Background on example

Center points added to check non-linearity relationship

Design Summary

Factors:	5	Base Design:	5, 8	Resolution:	III
Runs:	11	Replicates:	1	Fraction:	1/4
Blocks:	1	Center pts (total):	3		

- Three center points

Comparing outputs

Between JASP and another statistical software

Coded Coefficients

Term	Effect	Coef	SE Coef	T-Value	P-Value	VIF
Constant		189.480	0.347	546.04	0.000	
ReleaseAng	195.330	97.665	0.347	281.45	0.000	1.00
FiringAng	17.160	8.580	0.347	24.73	0.002	1.00
Cup	145.930	72.965	0.347	210.27	0.000	1.00
Pin	163.520	81.760	0.347	235.62	0.000	1.00
Bungee	138.260	69.130	0.347	199.22	0.000	1.00
FiringAng*Cup	48.210	24.105	0.347	69.47	0.000	1.00
FiringAng*Bungee	59.090	29.545	0.347	85.14	0.000	1.00
Ct Pt		51.640	0.664	77.72	0.000	1.00

Coded Coefficients ▼

Alias	Term	Effect	Coefficient	Standard error	t	p	VIF
(Intercept)	(Intercept)		203.6	13.28	15.33	< .001	
A	releaseAng	195.3	97.66	15.57	6.272	.008	1.000
B	firingAng	17.16	8.580	15.57	0.551	.620	1.000
C	cup	145.9	72.96	15.57	4.685	.018	1.000
D	pin	163.5	81.76	15.57	5.250	.013	1.000
E	bungee	138.3	69.13	15.57	4.439	.021	1.000
BC	firingAng∗cup	48.21	24.11	15.57	1.548	.219	1.000
BE	firingAng∗bungee	59.09	29.54	15.57	1.897	.154	1.000

Pure error from center points

Output from a statistical software "A"

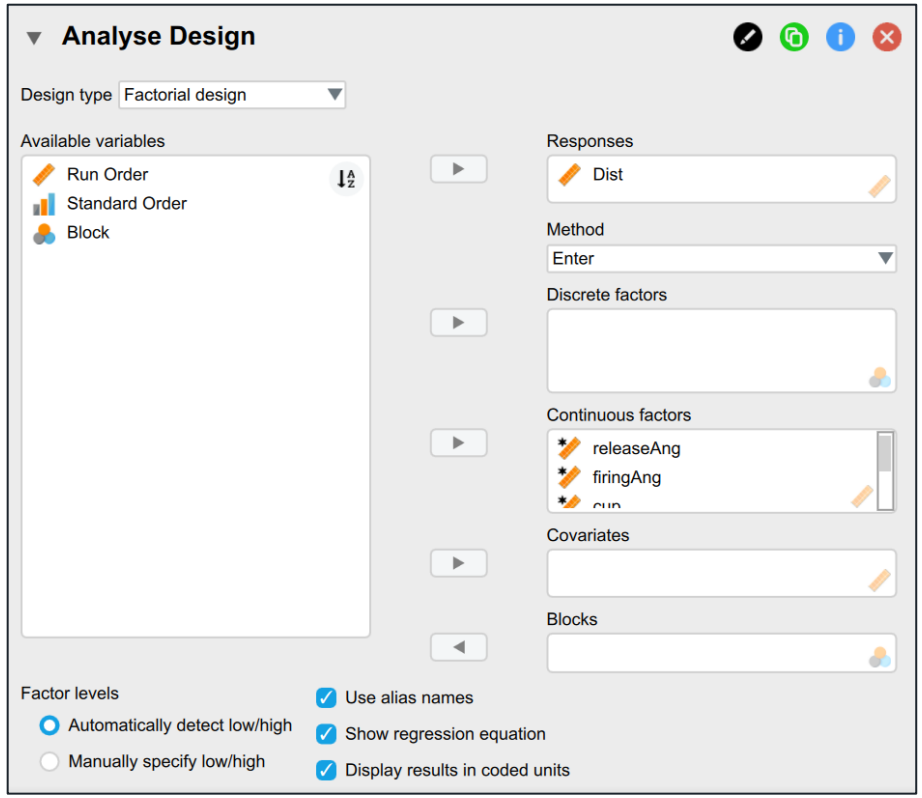
- Provides p-value on the effect for the group of center points as well
- **Center point group is significant** implies non linearity
- **Can proceed to add axial points to convert to RSM** design

Output from JASP ver 0.96

- Provides p-value on the effect from the factors, **except the group of center points**
- **No info if non linearity exists** and if I should convert design to RSM.

