Important Groups of Health and Disease Models in Medicine

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As a physician, you could not work without models in medicine: The consequences would be chaos, randomness, and a lack of structure. On the other hand, one should not fixate on just one model in order to prevent a limited diagnostic and therapeutic spectrum. Old medical rule says: Anything helpful should be considered. Below, we are summarizing the five most important groups of models at a glance: behavioral models, bios-psychological models, the psychodynamic model, social-psychological models, and sociological models. With this, you will be perfectly prepared for exams and the preliminary examination.

Function of Disease Models

Disease models are characterized by commonly accepted views of disease, with partitioning into different disease groups (think of the various medical specialties). The **perception and organization of actions in daily clinical practice are structured** by disease models. The doctor focuses on the dysfunction or defect within the patient using problem-solving techniques. The medical history of the patient, physical examination, and diagnostic tests are used to identify and treat diseases.

Image: Disease model. By: OnkelDagobert. License: CC BY-SA 3.0

Behavioral Models

Human behavior mainly depends on learning and thinking processes, even when a person feels uncomfortable and sick. In behavioral analysis, **5 condition dimensions** are considered that can explain many human behavioral patterns.

The SORKC model: behavior-analytic model according to Kanfer (1976)

The SORKC model contains 5 important condition dimensions that explain a variety of human behavior patterns/disorders.

- **S**: Stimuli such as trigger irritants or situations
- **O**: Organism variables: innate dispositions, biological characteristics, and preexisting injury
- **R**: Reactions are forms of exhibited behavior
- **K**: Contingencies provide information about the relationship between R and K
- **C**: Consequences are amplifiers and demonstrate reactions to the behavior

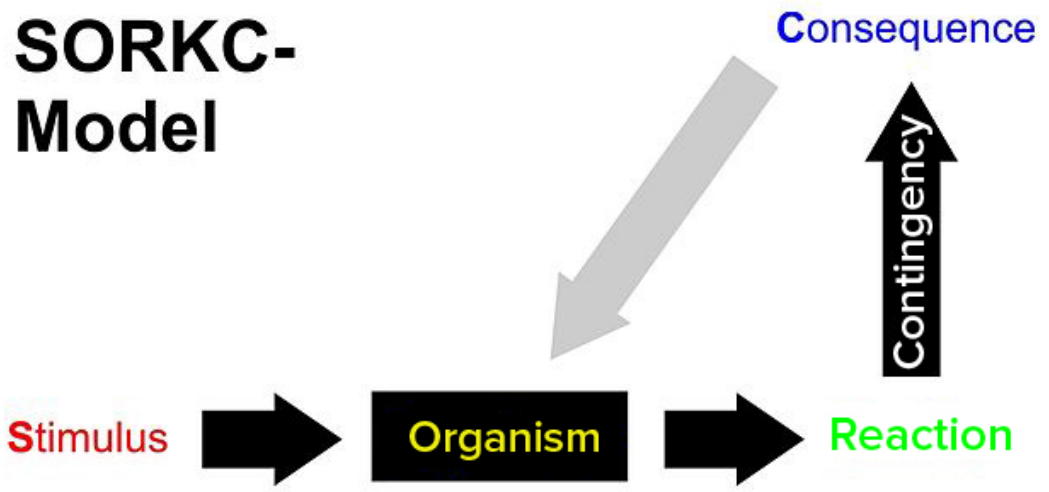

Image: SORKC. By: OnkelDagobert. License: CC BY-SA 3.0

Conditioning: classical and operant

It is important to determine where a symptom comes from and its purpose. Of particular importance are the amplifiers that maintain a symptom and can contribute to its chronification. This knowledge aims to create a difference between voluntary and involuntary behavior. The **following types of learning work together:**

- **Classical conditioning**: respondent learning, focuses on involuntary and automatic behavior.
- **Operant conditioning**: learning through success, entails applying punishments or reinforcement after a behavior. Aims to weaken or strengthen voluntary behaviors.

Behavioral medicine

In behavioral medicine, **relationships between disorders, behavior, and environment are analyzed in an interdisciplinary manner**. For example, medical treatment goals can be reached by means that modify the behavior through patient training and biofeedback.

