# Psychiatry

## Chapter 1
## Learning and Behavior Change

# 1. Learning and Behavior Change

## Objectives

» Describe the different developmental milestones (motor, social, and verbal) and at which ages they generally occur in childhood development.

» Describe the physical changes that occur in older adults.

» Describe the different types of conditioning.

» Define and give an example of each of the immature and mature defense mechanisms.

» Define the 6 stages in the transtheoretical model of behavior change.

» Describe 5 different types of psychotherapy and give an example of what each can be used to treat.

**i.** This section reviews the standard or typical developmental stages, how behaviors are developed, and several different types of therapy used in mental health practices. The second section reviews what happens when these processes are disrupted: the mental health disorders.

From birth until death people develop and change, and while each person is unique, there are some general milestones that occur at similar time frames for most people (see below). The developmental milestones for children can help to track their development and, while not diagnostic of a problem, can be one sign of a possible developmental delay that should be tracked or in some cases, the child should receive additional testing (for example, not meeting speaking milestones may indicate a hearing problem, and the child's hearing should be tested). Also, if a child is not meeting certain milestones, it may not indicate a life-long problem, but may be a sign that a child needs short-term additional help in one area (for example, many children require speech therapy while they are young to help them pronounce certain words and sounds). The developmental milestones for young children are below:

| Age | Motor | Social | Verbal |
|---|---|---|---|
| 0-6 months | Primitive reflexes are present at birth and all except the babinski reflex should disappear by 6 months (Moro, rooting, palmar; disappear in that order)<br>1 month: a baby should be able to briefly hold their head up<br>6 months: a baby should be able to sit without assistance, roll, bring their arms to midline, and transfer objects between hands | 2 months: a baby should smile<br>6 months: Stranger anxiety may begin | 4 months: turns head towards a sound or voice |
| 7-12 months | 10 months: Stands, developing a pincer grasp<br>12 months: Beginning to walk, points at objects | 9 months: separation anxiety | 9 months: Turns head to name and gestures, object permanence<br>10 months: beginning to say words |
| 12-36 months | 15 months: stack 2 blocks<br>18 months: climbs stairs, stack 4 blocks<br>20 months: able to eat using utensils<br>24 months: runs, able to kick a ball<br>36 months: stack 6 blocks, walks up and down stairs with alternating feet | 24 months: Parallel play (children play next to, but not with other children), moves away and returns to familiar people (parent).<br>36 months: core gender identity is formed. | 24 months: speaking in 2 word sentences, vocabulary of about 200 words<br>36 months: speaking in 3 word sentences. |
| 3-5 Years | 3 years: ride a tricycle, copy a circle<br>4 years: hops on one foot, able to copy a square<br>5 years: able to dress oneself, able to copy a triangle | 3 years: comfortable spending some time away from parents/caregivers<br>4 years: plays cooperatively with other children, develops imaginative play | 4 years: speaks in complete sentences, able to tell stories. |

While children differ in when they achieve different developmental milestones, the general time frames presented above are good for guiding assessment of developmental growth in children. Many pediatricians have parents complete Ages and Stages questionnaires to help guide their assessment of a child's development. It is important to remember that these questionnaires may include asking parents to answer if a child can complete a task that they have never been asked to complete (for example, a child may not have blocks at home to stack). Asking follow-up questions and completing additional testing, if indicated, is important when assessing developmental milestones.

