

Rosa (2010) showed that **visual attention** — *the brain’s ability to selectively filter unattended or unwanted information from reaching awareness* — diminishes with age, leaving older adults less capable of filtering out distracting or irrelevant information. This age-related “leaky” attentional filter fundamentally impacts the way visual information is encoded into memory. Older adults with impaired visual attention have better memory for “irrelevant” information. In the study, the research team examined brain images using functional magnetic resonance imaging (fMRI) on a group of young (mean age = 22 years) and older adults (mean age = 77 years) while they looked at pictures of overlapping faces and places (houses and buildings). Participants were asked to pay attention only to the faces and to identify the gender of the person. Even though they could see the place in the image, it was not relevant to the task at hand ([Read about the study’s findings](http://www.artsci.utoronto.ca/main/newsitems/brains-ability) at <http://www.artsci.utoronto.ca/main/newsitems/brains-ability>).

The authors noted:

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In young adults, the brain region for processing faces was active while the brain region for processing places was not. However, both the face and place regions were active in older people. This means that even at early stages of perception, older adults were less capable of filtering out the distracting information. Moreover, on a surprise memory test 10 minutes after the scan, older adults were more likely to recognize what face was originally paired with what house.

The findings suggest that under attentionally demanding conditions, such as a person looking for keys on a cluttered table, age-related problems with “tuning in” to the desired object may be linked to the way in which information is selected and processed in the sensory areas of the brain. Both the relevant sensory information — the keys — and the irrelevant information — the clutter — are perceived and encoded more or less equally. In older adults, these changes in visual attention may broadly influence many of the cognitive deficits typically observed in normal aging, particularly memory.

Key Takeaways

- Biological psychology – also known as biopsychology or psychobiology – is the application of the principles of biology to the study of mental processes and behaviour.
- Biological psychology as a scientific discipline emerged from a variety of scientific and philosophical traditions in the 18th and 19th centuries.
- In *The Principles of Psychology* (1890), William James argued that the scientific study of psychology should be grounded in an understanding of biology.
- The fields of behavioural neuroscience, cognitive neuroscience, and neuropsychology are all subfields of biological psychology.
- Biological psychologists are interested in measuring biological, physiological, or genetic variables in an attempt to relate them to psychological or behavioural variables.

Exercises and Critical Thinking

1. Try this exercise with your group: Take a short walk together without talking to or looking at one another. When you return to the classroom, have each group member write down what they saw, felt, heard, tasted, and smelled. Compare and discuss reflecting on some of the assumptions and beliefs of the structuralists. Consider what might be the reasons for the differences and similarities.
2. Where can you see evidence of insights from biological psychology in some of the applications of psychology that you commonly experience today (e.g., sport, leadership, marketing, education)?
3. Study the functions of the brain and reflect on whether you tend toward left- or right-brain tendencies.

Image Attributions

Figure 2.3: Complex Adaptive System by Acadac (<http://commons.wikimedia.org/wiki/File:Complex-adaptive-system.jpg>) is in the public domain.

Figure 2.4: Left and Right Brain by Webber (http://commons.wikimedia.org/wiki/File:Left_and_Right_Brain.jpg) is in the public domain.

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Notes

1. A system for taking information in one form and transforming it into another.
2. The generation or growth of new brain cells, specifically when neurons are created from neural stem cells.

2.2 Psychodynamic Psychology

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Learning Objectives

1. Understand some of the psychological forces underlying human behaviour.
2. Identify levels of consciousness.
3. Critically discuss various models and theories of psychodynamic and behavioural psychology.
4. Understand the concept of psychological types and identify applications and examples in daily life.

Sigmund Freud

The psychodynamic perspective in psychology proposes that there are psychological forces underlying human behaviour, feelings, and emotions. Psychodynamics originated with Sigmund Freud (Figure 2.5) in the late 19th century, who suggested that psychological processes are flows of psychological energy (libido) in a complex brain. In response to the more reductionist approach of biological, structural, and functional psychology movements, the psychodynamic perspective marks a pendulum swing back toward more holistic, systemic, and abstract concepts and their influence on the more concrete behaviours and actions. Freud's theory of psychoanalysis assumes that much of mental life is unconscious, and that past experiences, especially in early childhood, shape how a person feels and behaves throughout life.

Consciousness is the *awareness of the self in space and time*. It can be defined as human awareness of both internal and external stimuli. Researchers study states of human consciousness and differences in perception in order to understand how the body works to produce conscious awareness. Consciousness varies in both arousal and content, and there are two types of conscious experience: **phenomenal**, or *in the moment*, and **access**, which *recalls experiences from memory*.