Practice tip: The psychological and pedagogical contents and the training with regard to giving advice, educating and changing behavior patterns in patients, unfortunately, do not get enough attention during medical studies. The only 'patient' that is seen during preclinical studies in classically structured courses is the cadaver in the dissecting room. Thus, practical nursing training should not be considered a necessary evil during lecture-free periods as prolonged patient contact can be useful. Later on, the student will be able to **observe, learn, and communicate** as much without time pressure and responsibility.

Biopsychological Models

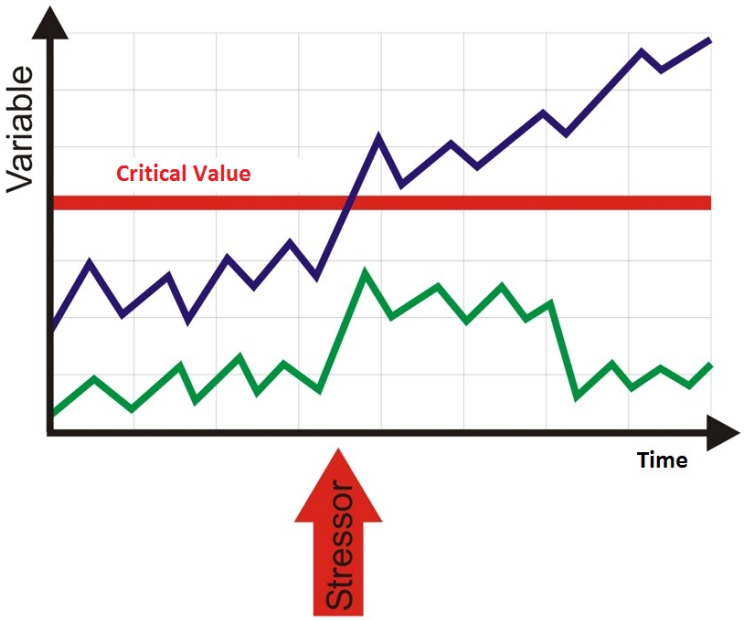

Image: Diathesis-stress model. By: OnkelDagobert. License: CC BY-SA 3.0

The definition of disease in the biological model is the **disturbance of homeostasis due to changes in an organism/body**. However, not all diseases develop because of biological factors alone. Based on 3 main influences, a **bio-psycho-social disease model** is currently suggested. For the development and maintenance of a disease, subliminal stimuli also have to be taken into account. Subliminal perception processes are below the threshold of conscious perception.

In conjunction with **emotion, stress, and disease**, the following terms should be memorized:

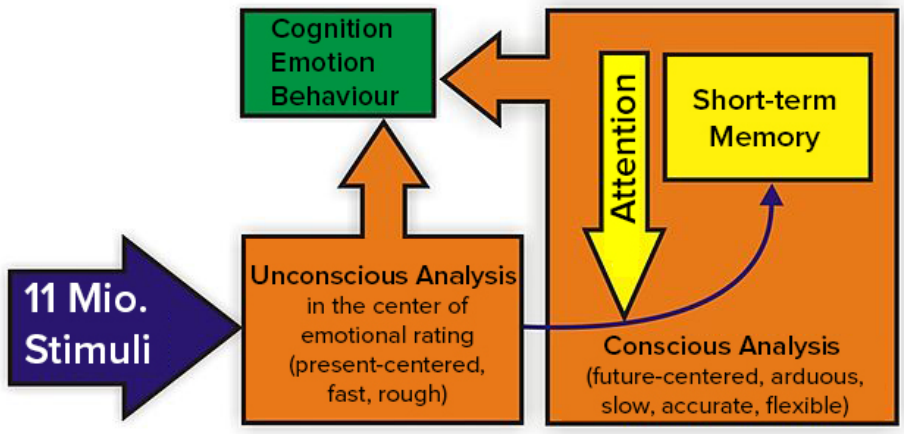

Image: Highly simplified model of human information processing. By: OnkelDagobert. License: CC BY-SA 3.0

A ‘good’ amount of stress can have positive effects, i.e., new career challenges can cause **eustress**. **Distress** could occur if somebody constantly has high-stress levels (i.e. as a result of burnout). Internal and external stimuli (perceived very differently individually) are called **stressors** and the physical response to stressors is the stress reaction with amplified sympathetic activation.