In addition to the generalizations made above about childhood development, certain generalizations can be made about the changes that occur in older adults. These changes do not occur at a certain age, but if they are noted in an older adult, they are likely to be normal changes associated with aging (rather than a pathologic process). Changes in older adults include:

- **Sexual changes:** men take longer to develop erections and have slower ejaculation and longer recovery time between ejaculations. Women often develop vaginal dryness, thinning of the vaginal epithelium, and vaginal shortening.
- **Sleep patterns:** Decreased REM and slow-wave sleep, increased sleep onset latency, increased early awakenings.
- **Decreases in function of:** vision, hearing, immunity, renal, pulmonary, GI. Note, while organ system function may decline slightly, the decline with normal aging is not enough to warrant intervention (for example, dialysis from ESRD is not a change expected with age, but a slightly increasing trend of creatinine, over years, is expected with age).
- **Decreased muscle mass, increased fat;** redistribution of fat to more central areas.
- **Memory:** Changes with memory are a common reason for doctors visits. With age some memory changes are normal (e.g. missing one monthly payment, forgetting the day of the week and remembering it later, sometimes forgetting a word, losing things occasionally). Memory changes are a medical concern when they impact a person's function or instrumental activities of daily living (e.g. forgetting many bills, getting lost, inability to manage finances if they were the financial manager of their household).

As humans grow and reach developmental milestones, they also learn different behaviors (both beneficial and harmful). Understanding how behaviors are developed and reinforced is helpful when considering behavior change with the goal of decreasing or eliminating harmful behaviors. A behavior is a response or reaction to an object or event. Behaviors can be voluntary or involuntary. Behaviors can be learned (and re-learned) through a process called conditioning, a psychological theory in which responses to events can be learned. There are two main types of conditioning:

- **Classical conditioning:** A natural (usually involuntary) response (behavior) is elicited by using a neutral stimulus. The classic example is Pavlov's dogs: he conditioned them to salivate at the sound of a bell by ringing the bell each time he fed them. They learned to associate the bell with food.
- **Operant Conditioning:** A voluntary response (behavior) is either promoted or not promoted through reinforcement or punishment.
  - » **Reinforcement:** Can be positive or negative, but both promote a behavior.
    Positive: A desired behavior is promoted by rewarding the behavior when it occurs. Example: Giving a child candy for completing a chore.
    Negative: A desired behavior is promoted by removing an unpleasant stimulus when the behavior is completed. Example: A teacher decreases or eliminates a homework assignment when children work hard and behave in class.
  - » **Extinction:** When a behavior that has been learned is not reinforced, it will slowly decrease (sometimes to the point of not occurring at all).
  - » **Punishment:** Can be positive or negative, but both act to decrease an undesired behavior.
    Positive: An undesired behavior is discouraged by adding an aversive stimulus. Example: A child has to wash their mouth with soap after using foul language.
    Negative: An undesired behavior is discouraged by removing a reinforcing stimulus. Example: A teen is not allowed to drive the family car after missing curfew.

## Reinforcement vs Punishment

Figure 1

| | Reinforcement | Punishment |
|---|---|---|
| Positive (add stimulus) | Add pleasant stimulus to increase/maintain behavior | Add aversive stimulus to decrease behavior |
| Negative (remove stimulus) | Remove aversive stimulus to increase/maintain behavior | Remove pleasant stimulus to decrease behavior |

A comparison of positive and negative reinforcement with positive and negative punishment; all are methods used to promote behavior change.

Depending on what occurs after a behavior is performed, a person may also learn habituation or sensitization.

- **Habituation:** A non-associative learning process in which a person learns not to respond to a stimulus (or has a decreased response to a stimulus), as it is not associated with reward or punishment. Example: Not responding to loud background music.
- **Sensitization:** A non-associative learning process in which a person learns to be more responsive to a stimulus. Often seen in chronic pain (central sensitization) and trauma. In chronic pain, even after the painful stimulus is removed, the patient may still perceive pain.

There are common behaviors/mental processes that people display in response to various emotions, primarily stress and anxiety. These were first described by Freud, and are called the ego defense mechanisms (or just defense mechanisms).

- **Defense mechanisms:** Conscious or unconscious thought processes or psychological strategies that are used to resolve conflict and prevent adverse feelings (stress and anxiety).

