Introduction to OSCE

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Objective Structured Clinical Examination (OSCE) and Standardize Patient (SP) Training Workshop
Psychiatry Postgraduate Program
25th May 2022

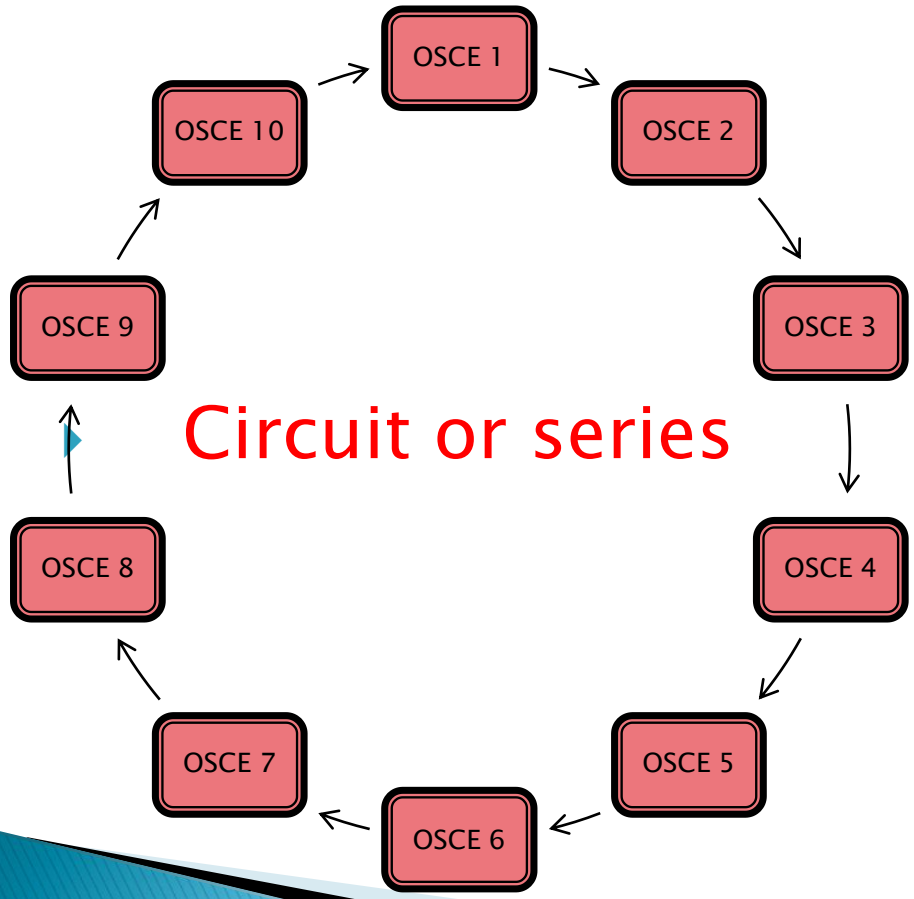
Content

1. Introduction to OSCE
2. Enhancing reliability and validity in OSCE

Introduction to OSCE

OSCE: Definition

Founder: Harden and Gleeson (1979)

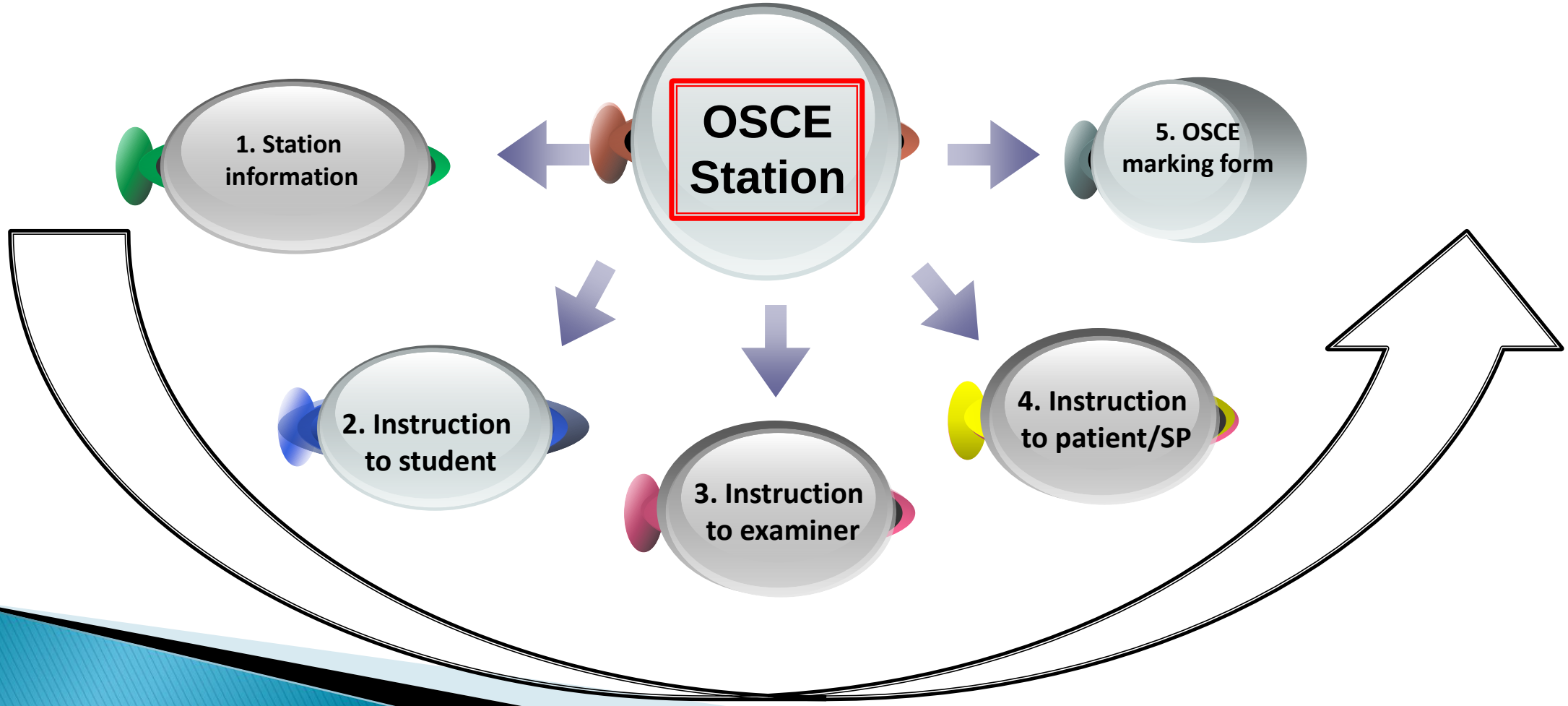


The OSCE is defined as "an approach to the assessment of clinical competence in which the components of competence are assessed in a well planned or structured way with attention being paid to objectivity" (Harden 1988, p. 19)

It typically consists of a circuit or series of short assessment tasks (stations), each of which is assessed by an examiner using a predetermined, objective marking scheme

(Bartfay et al 2004; Major 2005; Ward & Barratt 2005).

Structured OSCE



Objective and standardized OSCE

Rating scales

Items

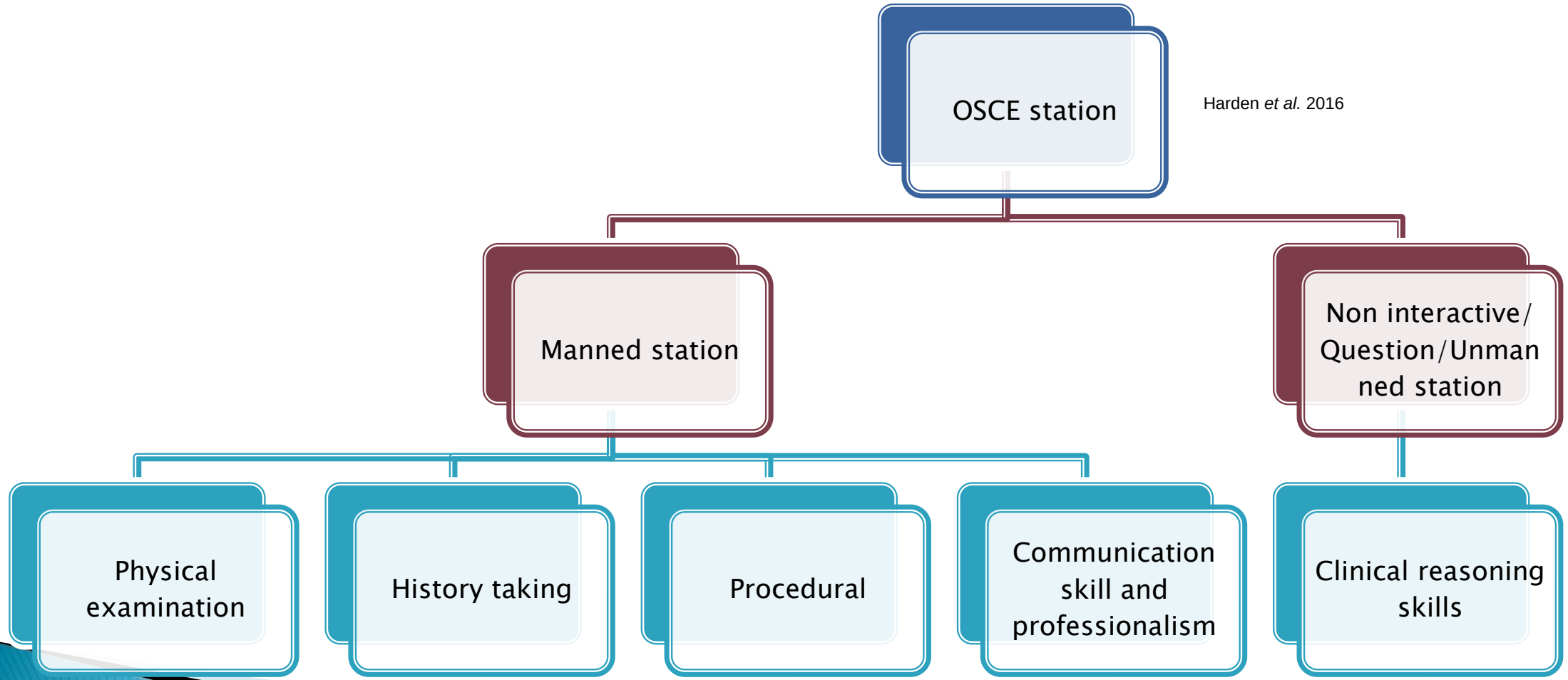
Weightage

No.	Expected Answers/Action/ Items	Not Done	Below Expectation	Meets Expectation	Above Expectation	Weightage of items
1	Explore the history of chest pain: site, onset, characteristic, radiation, associating factors, timing, exacerbating & relieving factors and severity specifically looking for cardiac symptoms					3
2	Explore associating factors, SOB, palpitations, ankle oedema					2
3	Exclude other possible causes: lung, anaemia, anxiety, HF					1
4	Risk factors for IHD: T2DM, HPT, Cholesterol, Smoking, Premature IHD FH					3
5	Explore family history, social history, medication history and allergies					2
6	Share with patient the possible diagnosis e.g., stable angina					2
7	Communication skills performance: demonstrate empathy, listen to patient cues.					2
					Total weightage of items	15

Description/ guidance

Standardize answer

Type of clinical skills can be tested in OSCE

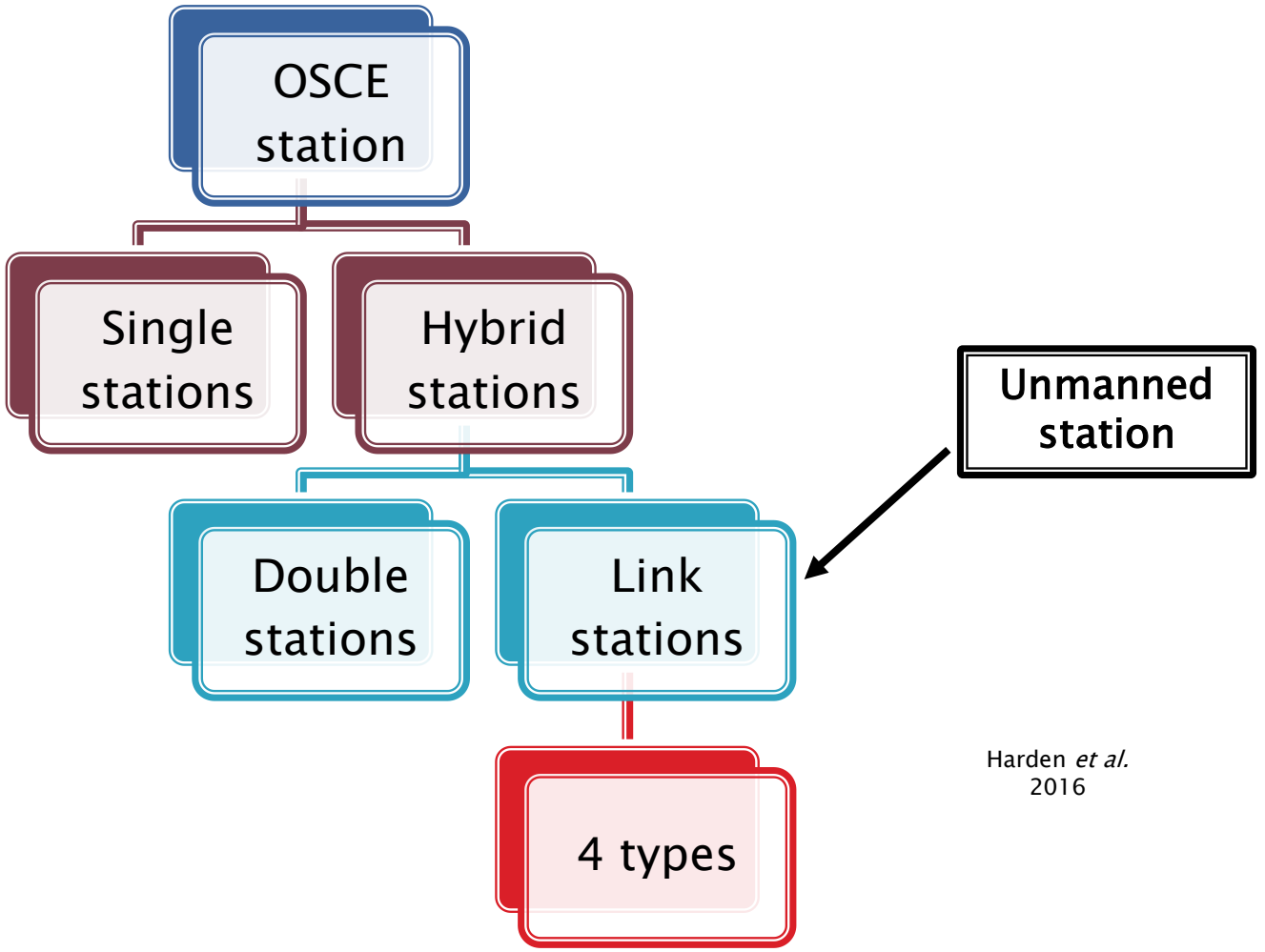


Harden *et al.* 2016

Table 5.1 The use of an OSCE to assess the 12 learning outcomes described in the three-circle model (Harden et al. 2003)

Learning outcome	References to the OSCE	%
Clinical Skills	381	54
Practical Procedures	95	13
Patient Investigation	107	15
Patient Management	152	22
Health Promotion and Disease Prevention	43	6
Communication	275	39
Information Handling	31	4
Understanding of Basic and Clinical Sciences	56	8
Attitudes and Ethics	72	10
Decision Making/Clinical Reasoning	102	14
Role of the Doctor	2	0.3
Personal Development	7	1

Type of stations



Harden *et al.* 2016

Linked stations (couplet station)

Type 1	• P/E THEN Question (EMQ or MCQ)	Manned then Unmanned
Type 2	• undertake part of procedure THEN complete the procedure	Manned then Unmanned
Type 3	• Information (Preparation station- read case record) about the patient THEN take the Hx	Unmanned then Manned
Type 4	• Observe video/ listen audio record THEN discuss with the examiner.	Unmanned then Manned

Unmanned OSCE

- Non-interactive station
- Written station
- Question station
- Post encounter probe
- Similar to data interpretation

Unmanned OSCE: materials

- Lab results
- Imaging
- Clinical pictures
- Instrument

Unmanned OSCE: Example

- Related to patient care and management
- Prescription writing
- Judgment
- Health promotion
- Death certification
- Decision making
- Ethics and medico legal

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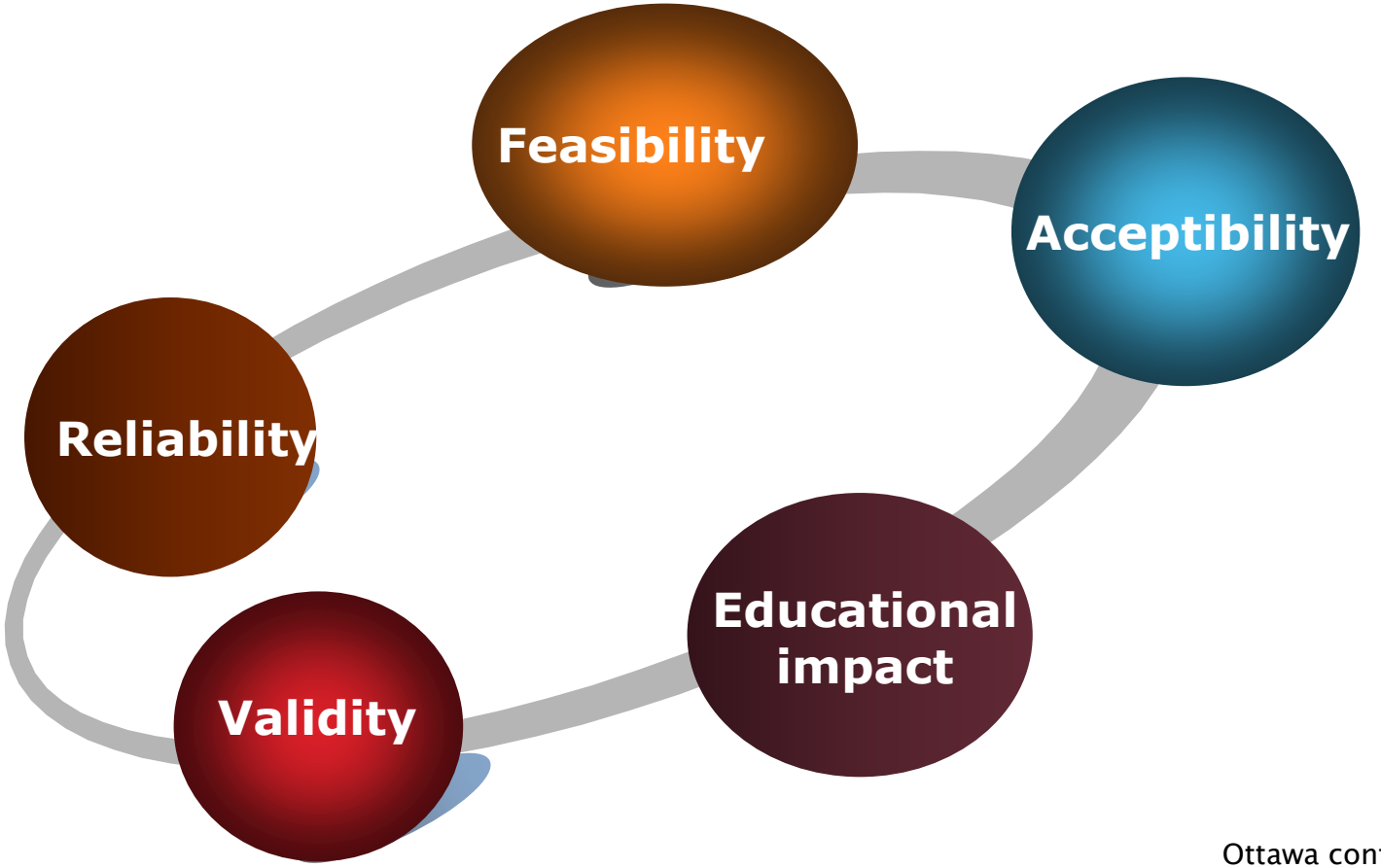
How to justify?



Issue in OSCE: I can't penalize the candidate

- Making up sign
- Over investigation
- Over management
- Disrespectful
- Ethical or legal concern
- Causing patient to be in pain
- Missing crucial steps
- Wrong steps
- Too harsh/ pain/ uneasy/rude
- Forgetting to remove the instrument

I can't penalize the student: What can we do?

- Award appropriate weightage that may effect the final score (p/e +finding)
- Choose appropriate rating that may effect the final score (p/e +finding)

Penalize in OSCE:
Prof Richard Fuller (Leeds)

- “I would contrast this with real life – we cause patients pain on a regular basis. I would more focus on whether unintentional and how candidates recognise and respond to it”

- “This contrasts with someone showing general rough handling of patients (but not causing pain) and not being penalised”

More strict: Depend on faculty policies

- **Criteria Marking**
  - Award zero mark or borderline fail marks for:
    - Whole performance
    - Domain (P/E or Finding)
    - Sub-domain (Inspection, palpation, percussion, auscultation)
    - Items- (Special examination: Examination of the liver)

Reliability and validity in OSCE

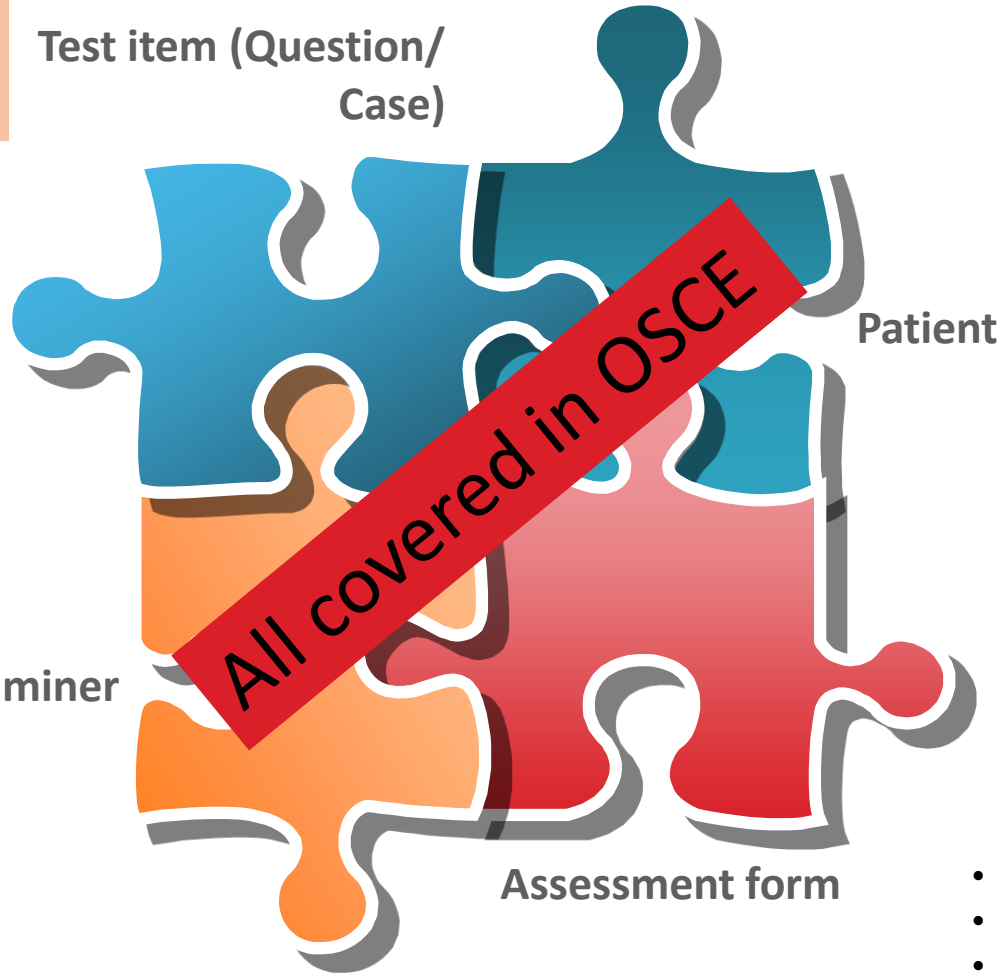
Reliability in OSCE

- Reliability refers to the precision of measurement or the **reproducibility** of the scores obtained with the examination

- '**CONSISTENCY**' of assessment result.

How to improve reliability?

