

PSICOMETRÍA GRUPO D, TIPO B

ejercicio 1

EI = 180

$r_{xy'} = 0.98$

$R_{xx'} = 0.49$

$$n = \frac{R_{xx'} (1 - r_{xx'})}{r_{xx'} (1 - R_{xx'})} = \frac{0.49 (1 - 0.98)}{0.98 (1 - 0.49)} = \frac{0.49 \cdot 0.02}{0.98 \cdot 0.51} = \frac{0.01}{0.5} = 0.02$$

$$n = \frac{EF}{EI} \rightarrow 0.02 = \frac{EF}{180} \rightarrow 0.02 \cdot 180 = EF$$

$$3.6 = EF \rightarrow EF \approx 4$$

$EI - EF = 180 - 4 = 176$  eliminados

ejercicio 2

$r_{xx'} = 0.79$

$\bar{X} = 13.6$

$S_x = 3.17$

$nc = 95\%$

$X = 15$

$Lim = V' \pm E_{max} = 14.71 \pm 2.53 < \begin{matrix} 17.24 \\ 12.18 \end{matrix}$

$V' = r_{xx'} (X - \bar{X}) + \bar{X} = 0.79 \cdot (15 - 13.6) + 13.6 = \frac{0.79 \cdot 1.4}{1.1} + 13.6 = 14.71$

$E_{max} = z_c \cdot S_{rx} = 1.96 \cdot 1.29 = 2.53$

$S_{rx} = S_x \sqrt{1 - r_{xx'}} \sqrt{r_{xx'}} = 3.17 \cdot \sqrt{1 - 0.79} \sqrt{0.79} = 3.17 \cdot \sqrt{0.21} \cdot \sqrt{0.79} = 3.17 \cdot 0.46 \cdot 0.89 = 1.29$

ejercicio 3

X	Y	XY	X <sup>2</sup>	Y <sup>2</sup>
1	1	1	1	1
2	0	0	4	0
2	1	2	4	1
3	4	12	9	16
5	3	15	25	9
5	2	10	25	4
6	5	30	36	25
7	6	42	49	36
10	9	90	100	81
11	13	143	121	169
11	15	165	121	225
12	16	192	144	256
75	75	702	639	823

$$r_{xy} = \frac{N \sum XY - \sum X \cdot \sum Y}{\sqrt{[N \sum X^2 - (\sum X)^2] [N \sum Y^2 - (\sum Y)^2]}} = \frac{12 \cdot 702 - 75 \cdot 75}{\sqrt{[12 \cdot 639 - 75^2] [12 \cdot 823 - 75^2]}}$$

$$= \frac{8424 - 5625}{\sqrt{[7668 - 5625][9876 - 5625]}} = \frac{2799}{\sqrt{2043 \cdot 4251}} = \frac{2799}{\sqrt{8684793}} = \frac{2799}{2947} = 0.95$$

$$r^2_{xy} = 0.95^2 = 0.9$$

b) El 90% de la variabilidad de Y es explicada por el test.

#### EJERCICIO 4

$$S_x = 3$$

$$r_{xx'} = 0.16$$

$$r_{xy} = 0.16$$

$$\begin{aligned} \text{a) } R_{xy} &= \frac{r_{xy} \sqrt{n}}{\sqrt{1 + (n-1)r_{xx'}}} = \frac{0.16 \sqrt{2}}{\sqrt{1 + (2-1)0.16}} = \frac{0.16 \cdot 1.41}{\sqrt{1.16}} = \\ &= \frac{0.23}{1.08} = 0.21 \end{aligned}$$

b)

$$S_x = 5$$

$$R_{xy} = \frac{S_x r_{xy}}{\sqrt{S_x^2 r_{xy}^2 + s_x^2 - s_x^2 r_{xy}^2}} = \frac{5 \cdot 0.16}{\sqrt{25 \cdot 0.03 + 9 - 9 \cdot 0.03}} = \frac{0.8}{\sqrt{0.75 + 9 - 0.27}} =$$

$$S_x^2 = 5^2 = 25$$

$$r_{xy}^2 = 0.16^2 = 0.03$$

$$= \frac{0.8}{\sqrt{9.48}} = \frac{0.8}{3.08} = 0.26$$

$$s_x^2 = 3^2 = 9$$