2011

Edward C. Moore Symposium

Friday, February 25

8:00 am to 4:30 pm · IUPUI Campus Center, CE 450

Cognitive Developmental Science

Kathy Johnson

Department of Psychology, IUPUI

Cognitive Science

- **Basic cognitive processes** (attention, concept formation, working memory, long-term memory, language)
- **Higher order cognitive processes** (problem solving, decision making, reasoning, metacognition)

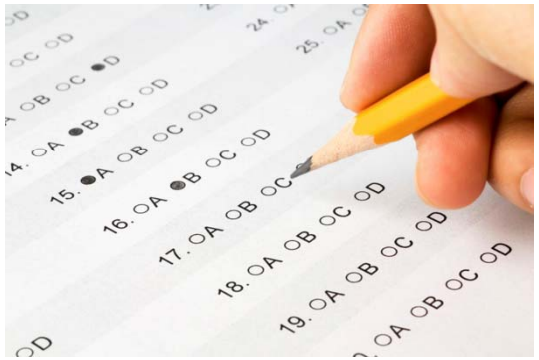
Developmentalists examine how interactions between basic and higher order processes may change over developmental time…as knowledge accrues, working memory capacity improves, etc.

Examples of Applications to Learning in Formal and Informal Contexts

e.g., Bransford, Brown, & Cocking, 1999; Halpern & Hakel, 2002, 2003

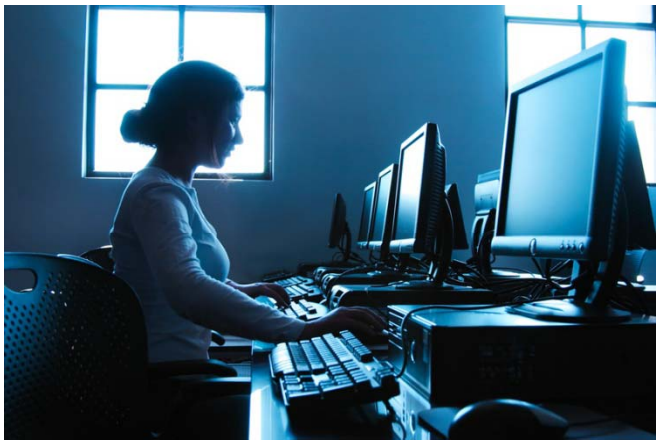
1. ‘Practice at retrieval’ promotes long-term memory retention

Assessments DRIVE learning and should be administered frequently and with feedback



Introductory Psychology (B104)

- Hybrid course
- Currently undergoing substantive revision… but frequent assessments (supported by technology) will continue to be a core element
- Recitation Sections: Active Learning/Collaborative Problem Solving
- Homework: Online Activities
- Peer mentoring support
- Developmental approach



Compare and Connect

Chapter 4 >> 100% -- Icontino

	Concept Group 1 of 6 -- Concept 2 of 7
secondary appraisal	☐ moderator(s) of stress ☐ individual's evaluation of whether a situation is relevant or stressful ☐ Kobasa ☐ tendency to expect the outcomes of situations to be positive ☐ includes information, advice, material goods, and emotional support ☐ characterized by relaxed, easy-going, patient behavior ☐ Lazarus and Folkman ☐ individual's evaluation of coping methods for a stressful situation ☐ personality factors ☐ characterized by impatient, hostile, aggressive behavior ☐ cognitive factors ☐ includes commitment, challenge, and control
Submit	

2 out of 4 matches. Find 2 more.	Concept Group 1 of 6 -- Concept 2 of 7
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Submit	**The answers above were correct.** **Your score was lowered for the incorrect submissions.**

Examples of Applications of Cognitive Science to Learning in Formal and Informal Contexts