Defense mechanisms are commonly divided into **immature** defenses and **mature** defenses. People who are over-reliant on immature defense mechanisms typically have a poor understanding of reality and often are not well equipped to cope with reality. Mature defense mechanisms integrate conflicting thoughts and emotions to help a person have an effective emotional response; people who rely on mature defense mechanisms often have a strong understanding of reality and good ability to cope. Note: the defense mechanisms are divided differently in different classification schemes, here they are simply divided into mature and immature.

Immature defense mechanisms:

- **Acting out:** Expressing an unconscious wish or impulse in an action without conscious awareness of the emotion that drives the expressive behavior. Example: Inflicting self-injury rather than processing and managing emotions.
- **Denial:** Refusing to accept or acknowledge external reality because it is perceived as too threatening.
  Example: An alcoholic refuses to admit they have a drinking problem when confronted by their friends and family about missing important obligations due to alcohol consumption.
- **Displacement:** Transferring inappropriate urges or behaviors onto a more acceptable or less threatening target.
  Example: A man is angry at his brother, but instead of talking with his brother he yells at a waiter at a restaurant.
- **Projection:** Attributing unacceptable feelings, thoughts, or impulses to an external source or person.
  Example: A person dislikes their neighbor, but accuses the neighbor of disliking them.

- **Dissociation:** A temporary alteration in consciousness or identity to avoid emotional distress.
  Example: An adult has no recollection of childhood abuse.
- **Fixation:** Failure of certain aspects of emotional development to advance past a certain point.
  Example: An adult with an oral fixation may continue to suck their thumb, or smoke cigarettes.
- **Regression:** Involuntarily returning to a behavior pattern and maturational state that is characteristic of an earlier stage of development.
  Example: A child who was previously toilet-trained returns to bedwetting and not using the toilet after a stressful event or stressful period (e.g. parental disagreements, new sibling is born, etc.).
- **Idealization:** Attributing exaggerated positive qualities to self or others and ignoring negative qualities.
  Example: A woman gloats about how good looking and funny her boyfriend is, but ignores the fact that he is financially dependent on her because he is unable to get a job.
- **Identification:** The unconscious modeling of one's self upon another person's character, traits, and behavior.
  Example: A simple example is a person starting to wear bowties because their idol wears bowties. A deleterious example is Stockholm syndrome: when hostages develop an emotional bond with their captors and may display the behaviors of their captors (e.g. a hostage denouncing their previous life and joining their captor in negative behaviors).
- **Intellectualization:** Avoiding the emotions of a situation or event by focusing on facts and logic.
  Example: A rape victim researches the statistics of where and when rape is most likely to occur and which self-defense classes are most effective.
- **Isolation:** Also called "isolation of affect". Separating emotions from ideas and events.
  Example: A medical student dissects a cadaver without thinking about death.
- **Passive aggression:** Indirectly expressing aggression or demonstrating hostile feelings toward another.
  Example: An employee gets passed over for a promotion at work and rather than stating their displeasure, shows up 5 minutes late to every meeting.
- **Rationalization:** Explaining an unacceptable feeling or behavior using logical reasons to avoid self-blame.
  Example: A medical student is not offered an interview at a residency program they were interested in, but then says they thought the program would not have been a good fit for them anyways.
- **Reaction formation:** Acting the opposite of an unacceptable impulse or feeling.
  Example: A medical student acts overly friendly to an attending physician they dislike.
- **Repression:** The involuntary blocking of thoughts, feelings, or impulses from consciousness.
  Example: A child is physically abused; later in life they cannot recall the details of the abuse and have difficulty forming interpersonal relationships.

- **Splitting:** Viewing oneself or others as entirely good or bad at different times without considering any possibilities within the spectrum from good to bad.
  Example: Commonly seen in borderline personality disorder. A patient says that all the receptionists are the worst, but believes the nurses take the greatest care of the patient.