Number of sampling (and test duration)
- 12 to 16 stations



Standardize
- **Patient history**
- **Case complexity**

Standardize assessment form

- Rating scales
- Domains/Items
- Question
- Answer scheme

Examiner
- **Examiner training**
- **A single student will be assessed by many examiners**

"… reliability is a matter of careful sampling. It relies on a sufficiently large sample through all possible sources of error, for example, items, examiners, and test occasions. **But reliability is not the whole story. Reliability is** necessary, but not sufficient, for valid inferences **."**

(Schurwith and Ces Van Der Vleuten 2019)

Relationship between reliability and validity

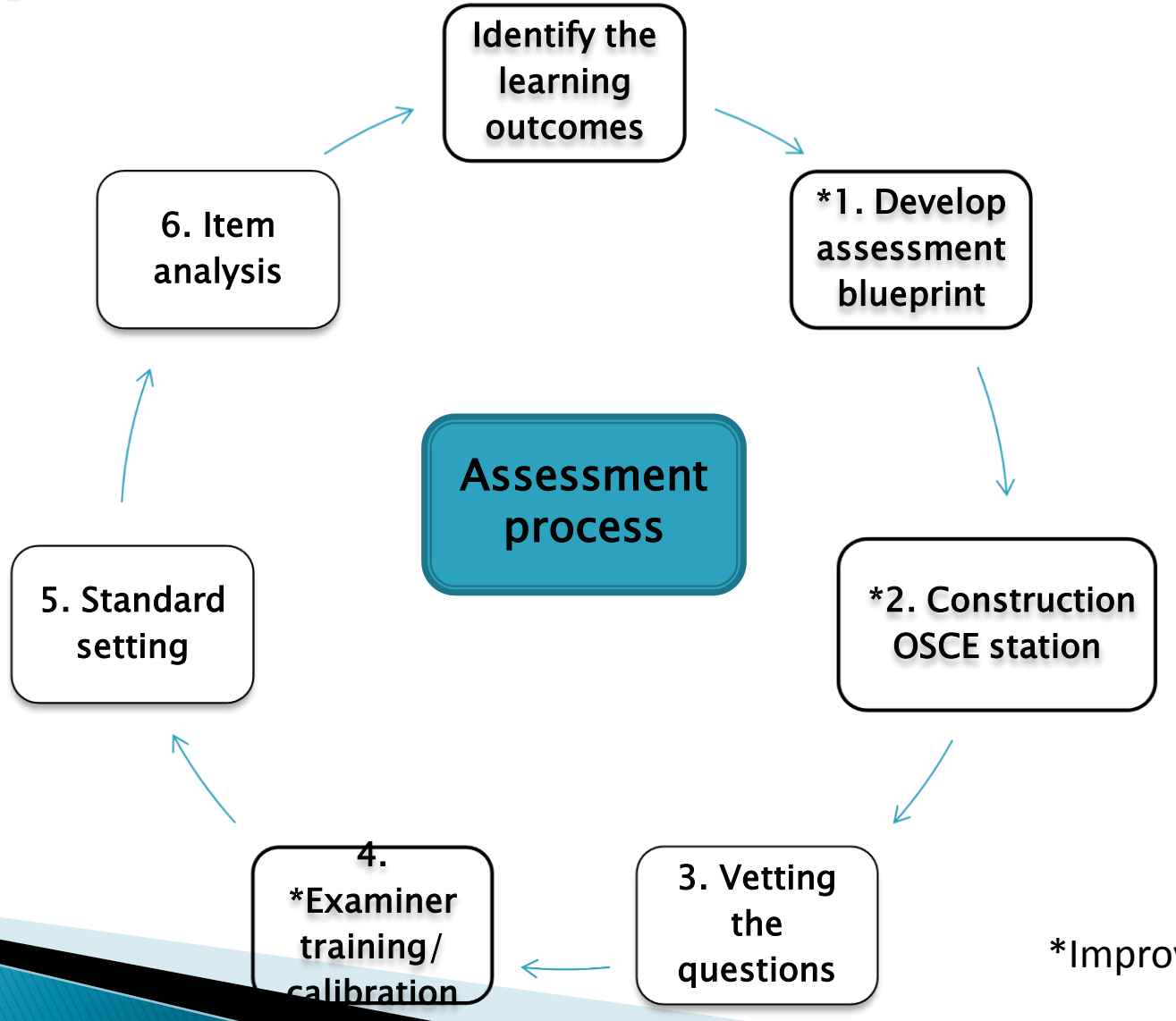
- "…reliability and other test metrics then become part of validity evidence. (Boursicot 2020)
- Any threats to the reliability of the test are also threats to its validity (Shiken 2000)
- Unreliable test cannot be valid (Wass et al 2001)

Validity in OSCE

- Validity: Constant, accuracy

- It measure what it is supposed to be measuring
- Is the extent to which the scores actually represent the variable they are intended to

Assessment process to enhance reliability and validity



*Improve reliability and validity

Table 1 Threats to validity of assessments

	Written test	Performance examination	Ratings of clinical performance
1	Construct under-representation (CU)		
	Too few items to sample domain adequately	Too few cases/OSCEs for generalisability	Too few observations of clinical behaviour
	Biased/unrepresentative sample of domain	Unstandardised patient raters	Too few independent raters
	Mismatch of sample to domain	Unrepresentative cases	Incomplete observations
	Low score reliability	Low reliability of ratings	Low reliability of ratings/ low generalisability
2	Construct-irrelevant variance (CIV)		
	Flawed item formats	Flawed cases/checklists/ rating scales	Inappropriate rating items
	Biased items (DIF)	DIF for SP cases/rater bias	Rater bias
	Reading level of items inappropriate	SP use of inappropriate jargon	Systematic rater error: halo, severity, leniency, central tendency
	Items too easy/too hard/ non-discriminating	Case difficulty inappropriate (too easy/too hard)	Inadequate sample of student behaviours
	Cheating/insecure items	Bluffing of SPs	Bluffing of raters
	Indefensible passing score methods	Indefensible passing score methods	Indefensible passing score methods
	Teaching to the test	Poorly trained SPs	Poorly trained raters

Downing & Haladyna 2004

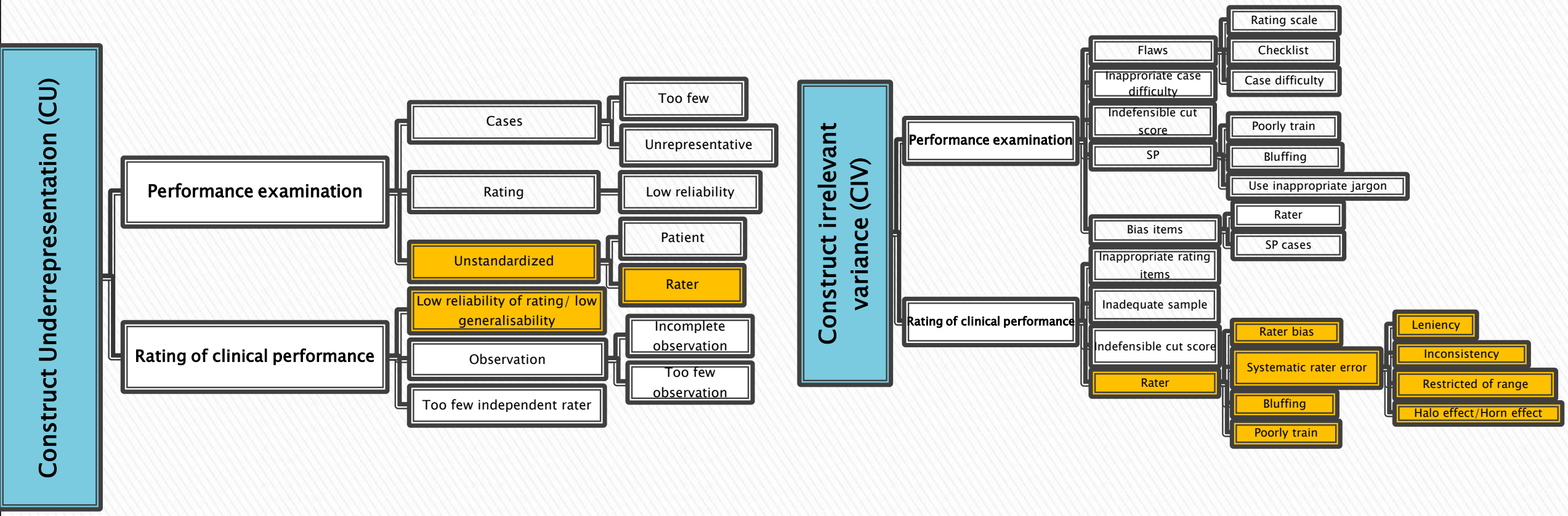
Downing &Haladyna (2004) Validity threats: [illegible] interference with proposed interpretations of assessment data. Medical Education 38:327-333

Examiner

In most studies, the variance of raters is the largest variance component, typically in the 80-90% range.

(Downing, 2005)

Examiner and validity



Downing &
Haladyna 2004

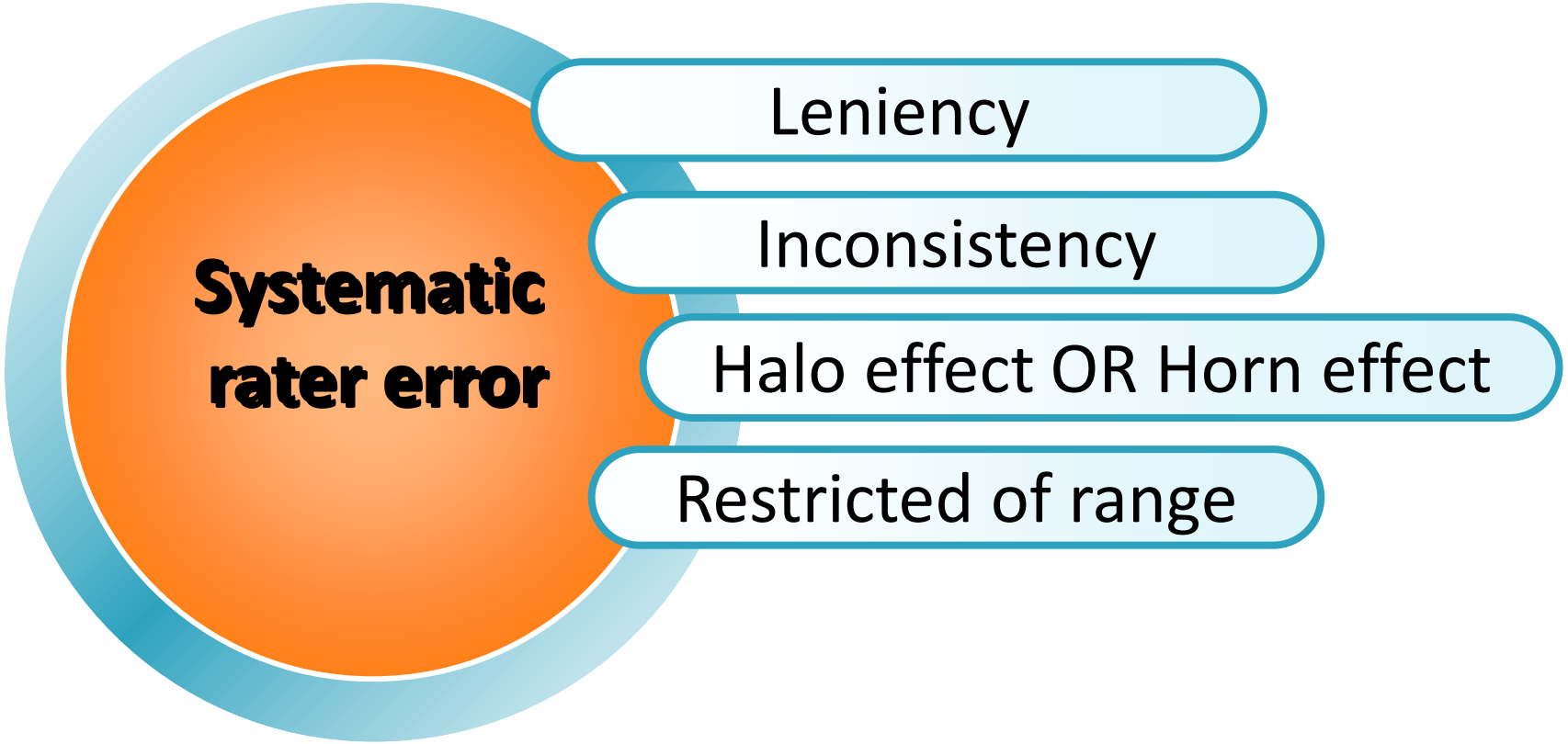
Inter-rater reliability

- Inter-rater reliability is a specific aspect of reliability referring to the degree of measurement error due to bias caused by **different raters** or observers **rating the same person or object** (Kottner and Dassen 2008)

- “Shared undergraduate clinical assessments should not rely on scoring systems and standard setting which fail to take into account other differences between schools. Examiner behaviour and training and other local factors are important contributors to variations in scores between schools”.

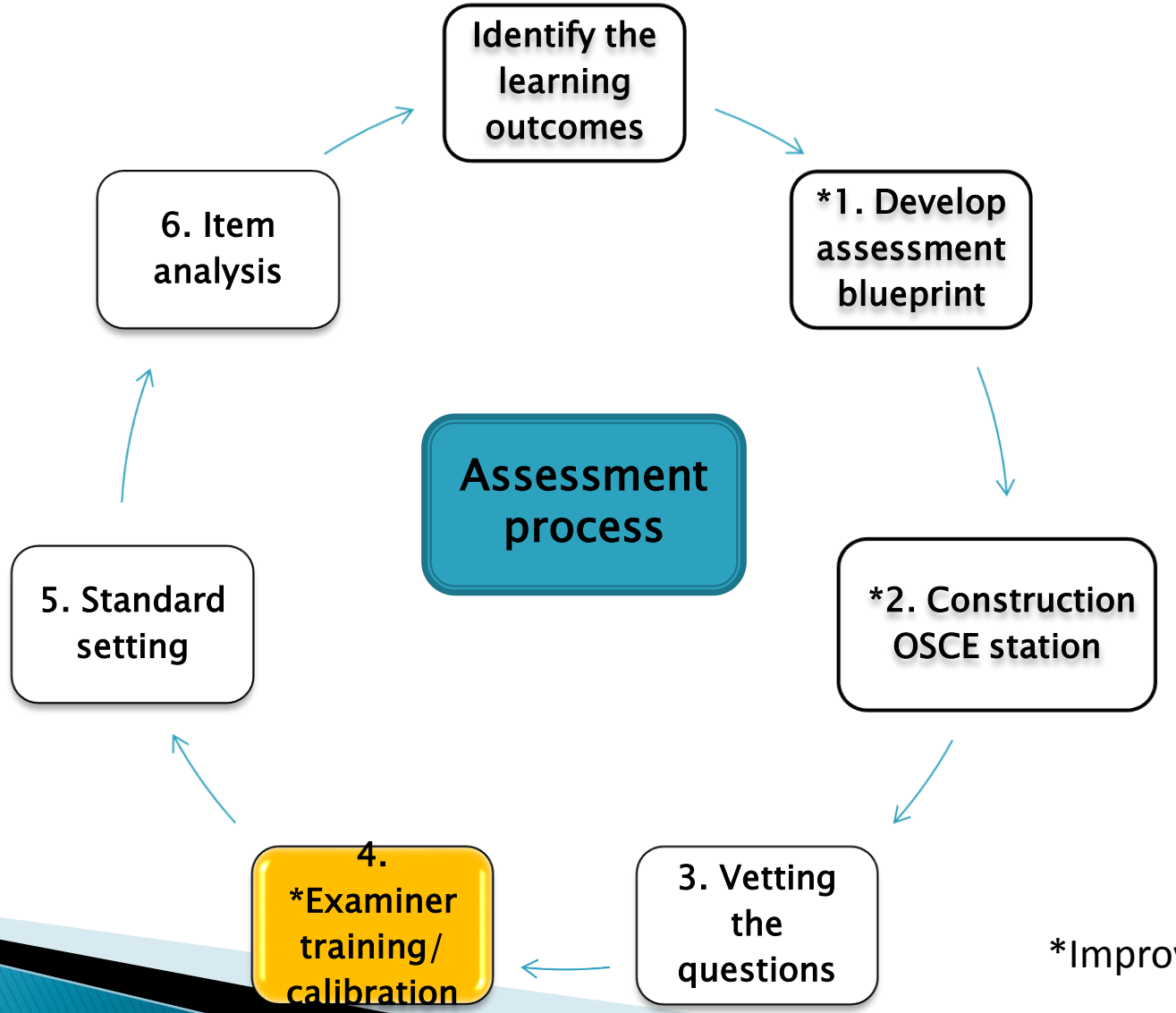
(Chesser et al, 2009)

Systematic rater errors



Iramaneerat and Yudkowsky (2007)

Process of OSCE- to enhance reliability and validity



*Improve reliability and validity

Examiner calibration

Aims:

To parallel the level of expectation based on candidate's performance

To standardize/ set ground rule for specific case

To discuss or improve on items in the checklist

To discuss on other 'difficulties" based on the experienced as examiner

For new examiner:

To inform about OSCE process

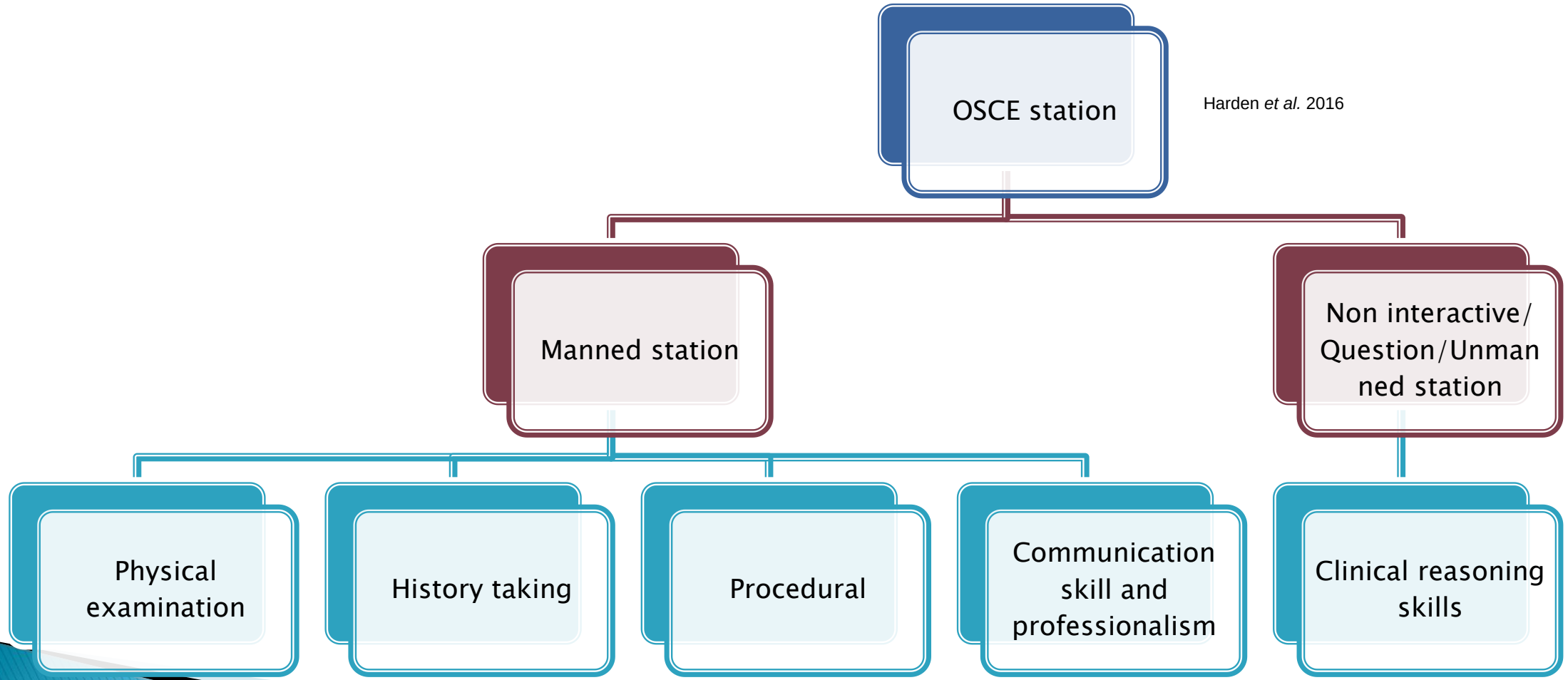
To highlight principle of OSCE-do and don't

To train on how to use rating scales

No.	Expected Answers/Action/ Items	Not Done	Below Expectation				Meets Expectation			Above Expectation			Weightage of items	(Calculation) $\frac{Score}{Total\ Score} \times weighatge\ of\ items$	Sub Total
1	Explore the history of chest pain: site, onset, characteristic, radiation, associating factors, timing, exacerbating & relieving factors and severity specifically looking for cardiac symptoms	0	1	2	3	4	5	6	7	8	9	10	3		
2	Explore associating factors, SOB, palpitations, ankle oedema	0	1	2	3	4	5	6	7	8	9	10	2		
3	Exclude other possible causes: lung, anaemia, anxiety, HF	0	1	2	3	4	5	6	7	8	9	10	1		
4	Risk factors for IHD: T2DM, HPT, Cholesterol, Smoking, Premature IHD FH	0	1	2	3	4	5	6	7	8	9	10	3		
5	Explore family history, social history, medication history and allergies	0	1	2	3	4	5	6	7	8	9	10	2		
6	Share with patient the possible diagnosis e.g., stable angina	0	1	2	3	4	5	6	7	8	9	10	2		
7	Communication skills performance: demonstrate empathy, listen to patient cues.	0	1	2	3	4	5	6	7	8	9	10	2		
												Total weightage of items	**15**	**New overall score**	/15

To parallel the level of expectation based on candidate's performance

Type of clinical skills can be tested in OSCE



Harden *et al.* 2016

OSCE history taking

	ACTIVITIES	PERFORMANCE
INTRODUCTION		
1.	Engage patient - Introduction - Build rapport - Patient's background i.e. age, occupation, marital status	**A B C D E**
ELICITING SYMPTOMS		
2.	**Eliciting key depressive symptoms (at least one symptom)** - persistent depressed mood - loss of interest or pleasure - Anhedonia	**A B C D E**
3.	**Eliciting other depressive symptoms (At least 3 symptoms)** - insomnia or hypersomnia - loss or increase of appetite - loss of weight or weight gain - fatigue - worthlessness - diminished ability to concentrate - psychomotor retardation or agitation	**A B C D E**
	- previous attempt - If not present - life-time suicidal ideation and behavior	
8.	**Eliciting other important features** - duration - significant impairment in function	**A B C D E**
9.	**Eliciting other important history** - To exclude medical condition - To exclude substances abuse - Family history of depression or mood disorder	**A B C D E**
DIAGNOSIS		
10.	State one provisional diagnosis	**A ▌ C ▌ E**
11.	State two differential diagnosis	**A ▌ C ▌ E**
12.	Give four reasons for your provisional diagnosis: - Symptomatology - Duration - Functioning - Exclusion	**A B C D E**
INTERVIEW TECHNIQUE		
13.	Employ proper balance of open & close-ended questions	**A B C D E**
14.	Ask questions systematically	**A B C D E**
15.	Attentive listening - Non-confrontational - Non-judgmental - Empathy - Well organized - Fluent - Speaks clearly - No prompting - Competent	**A B C D E**

Point to consider:

1: Domain/ section
- Introduction
- Eliciting symptoms
- Diagnosis/ Clinical reasoning
- Interview twchnique

OSCE history taking

SUMMARY FOR EXAMINERS

History of Presenting Illness:

40 year old female
Has been having neck lump progressively increasing in the last 6 months
Now roughly the size of a marble
Swelling firm and hard in consistency
Swelling not painful
No other neck swelling identified

Malignancy symptoms
Associated with mild discomfort when swallowing
And hoarseness of voice
No stridor
Weight loss
Poor appetite
No fever

Hyper/hypothyroidism symptoms
No tremor
No palpitation
No sweating or cold intolerance
No weight gain
No loss of hair
No change in bowel habit
No SOB
No back pain

Past medical history:
nil

Past surgical history:
nil

Allergies:
Nil

Social history:
Owns restaurant
Married & blessed with 2 children age 12, 10 girls,
Non smoker, teetotal

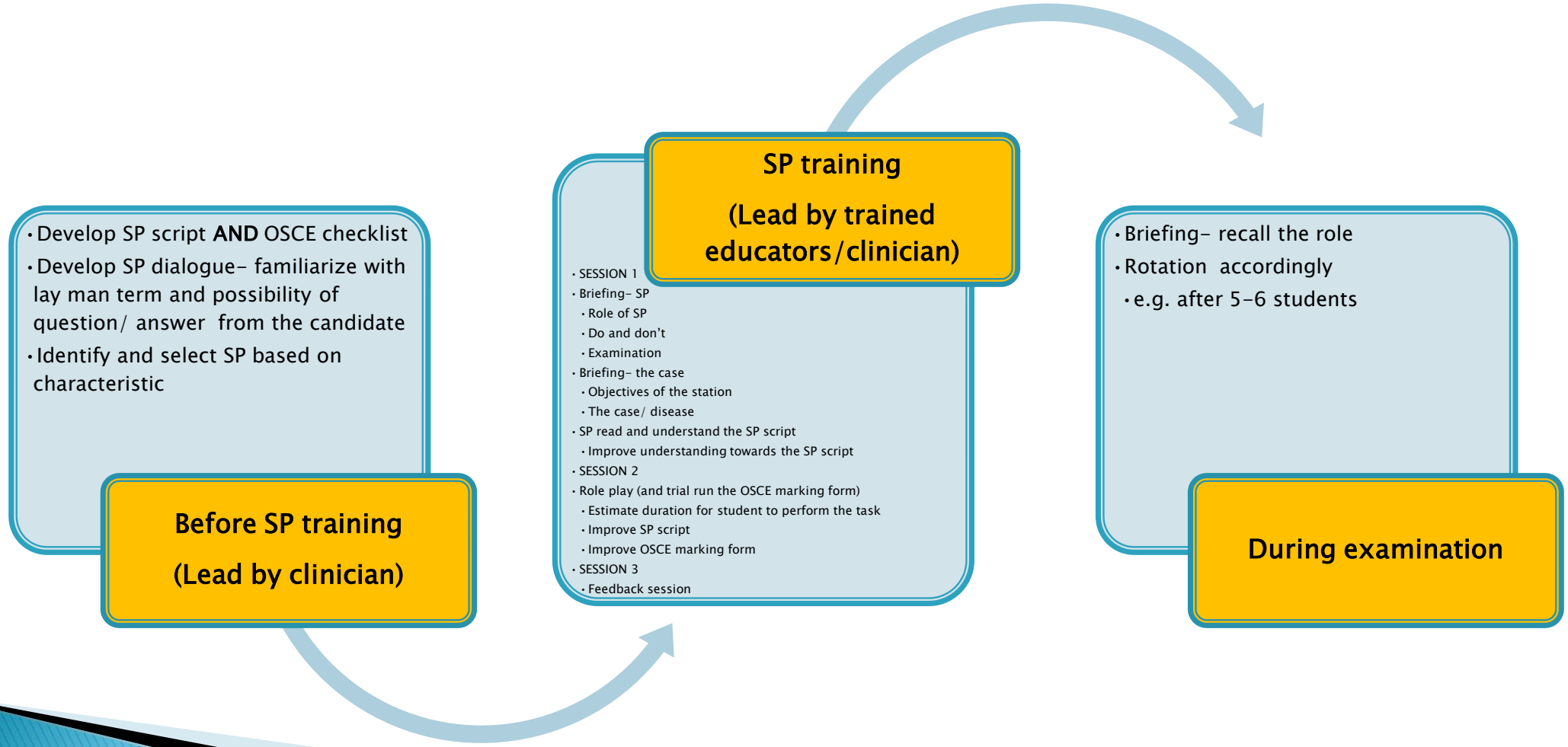
Family History
Mum passed away at age 65 with thyroid cancer
Elder Sister diagnosed at 45 with thyroid cancer

I. Checklist on candidate's overall performance (Please circle)

A = Very Good 1 | B = Good 0.75 | C = Acceptable 0.5 | D = Poor 0.25 | E = Not done 0

	ACTIVITIES	PERFORMANCE
HISTORY TAKING		**(70%)**
1.	Engage patient -Appropriate introduction (full name and role) -Build rapport	A B C D E (2%)
2.	Establishes reason for coming to the Surgical Outpatient Clinic Main chief complaint- anterior neck swelling and weight loss - Duration of neck swelling – for 6 months - Size of neck swelling – marble, firm - firm swelling - visible- yes - no other neck swelling	A [redacted] C [redacted] E (2%) A B C D E (6%)
3.	Malignancy related questions - any overlying skin changes – no - difficulty in swallowing –discomfort on swallowing - difficulty in breathing - no - noisy breathing – no - hoarseness of voice – no - weight loss – yes - appetite – no change - any other lumps and bumps - no	A B C D E (15%)
4.	Symptoms of hyperthyroidism: Palpitation: -present - no - associated chest pain: no -associated SOB: no Easily irritated: no Feels extremely hot: no Tremors: no Irregular periods: no GIT symptoms: no Hyperhidrosis- no Sleep disturbance – no Symptoms of hypothyroidism: -weight loss -lethargy -constipation -depression	A B C D E (20%)
5.	PMH - Nil PSH – nil	A B C D E (2%)
6.	Family History: -mum had thyroid cancer and passed at age 65 - sister has thyroid cancer diagnosed at 45	A [redacted] C [redacted] E (5%)
7.	Drug History: -No known drug allergy	A [redacted] C [redacted] E (1%)
8.	Establishes social history -alcohol - no smoking —no	A [redacted] C [redacted] E (1%) A [redacted] C [redacted] E (1%)
1.	Systematic approach	A B C D E (5%)
2.	Attentive listening Elicits patient's concerns and responds sensitively Non-confrontational Non-judgmental Fluent Speaks clearly No prompting	A B C D E (10%)

