are all correct.
F. A, B, C, and D are all correct.

Similar attachment occurs in many other species. Normally, baby monkeys spend a lot of time clinging to their mothers. Harry Harlow et al. (1971) showed that if they grow up separated from their mothers, infant monkeys will cling to anything soft and become attached to it. Harlow and his co-workers tested the role of different stimuli in forming infant-mother attachment. They created several different monkey dolls to serve as surrogate (substitute) mothers. They all had the same head and body shape but differed in softness, warmth, and availability of milk.

The babies strongly preferred ones covered with clingable terrycloth, even to one that provided its nursing bottle but was made of bare metal hardware cloth. If a "toddler" monkey is put by itself in a novel "playroom," it acts terrified, curling up into a ball, until its mother (real or surrogate doll) appears. It races over to cling to its mother and clings for a while, and slowly builds up enough courage to start playing. To read a brief description of these experiments, click HERE.

Harlow's research program raised major questions about the then-dominant model of attachment between human infants and their mothers. The model, based on behavioristic and psychoanalytic ideas, proposed that this attachment reflected mothers' role in satisfying some basic need, especially food.

Human infants also need contact comfort for normal development. John Bowlby (1958) developed a much broader model of attachment. This model proposes a positive, physical contact-based social process and a negative fear-based process in establishing infant-mother attachments. Serious psychological and social consequences can follow from deprivation of the attachment process.

Some of the strongest evidence for the importance of physical and social contact comes from orphaned or abandoned infants kept in large, impersonal nurseries where they get little contact comfort (holding and cuddling). Such infants can show disturbed physical as well as psychological development. A tragic "natural experiment" has strongly confirmed this idea. Because of severe economic difficulties and social disruption, many children have been orphaned in Romania. They were placed in orphanages that provided basic physical care but virtually no social contact and stimulation. People in the U. S. have adopted some of these children. They turn out to have severe developmental and social adjustment difficulties.

Q8. Traditional behaviorist theory proposed that infants became attached to their mothers because of the positive reinforcement from mothers' milk (and the negative reinforcement of relief from pain and discomfort). Harlow's data on monkeys growing up with surrogate mothers
A. support behaviorist theory
B. show that baby monkeys become attached to the source of food
C. show that attachment in monkeys is based on contact comfort
D. show that monkeys preferred the clingable surrogate (substitute) mother over the food-giving surrogate mother made of metal hardware cloth
E. A and B are both correct
F. C and D are both correct
A sign stimulus or releasing stimulus is the stimulus that triggers or elicits a species-typical behavior. For example, the shape, coloring pattern, and movement of the adult herring gull's bill trigger begging behavior from its chick. The chick's begging behavior in turn triggers regurgitation of the food that the parent gull brought to feed the baby (Hailman, 1969).

Among wolves, a dominant wolf making an aggressive posture triggers a submission response (usually rolling on back and exposing throat to attack) in a lower status wolf. The submission response (usually) turns off the aggression. In these examples a specific stimulus feature triggers a specific complex behavioral reaction, which is the same for all (appropriate) members of the species.

Humans have sign stimuli, also. For example, babies smile at adult faces. Adults see a baby's bulging forehead and small face as attractive, which helps elicit care from the adults. Emotional loss tends to trigger weeping in human adults, though culture and gender modulate (~modify) this behavior (like most emotional behaviors). Body secretions, like feces and urine, universally produce avoidance in adult humans.

Q9. During the mating season, male sticklebacks (a small fish) develop red bellies. A male attacks any other male that approaches his nesting territory. When presented with various models of another male, a male stickleback attacks if the model has a red area, regardless of any other feature. It ignores a model without the red, regardless of how good it is otherwise. The red belly serves as the ____ stimulus for attack when another male enters a male stickleback's nesting territory.

A. conditioned  
B. unconditioned  
C. generalized  
D. sign or releasing  
E. motivating

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Drive in Motivation

Drive theory states that disturbed homeostasis activates motivation. **Homeostasis** is a fundamental concept in biology. Homeostasis refers to the steady state (=stasis) condition of the body's internal environment, which the body actively preserves or returns to. Homeostasis exists when the internal conditions of the body are within normal limits. Body temperature is normally about 37.5°C (98.6°F); salt concentration in body fluids is normally about 0.9%; blood glucose (blood sugar) is normally about 100 mg/ml; carbon dioxide is normally about 25 mEq/L concentration in the blood; etc. These are average values. They normally vary about that average. For example, your body temperature rises about the time you usually wake up in the morning.