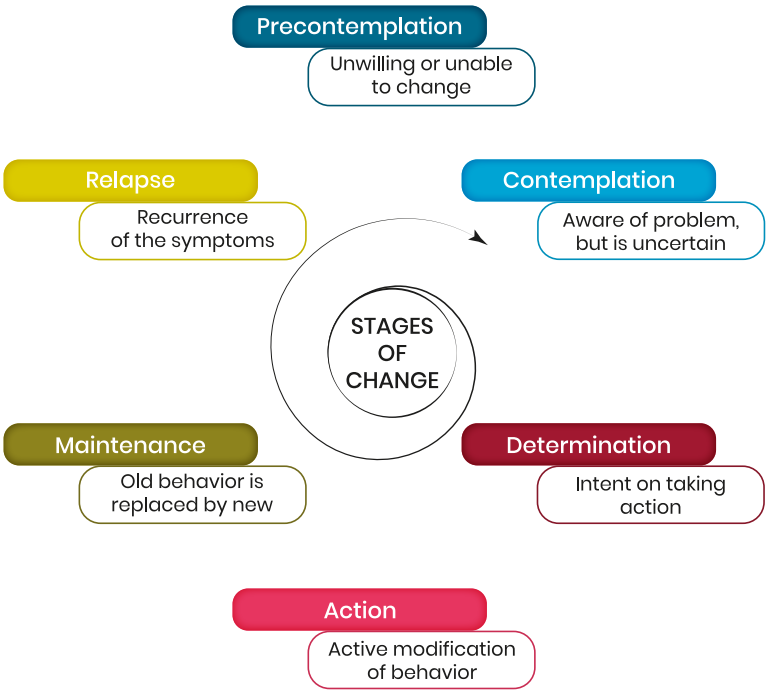
Mature defense mechanisms:

- **Altruism:** Managing stressful emotions by dedicating oneself to meeting the needs of others; by being generous the person experiences gratification. Contrast with reaction formation.
  Example: A major executive with a trust fund establishes a scholarship program for underprivileged youth.
- **Humor:** Managing emotional stressors by recognizing the amusing or ironic aspects of the stressor.
  Example: A medical student jokes about how to give good patient presentations on the wards.
- **Sublimation:** Transforming an unacceptable impulse into a socially acceptable action that is also a more productive or effective way of managing the stressor. Compare with reaction formation.
  Example: A musician uses a recent breakup as an opportunity to spur creativity in writing music; a person with anger issues starts kickboxing to release energy.
- **Suppression:** Intentionally blocking unpleasant feelings and experiences from conscious awareness until there is a better time to manage them.
  Example: An employee avoids thinking about the disagreement he had with his spouse before work while he is at work.

**ii.** Changing behavior, whether further developing a beneficial behavior or stopping a deleterious behavior, is an important topic in medicine and psychiatry. Unfortunately, it is not something that medical and mental health providers are particularly good at, although it is widely studied. Many models of behavior change exist, one that is commonly used is the Transtheoretical model of behavior change. This model is especially highly referred to when discussing addiction.

- **Transtheoretical model of behavior change:** Behavior change is based on the decision-making of the individual who may make the change (if they are ready) and is a cyclical process. The process includes 6 possible stages, in each a different intervention will be most effective.
  1. **Precontemplation:** In this stage the person is not ready to change. They are unaware that their behavior is a problem, do not understand or recognize the pros and cons of stopping the behavior, and are unlikely to make changes in the immediate future (6 months). In this stage it is not beneficial to strongly counsel a person about change because they will be resistant; recognizing the behavior as a problem for the person, stating that the therapist/medical provider can help them change when they are ready, and then moving on is the best technique.
  2. **Contemplation:** The person recognizes the pros and cons of a behavior and begins to develop an intention to change the behavior, acknowledging that the behavior is a problem. However, they still may be ambivalent towards behavior change.
  3. **Preparation/Determination:** The person is ready to make an effort to change behaviors within the next 30 days.
  4. **Action/willpower:** The person has recently made a behavior change and intends to continue with the behavior change.
  5. **Maintenance:** The person has sustained the behavior change for at least 6 months and intends to maintain the behavior change moving forward.
  6. **Relapse:** This does not always occur, but can if the person returns to old behaviors and gives up on any changes they have made.

