

PSICOMETRÍA

ENERO, 2015, EXAMEN FINAL

2)

$S_x^2 = 16$

$S_e = 2 \rightarrow$

$\bar{x} = 18$   $S_e^2 = 2^2 = 4$

$r_{xv} = ?$

$r_{xx'} = 1 - \frac{S_e^2}{S_x^2} = 1 - \frac{4}{16} = 1 - 0.25 = 0.75$

3)  $r_{xv} = \sqrt{r_{xx'}} = \sqrt{0.75} = 0.87$

437

R	R	V	A	Σ
R	-	200	750	950
V	800	-	850	1650
A	250	150	-	400

V	V	R	A	Σ
V	-	800	850	1650
R	200	-	750	950
A	150	250	-	400

P

	V	R	A
V	-	0.8	0.85
R	0.2	-	0.75
A	0.15	0.25	-

Z

	V	R	A	ΣZ	ΣZ/k	estímulos
V	-	0.84	1.04	1.88	0.63	1.2
R	-0.84	-	0.67	-0.17	-0.06	0.51
A	-1.04	-0.67	-	-1.71	-0.57	0

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	1	2	3	4	5	6	7	8	9	10	11
$f_i$	0	0	0	10	20	30	30	50	30	20	10
$F_i$	0	0	0	10	30	60	90	140	170	190	200

$5.5 \leftarrow Q_1$        $7.5 \leftarrow \text{Mdn}$        $8.5 \leftarrow Q_3$

$$\text{Mdn} = L_i + \frac{1}{f_i} \left( \frac{n}{2} - F_i \right) = 7.5 + \frac{1}{50} (100 - 90) = 7.5 + 0.2 = 7.7$$

$$n/2 = \frac{200}{2} = 100$$

9  $CA = Q_3 - Q_1 = 8.83 - 6.17 = 2.66$

$$Q_3 = L_i + \frac{1}{f_i} \left( \frac{3n}{4} - F_i \right) = 8.5 + \frac{1}{30} (150 - 140) = 8.5 + 0.33 = 8.83$$

$$\frac{3n}{4} = \frac{3 \cdot 200}{4} = \frac{600}{4} = 150$$

$$Q_1 = L_i + \frac{1}{f_i} \left( \frac{n}{4} - F_i \right) = 5.5 + \frac{1}{30} (50 - 30) = 5.5 + 0.67 = 6.17$$

$$n/4 = \frac{200}{4} = 50$$

2.66 > 2 Ambiguo. Se elimina de la escala

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	A*	B	C	D
50% sup	100	54	32	14
50% inf	24	35	70	71
$\Sigma$	124	89	102	85

$$p_c = \frac{A - \frac{E}{k-1}}{N} = \frac{124 - \frac{276}{3}}{400} = \frac{32}{400} = 0.08$$

14  $IF = S_j \cdot P_j = 0.46 \cdot 0.4 = 0.18$

$$S_j^2 = p \cdot q = 0.31 \cdot 0.69 = 0.21 \rightarrow S_j = \sqrt{0.21} = 0.46$$

$$p = \frac{124}{400} = 0.31 \quad q = 1 - p = 1 - 0.31 = 0.69$$

$$(15) \chi^2 = \sum \frac{(FT - FO)^2}{FT} = \frac{(92-89)^2 + (92-102)^2 + (92-85)^2}{92} = \frac{9+100+49}{92} = \frac{158}{92} = 1.72$$

$$FT = \frac{89+102+85}{3} = 92$$

$$\chi^2_{emp} < \chi^2_T$$

1.72 < 5.99 → Son equiprobables

$$\chi^2(\alpha, k+1) = \chi(0.05, 2) = 5.99$$

↳ n° de distractores

$$(17) r_{xx'} = \frac{S_V^2}{S_{X'}^2} = \frac{4S_e^2}{5S_e^2} = 0.8$$

$$\bar{x} = 25$$

$$S_x = 5$$

$$S_V = 4S_e$$

$$S_{X'}^2 = S_V^2 + S_e^2 \rightarrow S_{X'}^2 = 4S_e^2 + S_e^2 = 5S_e^2$$

$$(18) R_{xx'} = \frac{n r_{xx'}}{1 + (n-1) r_{xx'}} = \frac{2 \cdot 0.8}{1 + (2-1) \cdot 0.8} = \frac{1.6}{1+0.8} = \frac{1.6}{1.8} = 0.89$$