The body actively defends these limits. Homeostasis is disturbed when some internal condition of the body's internal environment begins to go outside of its normal limits. Disturbed homeostasis makes the body act to restore homeostatic balance. It acts to bring the variable that has deviated from its normal range back into that range.
This is what thermostats do for temperature \( \text{therm} = \text{temperature or heat; stat} = \text{static or stationary} \), so drives are like thermostats.

\[ \text{1. Just as a thermostat turns on the heat when room temperature falls below the set level, the body’s thermostat activates reflexes that decrease heat loss and increase heat production. For example, when you are really cold, the blood moves away from your skin. If you have fair skin, it turns bluish-white. You also start shivering to generate more heat.} \]

\[ \text{2. Just as a thermostat turns on the air conditioner when room temperature increases, the body’s thermostat increases heat loss (e.g., moving blood to the skin - fair skin gets pinker) and starts perspiration. Figure 1-4m illustrates a thermostat doing these things.} \]

For more information about homeostasis, click HERE. For a detailed explanation, click HERE.

**Q1.** (Mark EACH item True (T) or False (F))

A. homeostasis was disturbed \[ \text{T/F} \]

B. body reacted to prevent homeostasis \[ \text{T/F} \]

C. body reacted to preserve or reestablish homeostasis \[ \text{T/F} \]

D. motivation to cool off and drink something was increased \[ \text{T/F} \]

E. homeostasis was increased \[ \text{T/F} \]

**Q2.** Homeostasis is disturbed when the body loses a lot of fluid through sweating, diarrhea, etc. Which of the following is (are) processes (not the effect of processes) the body uses to prevent or reverse the fluid loss?\[ \text{A. reflexes that reduce water loss.} \]

\[ \text{B. cooling itself down.} \]

\[ \text{C. directing behavior to look for water.} \]

\[ \text{D. lowering body temperature toward normal.} \]

\[ \text{E. A & C are both correct.} \]

\[ \text{F. A, B, C & D are all correct} \]

**Q3.** According to drive theory, behavior is motivated to help the body return to

A. homeostatic balance \[ \text{B. within the limits of the normal internal environment} \]

C. zero activity in the autonomic nervous system \[ \text{Hint} \]

D. A and B are both correct \[ \text{E. A, B, and C are all correct} \]

**Figure 1-4m.** When temperature falls below normal range, a thermostat turns on heat and prevents heat loss by pulling blood flow away from the skin (bluish arm). When temperature rises about normal range, it turns on a fan to remove heat faster and increasing heat loss by increasing blood flow to the skin (pink arm).
The problem with drive theory is this: Many motivated behaviors are not directly related to disturbed homeostasis. Much of human behavior is motivated by curiosity, by sensory pleasures (music, roller coaster rides, pictures, etc.), and by social motives, which direct how you act toward other people. Drive theories tried to explain such "non-homeostatic" motivations with learned motivation or learned drive (also called conditioned or secondary motivation or drive). Learned motivation is established by Pavlovian conditioning: pairing a previously neutral stimulus with a motivated state produced by a primary drive.

Some kinds of learned motivations can be demonstrated easily in the laboratory. For example, a rat can learn to step back and forth across a hurdle to postpone randomly presented electric shocks (this is instrumental conditioning using escape/avoidance learning). A signal, like a flickering light, that had been paired with shock (Pavlovian conditioning), speeds up the rate of hurdle crossing. A different signal, like a steady light, that had been associated with the absence of shock, slows the rate of hurdle crossings. These signals are supposed to work by triggering motivational states that produce the observed change in behavior. These motivational states are examples of learned or conditioned drives. Other kinds of learned motivation, like learned hunger, are harder to show in the laboratory, but good evidence shows that they exist (eg., Weingarten 1983).

Q4. Snoopy hears the can opener turn on, and he wants something to eat. The sound of the can opener
A. produces a learned (conditioned, secondary) drive
B. inhibits the drive
C. changes the drive into a reward
D. removes the drive and reward behavior

Two lines of evidence show that drive theory does not describe much of motivated behavior adequately:

1. Animals (including people) usually show "drive motivated" behaviors like eating or drinking before the body's internal environment shows much, if any, deviation from homeostasis. Winn (1995) called this process allostatic.
2. Many motives, such as social motives, have no apparent connection with to disturbed homeostasis.

Several lines of evidence show that behaviors like eating precede significant disturbance of homeostasis.

1. Direct measurement of blood sugar shows only small deviations before eating begins (Toates, 1986).
2. Eating ends before much of the food eaten can get into the body to counteract any deviation from homeostatic balance.

Selective damage in the hypothalamus severely disturbs rats' ability to respond to disturbed homeostasis. For example, an injection of insulin drives down concentration of glucose ("blood sugar") in the blood and triggers eating in normal animals, but not in rats with damage in a specific part of the hypothalamus. Yet these rats can show normal patterns of eating and drinking (Winn, 1995). This indicates that normal eating and drinking do not require detecting disturbed homeostasis.

