Cognitive Information Processing: Part 3

Slide 1	Welcome to Part 3 of an introduction to the cognitive information processing theory. In this presentation we will focus on how to use some of the mental representations that human beings use to make sense of the world around them. My name is Bill Huitt and I am Professor Emeritus at Valdosta State University and Adjunct Professor at Capella University. The presentation in narrated by Geoff Huitt who is assisting me with the production of these videos.
Slide 2	Human beings interact with the world around them not as it is but through mental representations of that world they create as they interact with that world.
Slide 3	That is, human beings interact with the maps they create of the world rather than reality itself. Sometimes those maps correspond quite well to the territory
Slide 4	and other times they do not.
Slide 5	The most general of these mental representations are called worldviews which include fundamental assumptions regarding reality and human nature, including what happens when the body no longer functions. There are three primary categories of worldviews. The first is the
Slide 6	physical or materialistic worldview with its basic assumption that all of reality is composed of matter and energy; nothing else exists.
Slide 7	What can be observed with the senses, including using technology to enhance those observations, incorporates all reality. Science is the proper means by which humans understand that reality,
Slide 8	Including the fact that the earth and its solar system are just one of the billions of solar systems in the Milky Way galaxy
Slide 9	and this galaxy is only one of billions of galaxies in the known universe.
Slide 10	When one realizes that the number of possible interactions among the neurons in the human brain exceeds the number of known galaxies in the universe, it is easy to comprehend why it is so difficult to understand one human beings behavior, let alone that of 7 billion and their interaction with the ecosystem in which we live.

Slide 11	A second worldview is labeled the cosmic-spiritual worldview and hypothesizes a non-material reality that is linked to the material or physical reality. The extensive study of near-death experiences provides support for this worldview.
Slide 12	A third worldview is labeled the God-centered worldview and proposes that the material and spiritual worldviews are fundamentally sound with the addition that they are under the control of a Creator. The Abrahamic Faiths of Judaism, Christianity, Islam, and Baha'I have billions of adherents who support this worldview.
Slide 13	A second mental representation that substantial influence on one's understanding of reality is labeled paradigm. These offer more precise statements about how each of the worldviews operate. They are important because they define
Slide 14	what phenomena are eligible to be studied.
Slide 15	For example, some paradigms, such as the behaviorist paradigm, state emphatically that the only phenomena that can be studied scientifically are overt or observable behaviors.
Slide 16	However, other paradigms such as the cognitive information processing or humanistic paradigms state that internal thoughts and subjective emotions should be the focus of study.
Slide 17	Paradigms also influence the types of questions that can be asked
Slide 18	and what types of data can be collected. For example, some paradigms focus on collecting
Slide 19	words and thoughts while others focus on
Slide 20	pictures and other media and others focus on
Slide 21	Numbers that can be statistically investigated.

Slide 22	Paradigms also influence the methods used for collecting data such as through interviews, literature reviews, observations, or focus groups. Additionally, paradigms influence
Slide 23	how data will be organized for analysis and used to create
Slide 24	theories that explain the findings such as Piaget's theory of cognitive development or
Slide 25	Erikson's theory of socioemotional development.
Slide 26	There are four primary paradigms that are used in educational psychology today. Historically, the primary paradigm is described as mechanistic or reductionistic because it proposes
Slide 27	that reality, including human beings, operate as a machine with parts that can be studied independently and the operation can be reduced to the sum of the parts.
Slide 28	A second paradigm is the existential or phenomenological paradigm that is used extensively in the humanistic theory to study the subjective understandings of the lived experiences of people.
Slide 29	This paradigm proposes that the mental representations of people, especially their emotional behavior, should be the object of study by behavioral and social scientists.
Slide 30	A third paradigm is the organism or systems paradigm that proposes human beings should be studied holistically and that the whole is more than the sum of the parts.
Slide 31	This paradigm is especially insistent that the ecosystem within which the organism is embedded must be a part of the investigation.
Slide 32	Finally, there is a process or connectionist paradigm that proposes it is the relationship among the parts and the patterns that are created that should be the object of study.
Slide 33	They propose that organisms consist of networks within networks and must be studied

Slide 34	within this multi-level perspective. This is a primary paradigm used in the study of artificial and machine intelligence.
Slide 35	Other mental representations that are studied In cognitive psychology include
Slide 36	frameworks used to name and organize important components of the paradigm. For example, the framework of the teaching-learning process proposes that contextual factors, teacher and student characteristics, and teacher and student classroom behaviors contain factors that influence student learning outcomes when measured outside of the control of the teacher.
Slide 37	This is made more explicit in a model of the teaching-learning process that shows the relationship among the variables within the categories.
Slide 38	Finally, there are schemes that are used to organize understanding such as how to walk from one location to another and
Slide 39	scripts which are mental representations with a specific order of tasks such as putting on underwear before pants and shirt
Slide 40	or how to order when being served at a restaurant. While these might seem obvious, they must be learned; they are not innate to human beings.
Slide 41	In conclusion, the mental representations of
Slide 42	worldviews restrict the number and types of
Slide 43	paradigms one is likely to create and how they are used.
Slide 44	These paradigms, in turn, influence the frameworks used to organize data
Slide 45	and the models constructed to investigate the validity of the frameworks.

Slide 46	Schemas and
Slide 47	scripts work in a slightly different way. Not only are the influenced by the models, frameworks, and paradigms, they also are created independently and influence these other mental representations from the bottom-up. That is, we can learn a script such as how to dress which influences a schema of how to do things in order which then influences higher-level mental representations. In fact, if one wants to change a higher-level representation it is often best to start with a simple behavior change that might be involved in a script.
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Last revised: August 2019