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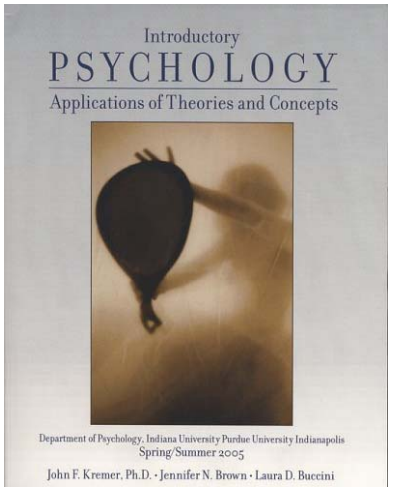
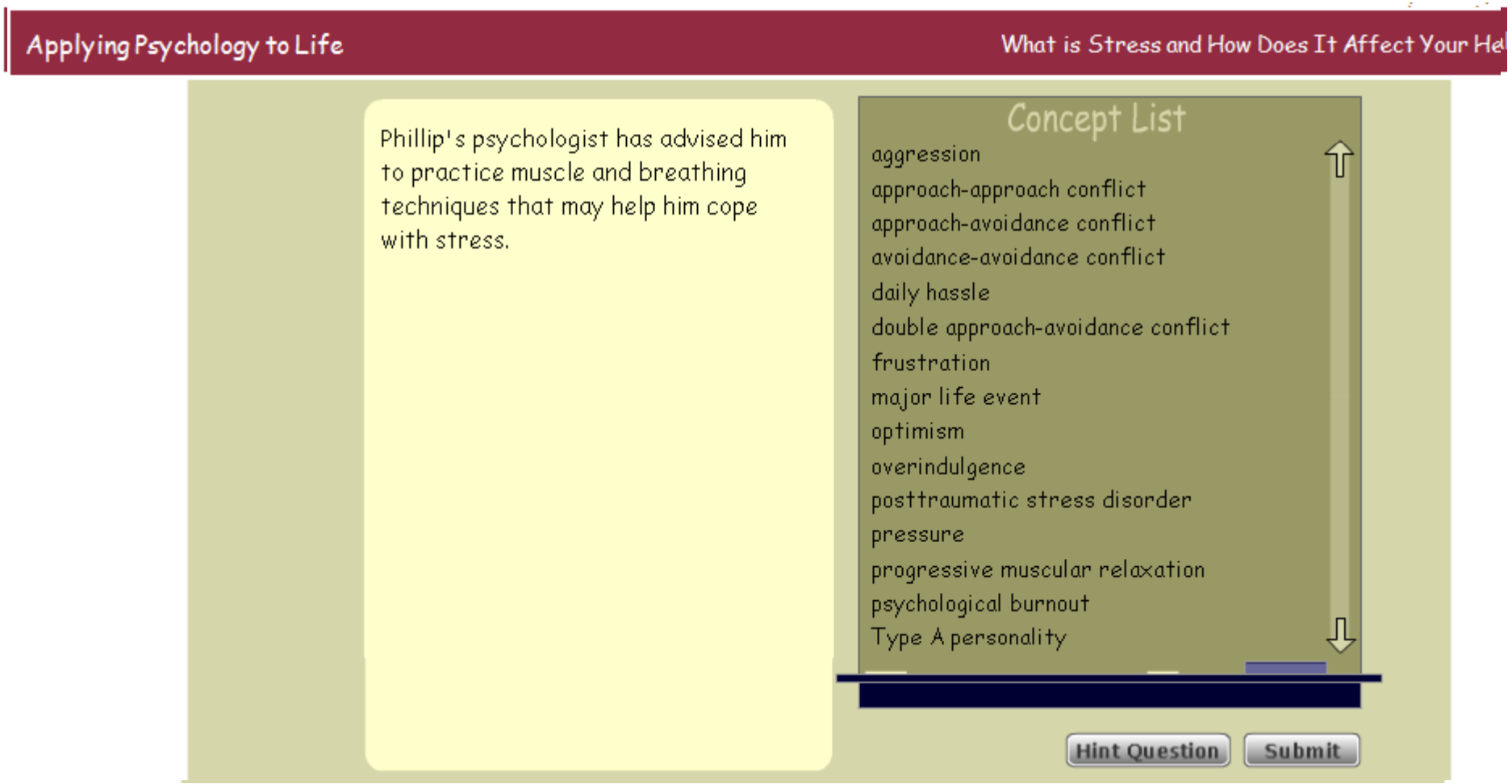