Taste properties of food strongly affect how much is eaten. Many overweight humans can lose weight and keep it off if they eat as much as they want of a very bland-tasting, nutritious liquid diet and nothing else. (Some fad diets, like the "ice cream diet," work this way. Unfortunately, you can’t live on ice cream alone.)

Q5. Which of the following supports a drive explanation of motivation?
A. animals start eating before blood sugar and other signals of disturbed homeostasis appear
B. overeating depends on the tastiness of food
C. eating stops before homeostatic disturbance can be relieved
D. normal eating occurs in animals with brain damage that prevents eating in reaction to rapid, artificially-produced changes in the body's internal environment
E. A, B, C and D are all correct
F. None of the above support a drive explanation; they show how it is inadequate.

The behavior of dogs provides a clear illustration of the effectiveness of social motivations. Dogs are very social animals. A well-trained dog treats its master as the dominant (~top) dog of its pack and will respond to its master's behavior. People can train dogs to sit, heel, come when called, stay, etc. without too much difficulty, though some breeds are much easier to train than are others. Although food is sometimes used as the reward for correct performance, pats and other signs of approval are usually completely sufficient. For example, a German Shepherd will learn to heel, sit, come, retrieve sticks his/her master throws, etc. for no reward other than patting.
The effectiveness of such reinforcers in strengthening behaviors indicates that drive theory cannot account for all motivation. You could say that dogs have a social drive. However, unless you explain how such a social drive is activated and how it operates, this would be another example of the nominal ( naming-explaining) fallacy.

Q6. Monkeys placed in a quiet, dimly lit chamber can learn to press a lever with no other consequence that having a window open so it can peek out. This finding indicates that
A. monkeys have a curiosity drive                              B. drive theory of motivation is incomplete
C. monkeys do not need reinforcement to learn a new task       D. getting to see out is a form of approval

Incentive theories state that motivation acts by making goal objects more attractive and behavior directed toward them easier to trigger. Incentive emphasizes external "pulls" rather than Drive theory's internal "pushes."

Flynn and coworkers (1969) showed that cats’ hunting behavior can be described in terms of incentive motivation. Cats’ hunting behavior is quite stereotyped. A cat starts by prowling around looking for prey. When it spots a mouse, it slowly slinks up toward it. When close enough, it pounces, pins the mouse with a batting movement of its paw, turns its head, opens its mouth and bites the mouse on the back of its neck.

Some cats don’t hunt. Flynn (1969) and co-workers showed that non-hunting cats turned into hunters if they applied weak electrical stimulation to a brain circuit involved in hunting behavior. This circuit goes between the forebrain and the middle of the brain stem through the hypothalamus. The hunting they elicited electrically was completely normal, so apparently the stimulation activated the brain circuits for hunting behavior.

The brain stimulation worked by making the parts of the hunting behavior much more reactive to their natural stimuli. During effective stimulation, the adequate stimuli for the visual search, paw batting, head turning, and biting reactions elicited these reactions more easily. Thus, the brain stimulation increased the non-hunting cats’ responsiveness to and attractiveness of hunting-related stimuli. This fits the basic process of incentive motivation.

Q1. Brain stimulation at a specific location in the hypothalamus can make a cat hunt when it did not normally hunt before. This stimulation works by ___. [Assume that naturally occurring hunting works the same way as hunting triggered by selective brain stimulation.]
A. activating the cat’s hunting drive                             B. disturbing homeostasis
C. eliciting the cat’s hunting drive                             D. making stimuli from prey trigger the parts of hunting more easily
E. activating the cat’s hunting instinct

According to incentive theory, hunger makes food and food-related stimuli more attractive, increasing the chance of activating eating. For example, when you are hungry, food related stimuli are easier to notice and more attractive, which increases the chances of finding food-related stimuli and reacting to them.

The idea that hunger makes food-related stimuli more attractive seems to be supported. For example, when they are hungry, people will rate a sugar solution as both very sweet and very pleasant. After they have eaten something, they still rate the sugar solution as very sweet, but less pleasant than when they were hungry. The same kind of effect appears with body temperature. When the body is warm, people judge putting the hand in cool water as pleasant; if the body is cool, the same water feels unpleasant (Cabanac, 1971) Rats show the same effect (Cabanac & LaFrance, 1990). These data show that the attractiveness of a stimulus changes when the related motivational state changes, even though its sensory properties remain the same.
Q2. According to an incentive interpretation, thirst makes
A. water-and water-related stimuli more attractive       B. the thirsty individual's behavior directed to find water
C. the body lose water                                   D. a person want to drink       E. the pleasure ratings of foods go up

_Arousal theories emphasize the idea that motivation activates or energizes behavior._ A motivated person is an activated or aroused person, and the stronger the motivation, the greater the arousal. However, arousal level can be too high. If this happens, a person looks for ways to decrease arousal. The _Yerkes-Dodson Law_ states that the relation between arousal level and its effects on feelings and behavioral performance as an inverted U. Individuals seek out the arousal level that makes feelings and performance the highest or best for themselves.