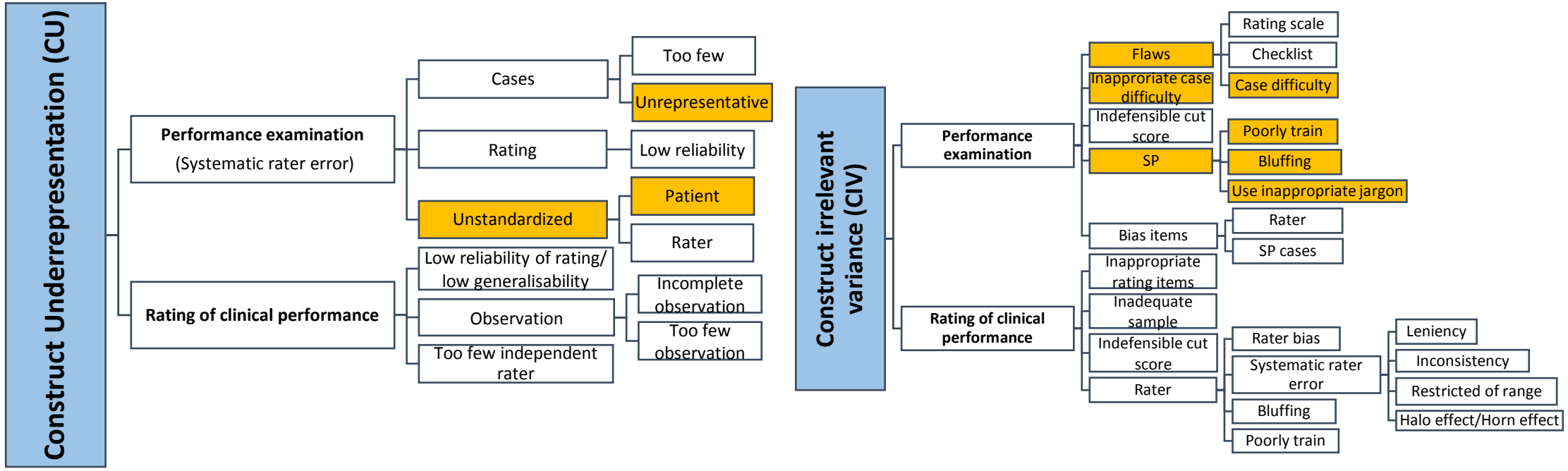
OSCE assessment using SP



Common flaws for OSCE using SP

Threats to validity: Common flaws for OSCE using SP

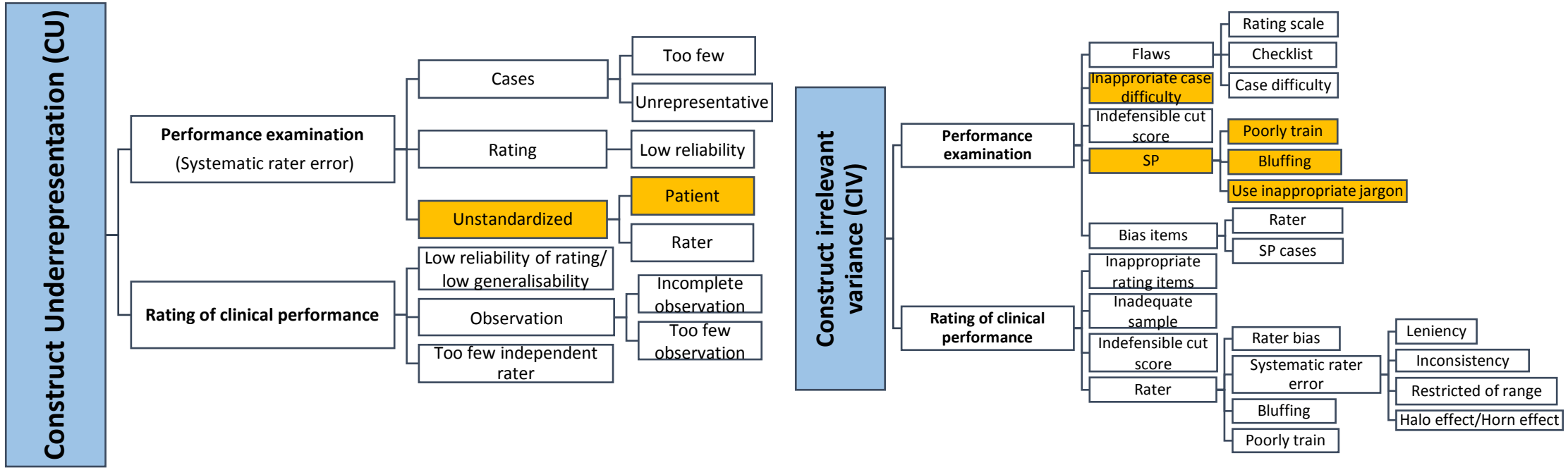
COMMON FLAWS1: Workload of SP



HOW TO OVERCOME? Rigorous SP training

Threats to validity: Common flaws for OSCE using SP

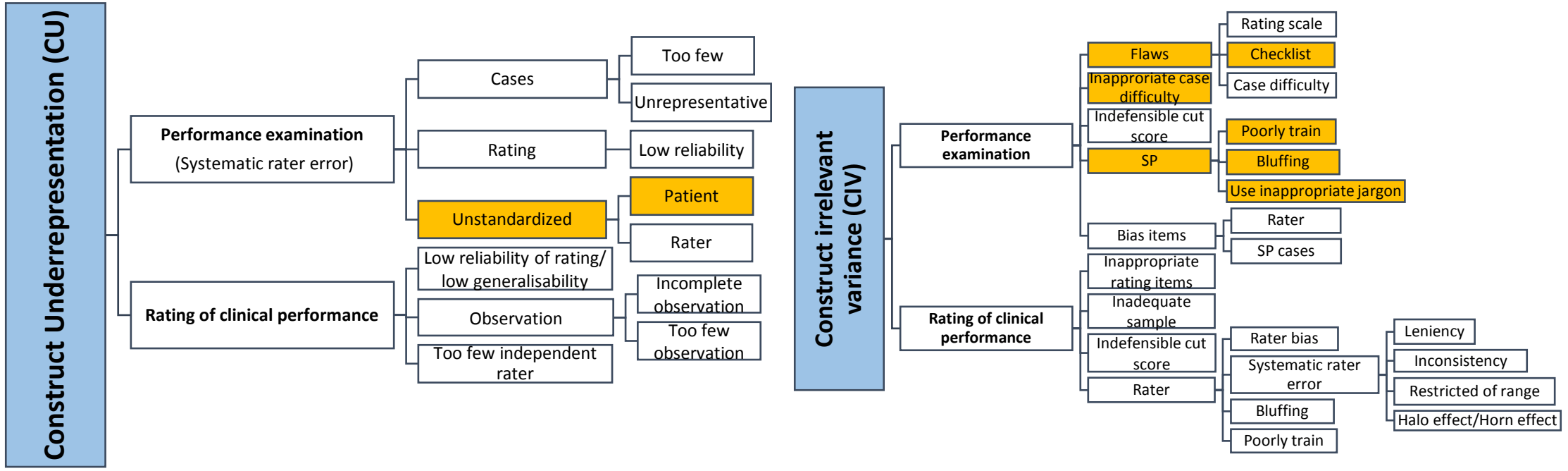
COMMON FLAWS 2: The necessity of SP Dialogue



HOW TO OVERCOME? SP Dialogue

Threats to validity: Common flaws for OSCE using SP

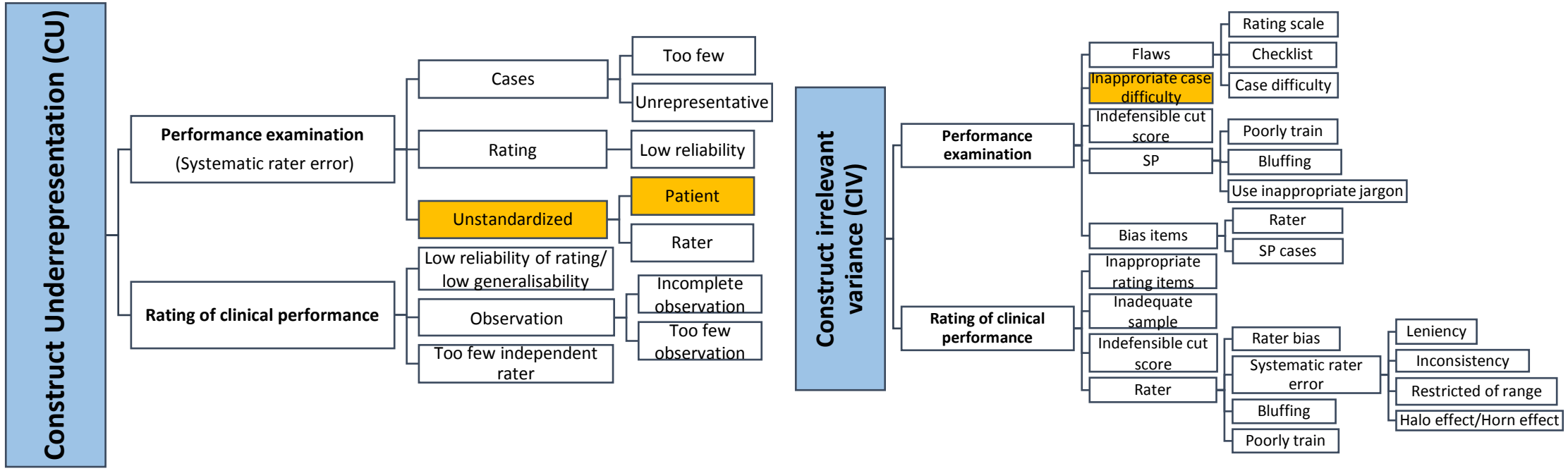
COMMON FLAWS 3: Congruent between the script and checklist items



HOW TO OVERCOME? Modification of the script and/or the checklist items during Role play

Threats to validity: Common flaws for OSCE using SP

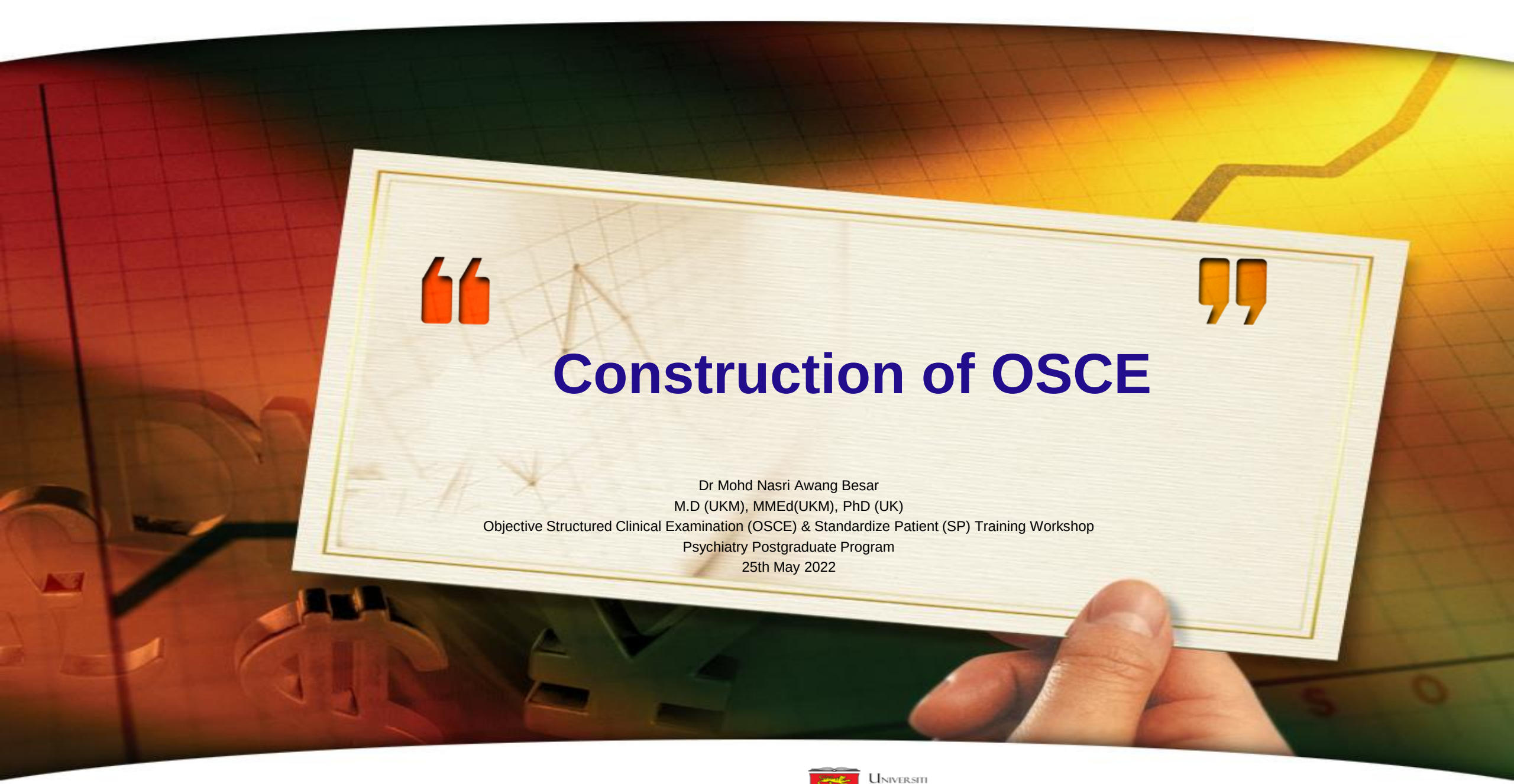
COMMON FLAWS 4: SP rotation



HOW TO OVERCOME? Reserved SP

Q & A session…..

Thank you



Construction of OSCE

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Universiti Kebangsaan Malaysia
National University of Malaysia

Outcomes

1. Able to design OSCE examination
2. Able to construct OSCE station
3. Able to construct OSCE marking form

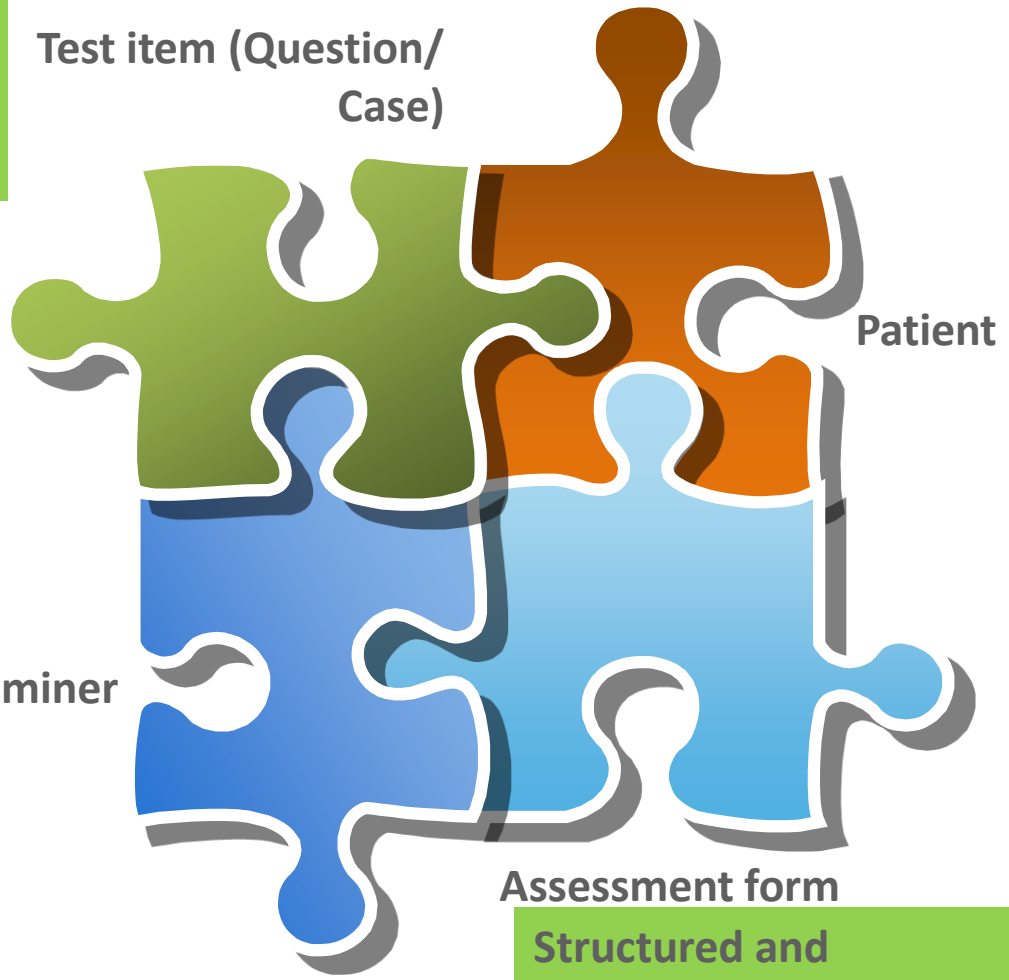
Enhancing reliability and validity in OSCE

Objective: Participants able to make decision based on the question

Question 1	• How long is the OSCE station duration?
Question 2	• How many OSCE (manned and unmanned) station?
Question 3	• Is there a link (unmanned) station?
Question 4	• How long is the rest duration in between OSCE station?
Question 5	• How many examiners for each station?
Question 6	• Any second examiner for Global Rating?
Question 7	• Which are the most suitable range of rating scale and rating description?
Question 8	• Which are the most suitable rating scale; number of grades?

Reliability

Number of sampling (and test duration)
- Question
- Case



Standardize
- Patient history
- Case complexity

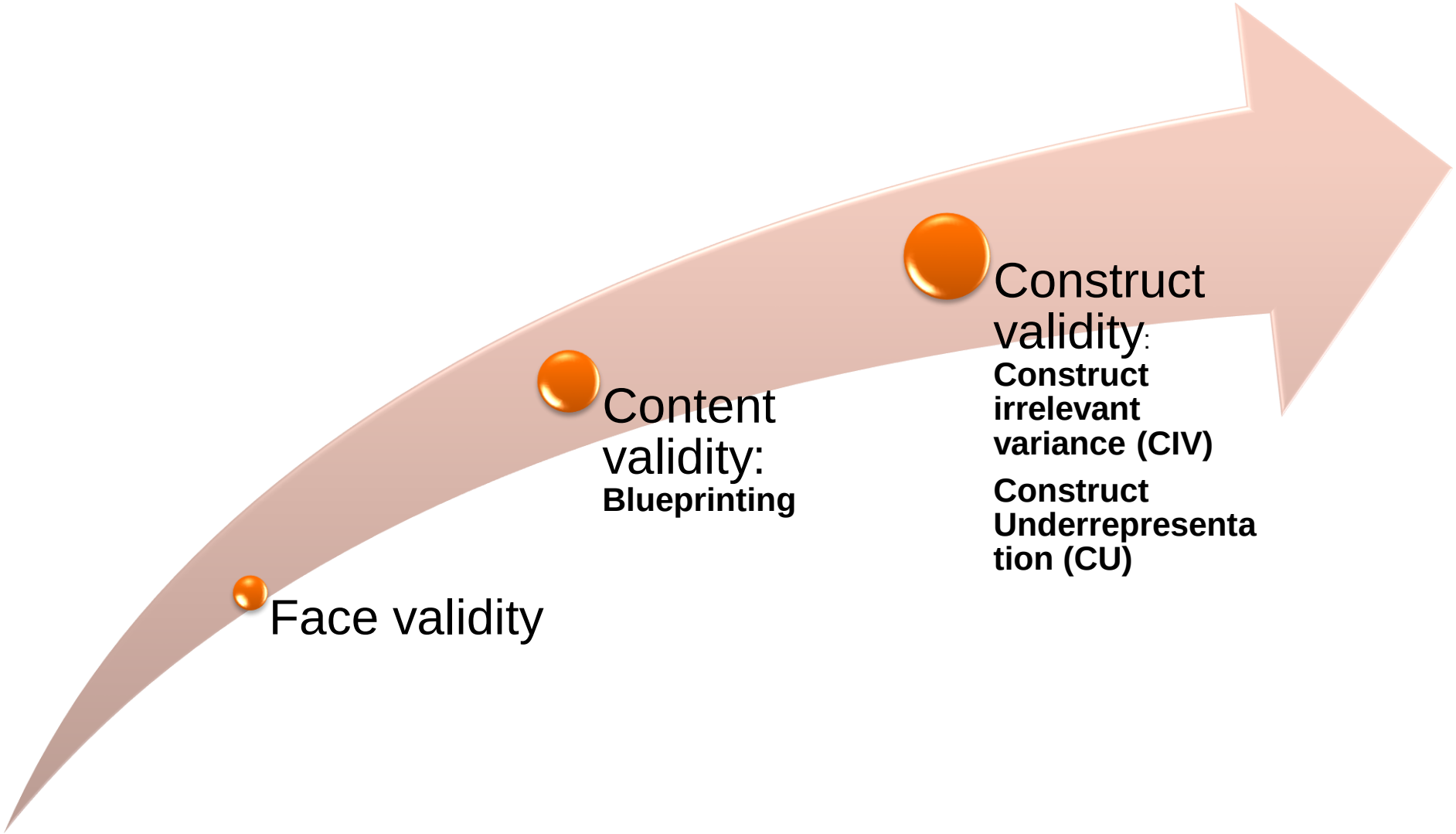
Examiner
- Examiner training
- Number of examiner

(interrater reliability)

Structured and standardize assessment form

- Appropriate scales
- Domains/Items
- Question
- Answer scheme
- Assessment rubric

Level of validity



Downing & Haladyna 2004

Table 1 Threats to validity of assessments

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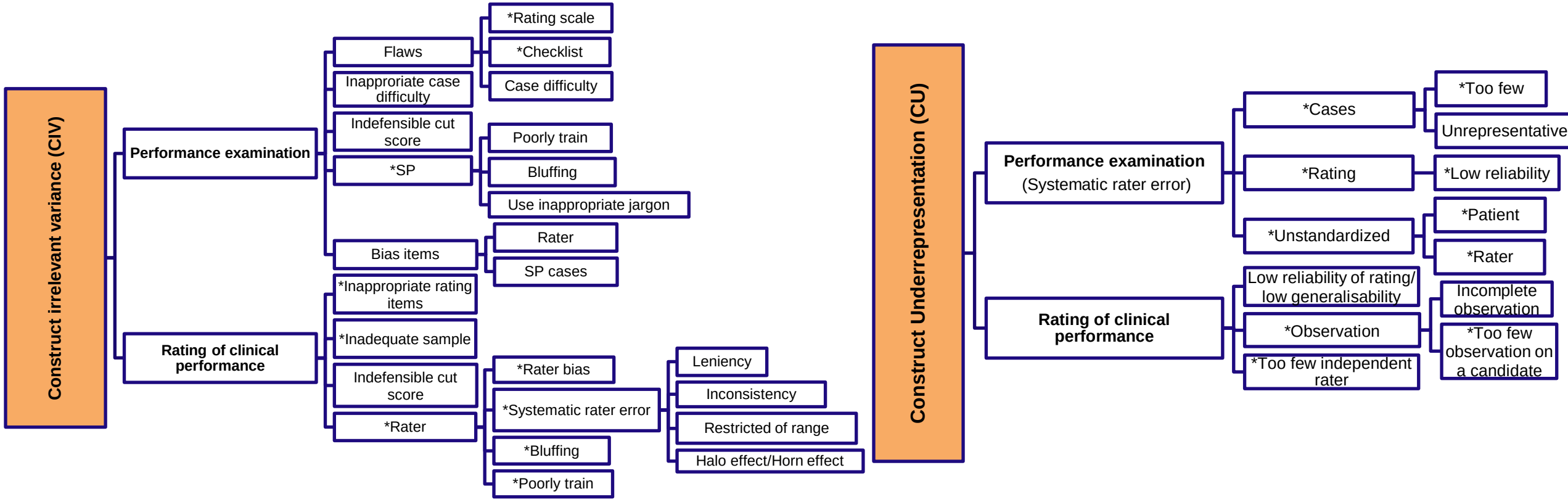
	Mismatch of sample to domain	Unrepresentative cases	Incomplete observations
	Low score reliability	Low reliability of ratings	Low reliability of ratings/ low generalisability
2	Construct-irrelevant variance (CIV)		
	Flawed item formats	Flawed cases/checklists/ rating scales	Inappropriate rating items
	Biased items (DIF)	DIF for SP cases/rater bias	Rater bias
	Reading level of items inappropriate	SP use of inappropriate jargon	Systematic rater error: halo, severity, leniency, central tendency
	Items too easy/too hard/ non-discriminating	Case difficulty inappropriate (too easy/too hard)	Inadequate sample of student behaviours
	Cheating/insecure items	Bluffing of SPs	Bluffing of raters
	Indefensible passing score methods	Indefensible passing score methods	Indefensible passing score methods
	Teaching to the test	Poorly trained SPs	Poorly trained raters

Downing &Haladyna (2004) Validity threats: overcoming interference with proposed interpretations of assessment data. Medical Education 28:227-232

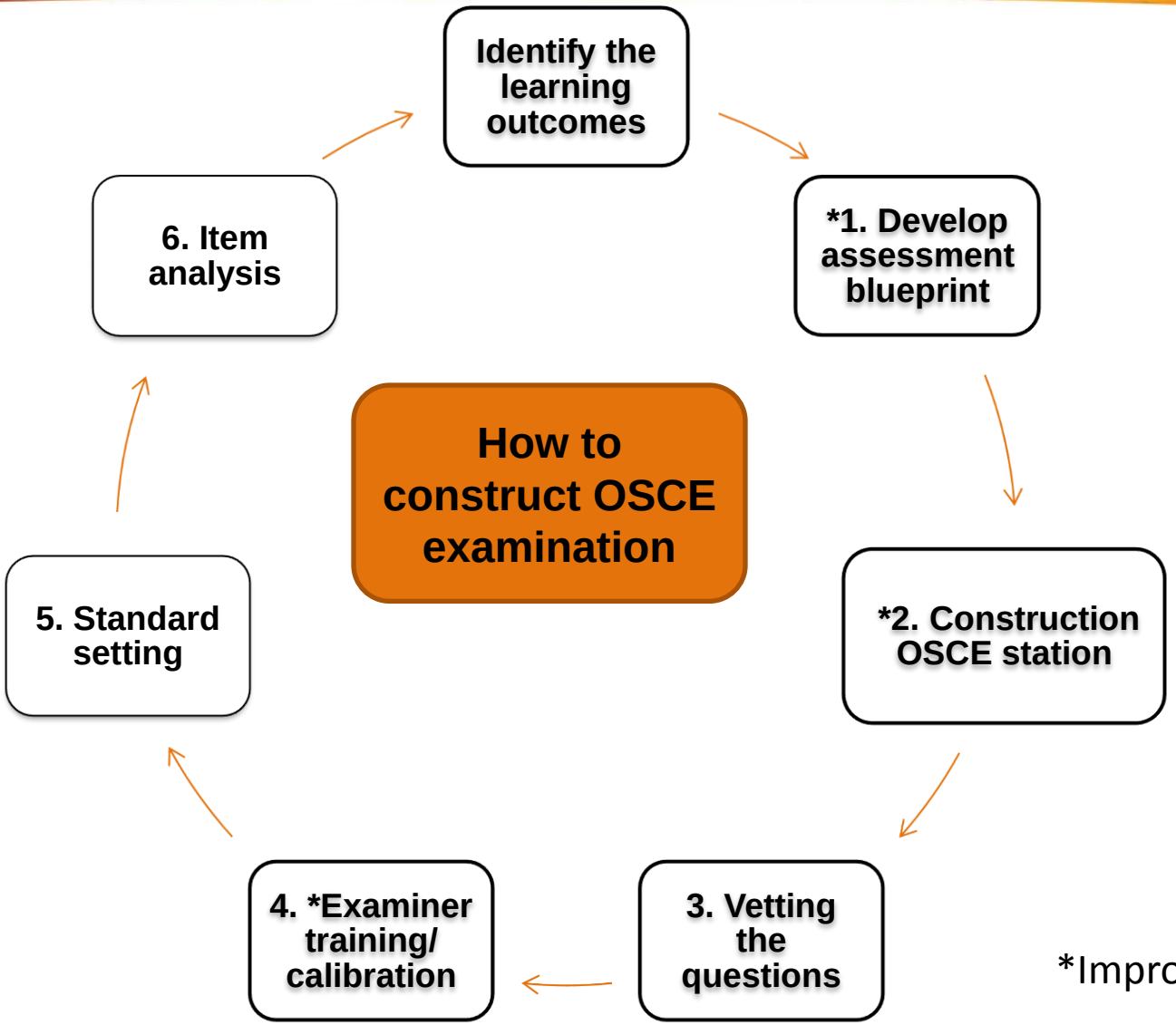
Relationship between validity and reliability



*Threat to reliability

Downing & Haladyna 2004

Enhancing reliability and validity



*Improve reliability and validity

PHASE 1: Design OSCE examination

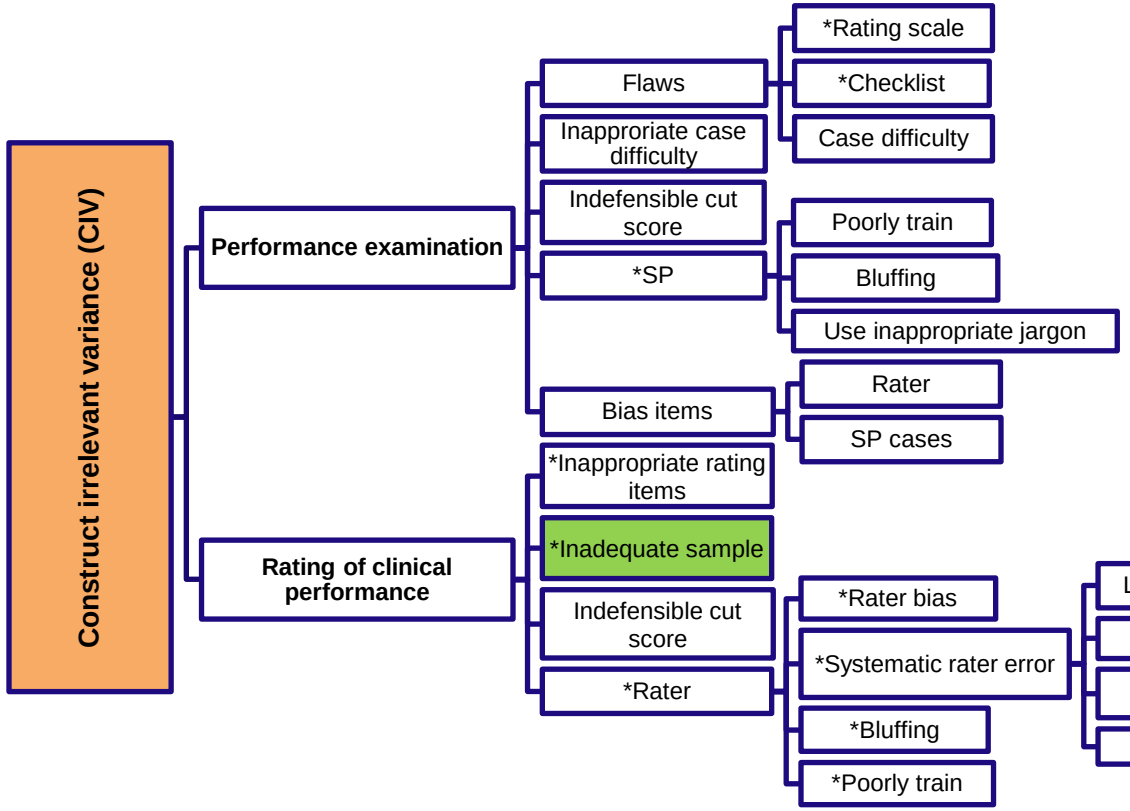
How to construct OSCE examination?

