Empirical Assessment of the Ahab Leg's Dilemma: Analysis of Pilot Data

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1 Analisys of Distraction

raters	kappa	p.value	agreement
1, 2	0.64	0.00	Substantial
1, 3	0.31	0.00	Fair
1, 4	0.26	0.01	Fair
2, 3	0.36	0.00	Fair
2, 4	0.36	0.00	Fair
3, 4	0.47	0.00	Moderate
2, 3, 4	0.40	0.00	Moderate
1, 3, 4	0.36	0.00	Fair
1, 2, 4	0.42	0.00	Moderate
1, 2, 3	0.44	0.00	Moderate
All	0.41	0.00	Moderate
1, final	0.60	0.00	Moderate
2, final	0.71	0.00	Substantial
3, final	0.29	0.01	Fair
4, final	0.19	0.08	Slight
All, final	0.42	0.00	Moderate

Table 1: Reliability of agreement among raters (Fleiss' kappa test).

	name	mean	median	sd	p.value	effect.size
1	No mention	1.18	1	0.87		
2	Mention to A.L.	0.55	1	0.52		
3	Difference	0.64	1	1.12	0.049	0.57

Table 2: Descriptive statistics and paired analysis of distraction (Wilcoxon's test).

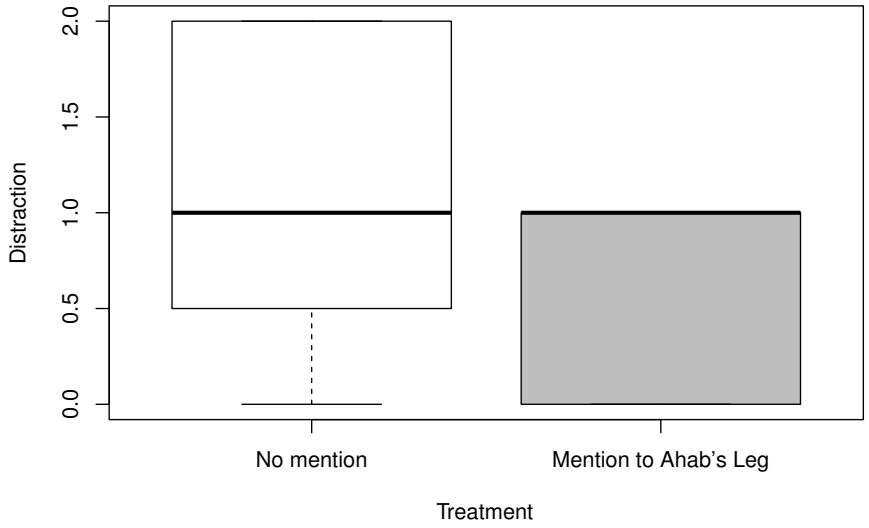
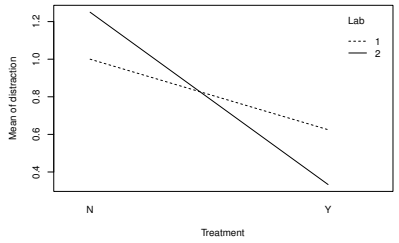


Figure 1: Boxplots of distraction.

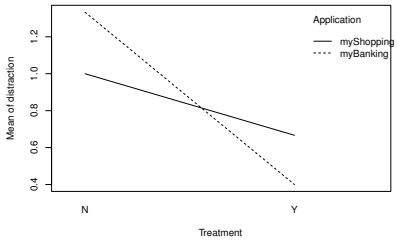
2 Analysis of co-factors

	cofactor	influence	interaction
1	Lab	0.95	0.46
2	Application	0.92	0.36
3	Merit	0.59	0.18
4	Background	0.84	0.92
5	Re.Experience	0.91	0.57
6	Dev.Experience	0.91	0.57
7	Scenario	0.30	0.56
8	Question kind	0.20	0.79

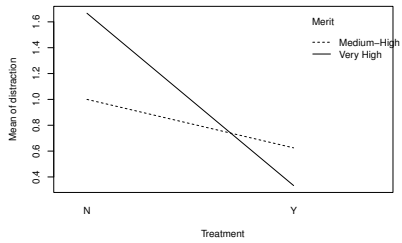
Table 3: ANOVA of Distraction by Treatment & co-factor C_i



