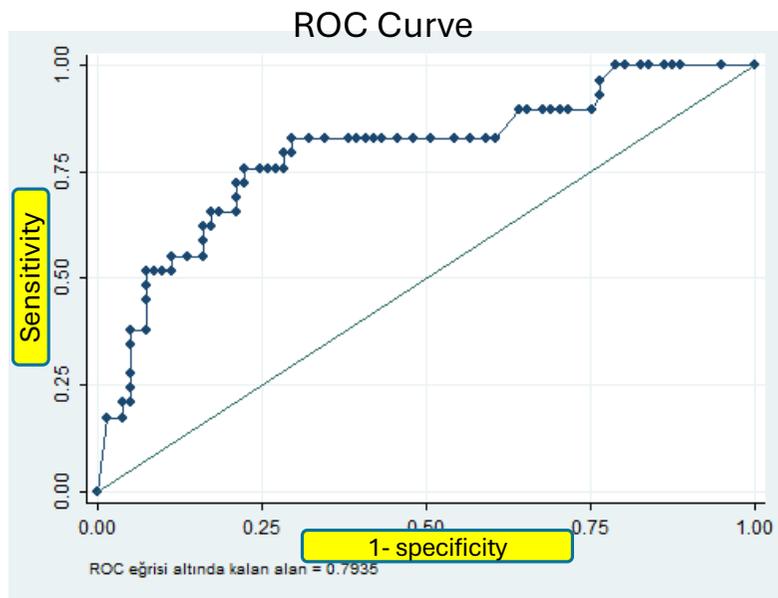Week 12

Methodological Designs
Scale Development studies

Assoc. Prof. Dr. Doğukan ÖZEN

Diagnostic accuracy studies
Performance measure of continuous outcome diagnostic tests

- The area under the curve (AUC)

ROC Curve

| Cutpoint	Sensitivity	Specificity	Correctly Classified
(>= 1.3)	100.00%	0.00%	26.36%
(>= 1.5)	100.00%	4.94%	30.00%
(>= 1.6)	100.00%	11.11%	34.55%
(>= 1.8)	100.00%	12.35%	35.45%
(>= 1.9)	100.00%	13.58%	36.36%
(>= 2)	100.00%	16.05%	38.18%
(>= 2.3)	100.00%	17.28%	39.09%
(>= 2.4)	100.00%	19.75%	40.91%
(>= 2.5)	100.00%	20.99%	41.82%
(>= 2.6)	96.55%	23.46%	42.73%
(>= 2.7)	93.10%	23.46%	41.82%
(>= 2.8)	89.66%	24.69%	41.82%
(>= 3)	89.66%	28.40%	44.55%

ROC eğrisi altında kalan alan = 0.7935

The graph showing the change of sensitivity and 1-Specificity values obtained from different cut-off points.

Diagnostic accuracy studies
Performance measure of continuous outcome diagnostic tests

Area under the curve (AUC): a global measure of diagnostic accuracy. Helps us to estimate how high is the discriminative power of a test

Area	Diagnostic accuracy
0.9-1.0	Excellent
0.8-0.89	Very good
0.7-0.79	Good
0.6-0.69	Sufficient
0.5-0.59	Bad
<0.5	Test not useful

Area under ROC Curve = 0.794
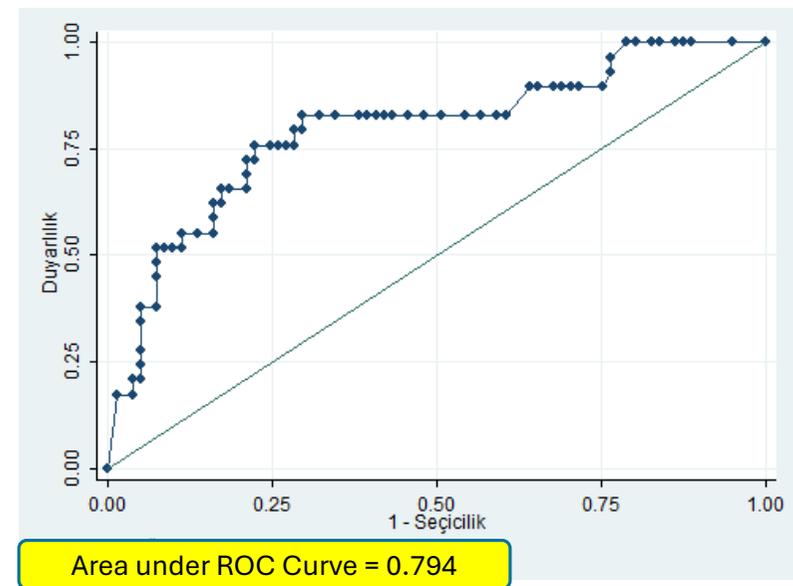
2. Scale Development studies

Disease severity

Aggression

Pain

Stress Level

Attitude

Anxiety

How to measure??

Scales*

*The result of the test, which is obtained with scales consisting of scoreable items, can be quantitative as well as qualitative.

A good developed scale...

❖ In order for the scores obtained with a scale/test to be used, the measurement tool must be **valid** and

   reliable.

❖ The scale should measure a single feature and give similar results even if applied to the same

   individuals at different times.

❖ It should be easy and inexpensive.
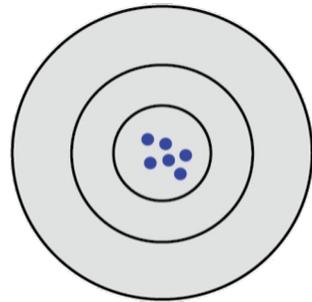
❖ Must be sensitive to change
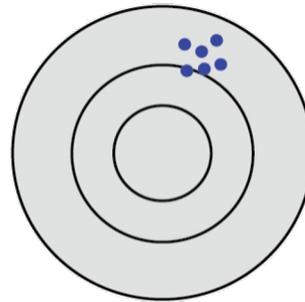
Validity and Reliability

Validity

The accuracy of a measure (whether the results really do represent what they are supposed to measure).
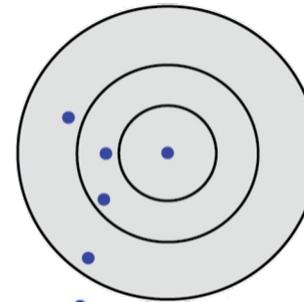
Reliability

Consistency of a measure (whether the results can be reproduced under the same conditions)

| Reliable & Valid | Not valid; Reliable | Not valid & Not reliable |

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3.Inter observer and Intra observer studies

Purpose: To evaluate the agreement of multiple measurements obtained from the same subject.

Intra-observer (or within observer) reliability: the degree to which measurements taken by the same observer are consistent

Inter-observer (or between observers) reliability: the degree to which measurements taken by different observers are similar.