SCT: Assessing Expertise when Answers are Uncertain

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BACKGROUND

- Assessing clinical reasoning is one of the "unfunded mandates" of competency-based assessment.
- Traditional assessments of knowledge such as MCT's can't determine how the test taker would interpret clinical data in conditions of uncertainty- where there is not a straightforward answer with which all experts would agree.
- "Script Theory" postulates that clinicians mobilize prestored sets of knowledge or "scripts" to understand situations and act appropriately.
- Script Concordance Tests (SCTs) compare how an examinee responds to how a panel of experts respond in an attempt to test concordance between the examinee and the panel of experts.
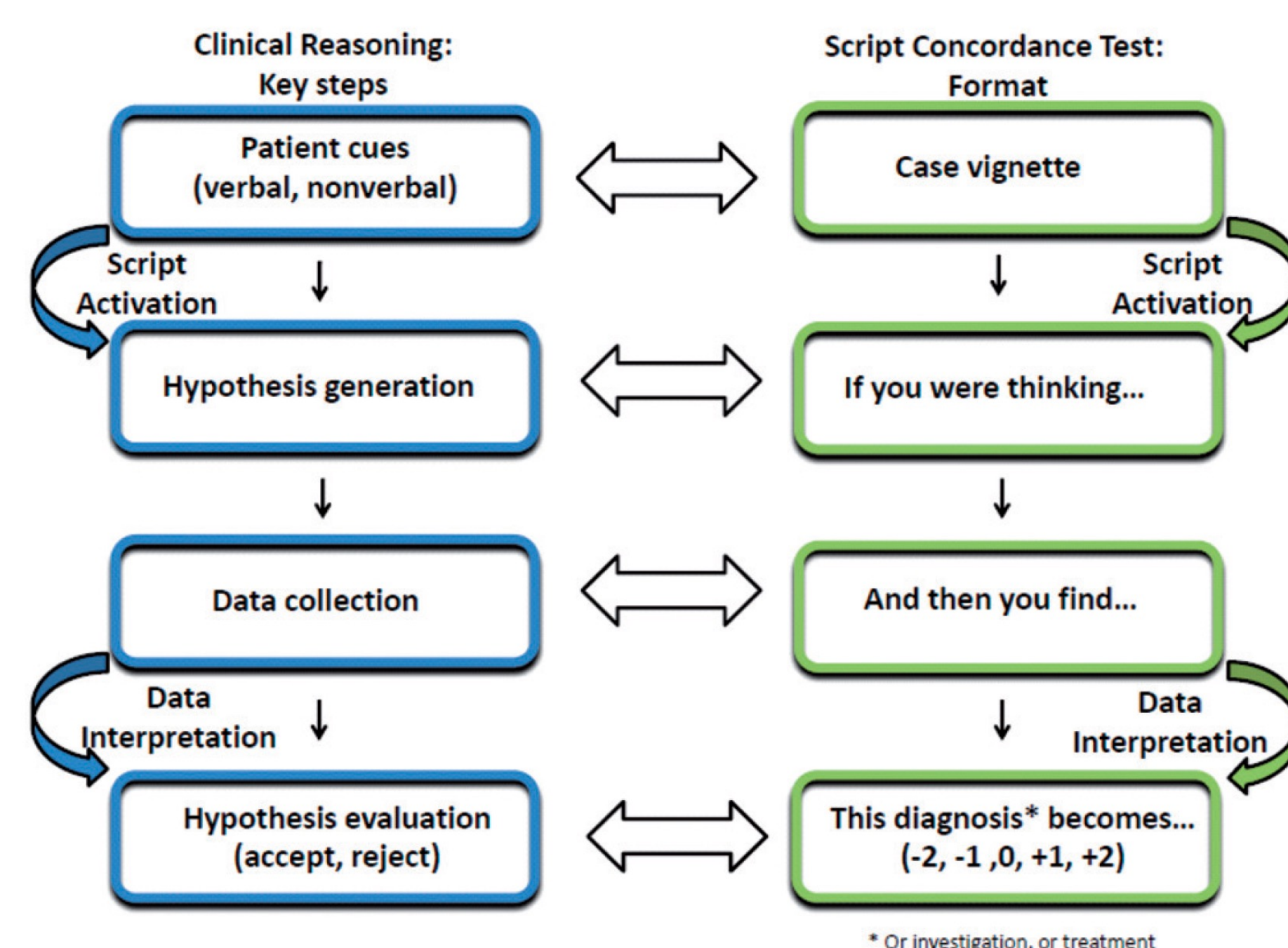
TEST ITEM DEVELOPMENT

SCT has three design features:
   Examinees face ill-defined clinical situations and must chose between several realistic options
   The response format reflects the way information is processed in complex problem solving situations
   Scoring takes into account the variability of responses of experts to clinical situations

Clear, practical guidelines exist to assist in the construction of SCTs

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Script Concordance Testing
is a useful tool for understanding how learners throughout the spectrum of medical education interpret data when the "right answer" is uncertain.

Next Steps:
1. Implement SCT across the continuum
2. Use SCT as a research tool to better understand expertise
3. Use SCT not simply for *assessment* but also for *teaching*: studying whether or not including detailed rationale by experts of differing answers improves performance and development of experts.

SAMPLE SCT ITEM

The examinee would be presented with a short clinical vignette, followed by the following 6 test items, within which they chose between -2 and +2 on a Likert scale:

If you were thinking of	And the patient reports or you find upon clinical examination	This hypothesis becomes
Anaphylactic reaction	Respiratory rhythm at 32	–2 –1 0 +1 +2
Asthma	Difficulty swallowing	–2 –1 0 +1 +2
Hyperventilation	A normal pharynx	–2 –1 0 +1 +2
Anaphylactic reaction	Arterial blood pressure = 120/180	–2 –1 0 +1 +2
Asthma	A diffuse arterial II/IV murmur	–2 –1 0 +1 +2
Hyperventilation	Arterial blood pressure = 150/90	–2 –1 0 +1 +2

–2   Ruled out or almost ruled out
–1   Less probable
0   Neither less nor more probable
+1   More probable
+2   Certain, or almost certain

Figure 1 Example of a clinical vignette and format of items used for diagnostic knowledge assessment.

SCT SCORING

Examinee gets full credit when their answer was the most common given by the panel of experts and receive partial credit when it was a less commonly given answer.

For each possible response for the sample item given, here are the number of experts that answered each and the point credit given to the examinee, in parentheses, if they answered as such:

Item #	-2	-1	0	+1	+2
1.	0	0	1 (0.11)	9 (1)	2 (0.22)
2.	5 (1)	5 (1)	1 (0.2)	0	1 (0.2)
3.	0	0	7 (1)	5 (0.71)	0
4.	0	7 (1)	5 (0.71)	0	0
5.	0	2 (0.2)	10 (1)	0	0
6.	0	0	9 (1)	3 (0.33)	0

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