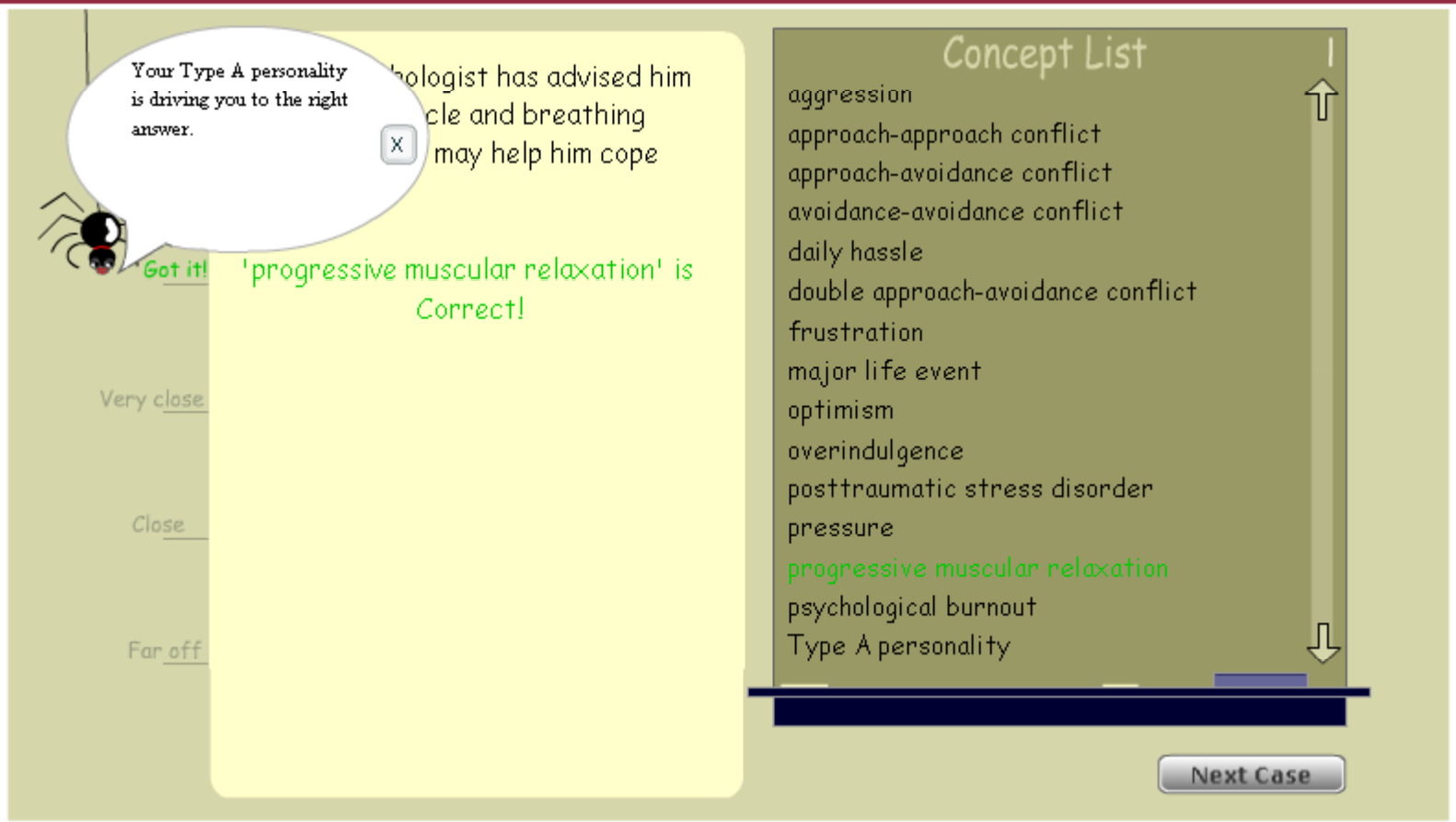
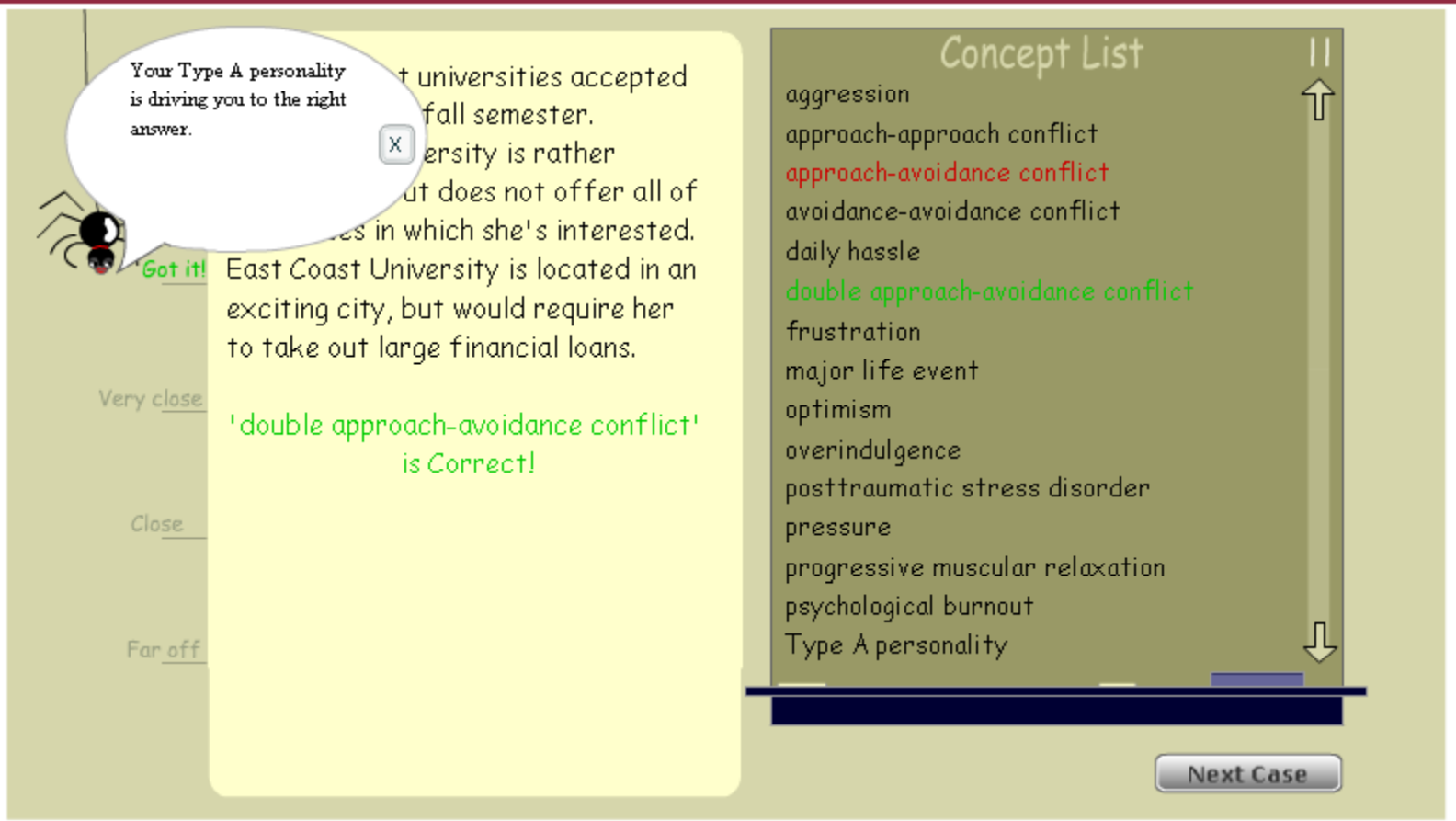
2. **Learning that takes place across different contexts is more challenging – but results in better retention…and transfer to additional contexts**