First appearing in the historical records of the ancient Mayan and Incan civilizations, various theories of multiple levels of consciousness have pervaded spiritual, psychological, medical, and moral speculations in both Eastern and Western cultures. The ancient Mayans were among the first to propose an organized sense of each level of consciousness, its purpose, and its temporal connection to humankind. Because consciousness incorporates stimuli from the environment as well as internal stimuli, the Mayans believed it to be the most basic form of existence, capable of evolution. The Incas, however, considered consciousness to be a progression, not only of awareness but of concern for others as well.

Sigmund Freud divided human consciousness into three levels of awareness: the *conscious*, *preconscious*, and *unconscious*. Each of these levels corresponds to and overlaps with Freud's ideas of the id, ego, and superego. The

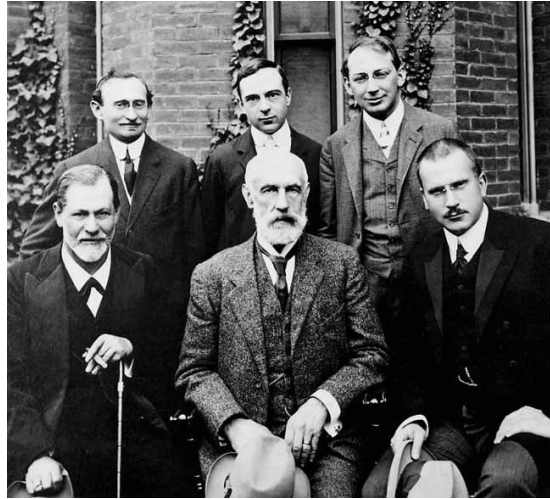


Figure 2.5 Group Photo. Front row (left to right): Sigmund Freud, G. Stanley Hall, Carl Jung; Back row (left to right): Abraham A. Brill, Ernest Jones, Sándor Ferenczi.

conscious level consists of *all those things we are aware of*, including things that we know about ourselves and our surroundings. The **preconscious** consists of *those things we could pay conscious attention to if we so desired, and where many memories are stored for easy retrieval*. Freud saw the **preconscious** as *those thoughts that are unconscious at the particular moment in question, but that are not repressed and are therefore available for recall and easily capable of becoming conscious* (e.g., the “tip of the tongue” effect). The **unconscious** consists of *those things that are outside of conscious awareness, including many memories, thoughts, and urges of which we are not aware*. Much of what is stored in the unconscious is thought to be unpleasant or conflicting; for example, sexual impulses that are deemed “unacceptable.” While these elements are stored out of our awareness, they are nevertheless thought to influence our behaviour.

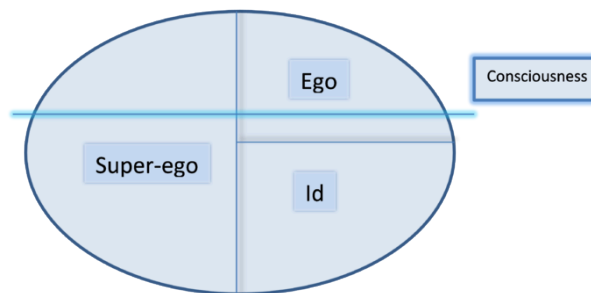


Figure 2.6 The Levels of Consciousness.

Figure 2.6 illustrates the respective levels of id, ego, and superego. In this diagram, the bright blue line represents the divide between consciousness (above) and unconsciousness (below). Below this line, but above the id, is the preconscious level. The lowest segment is the unconscious. Like the ego, the superego has conscious and unconscious elements, while the id is completely unconscious. When all three parts of the personality are in dynamic equilibrium, the individual is thought to be mentally healthy. However if the ego is unable to mediate between the id and the superego, an imbalance occurs in the form of psychological distress.

While Freud's theory remains one of the best known, various schools within the field of psychology have developed their own perspectives. For example:

- **Developmental psychologists** view consciousness not as a single entity, but as a developmental process with potential higher stages of cognitive, moral, and spiritual quality.
- **Social psychologists** view consciousness as a product of cultural influence having little to do with the individual.
- **Neuropsychologists** view consciousness as ingrained in neural systems and organic brain structures.
- **Cognitive psychologists** base their understanding of consciousness on computer science.

Most psychodynamic approaches use *talk therapy*, or *psychoanalysis*, to examine maladaptive functions that developed early in life and are, at least in part, unconscious. **Psychoanalysis** is a type of analysis that involves attempting to affect behavioural change through having patients talk about their difficulties. Practising psychoanalysts today collect their data in much the same way as Freud did, through case studies, but often without the couch. The analyst listens and observes, gathering information about the patient. Psychoanalytic scientists today also collect data in formal laboratory experiments, studying groups of people in more restricted, controlled ways (Cramer, 2000; Westen, 1998).