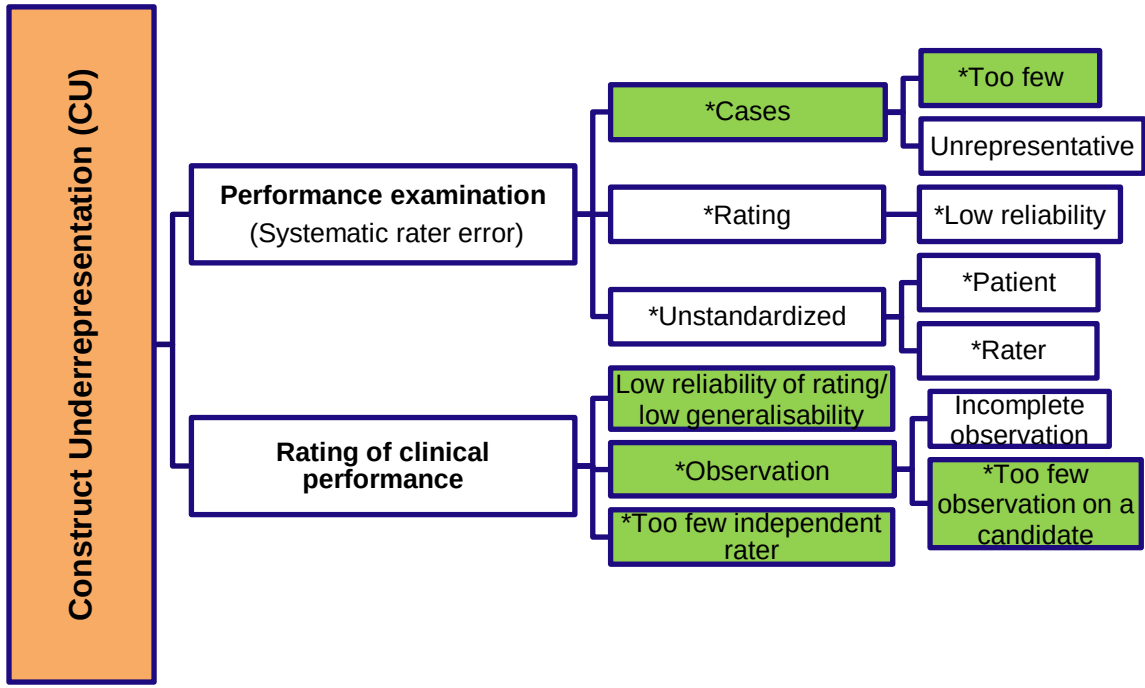
Question 1	• How long is the OSCE station duration?
Question 2	• How many OSCE (manned and unmanned) station?
Question 3	• Is there a link (unmanned) station?
Question 4	• How long is the rest duration in between OSCE station?
Question 5	• How many examiners for each station?
Question 6	• Any second examiner for Global Rating?

Notes

- Adequate number of OSCE stations to increase reliability is between 12 to 16 stations
- OSCE reliability also closely relates to total OSCE exams duration
- Rest stations to might required to accommodate more candidates
- Rest duration in between OSCE station is for the examiner to mark the student and to improve SP readiness
- Some of the institution use a second rater for Global rating for standard setting purposes
- to enhance reliability it is better to have more stations with one assessor per station than fewer stations with two assessors per station (Harden 1995)
- A single rater can be used to rate OSCE marking form and Global rating, however, a strategy is required to **avoid** examiner to explicitly relate checklist score with Global rating score

How my answer affect reliability and validity

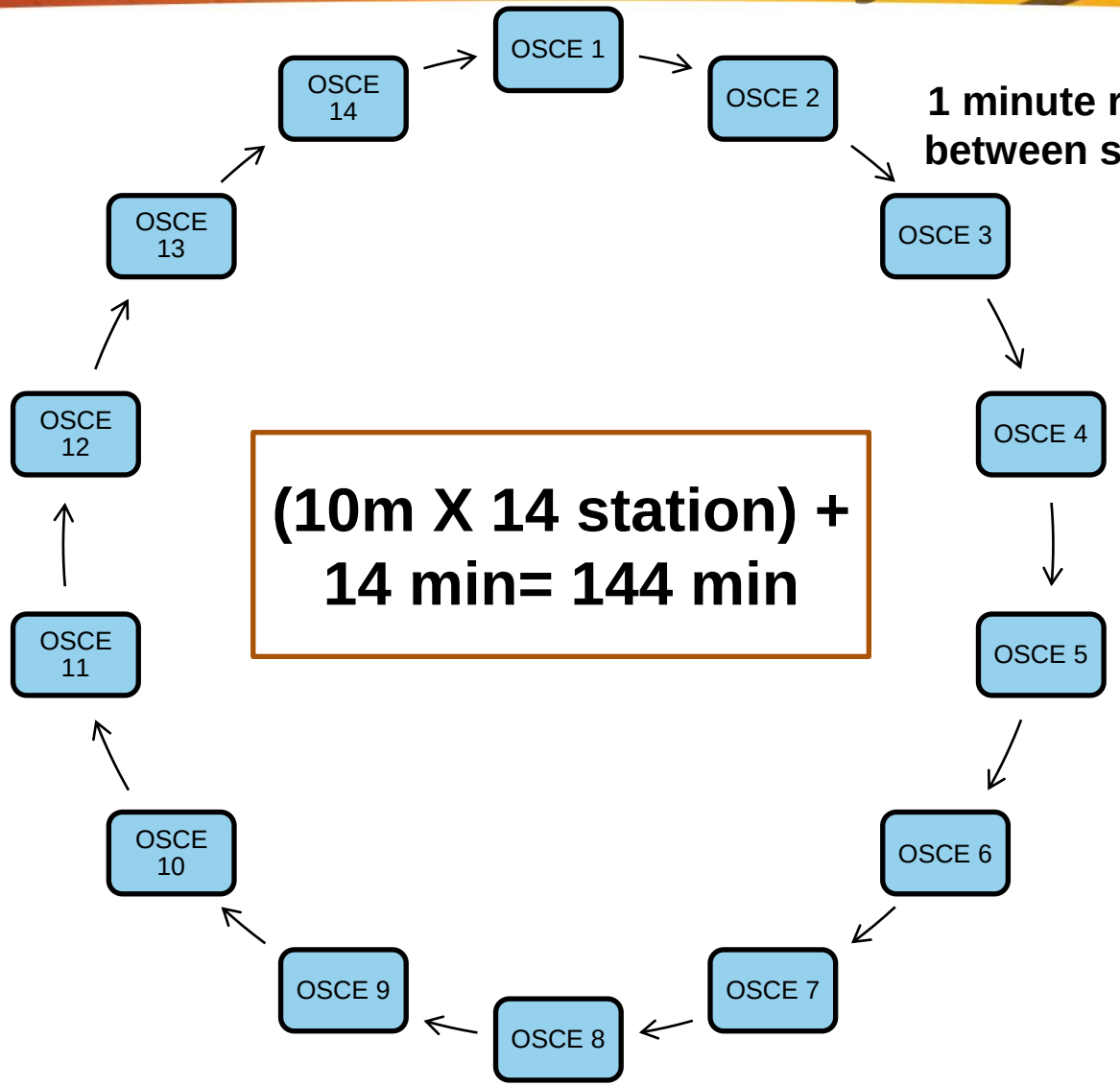




*Threat to reliability

Downing & Haladyna 2004

How my answer affect examination feasibility?



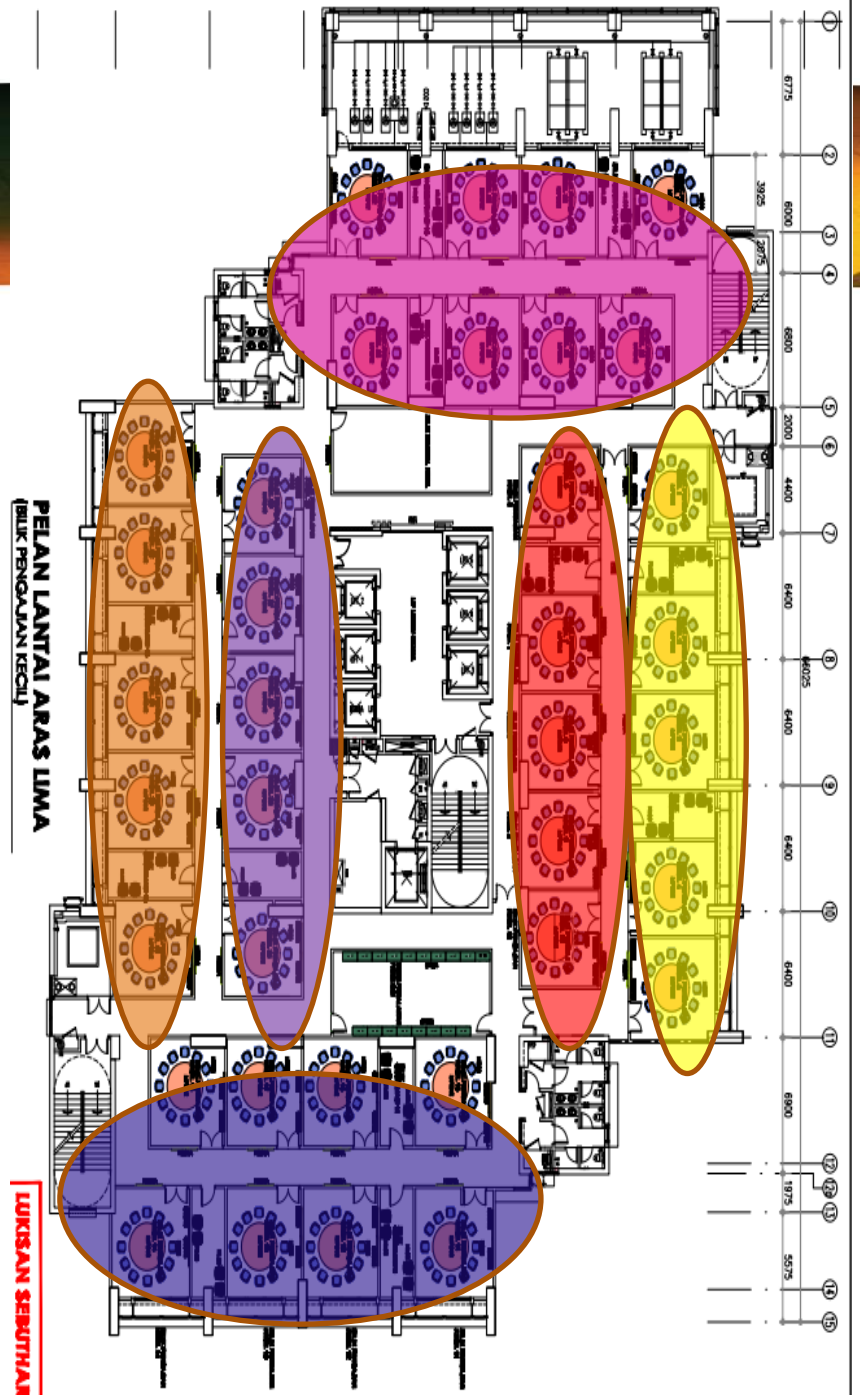
1 minute rest in between station

(10m X 14 station) + 14 min= 144 min

Effect on total number of:

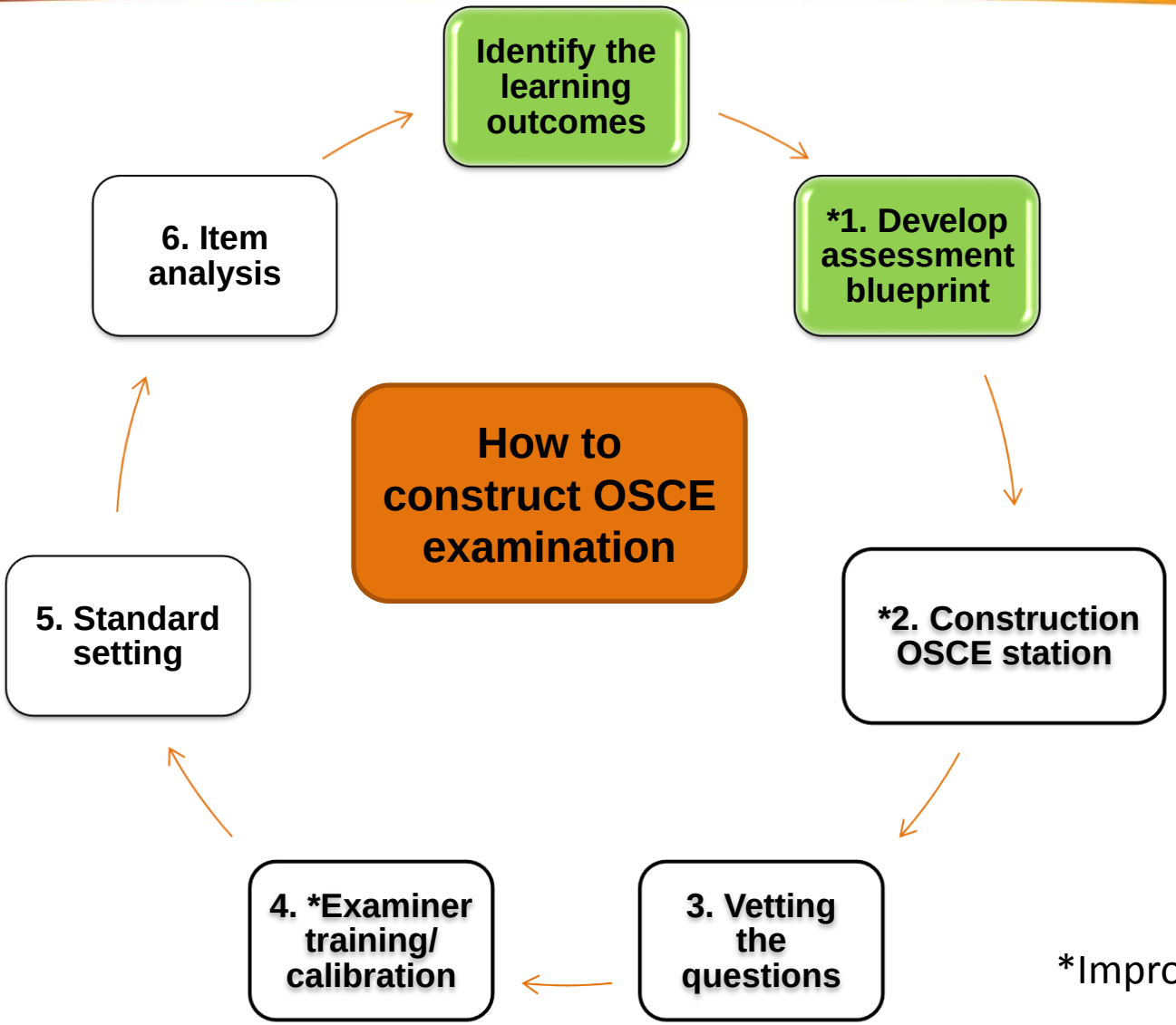
- **examiners**
- **real patient**
- **SP**
- **Manikin**
- **Cost**

Set?


PELAN LANTAI ARAS LIMA
(BLOK PENGAJIAN KECIL)
LUKISAN SEBUTHAN

PHASE 2: Construct OSCE station

Enhancing reliability and validity



*Improve reliability and validity

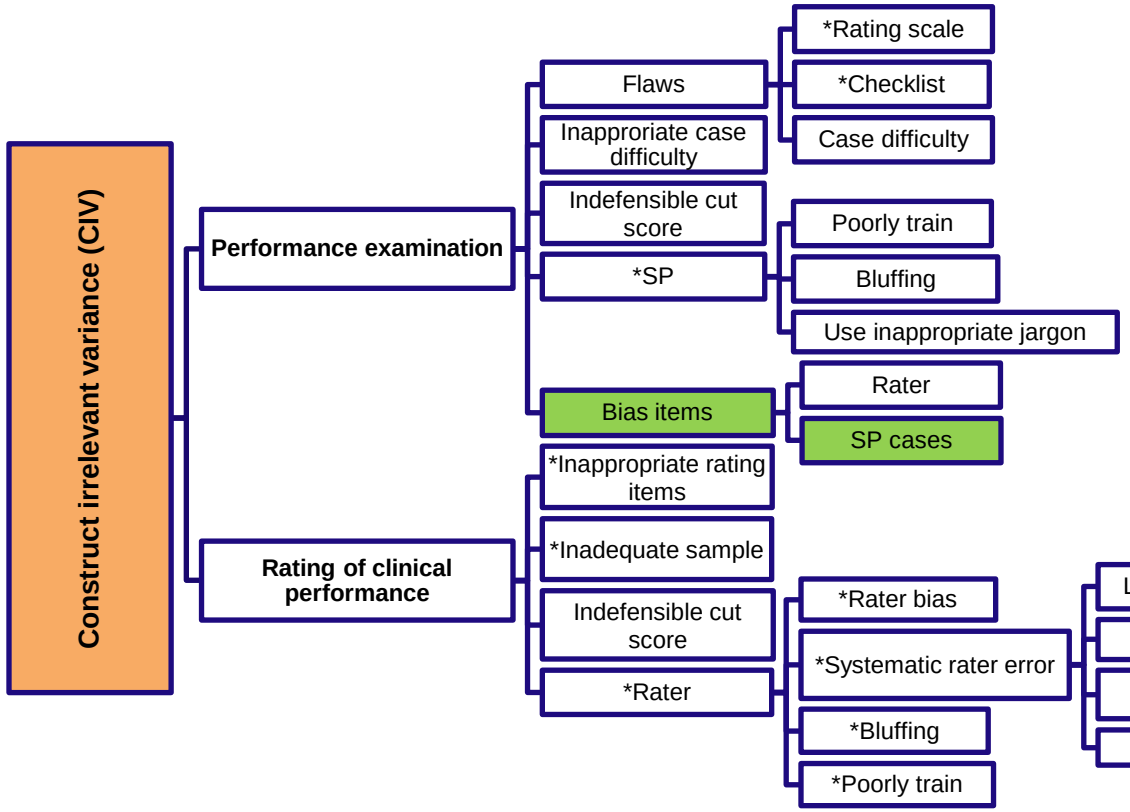
OSCE blueprint

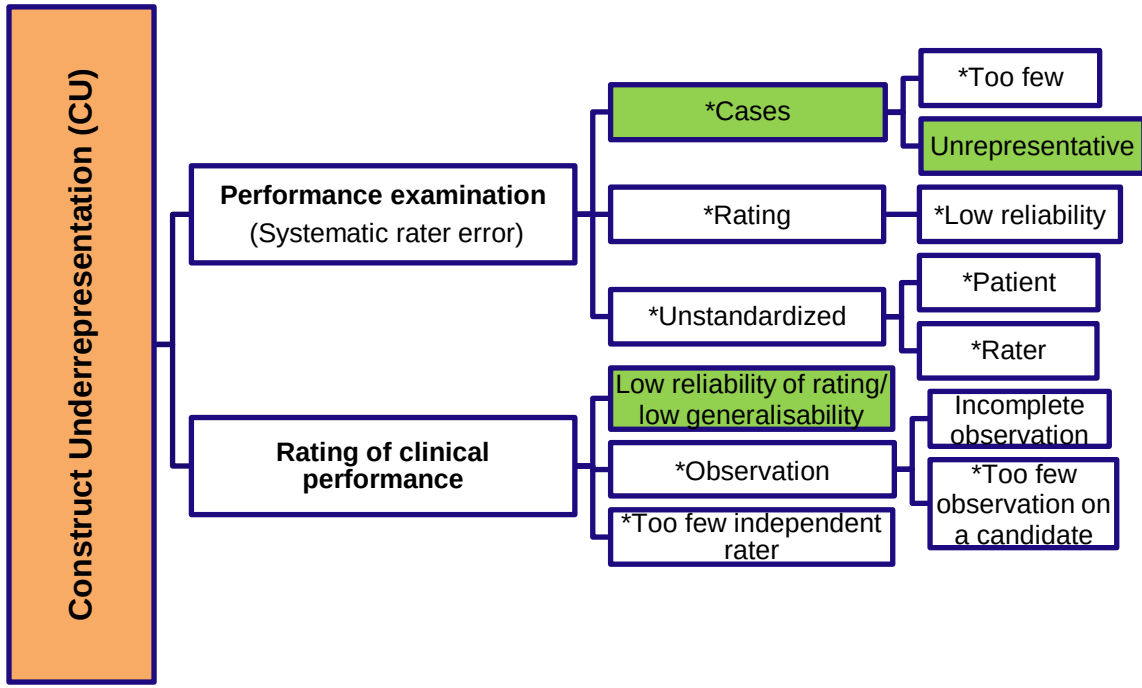
CLINICAL COMPONENT EXAMINATION: Clinical OSCE

Topics	CLINICAL OSCE				
	History Taking	Physical Examination	Counselling	Procedure	Management Decision
	X	X			
	X	X			
	X		X		
			X		
	X	X			
	X				
		X			
					X
		X			
				X	
TOTAL (14)	**5**	**5**	**2**	**1**	**1**

Reliability for OSCE:
12 to 16 stations

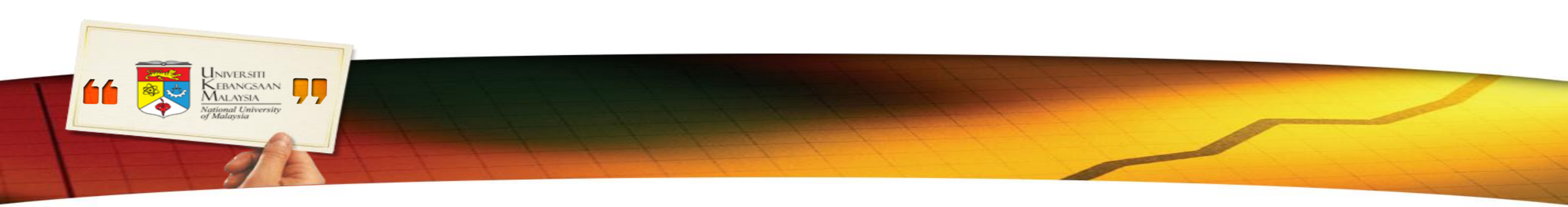
How poor blueprint affect reliability and validity