Applying Psychology




Your Type A personality is driving you to the right answer.
X
hologist has advised him
cle and breathing
may help him cope
Got it!
'progressive muscular relaxation' is Correct!
Very close
Close
Far off
Concept List
aggression
approach-approach conflict
approach-avoidance conflict
avoidance-avoidance conflict
daily hassle
double approach-avoidance conflict
frustration
major life event
optimism
overindulgence
posttraumatic stress disorder
pressure
progressive muscular relaxation
psychological burnout
Type A personality
Next Case


Your Type A personality is driving you to the right answer.
X
t universities accepted
fall semester.
ersity is rather
ut does not offer all of
es in which she's interested.
East Coast University is located in an exciting city, but would require her to take out large financial loans.
Got it!
Very close
Close
Far off
'double approach-avoidance conflict' is Correct!
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aggression
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Type A personality
Next Case

Examples of Applications of Cognitive Science to Learning in Formal and Informal Contexts

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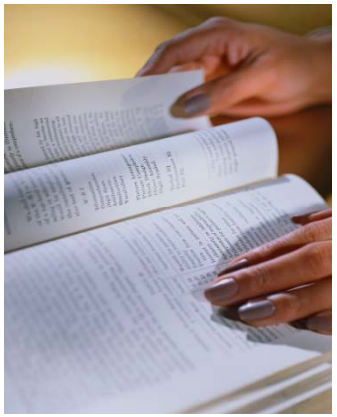
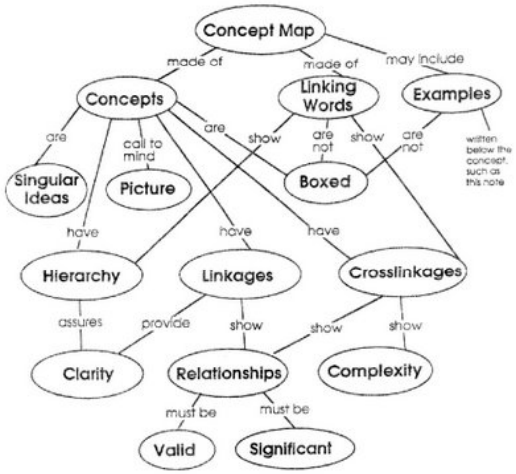
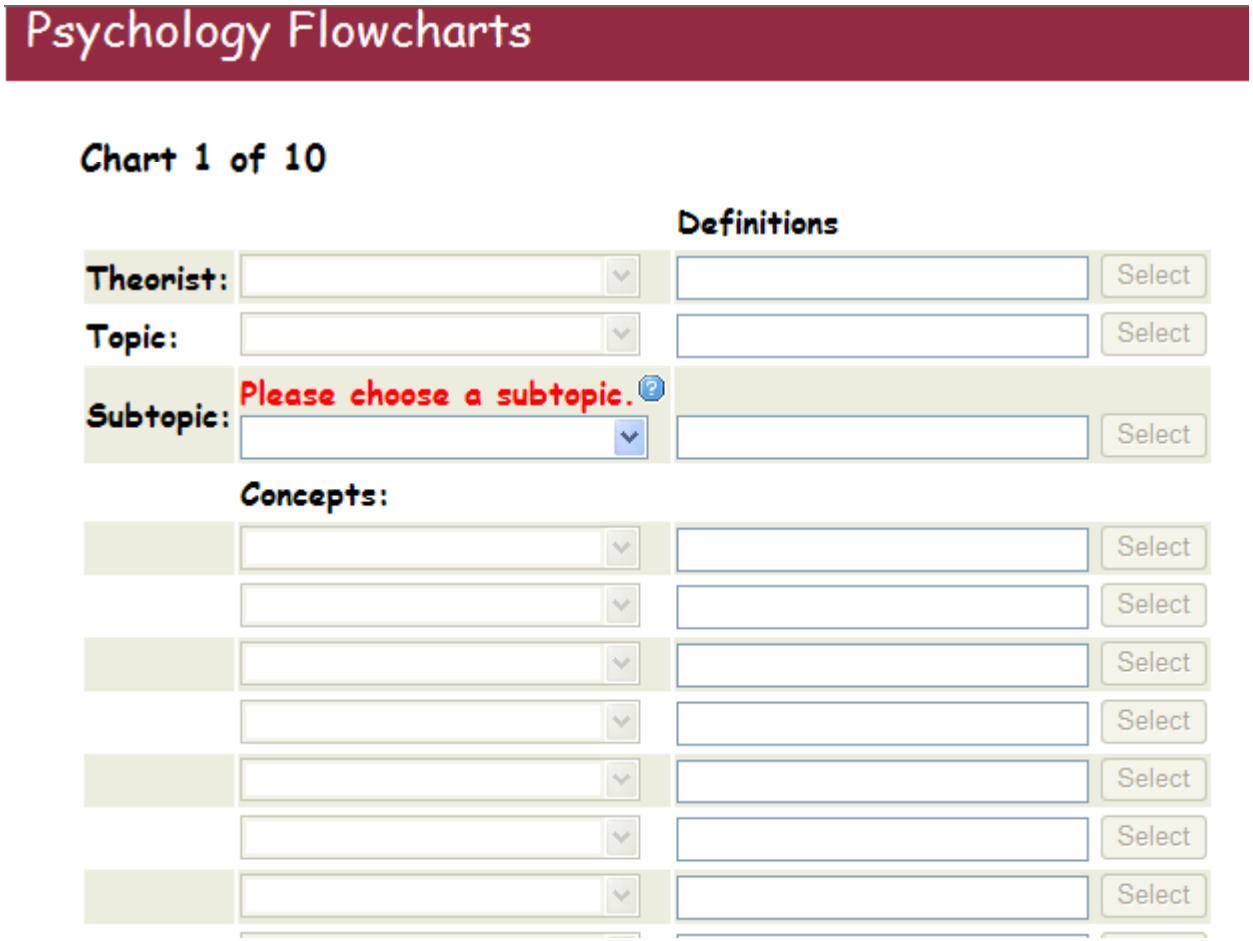
3. Presenting information in one format and then asking learners to re-represent that information in a different format enhances learning