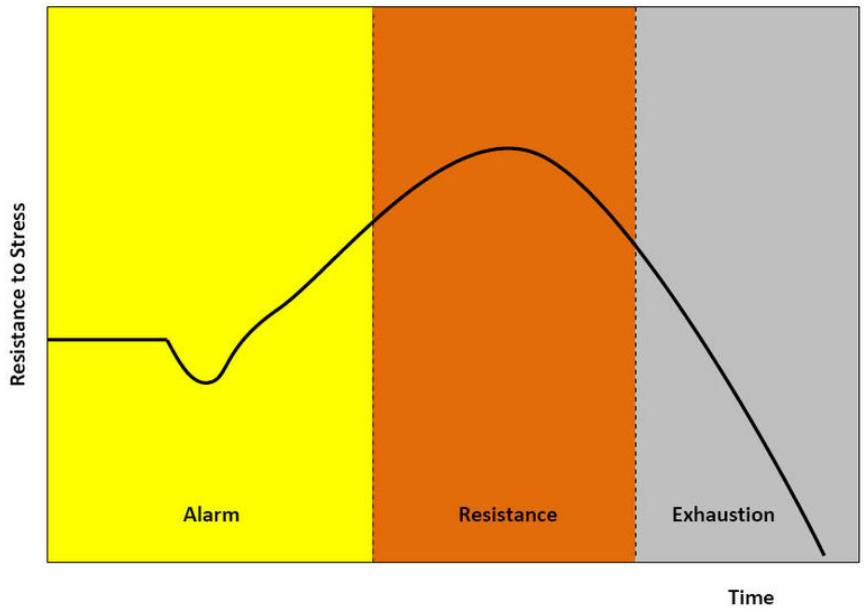

Image: General adaptation syndrome according to Selye. By: David G. Myers. License: CC BY 3.0

Psychodynamic Models

In psychodynamics, the following is basically assumed: **the human being is mainly directed by desires, impulses, and motives that are not accessible by one’s consciousness**. The psychodynamic model considers these unconscious conflicts as the cause for the development of disease. This model is based on the **theory of Sigmund Freud’s psychoanalysis.**

The model focuses on human functioning based on the interaction of forces as

well as the drive within a person.

Assumption of the model:

The assumption in this model is that:

- The most vital force that shapes human behavior operates at the unconscious level.
- Individuals are not aware of the most vital motivation or their important conflicts and frustrations.
- Anxiety generated by conflict may be disguised as defenses.

Structure of the human personality

- **The conscious**: all perceptions and thoughts of the moment.
- **The pre-conscious**: memories and knowledge that can actively be transferred into the conscious at any time.
- **The unconscious**: the conscious has no access to this part and maintains a resistance to its contents: repressed traumas, suppressed desires, etc.

Structure of the human psyche

According to Freud, the human psyche is divided into 3 parts: **id, ego, and superego**. The complex interaction between these 3 qualities is called the psychodynamic.
Id: The id has a **physiological origin and** exists from birth. It provides the energy for the immediate satisfaction of needs according to the '**pleasure principle'**: food, water, excretion, warmth, attention, and sexuality. The main drivers are Eros—the life-integrating force, especially libido, and Thanatos—the death wish. These drivers or instinctual demands are called the **primary process**.