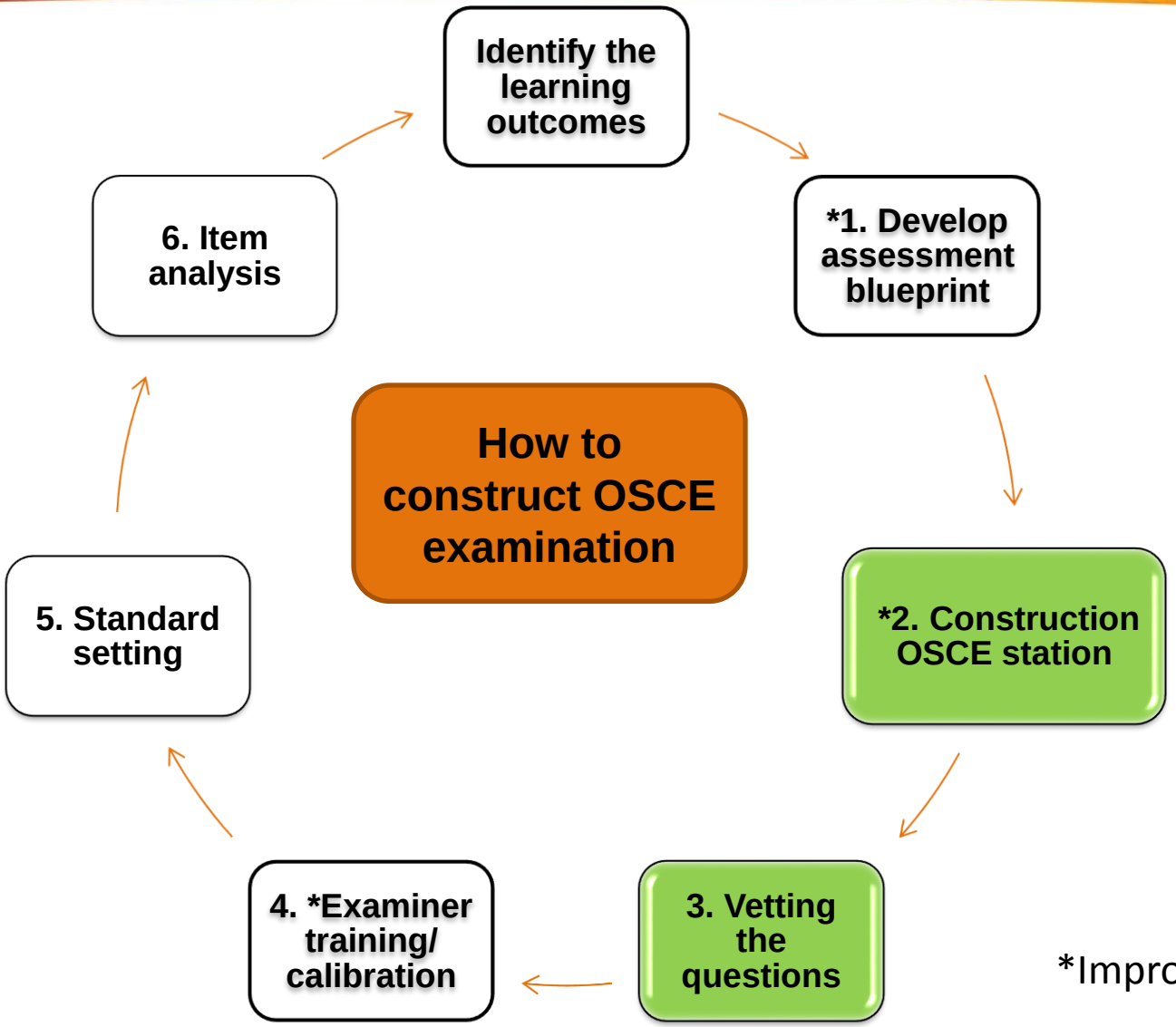
*Threat to reliability

Downing & Haladyna 2004


Universiti
Kebangsaan
Malaysia
National University
of Malaysia

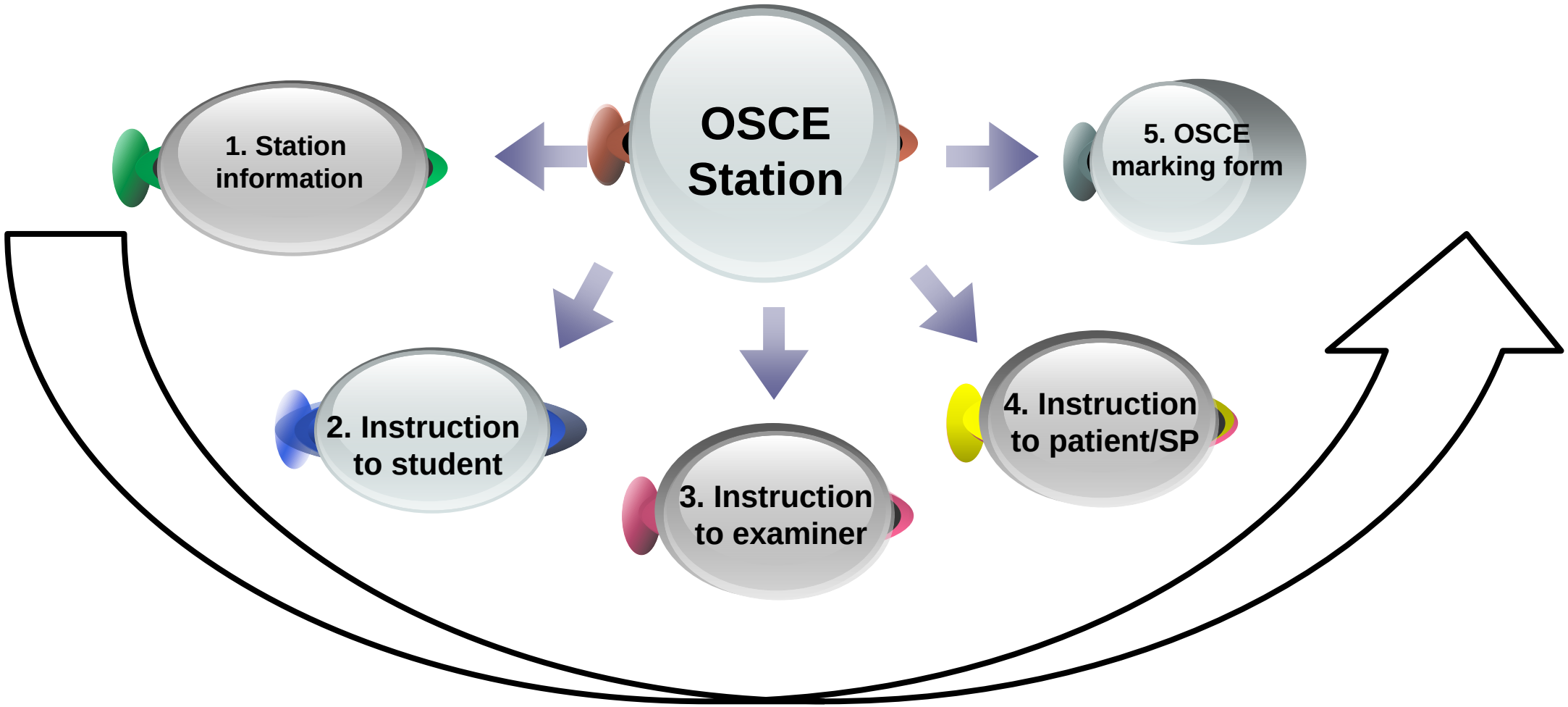
PHASE 3

Enhancing reliability and validity



*Improve reliability and validity

CREATING OF OSCE STATION: 5 steps



Step 1

Creating OSCE station

Station information

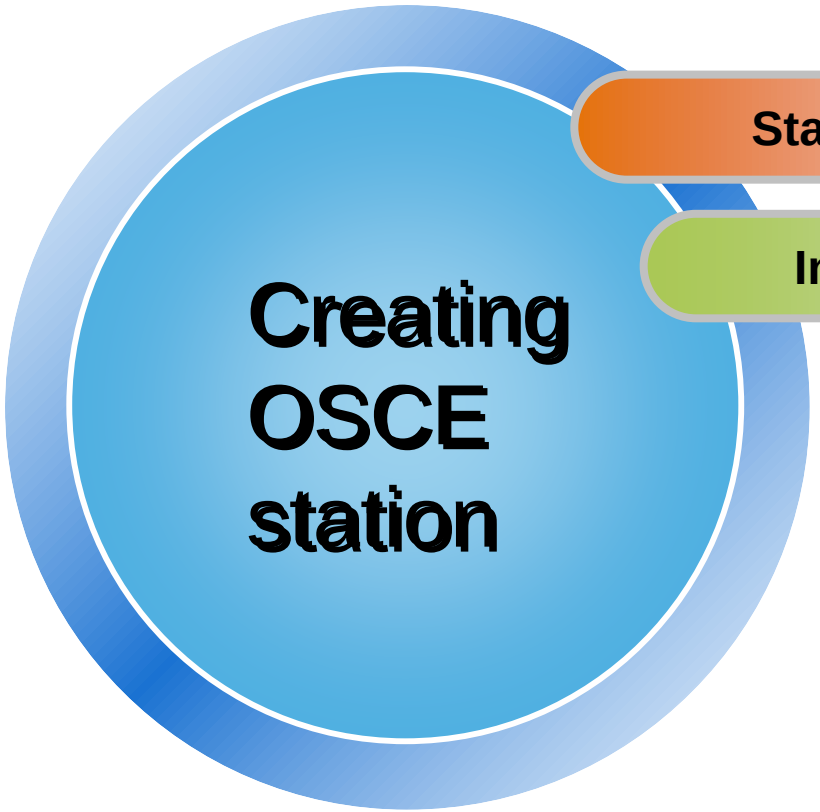
Step 1: Station information

STATION INFORMATION

1) Station code name	:	IM-C
2) Department	:	Internal Medicine
3) Duration	:	10 minutes
4) Station requirements	:	Patient Stethoscope Ruler
5) Date of vetting at department	:	28/5/18
6) Date of vetting at faculty	:	18/7/18
7) Author	:	
8) Corrected author	:	

“Security and Overview of the station”

Step 2



- Station information
- Instruction to student

Step 2: Instruction to student

Clear and concise
- Scenario
- Task
  - -Perform history taking/ physical examination of
  - -Conventional / *running commentary
  - -Involvement of question and answer session
  - -Duration (for each task)

INSTRUCTIONS TO CANDIDATE:

Scenario:

Mr./Mrs./Ms. had been on a regular follow up at the clinic for feeling low.

Task:

1. Take a history relevant to the patient's presenting symptoms.
2. Upon completion of your task, you will be asked about this patient's diagnosis:

Duration:

You have 10 minutes to complete the task.

- You are expected to complete your history taking by 7 minutes
- The patient will be taken out of the room after 7 minutes.

STATION 13 OSCE

INSTRUCTION TO STUDENT

Patient details : Mr. Azmi, 52 years old man

Your role : You are the final medical student in ORL posting

Setting : ORL ward

Background information:

Mr. Azmi is a 52-year-old male inpatient who underwent a tracheostomy operation four weeks ago. This morning he complains of difficulty of breathing through the trachea tube.

On examination, he is stable with mild biphasic stridor and a blocked tracheostomy tube is noted.

YOUR TASK:

1. You are required to change the tracheostomy tube with a suitable type that patient can be discharged home with. Use the instruments provided.
2. For this procedure you are provided with a mannequin, assuming it is a real patient.

Time allowed: 8 minutes

OSCE procedural

STATION 2 OSCE

INSTRUCTION TO STUDENT

Patient details: Mr. Ahmad/Mrs Aminah, a 30-year-old man/woman

Your role: You are a final year student in the Psychiatry Posting

Setting: Psychiatric ward

Patient's complaint: Diagnosed with schizophrenia

Background information:

Mr. Ahmad/Mrs. Aminah a 30-year-old man/woman, is recently diagnosed with schizophrenia. This is the first time he hears about this diagnosis and is worried about its implication in his life.

He/she is keen to know more about schizophrenia.

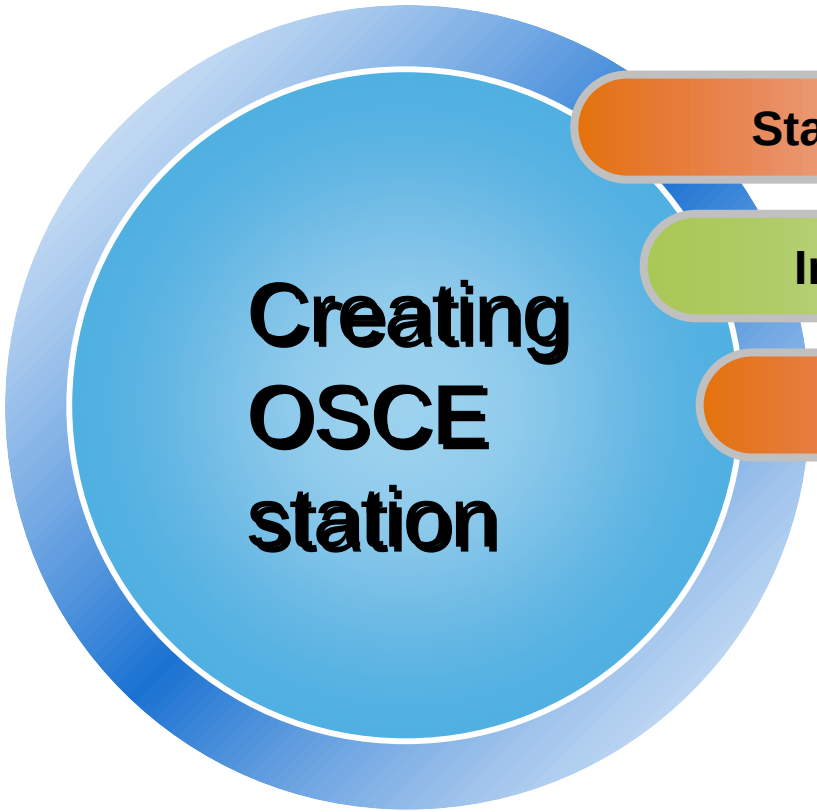
YOUR TASK:

1) Your task is to psychoeducate this patient regarding schizophrenia and briefly discuss about the treatment.

NOTE: You are not required to discuss about psychosocial management of schizophrenia

OSCE counseling

Step 3



- Station information
- Instruction to student
- Instruction to examiner

Clear and concise

- Scenario
- Objectives of the station
- Task
  - **No probing or prompting** except asking candidate to review the instruction/scenario if required
  - **DO NOT** interrupt
  - Total duration and duration (for each task)
  - Conventional / *running commentary
  - Involvement of question and answer session

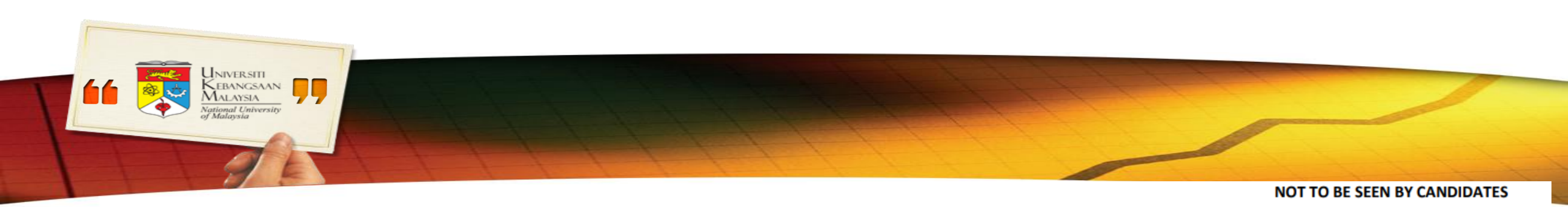
INSTRUCTIONS EXAMINER:

Objectives of the test:

1) To assess candidate's ability to demonstrate proper interview techniques.
2) To assess candidate's ability to ask relevant questions about depression and reach a provisional and differential diagnosis.
3) To assess candidate's ability to provide reasons to support the diagnosis.

Task:

1. Observe the candidate interviewing the patient. Allocate 7 minutes for the candidate to complete this exercise. **Do not interrupt** or prompt the candidate during this examination.
2. If the candidate has not completed the examination in this time, you may interrupt and proceed with the discussion.
3. The patient will be taken out of the room after 7 minutes.



NOT TO BE SEEN BY CANDIDATES

INFORMATION FOR EXAMINER

STATION 2 OSCE (PSYCHIATRY): PSYCHOEDUCATION

Rewrite the scenario

INSTRUCTIONS FOR THE EXAMINER

This OSCE station is primary testing a candidate's ability to perform psychoeducation

The candidate is expected to:

1. Demonstrate their ability to establish rapport and use this basis of rapport to discuss about the diagnosis.
2. Demonstrate the ability to discuss relevant information in an appropriate manner.
3. Demonstrate their understanding about causes, course and management of schizophrenia.
4. Demonstrate the ability for active listening and address the relative's concern..

Mark scheme

The student will be assessed by ONE examiner. For each of the component in the marking sheet, the student is graded **Satisfactory**, **Borderline** or **Unsatisfactory**

INSTRUCTION TO STUDENT

Patient details:	Mr. Ahmad/Mrs Aminah, a 30-year-old man/woman
Your role:	You are a final year student in the Psychiatry Posting
Setting:	Psychiatric ward
Patient's complaint:	Diagnosed with schizophrenia

Background information:

Mr. Ahmad/Mrs. Aminah a 30-year-old man/woman, is recently diagnosed with schizophrenia. This is the first time he hears about this diagnosis and is worried about its implication in his life.

He/she is keen to know more about schizophrenia.

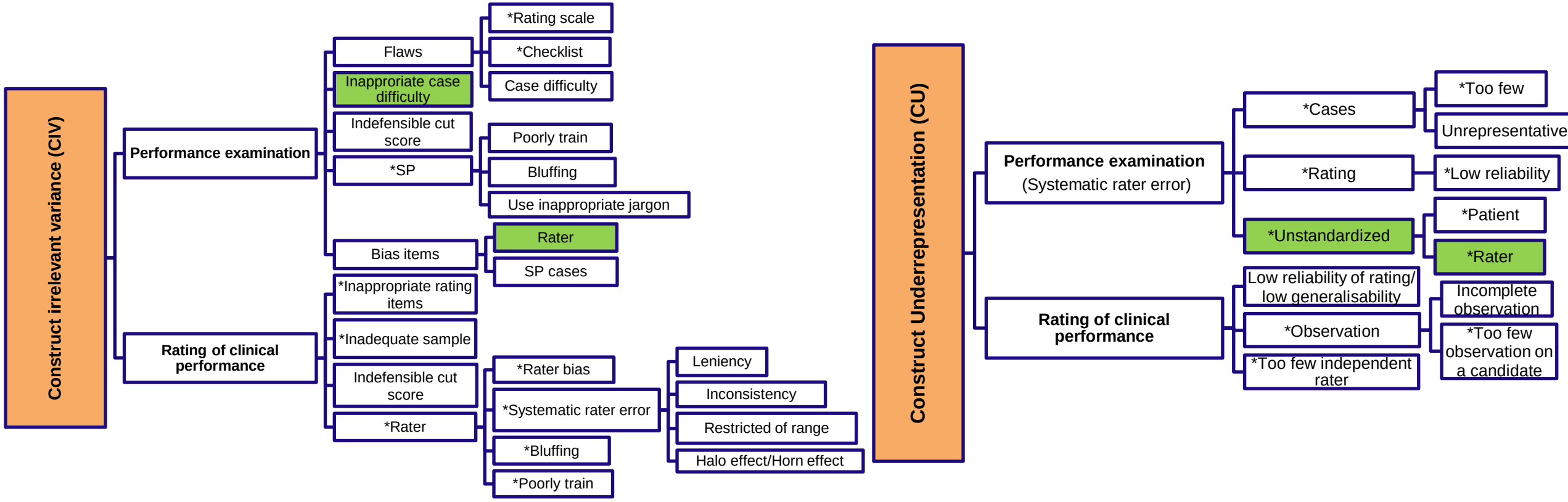
YOUR TASK:

1) Your task is to psychoeducate this patient regarding schizophrenia and briefly discuss about the treatment.

NOTE: You are not required to discuss about psychosocial management of schizophrenia

Change the candidate's task to objectives

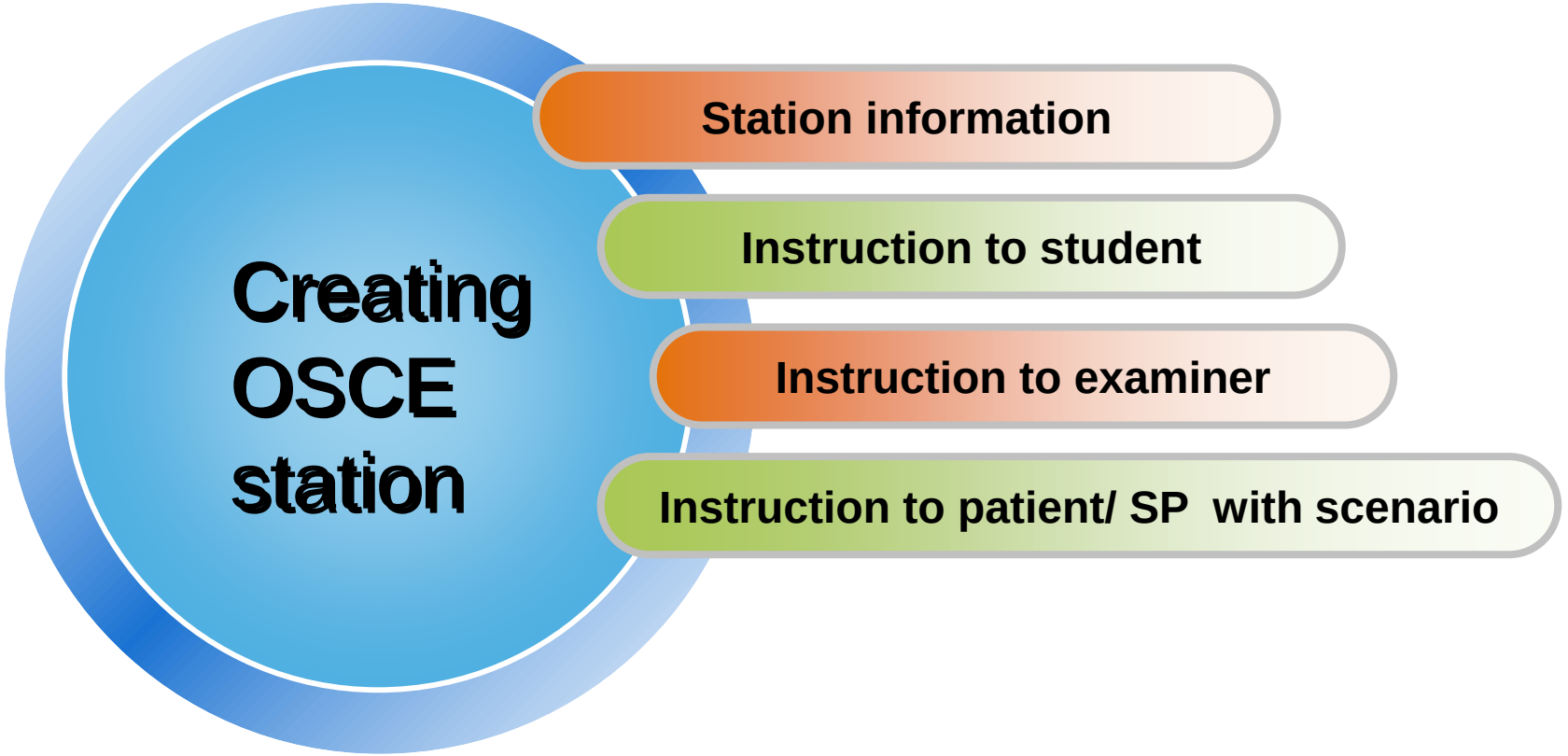
How STEP 1-3 affect reliability and validity



*Threat to reliability

Downing & Haladyna 2004

Step 4


Creating OSCE station
Station information
Instruction to student
Instruction to examiner
Instruction to patient/ SP with scenario

Clear and concise

- Scenario
- Task **(Additional standard information)**
  - Cooperation
  - Follow instruction from student / examiner
  - No clues
  - Inform examiner if do not feel comfortable
  - Duration (for each task)
- Task should be written English and Malay

INSTRUCTIONS TO PATIENT

Scenario:

You will be interviewed by the student for the purpose of reaching a diagnosis.

1. Do not volunteer information unless asked.
2. Do not disclose the name of diagnosis/medication.
3. Do not guide the students but be cooperative and assist them accordingly.
4. Each student will take 7 minutes for each interview.

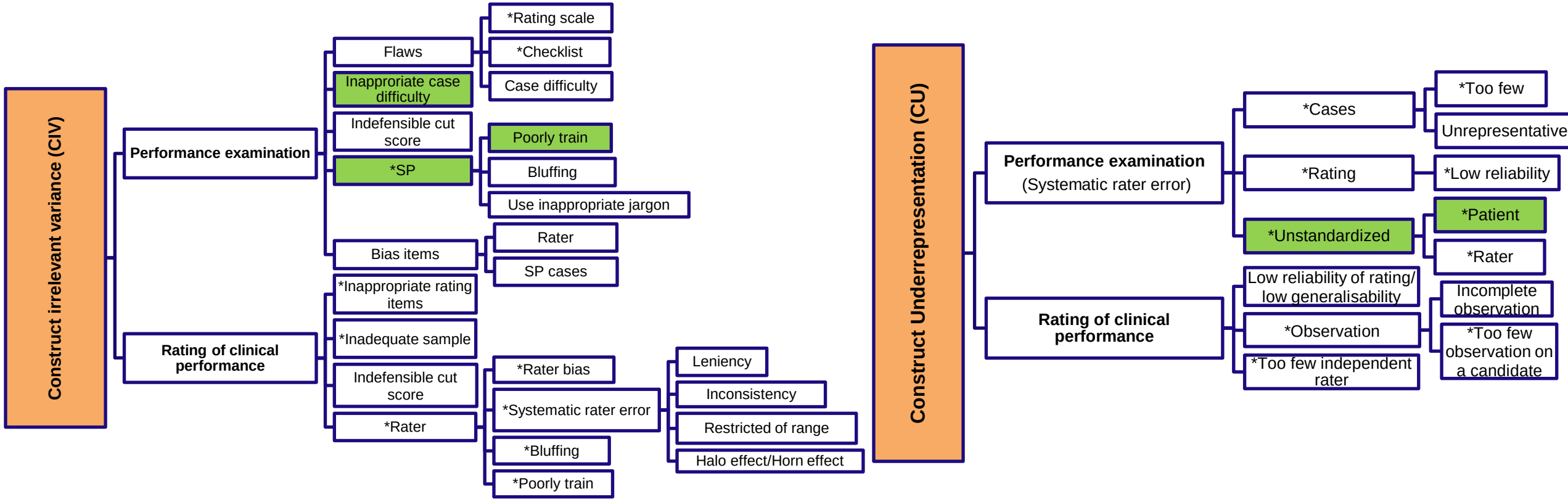
Arahan kepada pesakit:

Senario:

Anda akan ditemu-bual oleh pelajar dengan tujuan mencapai diagnosis.

1. Jangan beri maklumat yang tidak ditanya.
2. Jangan beritahu nama penyakit/ubat.
3. Jangan beri panduan kepada pelajar tetapi bekerjasama dan membantu mereka dengan sewajarnya.
4. Setiap pelajar akan mengambil masa 7 minit untuk temubual.