Flowcharts


Psychology Flowcharts
Chart 1 of 10
Definitions
Theorist:
Topic:
Subtopic:
Please choose a subtopic.
Concepts:
Select

Psychology Flowcharts

Chart 1 of 10

		Definitions	
Theorist:			Select
Topic:			Select
Subtopic:	Cognitive factors		Select
	Concepts:		
			Select
			Select
			Select
			Select
			Select
			Select
			Select
			Select
			Select

Submit chart when you are finished.

This exercise is current

Close

Select a Definition...	
	Select
When stress levels are high includes signs such as hyperactivity or change in appearance	Select
Stressors are not independent events, they are also related to personal, social, and environmental factors	Select
Interpretation of life events considered stressful (also include appraisal or the situation)	Select
Coping techniques involving physical actions of the body to alleviate tension and stress	Select
Mainly controlled by the autonomic nervous system, includes reactions such as increased heart rate	Select
Changing a behavior to reduce stressors (Lazarus and Folkman)	Select
Support provided by friends, family, or others during difficult times	Select
Involves the emotional effects of stress	Select
Individual life events that act as a stimulus of stress	Select
Adapting to the emotional response of a	Select

Chapter 4 -- Icontino

Chart 1 of 10

		Definitions	
Theorist:			Select
Topic:	Moderators of stress	Factors believed to affect individual re	Select
Subtopic:	Cognitive factors	Interpretation of life events considered	Select
	Concepts:		
	Heart disease	Arrhythmia and myocardial ischemia	Select
	Hardiness	People can endure high levels of stres	Select
	Primary appraisal	Perception of the relevence and stress	Select
	Secondary appraisal	Evaluating the resources available for	Select
			Select
			Select
			Select
			Select
			Select

Submit chart when you are finished.

Feedback 1 of 10 charts complete

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Theorist:			Select
Topic:	Moderators of stress	Factors believed to affect individual	Select
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	Secondary appraisal	Evaluating the resources available f	Select
			Select
			Select
			Select
			Select
			Select

Correct (green) = correct answers
Incorrect (red) = incorrect answers
Missed (blue) = required answers left blank

Return to this chart | Continue to next chart | View your responses

Psychology Flowcharts

Your Responses

1 of 10 charts complete

Subtopic	# Correct	# Incorrect	# Missed	% Comprehensive
Cognitive factors	10	2	6	56%
Subtotal	**10**	**2**	**6**	**56%**

Continue to next chart

Teaching = Organizing

- What learners DO predicts what is learned, how well it is retained, and whether it will generalize
- Cognitive Science provides a framework for 'course engineering'
- Technology can support, reinforce, and provide feedback

Co-curricular experiences involving applications (service learning, peer mentoring, research, internships) are particularly powerful mechanisms for fostering long-term retention

?

Given the potential impact of informal learning experiences, how might we consider revising our courses and/or curricula to maximize their benefits to students? Are there roadblocks that could impede such revisions (e.g., physical classroom spaces, accreditation pressures)? If so, how might they be overcome?

Which of the theoretical frameworks described by the panelists seems to align best with your own teaching? How did you make this determination, and might there be advantages to experimenting with other approaches? How might expanding one's teaching to include a broad range of formal and less formal contexts benefit one's own growth as a teacher?

Other Questions or Comments?