$$(19) EI = 25$$

$$\bar{x} = 15$$

$$S_1 = 4 \rightarrow S_1^2 = 4^2 = 16$$

$$r_{xx'} = 0.6$$

$$R_{xx'} = \frac{n r_{xx'}}{1 + (n-1) r_{xx'}} = \frac{2 \cdot 0.6}{1 + (2-1) \cdot 0.6} = \frac{1.2}{1.6} = 0.75$$

$$S_2 = 2 \cdot 4 = 8 \rightarrow S_2^2 = 64 \quad (20) \quad 0.71 \text{ (tiene que estar entre } 0.6 \text{ y } 0.75)$$

$$(21)$$

$$r_{22} = 1 - \frac{S_1^2}{S_2^2} (1 - r_{11}) = 1 - \frac{16}{64} (1 - 0.6) = 1 - 0.25 \cdot 0.4 = 1 - 0.1 = 0.9$$

$$(22)$$

$$\text{Lim} = V' \pm E_{\max} = 18 \pm 3.82 < \begin{matrix} 21.82 \\ 14.18 \end{matrix}$$

$$X = 20$$

$$V' = r_{xx'} (X - \bar{x}) + \bar{x} = 0.6 (20 - 15) + 15 = 18$$

$$z_c = 1.96$$

$$E_{\max} = z_c \cdot S_{VX} = 1.96 \cdot 1.95 = 3.82$$

$$S_{VX} = S_e \sqrt{r_{xx'}} = 2.53 \sqrt{0.6} = 2.53 \cdot 0.77 = 1.95$$

$$S_e = S_x \sqrt{1 - r_{xx'}} = 4 \sqrt{1 - 0.6} = 4 \cdot \sqrt{0.4} = 4 \cdot 0.63 = 2.53$$

TEST B

		TEST B		
		APTD	NO	
TEST A	APT D	a 10	b 4	g 14
	NO	c 6	d 15	h 21
		e 16	f 19	35

(23)  $p_0 = \frac{F_c}{N} = \frac{25}{35} = 0,71$

$F_c = a + d = 10 + 15 = 25$

(24)  $k = \frac{F_c - F_a}{N - F_a} = \frac{25 - 17,8}{35 - 17,8} = \frac{7,2}{17,2} = 0,42$

(25)  $F_a = \frac{e \cdot g}{N} + \frac{f \cdot h}{N} = \frac{16 \cdot 14}{35} + \frac{19 \cdot 21}{35} = \frac{224}{35} + \frac{399}{35} = 6,4 + 11,4 = 17,8$

(27)  $r_{xy} = 0,9$

$CVP = 1 - \sqrt{1 - r_{xy}^2} = 1 - \sqrt{1 - 0,9^2} = 1 - \sqrt{1 - 0,81} = 1 - \sqrt{0,19} = 1 - 0,44 = 0,56$

$\sum X = 70$

$\sum Y = 52$

$\sum X^2 = 720$

$\sum Y^2 = 344$

$\sum XY = 482$

$r_{xy}^2 = \frac{N \sum XY - \sum X \sum Y}{\sqrt{[N \sum X^2 - (\sum X)^2][N \sum Y^2 - (\sum Y)^2]}}$

$r_{xy}^2 = \frac{10 \cdot 482 - 70 \cdot 52}{\sqrt{[10 \cdot 720 - 70^2][10 \cdot 344 - 52^2]}}$

$r_{xy}^2 = \frac{4820 - 3640}{\sqrt{(7200 - 4900)(3440 - 2704)}} = \frac{1180}{\sqrt{2300 \cdot 736}} = \frac{1180}{\sqrt{1692800}} = \frac{1180}{1301,08} = 0,91$

(28)  $CA^2 = 1 - CD = 1 - 0,83 = 0,17$

$CD = r_{xy}^2 = 0,91^2 = 0,83$

(29)  $CA = \sqrt{0,17} = 0,41$

(30)  $Z_{y'} = r_{xy} Z_x \rightarrow Z_{y'} = 0,91 Z_x$

$Z_{y'} = 0,91 \cdot 1 = 0,91$

(31)  $Z_x = 1$