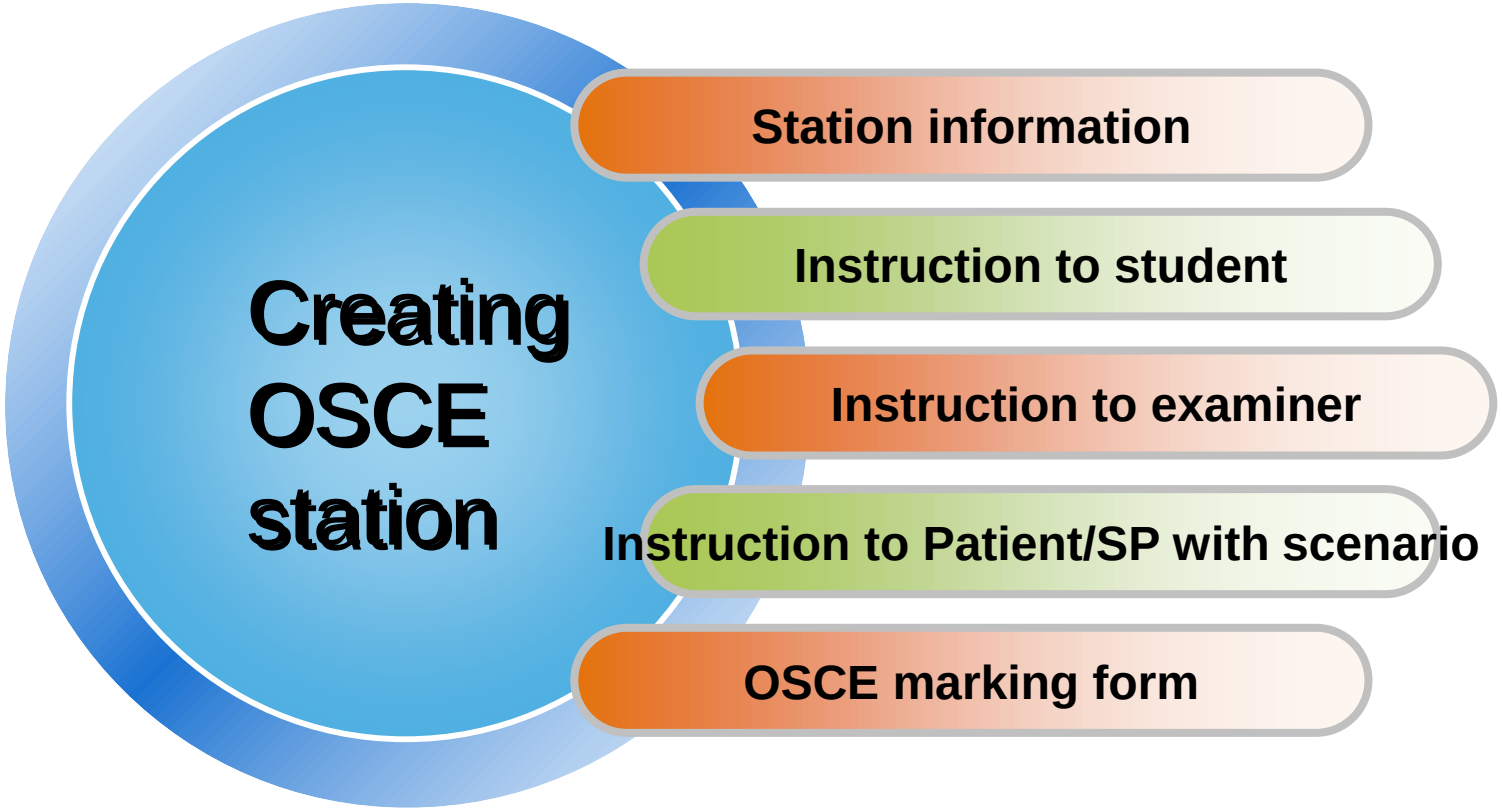
How STEP 4 affect reliability and validity



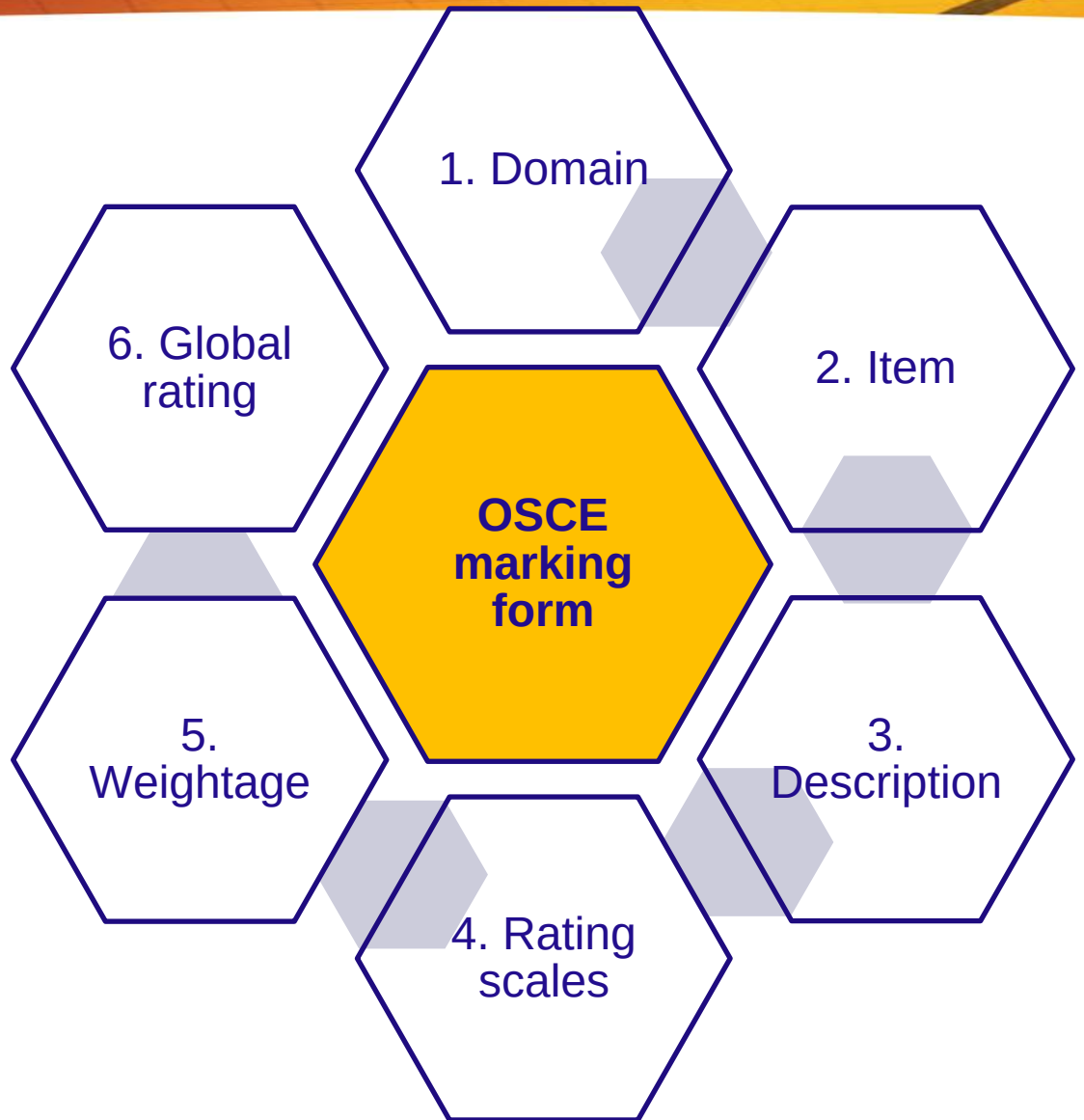
*Threat to reliability

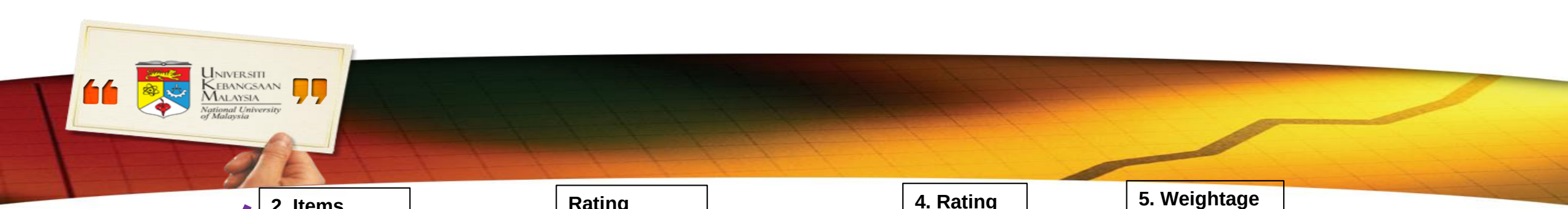
Downing & Haladyna 2004

Step 5


Creating OSCE station
Station information
Instruction to student
Instruction to examiner
Instruction to Patient/SP with scenario
OSCE marking form

Components in OSCE ~~checklist~~ marking form





2. Items

Rating description

4. Rating scale

5. Weightage

No.	Expected Answers/Action/ Items	Not Done	Below Expectation				Meets Expectation			Above Expectation			Weightage of items
1	Explore the history of chest pain: site, onset, characteristic, radiation, associating factors, timing, exacerbating & relieving factors and severity specifically looking for cardiac symptoms	0	1	2	3	4	5	6	7	8	9	10	3
2	Explore associating factors, SOB, palpitations, ankle oedema												2
3	Exclude other possible causes: lung, anaemia, anxiety, HF												1
4	Risk factors for IHD: T2DM, HPT, Cholesterol, Smoking, Premature IHD FH												3
5	Explore family history, social history, medication history and allergies												2
6	Share with patient the possible diagnosis e.g., stable angina												2
7	Communication skills performance: demonstrate empathy, listen to patient cues.												2
												Total weightage of items	15

3. Description

Undergraduate OSCE marking form

1. Domain

2. Item

OSCE Training station: SCORING SHEET 'A'

ABDOMINAL EXAMINATION

X=Inadequate Y=Adequate Z=Good

Appropriate introduction	XYZ
Explains procedure	XYZ
Ensures comfort	XYZ
Adequate hand hygiene	XYZ
Checks for clubbing	XYZ
Checks for liver flap	XYZ
Looks at palms for stigmata of GI/liver disease	XYZ
EXAMINER PROMPT: INSTRUCT CANDIDATE TO EXAMINE FACE & NECK	
Correct examination of neck/cervical lymph nodes	XYZ
Looks for anaemia	XYZ
Looks for jaundice	XYZ
Looks for facial stigmata of GI/liver disease	XYZ
EXAMINER PROMPT: NOW MOVE DIRECTLY TO EXAMINE THE ABDOMEN	
Inspects abdomen for scars.	XYZ
Checks for tenderness	XYZ
Palpates lightly in all areas	XYZ
Palpates deeply in all areas	XYZ
Observes patient's face during examination	XYZ
Checks for hepatomegaly	XYZ
Checks for splenomegaly	XYZ
Ballots kidneys	XYZ

EXAMINER PROMPT: ASK CANDIDATE TO SUMMARISE FINDINGS	
Correct information	XYZ
Clear summary	XYZ
Succinct	XYZ
EXAMINER PROMPT: ASK FOR DIFFERENTIAL DIAGNOSIS	
Gives sensible diagnosis	XYZ
Professional approach	XYZ
Examiner Rating	
A=Excellent/B=Very Good/C=Clear Pass/D=Borderline/E=Clear Fail	ABCDE

Clear Fail:

- Disorganized approach, no evidence of planning – tends to random actions, process and questions
- Unable to synthesize findings, or reach a diagnosis/plan

Borderline

- Able to commence station, but often uncertain, and struggles to proceed to completion
- Some organisation of approach, but 'formulaic' with no flexibility (e.g. 'lists' of questions for patients) and no evidence of reasoning/discrimination

Clear Pass

- Systematic overall approach to station/task
- Demonstrates sufficient organization to permit completion of task with some evidence of flexibility of approach
- Able to summarize (e.g. present history/explain) and manage additional questioning with evidence of reasoning

Very Good Pass

- Clearly professional approach to station. Good levels of organization with clear evidence of flexibility
- Clearly able to synthesize findings, or reach a diagnosis/plan
- Clear evidence of planning, ability to summarize and manage questioning

Undergraduate OSCE marking form

1. Domain

2. Item

I. Checklist on candidate's overall performance (Please circle)

A = Very Good	B = Good	C = Acceptable	D = Poor	E = Not done
1	0.75	0.5	0.25	0

	ACTIVITIES	PERFORMANCE
	INTRODUCTION	
1.	Engage patient - Introduction - Build rapport - Patient's background i.e. age, occupation, marital status	A B C D E
	ELICITING SYMPTOMS	
2.	**Eliciting key depressive symptoms (at least one symptom)** - persistent depressed mood - loss of interest or pleasure - Anhedonia	A B C D E
3.	**Eliciting other depressive symptoms (At least 3 symptoms)** - insomnia or hypersomnia - loss or increase of appetite - loss of weight or weight gain - fatigue - worthlessness - diminished ability to concentrate - psychomotor retardation or agitation	A B C D E
4.	**Eliciting manic symptoms (At least 2 symptoms)** - elevated mood or irritability - increased goal directed activity or energy - grandiosity - reduced need for sleep - more talkative than usual - flight of ideas - distractibility - high risk activities	A B C D E
5.	**Eliciting anxiety symptoms (At least 1 symptom)** palpitations sweating trembling shortness of breath chest discomfort feeling of choking nausea feeling dizzy chills tingling sensation - fear of losing control - fear of dying - derealisation - depersonalization	A B C D E
6.	**Eliciting psychotic symptoms (At least 1 symptom)** - auditory hallucinations - persecutory delusion - delusion of perception - nihilistic delusion - delusion of guilt - delusion of reference - delusion of control -thought insertion/withdrawal/broadcast	A B C D E
7.	**Eliciting suicidal behaviour** - If present - details of the suicidal behavior/method - specific planning	A B C D E

From item based to Domain based rating

- Chunking items into key behaviour sequences (Fuller et al. 2013)
- -group together single ‘lower-level’ checklist items to more ‘higher-level’ items — also know as “chunking (Robert et al 2010)

  - Eg: General inspection for chronic liver disease

- Thoroughness (item based) is more typical for beginners
- **Domain based rating scales** are seen as more valid for assessing increasing level of expertise

Prof Richard Fuller- Singapore 2018

CLINICAL SKILLS (Physical examination)

1. General approach to patient A B C D E

Introduction and orientation

(Name and role; purpose of the examination; explains what examination will involve; consent)

2. Clinical skills/physical examination A B C D E

Important features

Appropriate/ acceptable examination method

Performs examination/ procedure in fluent and organised manner

3. Findings A B C D E

Clear and accurate explanation of findings

Clear and accurate summary

4. Diagnosis A B C D E

Plausible differential diagnosis

5. Rapport and professionalism A B C D E

Gives clear instructions to patient through examination

Treats patient courteously and maintains dignity throughout

Leaves patient comfortable

6. Data Interpretation A B C D E

Accurate interpretation

Diagnosis

7. Management A B C D E

As appropriate e.g. investigations, treatment, admission, referral

8. SP to mark A B C D E

I felt that the students showed respect and treated me with dig

History-taking/ Information gathering station

1. General approach to patient A B C D E

Appropriate introduction (full name & role)

Checks patient's/ relative's name

Explains what interview/task will be about & checks consent

Start with an open question & listens without interruption

2. Information gathering: clinical content A B C D E

As appropriate to the station

3. Information gathering: clinical communication A B C D E

Questioning skills: (appropriate blend of open and closed questions, clarity, avoids or explains jargon)

Listens actively: (attentive, pick up cues, responds to answers, does not repeat questions)

Organised: (systematic, summarises, signposts change in focus of questions)

Closure: (e.g explains next steps, thanks patient)

4. Findings A B C D E

Accurate summary of history

5. Diagnosis A B C D E

Plausible differential

6. Rapport and Professionalism A B C D E

Shows interest, respect and concern for pt

Appropriate non verbal communication

(eye contact, appropriate use of touch, maintains comfortable distance from pt)

Professional behaviour:

(e.g. attitude, maintains dignity and privacy)

13. SP to mark (items will depend on station task) e.g. A B C D E

Empathy (I felt the candidate understood how I was feeling – expressed

Domain based rating scales- please refer appendix

CLINICAL SKILLS (Procedures)

1. General approach to patient **A B C D E**

Introduction and orientation

(Name and role; purpose of the procedure; explains what procedure will involve; consent)

2.Clinical Skills: Procedure **A B C D E**

Specific items for the performance of the task

Appropriate/ acceptable method

Performs procedure in fluent and organised manner

3. Rapport and professionalism **A B C D E**

Gives clear instructions to patient through examination

Treats patient courteously and maintains dignity throughout

Leaves patient comfortable

4. SP to mark **A B C D E**

I felt that the students showed I felt that the students showed respect and treated me with dignity

Domain based rating scales- please refer appendix

No.	Expected Answers/Action/ Items	Not Done	Below Expectation	Meets Expectation	Above Expectation	Weightage of items
1	Explore the history of chest pain: site, onset, characteristic, radiation, associating factors, timing, exacerbating & relieving factors and severity specifically looking for cardiac symptoms					
2	Explore associating factors, SOB, palpitations, ankle oedema					
3	Exclude other possible causes: lung, anaemia, anxiety, HF					
4	Risk factors for IHD: T2DM, HPT, Cholesterol, Smoking, Premature IHD FH					
5	Explore family history, social history, medication history and allergies					
6	Share with patient the possible diagnosis e.g., stable angina					
7	Communication skills performance: demonstrate empathy, listen to patient cues.					

Domain based rating scales

OSCE domain rating scale scoring with rubrics					
	Scoring				
Domain	A = Very Good	B = Good	C = Acceptable	D = Poor	E = Very Poor
1. Approach to patient	Full name, role, full explanation purpose / welcoming, courteous, establishes rapport and puts patient at ease quickly	Full name and role / full and clear explanation of purpose	Full name and role / attempts to explains purpose interaction	Incomplete name / role, fails to adequately explain purpose	Fails to identify self / role or purpose of interaction / patient uncomfortable
2. Information gathering/ history taking: clinical content	Full comprehensive history including addressing patient concerns / fluent and clearly reasoned questioning / adapts to patient's answers when required	Most points of history elicited including addressing patient concerns / no major omissions / well structured approach to history	Main points of history elicited including some recognition of patient concerns / no major omissions / reasonably structured approach	Some attempt at history but with significant omissions / little apparent structure to history	Failure to elicit relevant history / major omissions throughout /disorganised with no apparent logic or order
3. Information-gathering/ history taking: communication	Completely clear questions / Avoids or explains jargon / listens actively / builds in structure using appropriate signposts and accurate summary / fluent	Completely clear questions / Avoids or explains jargon / demonstrates some active listening / generally well structured using appropriate signposts and accurate summary / reasonably fluent	Most questions clear / avoids or explains jargon / some attempt to build in structure	Many questions unclear / Some use of or failure to explain jargon / often does not listen to answers	Totally unclear questions / repeatedly uses or does not explain jargon or uses leading or multiple questions / does not listen to answers

Example of domain based rating scales with rubric- please refer appendix

Add other element to reduce focus on knowledge

OSCE physical examination/procedure

Approach

- Engage patient (Appropriate introduction **and rapport**)
- Clear instruction
- Good bedside manner (Good introduction to patient and asking consent)
- Good listener
- **Consistently attentive to patient's comfort or dignity**
- **Systematic approach / Organize in examination**
- **Convenience handling of instrument**

Presentation skills

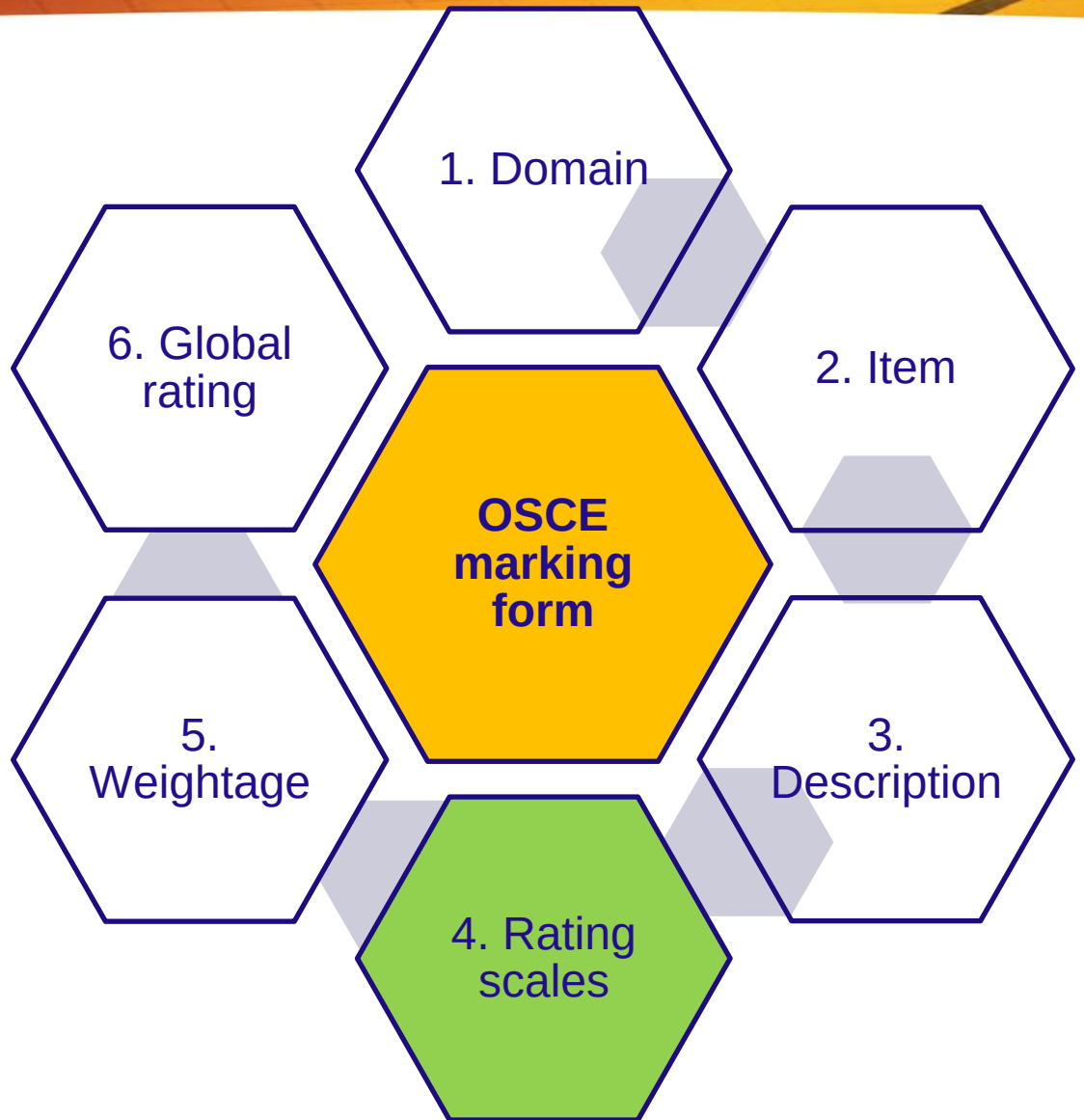
- **Systematic presentation**
- **Fluent and logical flow**
- **Purposeful**
- **No prompting**

OSCE history taking/counseling

Skills

- Attentive listening
- **Elicits patient's concerns and responds sensitively**
- Consistently attentive to patient's comfort or dignity
- **Make a reasonable attempt to diagnosis**
- Non-confrontational
- Non-judgemental
- Fluent
- Speak clearly
- Avoid or explain jargon
- **Purposeful**
- **No prompting**

Components in OSCE ~~checklist~~ marking form



Rating description

Rating range: from 1 to 10

No.	Expected Answers/Action/ Items	Not Done	Below Expectation				Meets Expectation			Above Expectation			Weightage of items
1	Explore the history of chest pain: site, onset, characteristic, radiation, associating factors, timing, exacerbating & relieving factors and severity specifically looking for cardiac symptoms	0	1	2	3	4	5	6	7	8	9	10	3
2	Explore associating factors, SOB, palpitations, ankle oedema												2
3	Exclude other possible causes: lung, anaemia, anxiety, HF												1
4	Risk factors for IHD: T2DM, HPT, Cholesterol, Smoking, Premature IHD FH												3
5	Explore family history, social history, medication history and allergies												2
6	Share with patient the possible diagnosis e.g., stable angina												2
7	Communication skills performance: demonstrate empathy, listen to patient cues.												2
												Total weightage of items	**15**

Rating scales: Range and rating description

A	B	C	D	E
Clear pass	Pass	Borderline	Fail	Clear fail
Not done	Partially done	Inadequately done	Adequately done	Well done
Uses no elements	Uses few elements	Uses half elements	Uses most elements	Uses all elements
Performed completely	Performed but not fully completely	Not performed		
Clear fail	Borderline fail	Borderline pass	Clear pass	Excellent
Not done	Minimally done	Done adequately	Done well	Notes
Did not perform	Needs improvement	Below average	Average	Above Average- Excellent
Performed fully competently	Performed not fully competently	Not performed Or incompetent		
Yes	Yes with reservation	~~No~~		
Very good	Good	Acceptable	Poor	Very Poor

Numbers or Grades

- Numbers will often drive:
  - Inter-rater differences (“What is a 5?”)
  - Difficult to justify during examiner calibration- very subjective
  - A tendency to correlate global grades with scores
  - Misuse of scoring criteria/item

- “Grey and fuzzy” (York 2009)
- Transactional currency (Sadler 2010)
- Difficulty at pass/fail boundary remains (Sadler 2010)

Example: Grades

Font Paragraph Styles

I. Checklist on candidate's overall performance (Please circle)

A = Very Good 1	B = Good 0.75	C = Acceptable 0.5	D = Poor 0.25	E = Not done 0

	ACTIVITIES	PERFORMANCE
INTRODUCTION		
1.	Engage patient - Introduction - Build rapport - Patient's background i.e. age, occupation, marital status	A B C D E
ELICITING SYMPTOMS		
2.	**Eliciting key depressive symptoms (at least one symptom)** - persistent depressed mood - loss of interest or pleasure - Anhedonia	A B C D E
3.	**Eliciting other depressive symptoms (At least 3 symptoms)** - insomnia or hypersomnia - loss or increase of appetite - loss of weight or weight gain - fatigue - worthlessness - diminished ability to concentrate - psychomotor retardation or agitation	A B C D E
4.	**Eliciting manic symptoms (At least 2 symptoms)** - elevated mood or irritability - increased goal directed activity or energy - grandiosity - reduced need for sleep - more talkative than usual - flight of ideas - distractibility - high risk activities	A B C D E
5.	**Eliciting anxiety symptoms (At least 1 symptom)** palpitations sweating trembling shortness of breath chest discomfort feeling of choking nausea feeling dizzy chills tingling sensation - fear of losing control - fear of dying - derealisation - depersonalization	A B C D E
6.	**Eliciting psychotic symptoms (At least 1 symptom)** - auditory hallucinations - persecutory delusion - delusion of perception - nihilistic delusion - delusion of guilt - delusion of reference - delusion of control -thought insertion/withdrawal/broadcast	A B C D E
7.	**Eliciting suicidal behaviour** - If present - details of the suicidal behavior/method - specific planning	A B C D E

Grades

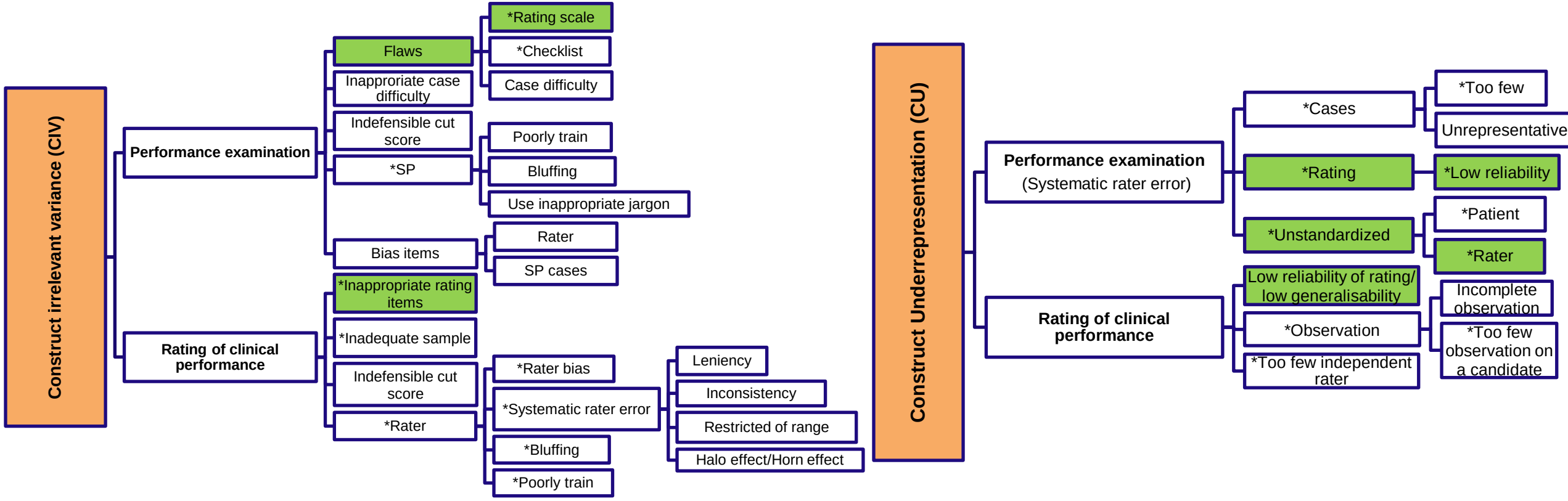
Example: Number

Rating description

Number

No.	Expected Answers/Action/ Items	Not Done	Below Expectation				Meets Expectation			Above Expectation			Weightage of items
1	Explore the history of chest pain: site, onset, characteristic, radiation, associating factors, timing, exacerbating & relieving factors and severity specifically looking for cardiac symptoms	0	1	2	3	4	5	6	7	8	9	10	3
2	Explore associating factors, SOB, palpitations, ankle oedema												2
3	Exclude other possible causes: lung, anaemia, anxiety, HF												1
4	Risk factors for IHD: T2DM, HPT, Cholesterol, Smoking, Premature IHD FH												3
5	Explore family history, social history, medication history and allergies												2
6	Share with patient the possible diagnosis e.g., stable angina												2
7	Communication skills performance: demonstrate empathy, listen to patient cues.												2
												Total weightage of items	15

How RATING SCALE affect reliability and validity

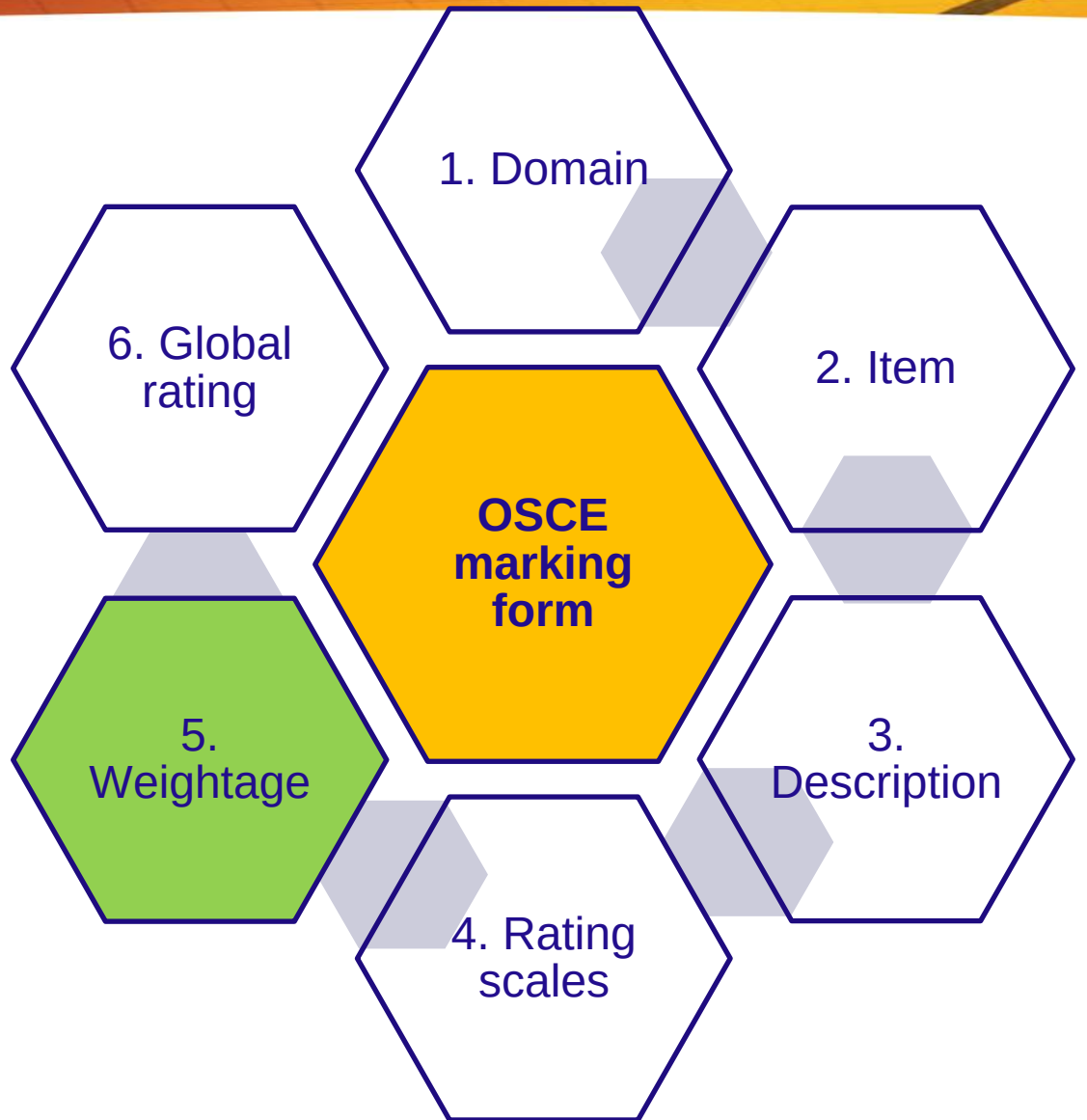


*Threat to reliability

Downing & Haladyna 2004

Question 7	• Which are the most suitable range of rating scale and rating description?
Question 8	• Which are the most suitable rating scale; number of grades?