Carl Jung

Carl Jung (1875-1961) expanded on Freud's theories, introducing the concepts of the *archetype*, the *collective unconscious*, and *individuation* — or the psychological process of integrating the opposites, including the conscious with the unconscious, while still maintaining their relative autonomy (Figure 2.7). Jung focused less on infantile development and conflict between the id and superego, and more on integration between different parts of the person.

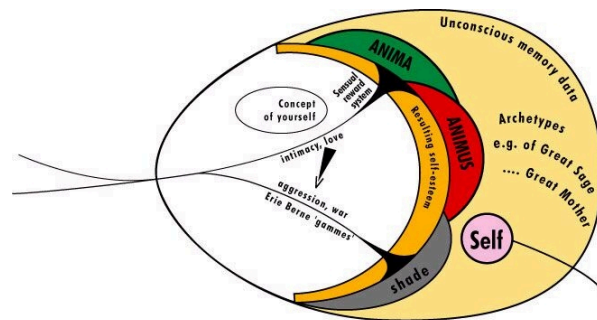


Figure 2.7 Jung's Theory.

The following are Jung's concepts that are still prevalent today:

Active imagination: This refers to activating our imaginal processes in waking life in order to tap into the unconscious meanings of our symbols.

Archetypes: These primordial images reflect basic patterns or universal themes common to us all and that are present in the unconscious. These symbolic images exist outside space and time. Examples are the shadow, animus, anima, the old wise person, and the innocent child. There are also nature archetypes, like fire, ocean, river, mountain.

1. **Anima** is the *archetype symbolizing the unconscious female component of the male psyche*. Tendencies or qualities often thought of as feminine.
2. **Animus** is the *archetype symbolizing the unconscious male component of the female psyche*. Tendencies or qualities often thought of as masculine.
3. **Self** is the *archetype symbolizing the totality of the personality*. It represents the striving for unity, wholeness, and integration.
4. **Persona** is the *mask or image a person presents to the world*. It is designed to make a particular impression on others, while concealing a person's true nature.
5. **Shadow** is the *side of a personality that a person does not consciously display in public*. It may have positive or negative qualities.
6. **Dreams** are *specific expressions of the unconscious that have a definite, purposeful structure indicating an underlying idea or intention*. The general function of dreams is to restore a person's total psychic equilibrium.
7. **Complexes** are usually *unconscious and repressed emotionally toned symbolic material that is incompatible with consciousness*. Complexes can cause constant psychological disturbances and symptoms of neurosis. With intervention, they can become conscious and greatly reduced in their impact.

Individuation: Jung believed that a human being is inwardly whole, but that most people have lost touch with important parts of themselves. Through listening to the messages of our dreams and waking imagination, we can contact and reintegrate our different parts. The goal of life is individuation, which is *the process of integrating the conscious with the unconscious, synergizing the many components of the psyche*. Jung asserted: "Trust that which gives you meaning and accept it as your guide" (Jung, 1951, p. 3). Each human being has a specific nature and calling uniquely his or her own, and unless these are fulfilled through a union of conscious and unconscious, the person can become sick. Today, the term "individuation" is used in the media industry to describe new printing and online technologies that permit "mass customization" of media (newspaper, online, television) so that its contents match each individual user's unique interests, shifting from the mass media practice of producing the same contents for all readers, viewers, listeners, or online users (Chen, Wang, & Tseng, 2009). Marshall McLuhan, the communications theorist, alluded to this trend in customization when discussing the future of printed books in an electronically interconnected world (McLuhan & Nevitt, 1972).

Mandala: For Jung, the mandala (which is the Sanskrit word for "circle") was a *symbol of wholeness, completeness, and perfection*, and symbolized the self.

Mystery: For Jung, life was a great mystery, and he believed that humans know and understand very little of it. He never hesitated to say, "I don't know," and he always admitted when he came to the end of his understanding.

Neurosis: Jung had a hunch that what passed for normality often was the very force that shattered the personality of the patient. He proposed that trying to be "normal" violates a person's inner nature and is itself a form of pathology. In the psychiatric hospital, he wondered why psychiatrists were not interested in what their patients had to say.

Story: Jung concluded that every person has a story, and when derangement occurs, it is because the personal story has been denied or rejected. Healing and integration come when the person discovers or rediscovers his or her own personal story.

Symbol: A symbol is a name, term, or picture that is familiar in daily life, but for Jung it had other connotations besides its conventional and obvious meaning. To Jung, a symbol implied something vague and partially unknown