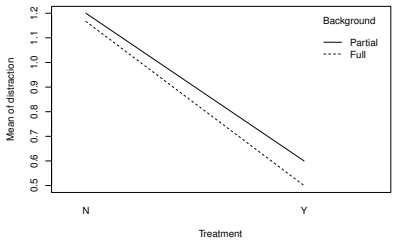
(a) Treatment & Lab



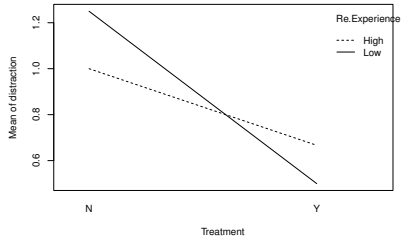
(b) Treatment & System



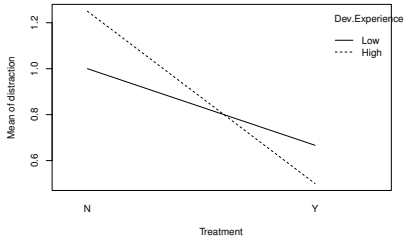
(c) Treatment & Merit



(d) Treatment & brackground



(e) Treatment & Requirement Experience



(f) Treatment & Development Experience

Figure 2: Interaction plots for distraction.

	Df	Sum Sq	Mean Sq	F value	Pr(>F)
Treatment	1	2.23	2.23	3.99	0.0610
Lab	1	0.00	0.00	0.00	0.9542
Treatment:Lab	1	0.32	0.32	0.57	0.4586
Residuals	18	10.04	0.56		

Table 4: ANOVA of Distraction by Treatment & Lab

	Df	Sum Sq	Mean Sq	F value	Pr(>F)
Treatment	1	2.23	2.23	4.06	0.0590
Application	1	0.01	0.01	0.01	0.9174
Treatment:Application	1	0.49	0.49	0.90	0.3565
Residuals	18	9.87	0.55		

Table 5: ANOVA of Distraction by Treatment & System

	Df	Sum Sq	Mean Sq	F value	Pr(>F)
Treatment	1	2.23	2.23	4.35	0.0514
Merit	1	0.15	0.15	0.30	0.5907
Treatment:Merit	1	1.00	1.00	1.96	0.1787
Residuals	18	9.21	0.51		

Table 6: ANOVA of Distraction by Treatment & Merit

	Df	Sum Sq	Mean Sq	F value	Pr(>F)
Treatment	1	2.23	2.23	3.88	0.0645
Background	1	0.02	0.02	0.04	0.8395
Treatment:Background	1	0.01	0.01	0.01	0.9193
Residuals	18	10.33	0.57		

Table 7: ANOVA of Distraction by Treatment & Background

	Df	Sum Sq	Mean Sq	F value	Pr(>F)
Treatment	1	2.23	2.23	3.94	0.0625
Re.Experience	1	0.01	0.01	0.01	0.9091
Treatment:Re.Experience	1	0.19	0.19	0.34	0.5697
Residuals	18	10.17	0.56		

Table 8: ANOVA of Distraction by Treatment & Requirement Experience

	Df	Sum Sq	Mean Sq	F value	Pr(>F)
Treatment	1	2.23	2.23	3.94	0.0625
Dev.Experience	1	0.01	0.01	0.01	0.9091
Treatment:Dev.Experience	1	0.19	0.19	0.34	0.5697
Residuals	18	10.17	0.56		

Table 9: ANOVA of Distraction by Treatment & Development Experience

	Df	Sum Sq	Mean Sq	F value	Pr(>F)
treatment	1	0.56	0.56	3.32	0.0721
scenario	1	0.18	0.18	1.10	0.2980
treatment:scenario	1	0.06	0.06	0.34	0.5623
Residuals	84	14.10	0.17		

Table 10: ANOVA of Distraction by Treatment & Scenario

	Df	Sum Sq	Mean Sq	F value	Pr(>F)
treatment	1	0.56	0.56	3.33	0.0716
kind	1	0.28	0.28	1.70	0.1960
treatment:kind	1	0.01	0.01	0.07	0.7950
Residuals	84	14.05	0.17		

Table 11: ANOVA of Distraction by Treatment & Kind of question

3 Analysis of post-questionnaire

	question	median	p.value
1	Q1	2	0.00
2	Q2	1	0.00
3	Q3	1	0.01
4	Q4	1	0.00
5	Q5	0	0.12
6	Q6	1	0.17

Table 12: Analysis of post quest Q1-Q6. Mann-Whitney test for the null hypothesis $median(Qx) <= 0$