Components in OSCE ~~checklist~~ marking form

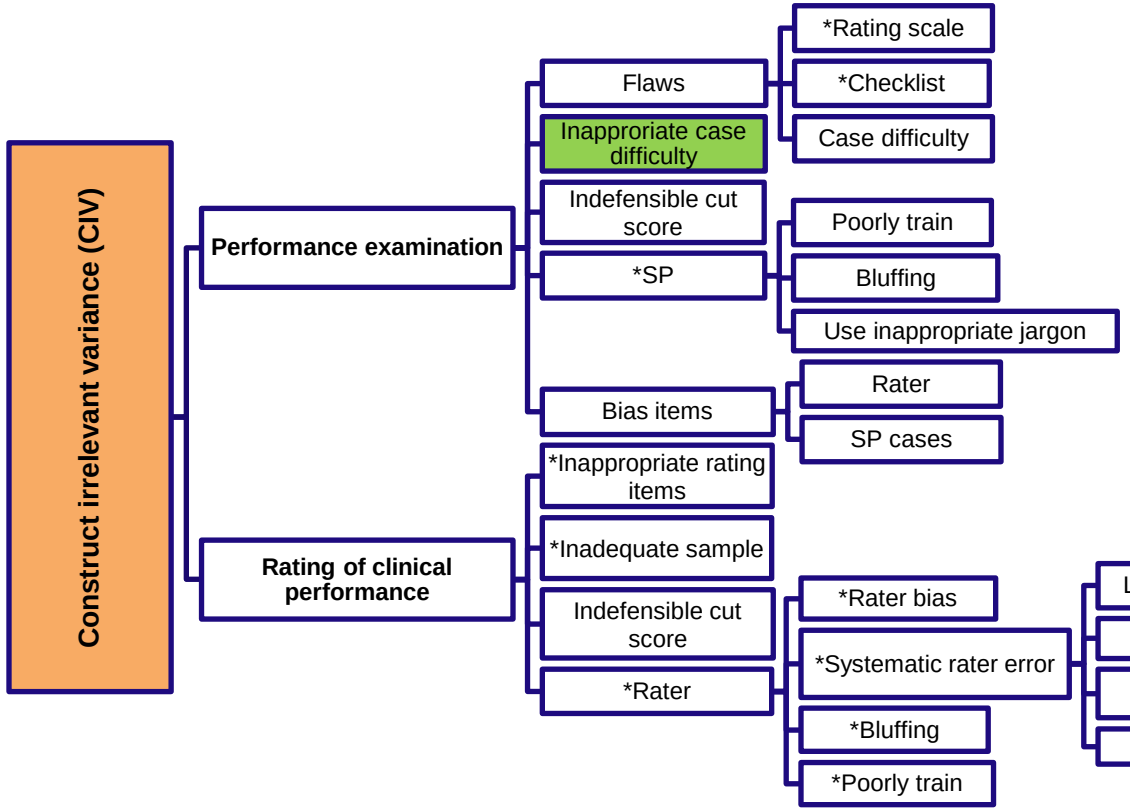


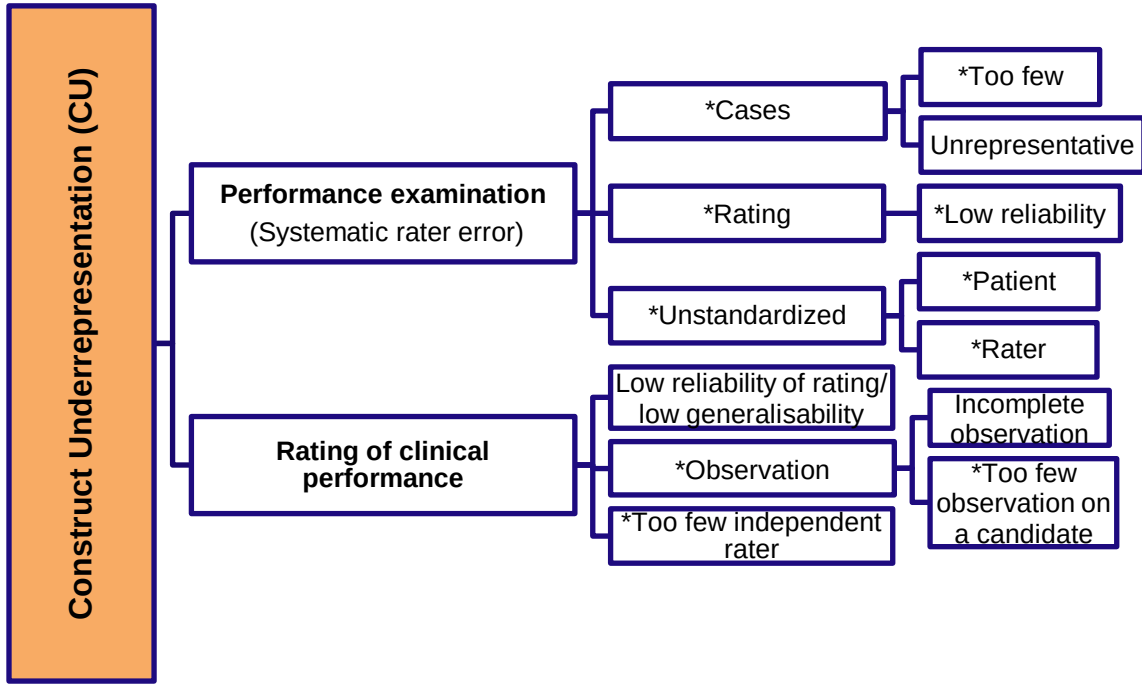
No.	Expected Answers/Action/ Items	Not Done	Below Expectation	Meets Expectation	Above Expectation	Weightage of items
1	Explore the history of chest pain: site, onset, characteristic, radiation, associating factors, timing, exacerbating & relieving factors and severity specifically looking for cardiac symptoms					3
2	Explore associating factors, SOB, palpitations, ankle oedema					2
3	Exclude other possible causes: lung, anaemia, anxiety, HF					1
4	Risk factors for IHD: T2DM, HPT, Cholesterol, Smoking, Premature IHD FH					3
5	Explore family history, social history, medication history and allergies					2
6	Share with patient the possible diagnosis e.g., stable angina					2
7	Communication skills performance: demonstrate empathy, listen to patient cues.					2
					Total weightage of items	**15**

How to decide the weightage?

- Standardize the weightage
  - Generic skills
    - Communication skills
    - Approach
    - Presentation skills
- Consider to allocate MORE weightage
  - Physical examination that require more/structured skill which require more time to perform. (eg: Palpation versus Inspection/ ausculatation)
  - have positive clinical findings (eg: auscultation with murmur versus auscultation of normal bowel sound)
  - Clinically important
  - Patient safety- Safety sequences
  - Questions that have several sub question (eg: HOPI) compare to the “unrelated direct” question (eg: Social history like smoking, alcoholic that not affect the diagnosis)
  - Complete provisional diagnosis (eg: Right …..secondary to…..)

How WEIGHTAGE affect reliability and validity





*Threat to reliability

Downing & Haladyna 2004

Penalization in OSCE

- Making up sign
- Over investigation
- Over management
- Disrespectful
- Ethical or legal concern
- Causing patient to be in pain
- Missing crucial steps
- Wrong steps
- Too harsh/ pain/ uneasy/rude
- Forgetting to remove the instrument

I can’t penalize the student: What can we do?

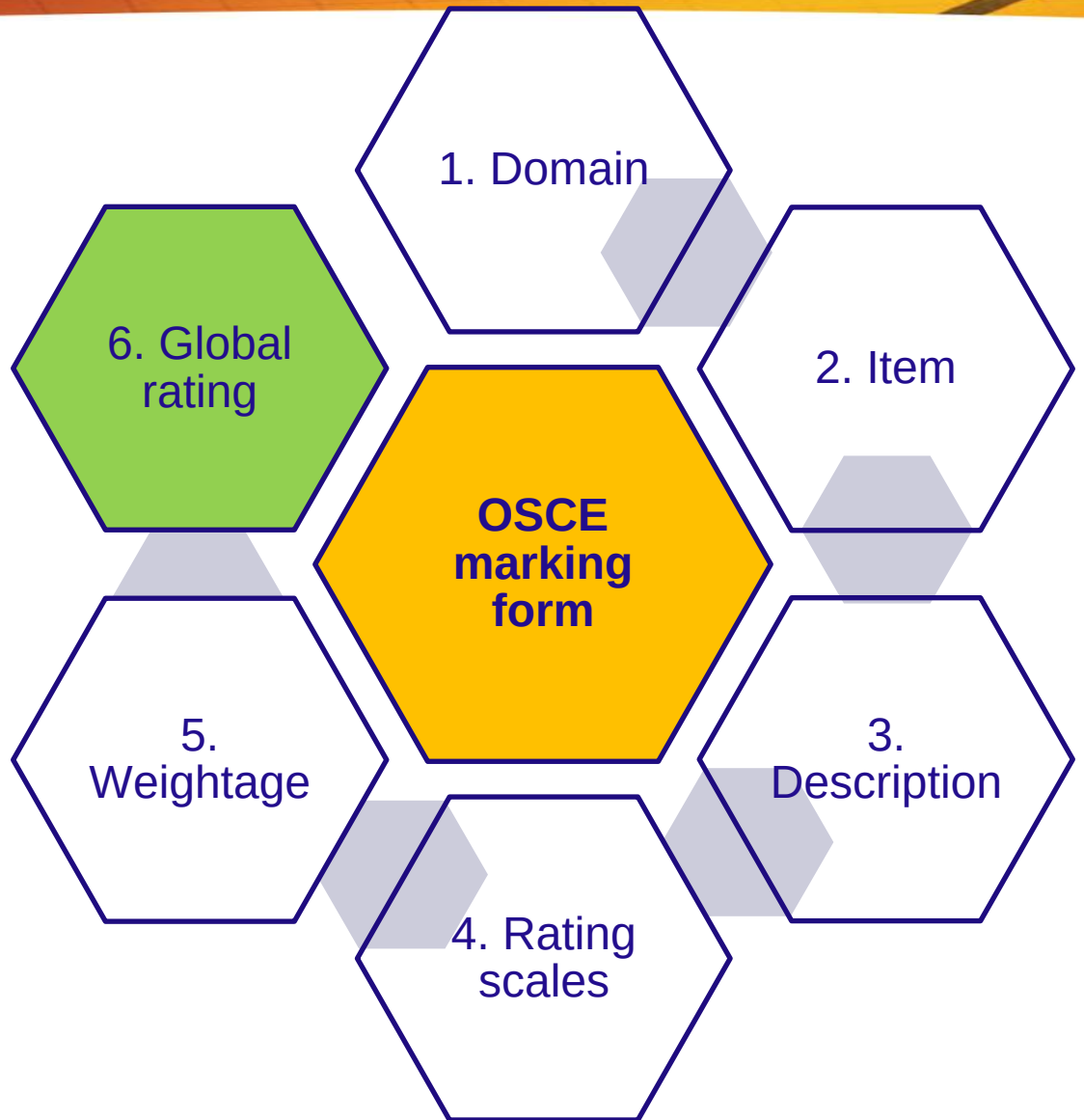
- Award appropriate weightage that may effect the final score (p/e +finding)
- Choose appropriate rating that may effect the final score (p/e +finding)

❖ Criteria Marking

- Award zero mark or borderline fail marks for:
  - Whole performance
  - Domain (P/E or Finding)
  - Sub-domain (Inspection, palpation, percussion, auscultation)
  - Items- (Special examination: Examination of the liver)

****Criteria Marking (based on policies with written and standardize justification**

Components in OSCE ~~checklist~~ marking form



Global Rating

Global ratings are station-independent scales identifying general areas of competence (Wilkinson et al. 2002), such as communication, rapport and similar constructs that may not be well captured in a checklist item (Boursicot and Roberts 2005)

Various Global rating scales

A	B	C	D	E
Clear pass	Pass	Borderline	Fail	Clear fail
Clear fail	Borderline fail	Borderline pass	Clear pass	Excellent
Very good	Good	Acceptable	Poor	Very Poor

**The mark for global rating are not included in the candidate's final marks*

II. Global Rating on candidate's overall performance *(Please Circle)*

POOR	BORDERLINE	GOOD	EXCELLENT

Global rating with description

Professional approach XYZ

Examiner Rating

A=Excellent/B=Very Good/C=Clear Pass/D=Borderline/E=Clear Fail ABCDE

Clear Fail:

- Disorganized approach, no evidence of planning – tends to random actions, process and questions
- Unable to synthesize findings, or reach a diagnosis/plan

Borderline

- Able to commence station, but often uncertain, and struggles to proceed to completion
- Some organisation of approach, but 'formulaic' with no flexibility (e.g. 'lists' of questions for patients) and no evidence of reasoning/discrimination

Clear Pass

- Systematic overall approach to station/task
- Demonstrates sufficient organization to permit completion of task with some evidence of flexibility of approach
- Able to summarize (e.g. present history/explain) and manage additional questioning with evidence of reasoning

Very Good Pass

- Clearly professional approach to station. Good levels of organization with clear evidence of flexibility
- Clearly able to synthesize findings, or reach a diagnosis/plan
- Clear evidence of planning, ability to summarize and manage questioning

Excellent

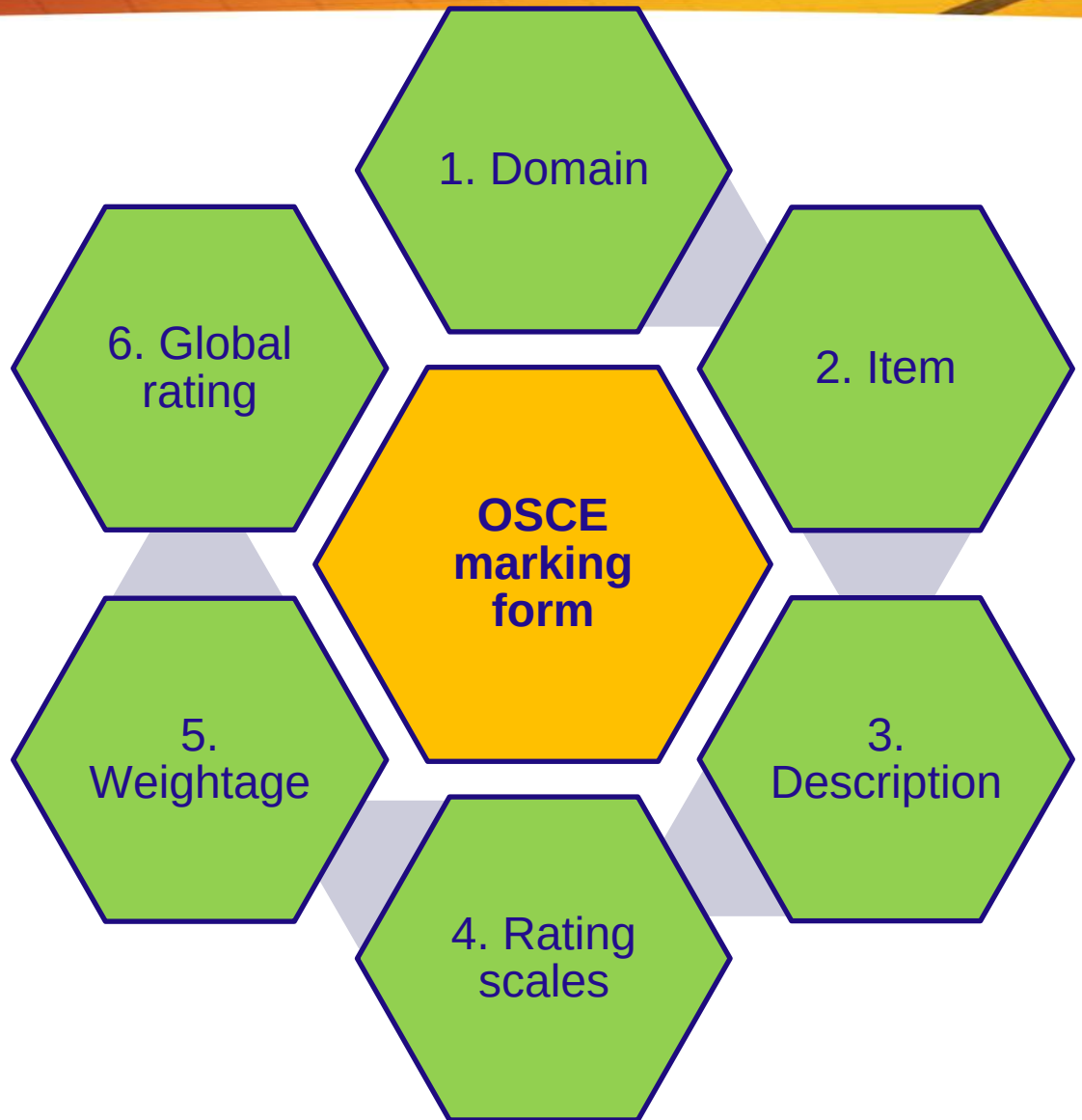
- Overall superior approach – excellent organizational skills, and fluent management of task in hand
- Flexible, adaptive approach to changing circumstances within a station – e.g. reacting to patients, emergency situations
- High levels of professionalism and clinical reasoning – applies knowledge

Global rating rubric- please refer appendix

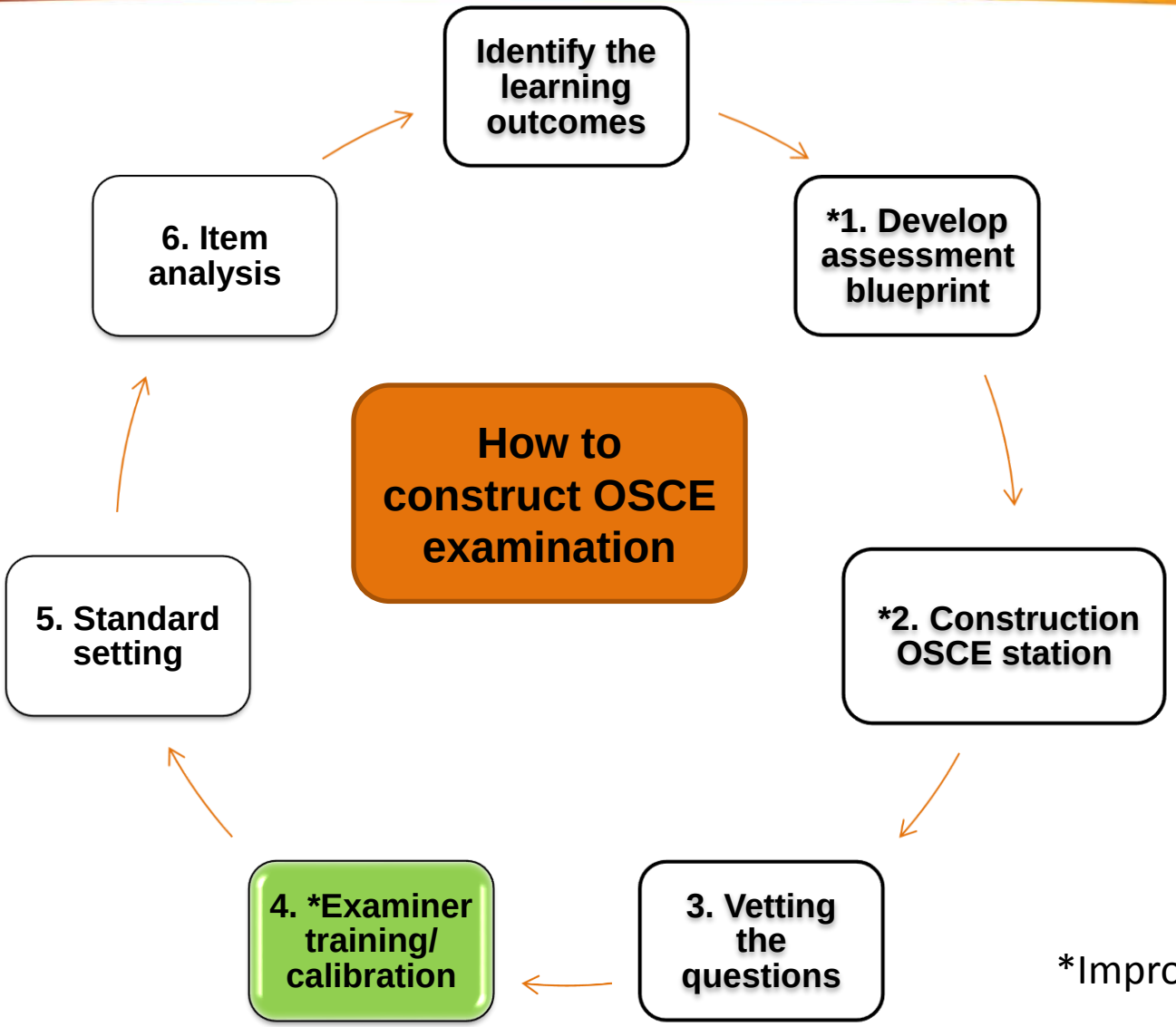
Roles of Global Rating

1. Item analysis
2. Standard setting (determine the cut score)

Components in OSCE ~~checklist~~ marking form

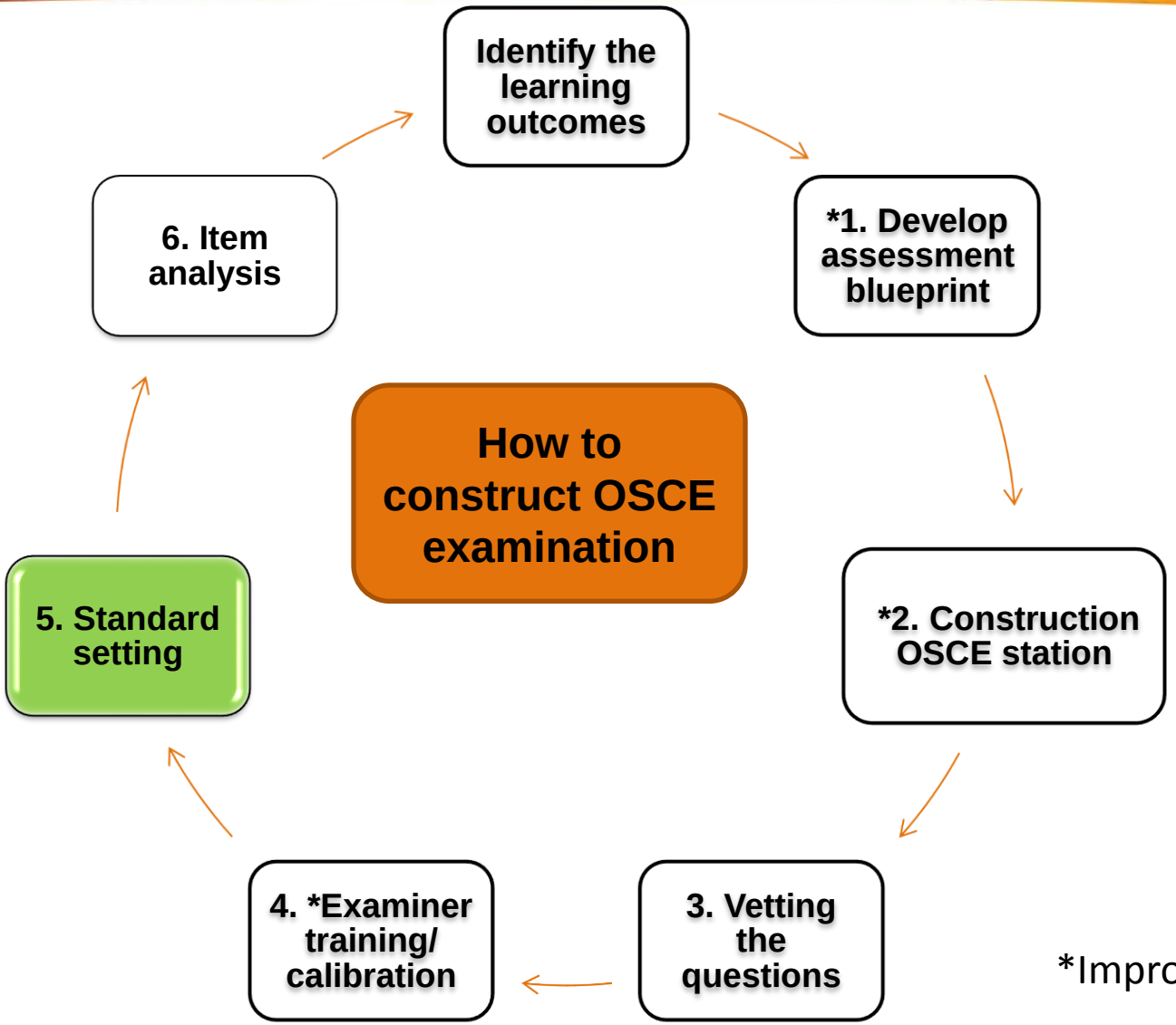


Enhancing reliability and validity



*Improve reliability and validity

Enhancing reliability and validity



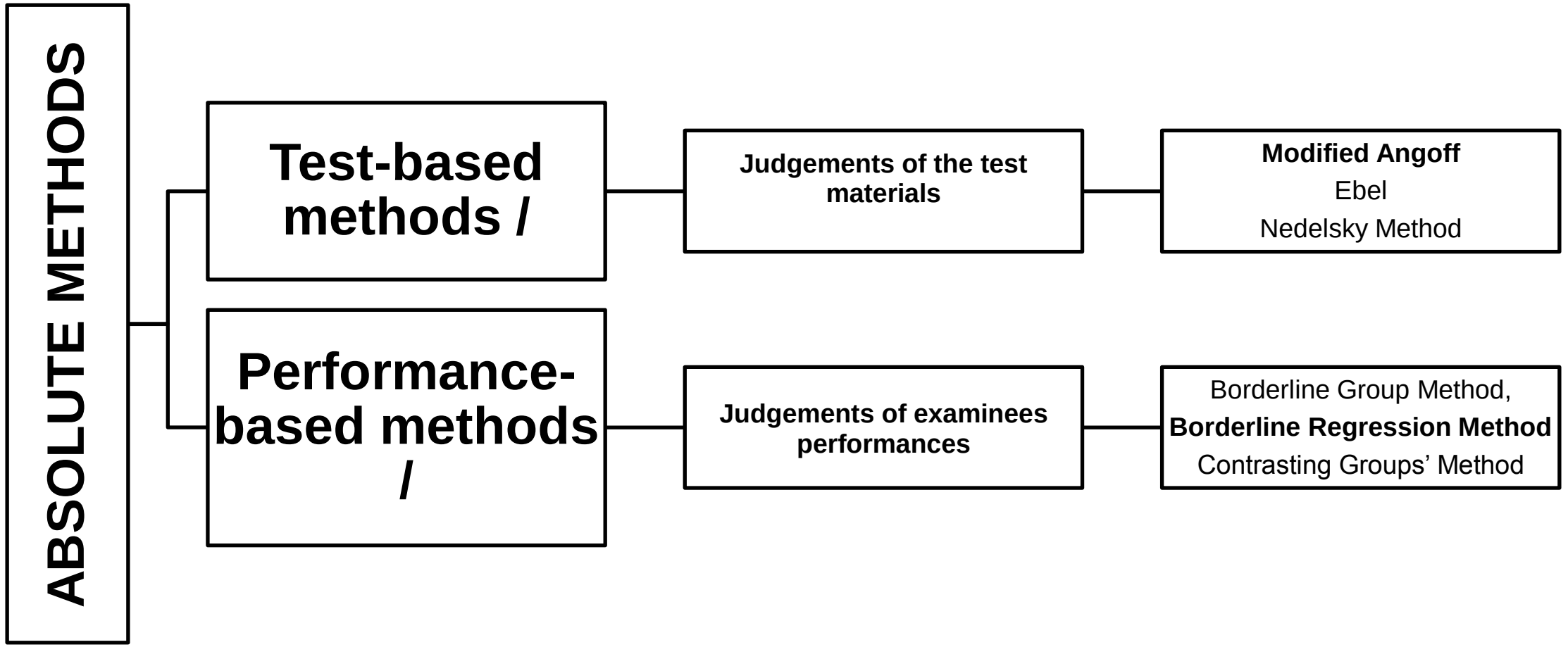
*Improve reliability and validity

Standard setting

It is a **judgmental process** that results in **defensible pass-fail** standards in a systematic, reproducible, and defensible manner