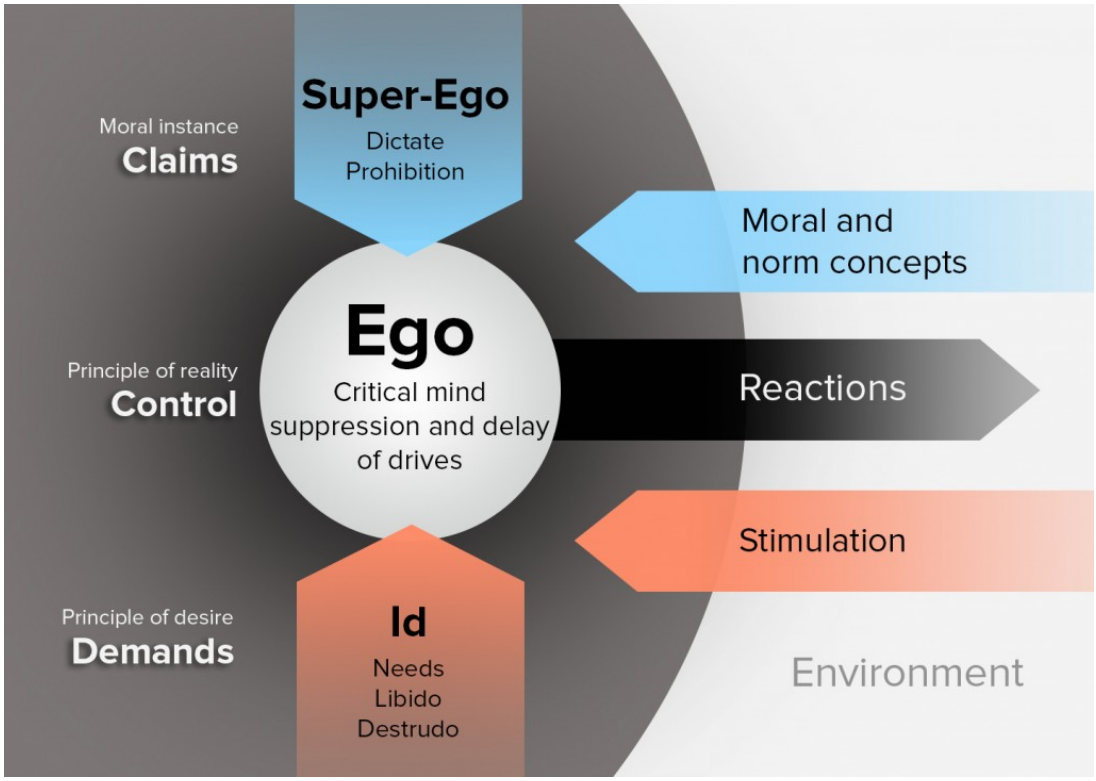

Image: Model of the psychic apparatus according to Freud. By: Rainer Zenz. License: CC BY-SA 3.0

Ego: The ego develops from the id in the second half of the first year of life. The satisfaction of drivers is postponed by the ego in a **secondary process** (planning and decision-making) and is thus regulated. Therefore, the ego provides its strengths to the accepted impulse: the **'reality principle'.**

Superego: The superego bears the moral rules of society – the **'conscience'**.

Defense Mechanisms against Fear in Psychoanalysis: Immune System of the Psyche

The id, ego, and superego are almost in constant contact with each other and thus inevitably create fear. For example, impulses of the id are often experienced as foreign or threatening and the ego attempts to repress them. The ego subconsciously creates **defense mechanisms against this fear**.

Tip: The terms regarding defense mechanisms against fear are very important for exams. Thus, they should be memorized and repeated often. In order to facilitate understanding and increase memorization, clear examples of each term should be retained.

Defense mechanism	Example
Identification: The counterpart to projection. Objects or parts of objects are introjected. The fear of panic-triggering images is blocked by identification with the aggressor.	Identification with an opponent who is rejected because of one's unacknowledged weakness.
Introjection: Incorporation of external values into the ego structure so that these values are no longer perceived as a threat.	Motives, opinions, and behavior patterns are copied in order to be perceived better or to prevent their rejection.
Compensation: The desired trait is emphasized more in order to cover up weaknesses.	Low height is compensated by extreme diligence.
Conversion: Transformation of a physical conflict into a physical symptom.	Palpitation, tremor, and blushing because of shame.
Projection: Subconscious characteristics are transferred to other persons.	One's own anger is not perceived while one's counterpart is confronted with the question 'Why are you so upset?'
Rationalization: Excuses for one's behavior towards oneself and others by using rational arguments.	One's desire to be center-stage and be noticed by being extravagant. This is justified with 'Everyone only pays attention to superficial qualities anyway'.
Reaction formation: Menacing impulses are not accepted but the behavior turns into the opposite extreme instead.	Remaining celibate instead of acting out sexual desires.
Reversion: Reversal of the opposite.	A fear-triggering grandfather is shown as an ant in a child's drawing.
Division: Emotional components are isolated from behavior, thoughts, and memories and seemingly accepted with indifference.	Objects or persons are uncoupled and either demonized or glorified.
Sublimation: Satisfaction and expression of unacceptable desires through socially accepted or even highly rated needs.	Sexual driving force/energy is completely 'invested' in an art project.
Undoing: Atonement for burdening actions and desires in order to neutralize them.	In many compulsive acts, i.e. obsessive washing after masturbation.
Repression (suppression): Preventing the invasion of undesired impulses, thoughts, and memories into the conscious.	Hatred toward one's mother is not allowed ('you have to love your parents'). Contradictory actions are possible in dreams.
Transmission: Repressed emotions**,** expectations, and desires (usually from childhood) are transferred to new social relationships.	Expectations of the patient toward a mother are transferred to the physician.
Denial: Protection against threats by refusing to acknowledge them.	Pretending that nothing happened after experiencing trauma.

