

1.

来源	SS	df	MS	
处理间	45	3	15	F = 5
处理内	108	36	3	
总和	153	39		

$$MS_1 = \frac{SS_1}{df_1} = 15 \quad df_1 = 4 - 1 = 3$$

$$\Rightarrow SS_1 = 15 \times 3 = 45$$

$$df_2 = 10 \times 4 - 4 = 36$$

$$MS_2 = \frac{SS_2}{df_2} = \frac{108}{36} = 3$$

$$F = \frac{MS_1}{MS_2} = \frac{15}{3} = 5$$

$$SS = S^2 \cdot (n-1)$$

2. A	2岁	n=20	X=2.1	s=1.3
B	6岁	n=20	X=4.3	s=1.5
C	10岁	n=20	X=6.9	s=1.8

$$SS = 32.11 \quad T = 42$$

$$SS = 42.75 \quad T = 86$$

$$SS = 61.56 \quad T = 138$$

$H_0$ : 无差异       $H_1$ : 有差异

$$N = 60, \quad K = 3, \quad G = 42 + 86 + 138 = 266$$

$$SS_2 = 32.11 + 42.75 + 61.56 = 136.42$$

$$SS_1 = \frac{42^2}{20} + \frac{86^2}{20} + \frac{138^2}{20} - \frac{266^2}{60} = 230.93$$

来源	SS	df	MS	F
处理间	230.93	2	115.465	48.25
处理内	136.42	57	2.393	
总和	367.35	59		

$$F(2, 57) = 3.159$$

$F > F_{crit}$ . 拒绝  $H_0$ , 认为有差异

$$HSD = q \cdot \sqrt{MS/n} < 3.44 \times \sqrt{\frac{2.393}{20}} = 1.19$$

$$B-A = 4.3 - 2.1 = 2.2 > 1.19$$

三者彼此间差异显著.

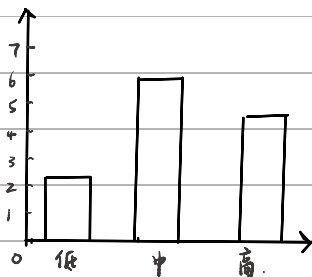
$$C-B = 6.9 - 4.3 = 2.6 > 1.19$$

$$C-A = 6.9 - 2.1 = 4.8 > 1.19$$

3. (a) 高吸引力:  $\bar{X}_1 = 4.5$

中等吸引力:  $\bar{X}_2 = 5.92$

低吸引力:  $\bar{X}_3 = 2.33$



(b)  $H_0$ : 无差异  $H_1$ : 有差异

$$N=36 \quad df_1 = 3-1=2 \quad df_2 = 36-3=33$$

$$SS_1 = 266 - 243 = 23 \quad T_1 = 54$$

$$SS_2 = 445 - 420.08 = 24.92 \quad T_2 = 71$$

$$SS_3 = 78 - 65.33 = 12.67 \quad T_3 = 28$$

$$SS_{\text{组内}} = SS_1 + SS_2 + SS_3 = 60.59$$

$$G = 153$$

$$SS_{\text{组间}} = \frac{54^2}{12} + \frac{71^2}{12} + \frac{28^2}{12} - \frac{153^2}{36} = 78.17$$

来源	SS	df	MS	F
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处理间	78.17	2	39.085	21.288
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处理内	60.59	33	1.836	
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总和	138.76	35		
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$$F(2, 33) = 3.285 \quad F > F_{\text{crit}}$$

拒绝  $H_0$ . 认为有差异.

$$HSD = q \cdot \sqrt{\frac{MS_{\text{组内}}}{n}} < 3.49 \times \sqrt{\frac{1.836}{12}} \doteq 1.365$$

$$\bar{x}_2 - \bar{x}_1 = 5.92 - 4.5 = 1.42 > 1.365$$

$$\bar{x}_2 - \bar{x}_3 = 5.92 - 2.33 = 3.59 > 1.365$$

$$\bar{x}_1 - \bar{x}_3 = 4.5 - 2.33 = 2.17 > 1.365$$

∴ 三组彼此间有差异