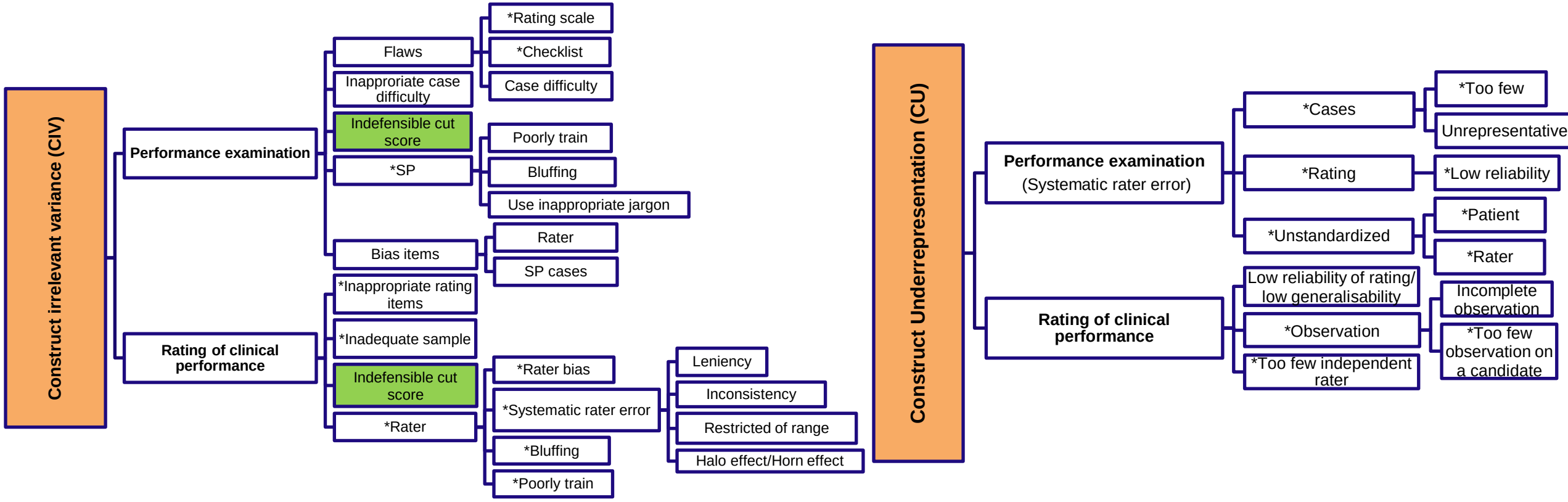
(Cusinamo 1996; Norcini 2003; Cizek & Bunch 2007)

Standard setting



(Kane 1998; Liu 2008;Norcini 2003; Cizek & Bunch 2007)

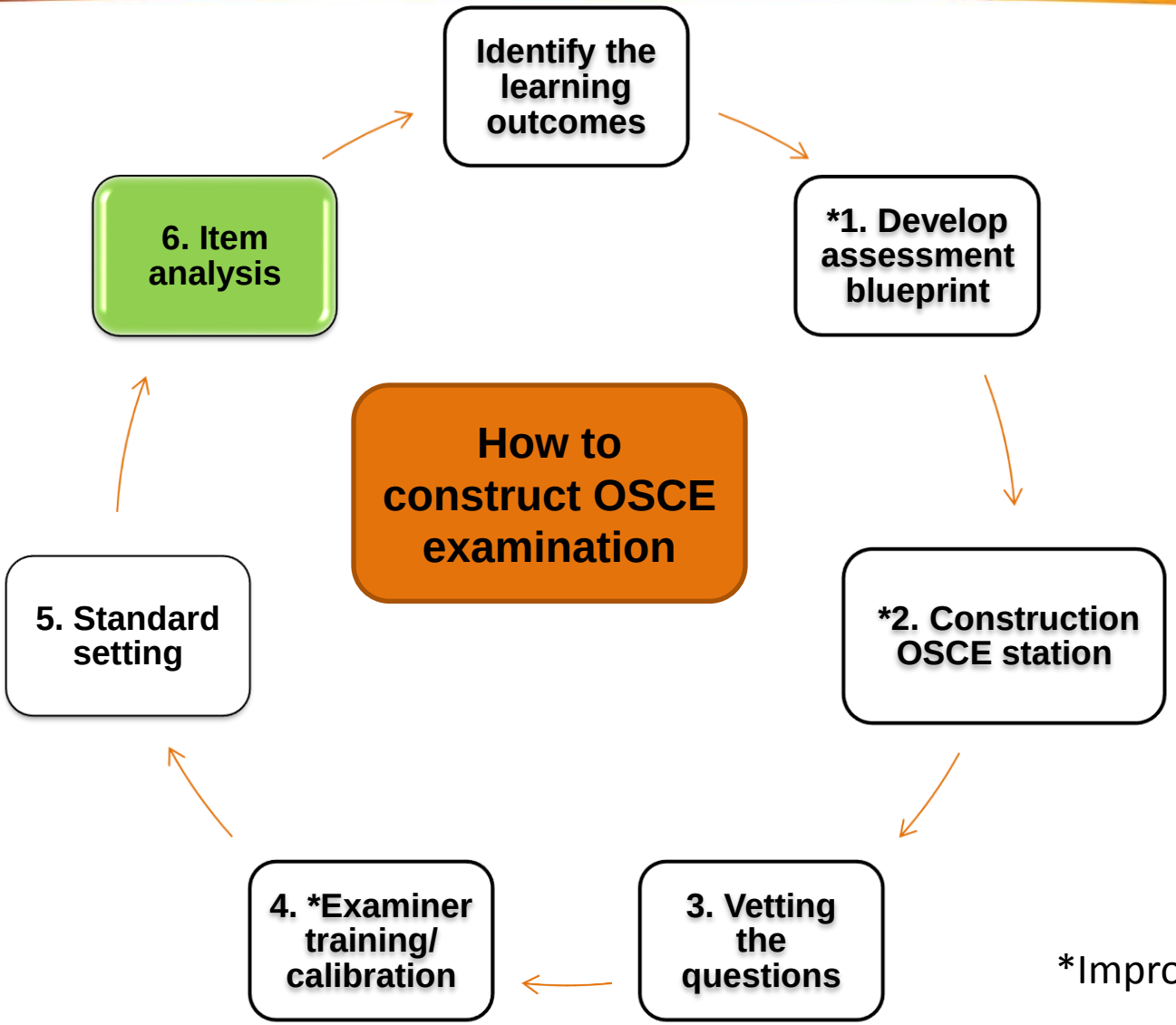
How STANDARD SETTING affect reliability and validity



*Threat to reliability

Downing & Haladyna 2004

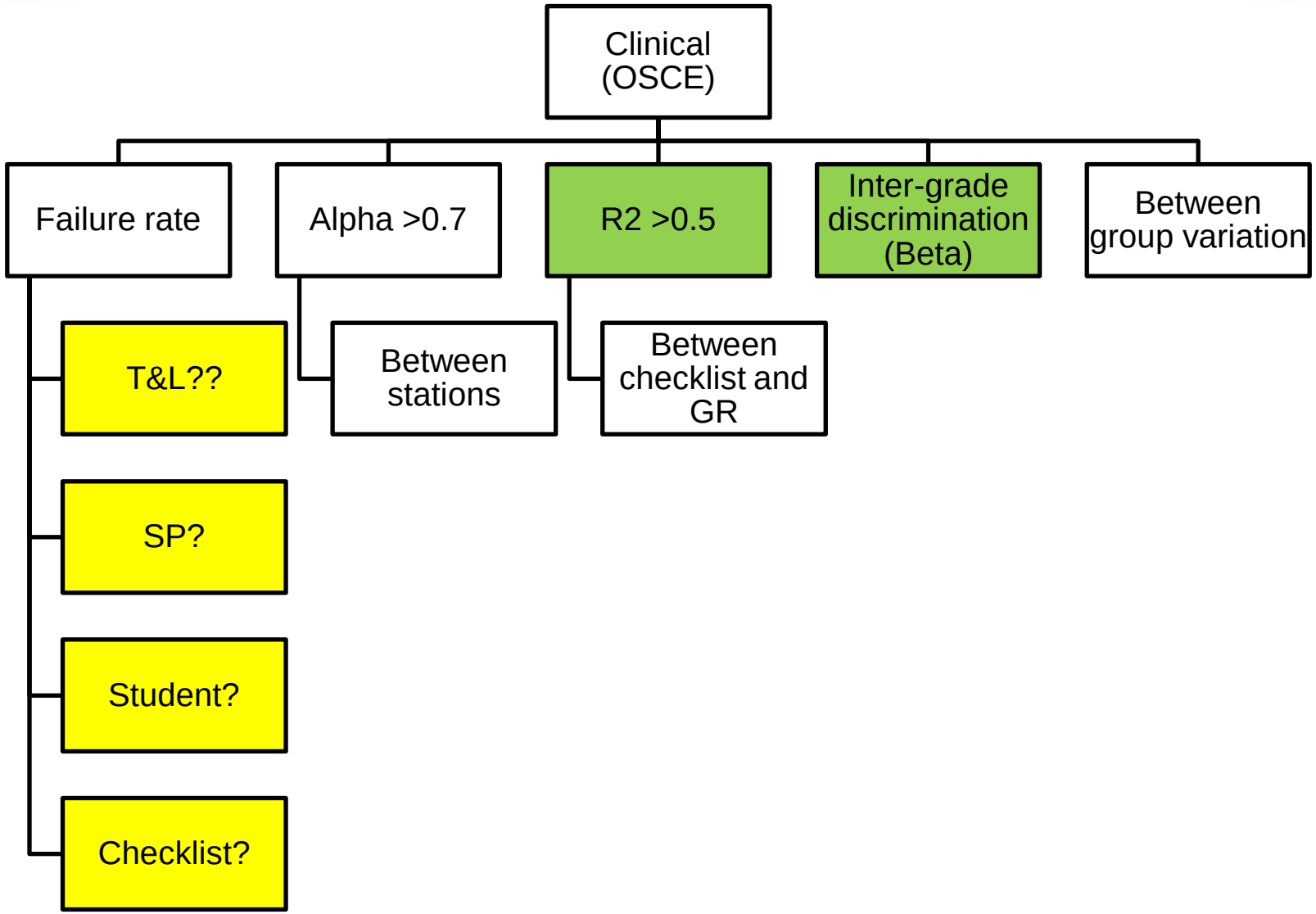
Enhancing reliability and validity



*Improve reliability and validity

		Non-interactive (10 Stations)										Interactive (14 Stations)													
		OSCE1	OSCE2	OSCE3	OSCE4	OSCE5	OSCE6	OSCE7	OSCE8	OSCE9	OSCE10	OSCE11	OSCE12	OSCE13	OSCE14	OSCE15	OSCE16	OSCE17	OSCE18	OSCE19	OSCE20	OSCE21	OSCE22	OSCE23	OSCE24
		OBG	PEDS	FM	ORTHO	SUR	IM	IM	CM	RAD	AEM	IM	PSY	EYE	ANEST	ORTHO	PEDS	OBG	SUR	PSY	PCM	PEDS	IM	ENT	SUR
		10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%
	PASS (%)	100.0	17.4	56.5	54.3	71.7	100.0	100.0	26.1	34.8	2.2	100.0	97.8	97.8	56.5	100.0	87.0	93.5	97.8	84.8	78.3	95.7	100.0	89.1	93.5
	FAIL (%)	0.0	82.6	43.5	45.7	28.3	0.0	0.0	73.9	65.2	97.8	0.0	2.2	2.2	43.5	0.0	13.0	6.5	2.2	15.2	21.7	4.3	0.0	10.9	6.5
	MINIMUM SCORE	5.0	0.0	1.5	1.0	2.5	5.0	5.0	0.0	1.0	0.0	11.0	8.0	9.0	5.0	14.5	7.0	7.0	8.0	6.0	5.0	8.0	11.0	8.0	7.0
	MAXIMUM SCORE	10.0	9.5	7.5	8.0	8.5	10.0	10.0	7.0	9.5	8.5	18.0	20.0	19.0	19.0	20.0	20.0	18.0	18.0	17.0	18.0	20.0	19.0	20.0	20.0
	MODE	8.5	2.0	5.0	6.0	5.0	9.0	8.0	4.0	5.5	2.5	15.0	18.0	16.0	11.0	17.5	17.0	10.0	13.0	12.0	14.0	18.0	15.0	15.5	11.0
	MEDIAN	8.3	2.0	5.0	5.3	5.5	9.0	7.0	4.0	3.0	2.8	14.0	16.5	16.0	10.5	17.5	15.5	11.5	13.0	12.0	12.0	16.0	15.0	15.5	12.3
	AVERAGE	7.9	2.9	4.6	4.9	5.6	8.8	7.3	3.7	3.8	2.8	14.0	16.1	15.5	10.3	17.6	14.7	11.9	13.1	11.7	11.7	15.5	14.8	14.9	13.0
	INTERQUATILE RANGE	1.9	1.0	3.0	2.4	2.4	1.0	1.8	1.9	3.5	1.5	2.0	3.0	3.0	2.9	2.0	5.0	3.0	1.9	3.8	4.0	4.5	2.9	5.0	4.4
	STANDARD DEVIATION	1.3	2.0	1.5	1.8	1.4	1.4	1.4	1.6	2.2	1.4	1.5	2.5	2.3	2.7	1.5	3.6	2.1	1.8	2.4	3.3	3.0	2.1	3.3	3.1

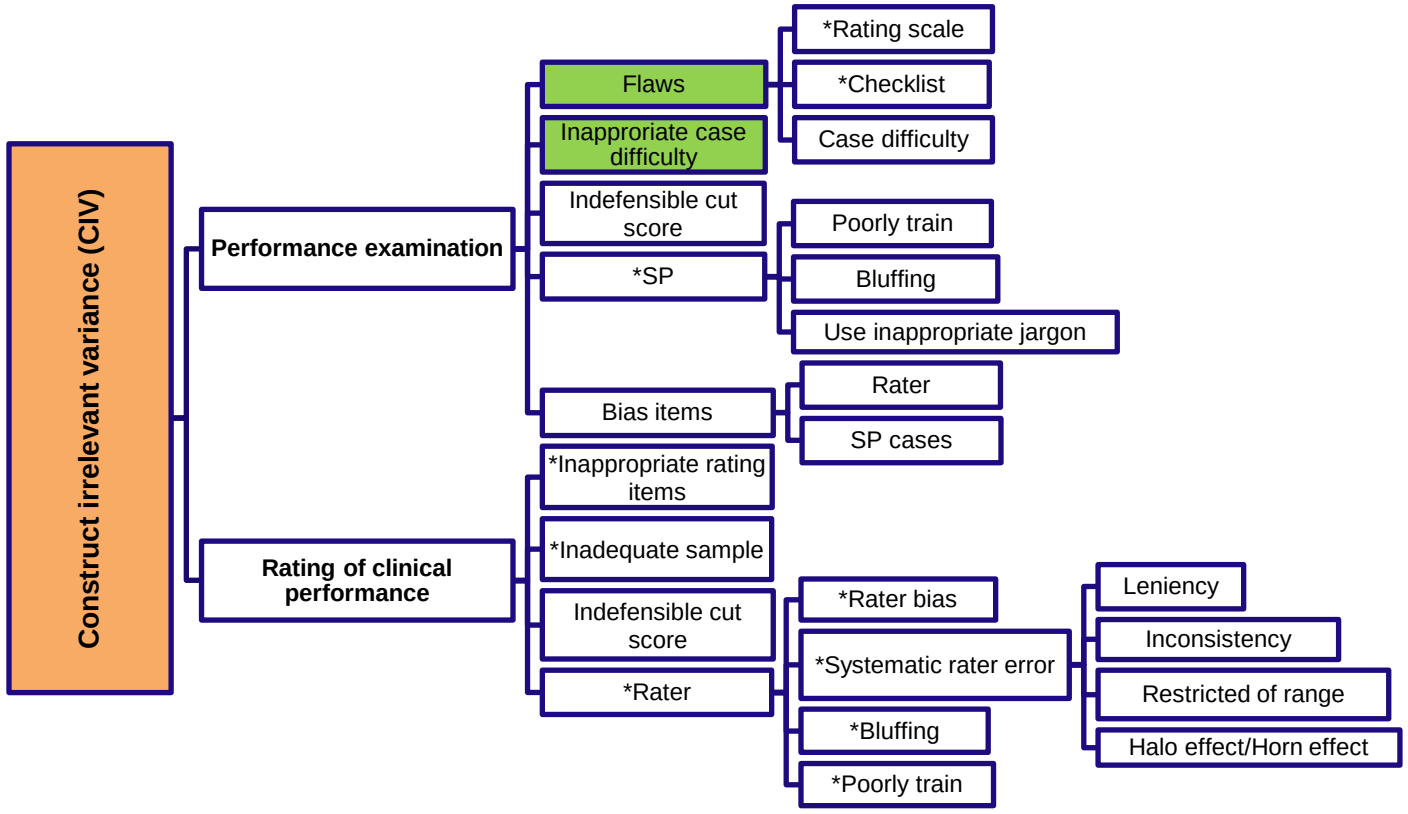
Matrics to measure clinical assessment

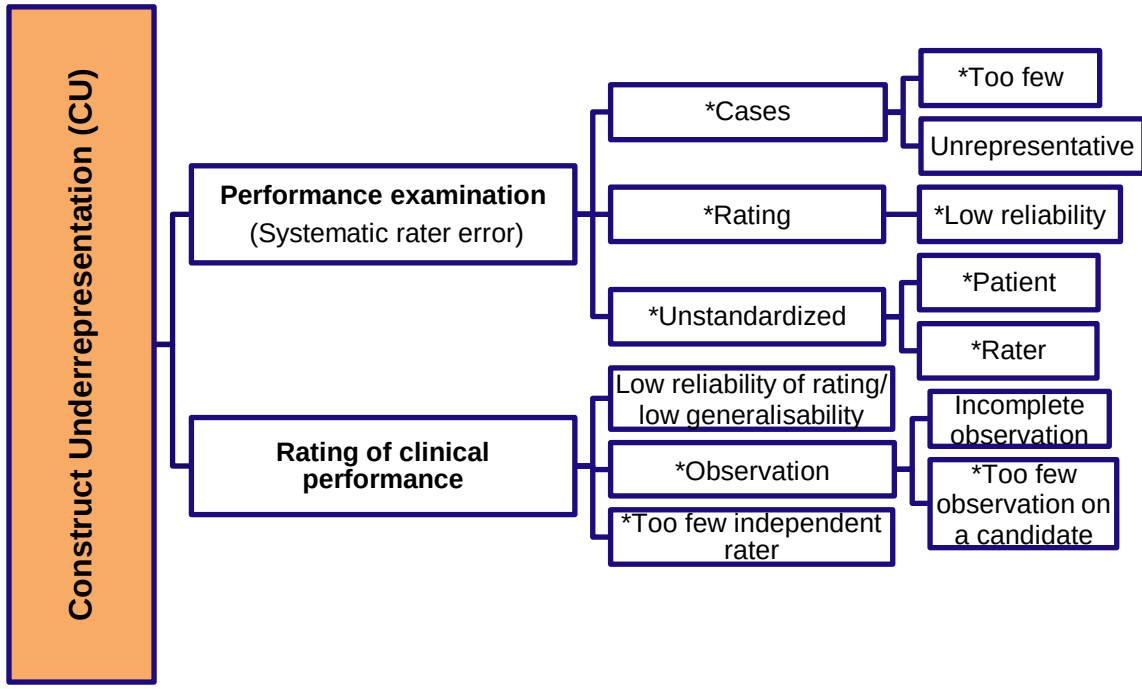


Station	Cronbach's alpha if item deleted	R^2	Inter-grade discrimination	Number of failures	Between-group variation (%)
1	0.745	0.465	4.21	53	31.1
2	0.742	0.590	5.23	24	30.1
3	0.738	0.555	5.14	39	33.0
4	0.742	0.598	4.38	39	28.0
5	0.732	0.511	4.14	29	20.5
6	0.750	0.452	4.74	43	40.3
7	0.739	0.579	4.51	36	19.5
8	0.749	0.487	3.45	39	33.8
9	0.744	0.540	4.06	30	36.0
10	0.747	0.582	3.91	26	29.9
11	0.744	0.512	4.68	37	37.6
12	0.744	0.556	2.80	23	32.3
13	0.746	0.678	3.99	30	22.0
14	0.746	0.697	5.27	54	27.3
15	0.739	0.594	3.49	44	25.9
16	0.737	0.596	3.46	41	34.3
17	0.753	0.573	3.58	49	46.5
18	0.745	0.592	2.42	15	25.4
19	0.749	0.404	3.22	52	39.5
20	0.754	0.565	4.50	37	34.1

Department of Medical Education
Faculty of Medicine, UKMMC

How ITEM ANALYSIS affect reliability and validity





*Threat to reliability

Downing & Haladyna 2004

Conclusion 1

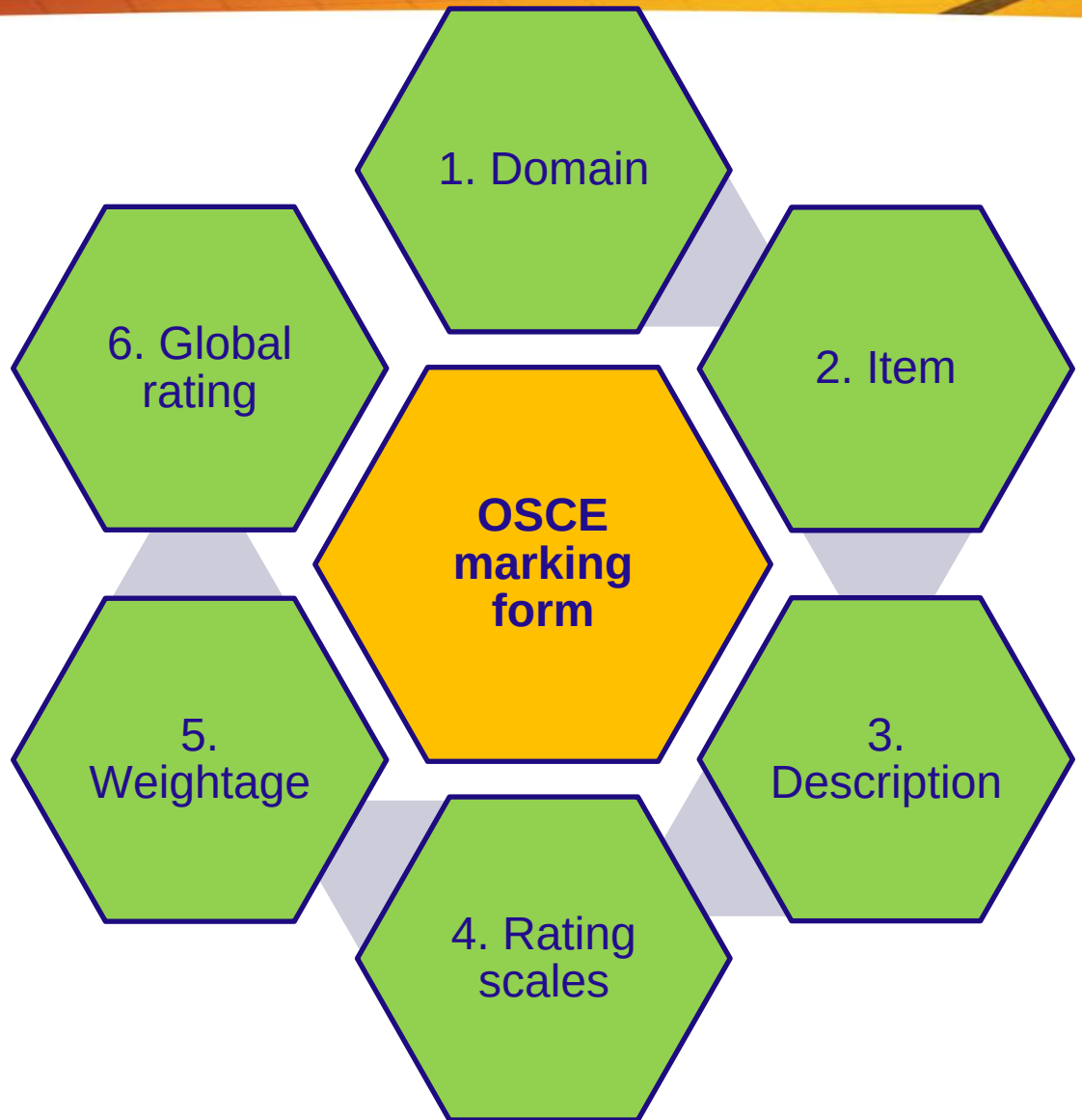
1. Able to design OSCE examination
2. Able to construct OSCE station
3. ~~Able to construct OSCE marking form~~

Enhancing reliability and validity in OSCE

Conclusion 2

Question 1	• How long is the OSCE station duration?
Question 2	• How many OSCE (manned and unmanned) station?
Question 3	• Is there a link (unmanned) station?
Question 4	• How long is the rest duration in between OSCE station?
Question 5	• How many examiners for each station?
Question 6	• Any second examiner for Global Rating?
Question 7	• Which are the most suitable range of rating scale and rating description?
Question 8	• Which are the most suitable rating scale; number of grades?

Conclusion 3: Able to construct OSCE station



Thank You