

COMMENTS ABOUT THE BRAIN

Basic Information About the Brain and Cognitive Impairment Shelly Weaverdyck

Models of Brain Function in General:

Ways of conceptualizing how the brain works

1. **Localization:** Correlation of specific areas of the brain and specific cognitive functions
2. **Neurochemical:** Correlation of neurotransmitters with function
3. **Neural circuitry:** Information follows a path through the brain as it enters and is processed
4. **Grid:** Information goes to a variety of areas of the brain simultaneously or nearly so
5. **Neuroconnections – Hubs:** The neurons ability to communicate with each other

Evidence of Brain Differences/Changes:

What we look for to discern how healthy the brain is

We examine the **whole brain** and **specific areas** for evidence.

6. **Volume** (increased or decreased)
7. **Hyperactivity or Hypoactivity**
8. **Tissue:** health, condition, appearance, texture
9. **Neurochemical:** type, amount, activity
10. **Blood vessels** (internal and external)
11. **Neuronal connections:** health, number, activity of:
axons (including myelin), dendrites, receptor sites, locations, speed, hubs

Brain Direction Terms:

Terms used to describe the location of parts of the brain

12. **Anterior** (ventral) = front (toward face)
13. **Posterior** (dorsal) = back (toward back of head)
14. **Superior** = above/ top (top of head)
15. **Inferior** = beneath/ lower (toward human feet)
16. **Medial** = middle (interior)
17. **Lateral** = toward outside (toward skull)
18. **Proximal** = closest to middle/ torso (navel - abdomen)
19. **Distal** = farthest from middle/ torso (finger tip)
20. **Cranial** = toward head
21. **Caudal** = toward tail (toward feet in humans)

Brain disorders:

22. Various disorders affect different parts of the brain.
23. Progressive disorders (e.g. Alzheimer's Disease) spread across the brain over time, affecting new parts of the brain in particular patterns, causing stages.
24. Specific cognitive functions are related to specific parts of the brain, so when those specific parts are affected, specific cognitive functions are affected.
25. Each stage of a progressive disorder has specific cognitive functions affected. Cognitive functions affected in previous stages continue to worsen because the parts of the brain previously affected continue to become more severely damaged by the pathology.

Brain Lobe and Function:

26. Brain dysfunction in any part of the brain generally results in impairment of cognitive functions specific to that part, regardless of the reason that part of the brain is dysfunctional. (For example, whether a person has a stroke in the left temporal lobe or Frontotemporal Dementia, the temporal lobe is still affected and likely to result in impairment of the person's ability to speak.)

Cognition & Behavior Vary with the Disorder:

27. Various disorders affect cognitive functions differently, due to different parts of the brain being affected.
28. Impaired cognitive functioning plays a significant role in behavior.
29. Behavior will vary with the disorder and severity of disorder.
30. Behavior is also affected by individual factors (e.g. individual preferences and cognition, habits that are formed over time, reactions and results of behaviors, pain, aging, health, family changes, emotions, etc)

Behaviors/Distress from Mismatch:

When the environment, interactions with other people, or the task & daily routines **overestimate or underestimate** a person's cognitive abilities, (are too challenging or not challenging enough) the following may occur:

31. Fatigue, withdrawal, lethargy
32. Distress, anxiety, or irritation
33. Confusion, surprises, errors in interpretation and action
34. Difficulty performing a task or a task step
35. Frustration from unmet needs or desires, or surprises/changes they encounter

Intervention:

36. **Specific brain areas** play a role in each cognitive function.
37. Brain changes affect a person's **cognitive functions** (the ability to understand and respond).
38. **Behavior results** in part from impaired cognition: **confusion, uncertainty, misinterpretation.**
39. Intervene by **addressing cognition**
40. Focus on the **causes** and triggers of the behavior or action (**address the mismatch**)
41. **Modify the conditions:** The environment, interactions with the person, task and daily routines