

EXERCISE 1

$$I = \frac{(N-1) \sum X + N \sum X - \sum X}{2(N-1)n} = \frac{(4-1) \cdot 0 + 4 \cdot 0 - 0}{2(4-1) \cdot 90} = \frac{0}{540} = 0$$

$N = \text{dimensions} = 4$

-1	0	+1
30	30	30

$$\sum X = (-1) \cdot 30 + (0) \cdot 30 + 1 \cdot 30 = 0$$

$n = \text{expos} = 90$

$0 < 0.5 \rightarrow$ We would remove the item

EXERCISE 2

			Q_1		Q_3						
f_i	0	10	8	10	50	10	2	0	0	5	5
F_i	0	10	18	28	78	88	90	90	90	95	100

$$AC = Q_3 - Q_1 = 5.44 - 4.2 = 1.24$$

$$Q_3 = L_i + \frac{1}{f_i} \left(\frac{3n}{4} - F_i \right) = 4.5 + \frac{1}{50} (75 - 28) = 4.5 + 0.94 = 5.44$$

$$\frac{3n}{4} = \frac{3 \cdot 100}{4} = 75$$

$$Q_1 = L_i + \frac{1}{f_i} \left(\frac{n}{4} - F_i \right) = 3.5 + \frac{1}{10} (25 - 18) = 3.5 + 0.7 = 4.2$$

$$\frac{n}{4} = \frac{100}{4} = 25$$

mdn está en $\frac{n}{2} = 50$ (categoría 5) \rightarrow Comparamos con 2 por no ser la categoría central

$1.24 < 2 \rightarrow$ The item can be maintained in the scale

EXERCISE 3

a) DIFFICULTY:

- Item 1 - relatively easy
- Items 2 and 3 - more difficult than recommended

DISCRIMINATION

- Item 1 - Adequate
- Items 2 and 3 - Inappropriate (values under 0.2)

b) Item 1 - alternative b (wrong answers) should have a R_b negative
 alternative c (correct answer) should have a positive R_b

Item 2 - alternative a (correct answer) should have a positive R_b
 - alternative c should be chosen at least by 10% of participants
 (it was considered as wrong too easily).

Item 3 - alternative c (wrong answer) should have a negative R_b (it's
 chosen by people that obtained high scores in the test).

	A	B	C
52% más bajo	15	52	10
50% intermedio	53	31	40
52% más alto	2	32	10

	Item 1	Item 2	Item 3
M	0.4	0.3	0.2
H	0.6	0.4	0.2
S	0.52	0.5	0.5
Difficultad (sin conexión)	1	2	3

Exercise 4. (2 points). A test is formed by 3 dichotomous items. We know that there were no omissions, the sum of the difficulty without correction of the 3 items is 1.7 and:

	item 1	item 2	item 3
Difficulty (without correction)	?	?	0.8
S_j^2	0.25	?	?
H_j	0.6	0.4	0.2
V_j	0.4	0.3	0.5

- Complete the table.
- Considering the difficulty index exclusively, which is the worst item?
- Considering the homogeneity index exclusively, which is the worst item?
- Considering the validity index exclusively, which is the worst item?

a)

	item 1	item 2	item 3
Difficulty (without correction)	0.5	0.4	0.8
S_j^2	0.25	0.24	0.16

- 3 (most extreme value).
- 3 (lowest value).
- 2 (lowest value).