How the data was analyse and how the data looks like

Without manually added “block” column



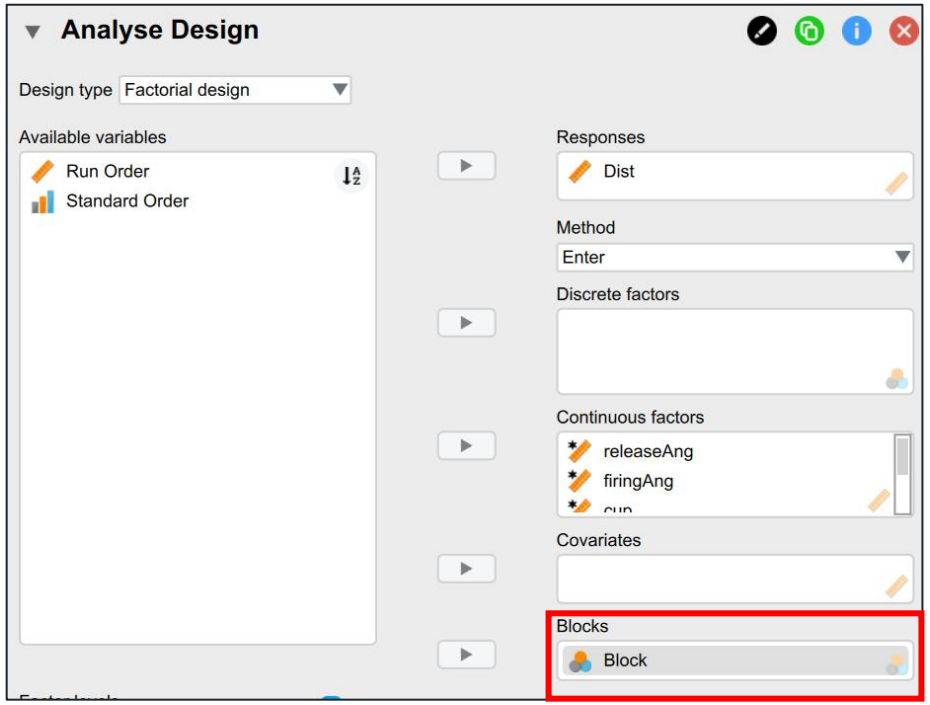
Run Order	Standard Order	releaseAng	firingAng	cup	pin	bungee	Dist	Block
1	1	162.5	115	250	150	150	242.16	0
6	1	162.5	115	250	150	150	240.99	0
11	1	162.5	115	250	150	150	240.21	0
8	2	140	100	200	200	200	155.72	1
2	3	185	100	200	100	100	108.36	1
10	4	140	130	200	100	200	20.24	1
3	5	185	130	200	200	100	181.74	1
5	6	140	100	300	200	100	174.27	1
4	7	185	100	300	100	200	285.25	1
9	8	140	130	300	100	100	17.03	1
7	9	185	130	300	200	200	573.23	1

Had manually key in the parameters, **not auto generated by JASP**

Manually added column (not generated by JASP) in attempt to differentiate center points (as a block) from the rest

How the data was analyse and how the data looks like

With manually added "block" column – manage to call out if center points are significant or not significant



Coded Coefficients

Alias	Term	Effect	Coefficient	Standard error	t	p	VIF
(Intercept)	(Intercept)		215.3	0.332	648.0	< .001	
A	releaseAng	195.3	97.66	0.347	281.5	< .001	1.000
B	firingAng	17.16	8.580	0.347	24.73	.002	1.000
C	cup	145.9	72.96	0.347	210.3	< .001	1.000
D	pin	163.5	81.76	0.347	235.6	< .001	1.000
E	bungee	138.3	69.13	0.347	199.2	< .001	1.000
BLK1	Block1		25.82	0.332	77.72	< .001	1.000
BC	firingAng*cup	48.21	24.11	0.347	69.47	< .001	1.000
BE	firingAng*bungee	59.09	29.54	0.347	85.14	< .001	1.000

Suppose to be center points & it is significant