Substitution (Displacement): The satisfaction of needs is displaced from the unreachable object that cannot be confronted with another (mostly hostile emotions towards the object).	A child is oppressed and abused by an older brother. In turn, the child himself oppresses and abuses weaker ones.
Turn against self: aggressive impulses are directed against oneself.	A child feels anger towards someone but cannot express it toward the target person and therefore hits himself.

Social-psychological Models

The psychosocial influences on health and disease are characterized by **social norms, roles, and attitudes.** Attitudes characterize the position of every person and affect their behavior in addition to emotions and concrete situational triggers. These attitudes are **not fixed but are rather subjected to constant changes through experiences**.

Attitudes are gained through socialization and experiences and can develop into a very selective perception. This can result in the development of **stereotypes** with preconceived and generalized attitudes within one's group (**autostereotypes**) or another group (**heterostereotypes**).

Festinger: Cognitive dissonance theory

Our opinions with regard to the same object can be very contradictory. This exciting state is described as cognitive dissonance by Festinger who believes that we **choose experiences and adjust or filter our opinions accordingly in order to minimize or eliminate stress.**

For example, a diabetic who thinks of his 85-year-old grandfather with diabetes, instead of the effects of polyneuropathy like toe necrosis and retinopathy.

Psychological risk and protection factors

Control attributions: Me or fate?

People often wonder whether they are in charge of their lives or whether their lives are controlled by fate. These causal attributions are described as **control attribution: Who do you hold responsible?**

- **Internal:** You consider yourself and your actions as responsible for success and failures.
- **External:** You hold "fate" or superior entities responsible for events, goals, and failure.
- **Stable:** You do not change this causal attribution.
- **Variable:** You change the causal attribution depending on the situation.
- **General/global:** Your causal attribution applies in general.
- **Particular/specific:** Your causal attribution applies to a specific case.

Control attributions regarding health-related behavior

Overall, internal attribution is considered more favorably than external attribution—how a person can influence one's health and/or prevent disease instead of believing in fate when disease occurs. **Therefore, trusting in oneself is considered important for health maintenance and is referred to as self-efficacy expectation**.

An additional psychological **protection factor is optimism**. Optimists attribute externally in cases of failure ("The test was that difficult, I had to fail.') while they

attribute internally in cases of success (‘Thanks to my optimal preparation, I passed the exam very well’) and consider problems as challenges.

Social risk and protection factors

Social risk factors

Social isolation can represent a **vicious circle** as a simultaneous cause or consequence of disease, i.e. depression in an individual. Another important factor is **role loss**, i.e. the end of a relationship or unemployment. This loss of stabilizing roles can lead to substance abuse or depression.

Social protection factors

Social support is not only one of the most important protective factors for positively influencing the progression of disease but it is also highly preventive. Individuals, who are socially well integrated into an environment that provides **social backing, support, and appreciation**, have a ‘**buffer’** against stress and associated diseases.

Sociological Models

Sociological models describe factors and structures that determine our behavior in numerous fields, even in handling health and disease. These behavior-determining structures include:

- **Social stratification** with social prestige structure
- **Social networks** with regional social support networks
- **Educational structure**
- **Professional structure**
- **Urbanization:** Environmental structure
- **Globalization:** International economic and political structures

References

Notes