For example, some people find studying rather boring, so they study in noisy places like the Main Library’s lobby or take take breaks. Both increase their arousal level. _Behavior directed to increase arousal level is called diversive exploration_ (as in diverse). Other people need quiet to study. They may also find crowds and noisy parties too stimulating, so they tend to get away from them to keep arousal from getting too high. _Behavior that seeks to decrease arousal level is called specific exploration._

_Different tasks require different levels of arousal for optimum performance._ Performance on tasks that are highly practiced and use automatic processing can increase as arousal increases, even when the arousal gets very high. Performance on tasks that require controlled processing is easily disrupted by high levels of arousal. This is why people like emergency medical technicians, who often work in highly arousing conditions, need to be very well-practiced for their jobs. Figure 1-4n shows optimal performance occurs at increasing levels of arousal as task performance becomes more automatic.

Laboratory studies on the effect of arousal level and task demands on performance are contradictory. Some studies fail to find the effect, whereas others do.

Q3. Amy visits a haunted house at Halloween. She enjoys the increased arousal the safely scary place gives her. She is
A. doing diversive exploration       B. trying to optimize her arousal level       C. performing an automatic task
D. doing controlled processing       E. A and B are both correct       F. A, B, C, and D are all correct

Q4. People who suffer from test anxiety often don't do well on tests because
A. they don't know the material       B. their arousal is too high for tasks that require thinking
C. they are doing diversive exploration       D. they are doing specific exploration       E. A and C are both correct

_Opponent process theory_ (Solomon, 1980) emphasizes the reaction to presenting and removing motivating stimuli; It has three basic ideas:

1. **Presenting a motivating stimulus triggers a direct reaction called the A process.** As the motivating stimulus fades, its loss triggers the opposite reaction, called the B process. The A and B processes have opposite signs. If an A process that a stimulus elicits is positive (attracts, is pleasant), the associated B process is negative (repels, is unpleasant). If an A process is negative, the associated B process is positive. For example, a bite of a chocolate chip cookie triggers a pleasant A process. The fading of its taste after swallowing is somewhat unpleasant. The hot, sweaty, dirty feeling you have after working hard in the yard is unpleasant; removing it with a shower feels pleasant.

2. **The A process and B process counteract each other.** The unpleasant B process after swallowing the bite of chocolate chip cookie can be blocked by the A process from another bite.

3. **Repeated presentation of a motivating stimulus decreases the strength of the A process and increases the strength of the B process.** According to this model, eating a chocolate fudge
cookie generates a positive A process. After the cookie is eaten, a negative B process (no more cookie) develops, which can be relieved by another cookie, which is why I eat too many chocolate fudge cookies. After many days of yard work, the hot, sweaty feeling isn't as bad as it was, and the shower feels great! Figure 2-4n shows a package of potato chips with a slogan that reflects opponent process theory.

Q5. An ad for potato chips says "Bet you can't eat just one." This ad is based on the B process triggered by ____. It can be relieved by ____.
A. the taste of the potato chip; swallowing the potato chip
B. swallowing the potato chip; the taste of another potato chip
C. being hungry enough to want a potato chip; getting full from eating chips
D. the A process, the B process

Opponent processes may play a role in addictions.

According to this model, an addictive substance triggers a positive A process when people use it. For example, nicotine in tobacco produces a pleasant, calming effect. After smoking stops, nicotine level in the brain falls, so its positive effects decline. This triggers an unpleasant B process (withdrawal), which can be relieved by more nicotine. Repeated smoking weakens the positive effects of the nicotine (A process) and increases the craving (B process) for another cigarette. A chain smoker may smoke the next cigarette partly to relieve the unpleasant B process triggered by the end of the previous cigarette.

Q6. According to opponent process theory, addictions to drugs develop because repeated use of an addictive drug makes
A. its A process stronger
B. its B stronger
C. its A process weaker
D. its B process weaker
E. A and D are both correct
F. B and C are both correct

Many chain smokers report that the first cigarette of the day, when nicotine in the body is lowest, is the most pleasant.

This mechanism works in the opposite direction as well. Long distance running requires a lot of effort. Experienced runners report that they have an intense "high" after the race is over. According to opponent process theory, this "high" is the positive B process that follows removal of the stress and effort when the run is over.