**Stages of Change** Figure 2




The 6 stages of the transtheoretical model of behavioral change.

To assist with behavior change, manage issues related to mental health disorders, and help people relieve or heal emotional or mental stress, a person may seek out therapy. There are many different kinds of therapy, several of the commonly used modes of psychotherapy are listed below with a note to particular disorders they have been shown to be effective at treating.

- **Behavioral therapy:** Employs a range of techniques based on learning theory to help patients learn to identify and change maladaptive thoughts, behaviors, and feelings.
  Uses: One type, desensitization, is commonly used to treat fears and phobias. Another type, aversion, is commonly used to treat sexual deviations and alcoholism.
- **Cognitive behavioral therapy:** A psycho-social intervention aimed at helping patients to identify, challenge, and change unhelpful behaviors, emotions, and coping strategies with the goal of improving emotional control/regulation and developing coping strategies.
  Uses: Commonly used in treatment of anxiety disorders, OCD, eating disorders, and depression.
- **Dialectical behavioral therapy:** Helps patients learn to recognize triggers that lead to reactive states and then identify and implement appropriate coping strategies to avoid undesirable actions.
  Uses: First developed to treat borderline personality disorder; also used to treat mood disorders and suicidal ideation/severe depression.

- **Interpersonal therapy:** A highly structured, time-limited (12-16 weeks) approach that is based on the idea that moods affect relationships and then those relationships in turn further affect moods. Aimed at improving interpersonal relationships by identifying distorted thinking and moods or emotions that are affecting relationships.
  Uses: Primarily used in treating depression; sometimes used to treat substance use disorders, bipolar, and eating disorders.
- **Supportive therapy:** Used as an initial treatment approach that employs supportive psychotherapy (encouragement, positive emotions, etc.) to reduce or relieve the intensity of distress or disability. This approach helps to develop a therapeutic alliance that can be built on as additional therapy modes are used.
  Uses: Bulimia nervosa, stress.

Another type of therapy that is not a type of psychotherapy, but one that is often used in treatment of psychological disorders is electroconvulsive therapy.

- **Electroconvulsive Therapy:** Primarily used for treatment-resistant depression, depression with psychotic symptoms, depression with catatonia, and acute suicidality. The procedure is done under general anesthesia, then electrical currents are applied to the brain to produce a grand mal seizure. This seizure is believed to change brain chemistry and improve the patient's mental status. Often multiple (6-12) treatments are completed. Some adverse effects include temporary disorientation, headache, amnesia. ECT is safe during pregnancy. There is some stigma associated with ECT, as historically it was completed without anesthesia. Current protocols are widely regarded as both safe and effective.

Between every patient and provider, there is a provider-patient relationship. For these to be healthy, each person should feel supported, heard, and the patient should feel comfortable sharing what is often intimate information about themselves. Because people have different personalities, not every patient-provider relationship is a good match. In mental health relationships between patients and therapists it is important that the patient feels a connection with their provider, as therapeutic trust is critical for successful therapy. Sometimes patients may have to meet with several different therapists before they find one they like and trust; this is not a repudiation of the providers they choose not to continue with, but a simple reflection of different personalities and styles.
Relationships between patients and providers also may be influenced by either person's feelings about other people they know; this phenomenon is defined as transference and countertransference.

- **Transference:** A patient redirects their feelings about another person onto their provider (e.g. therapist, physician, psychiatrist).
- **Countertransference:** A provider redirects feelings about another person onto the patient.

## Client-Therapist relationship

Figure 3


The relationship and differences between countertransference and transference.

Transference and countertransference are not necessarily problematic; people do not live in vacuums, so it is expected that patient-provider relationships are influenced to a small degree by the relationships and feelings the patient or provider has with other people. However, transference and countertransference can become problematic when they affect the therapeutic relationship. For example, if the patient was defiant and reminded the therapist of their child so that the therapist became more controlling, this could harm the therapeutic relationship.