Oneway

Notes

Output Created		28-FEB-2022 20:49:20
Comments		
Input	Data	/Users/benjamin/Deskto p/AP Research/21-22- PAS-AP- Research/Experiment 1/E1-Raw/E1-EA.csv
	Active Dataset	DataSet1
	Filter	<none></none>
	Weight	<none></none>
	Split File	<none></none>
	N of Rows in Working Data File	50
Missing Value Handling	Definition of Missing	User-defined missing values are treated as missing.
	Cases Used	Statistics for each analysis are based on cases with no missing data for any variable in the analysis.
Syntax		ONEWAY Difference BY Temperature /ES=OVERALL /STATISTICS HOMOGENEITY /MISSING ANALYSIS /CRITERIA=CILEVEL (0.95) /POSTHOC=TUKEY ALPHA(0.05).
Resources	Processor Time	00:00:00.06
	Elapsed Time	00:00:00.00

[DataSet1]

Tests of Homogeneity of Variances

		Levene Statistic	df1	df2	Sig.
Difference	Based on Mean	2.770	9	40	.013
	Based on Median	.826	9	40	.596
	Based on Median and with adjusted df	.826	9	6.969	.615
	Based on trimmed mean	2.147	9	40	.048

ANOVA

Difference

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	.642	9	.071	105452.154	<.001
Within Groups	.000	40	.000		
Total	.642	49			

ANOVA Effect Sizes^a

			95% Confid	ence Interval
		Point Estimate	Lower	Upper
Difference	Eta-squared	1.000	1.000	1.000
	Epsilon-squared	1.000	1.000	1.000
	Omega-squared Fixed- effect	1.000	1.000	1.000
	Omega-squared Random-effect	1.000	.999	1.000

a. Eta-squared and Epsilon-squared are estimated based on the fixed-effect model.

Post Hoc Tests

Multiple Comparisons

Dependent Variable: Difference

Tukey HSD

·		Maaa			95%
(I) Temperature	(J) Temperature	Mean Difference (I-J)	Std. Error	Sig.	Lower Bound
5	10	0178400 [*]	.0005201	<.001	019581
	15	0420600*	.0005201	<.001	043801
	20	0799800*	.0005201	<.001	081721
	25	1620400 [*]	.0005201	<.001	163781
	30	2550200 [*]	.0005201	<.001	256761
	35	2656200 [*]	.0005201	<.001	267361
	40	2703400 [*]	.0005201	<.001	272081
	45	2819200 [*]	.0005201	<.001	283661
	50	2838800 [*]	.0005201	<.001	285621
10	5	.0178400*	.0005201	<.001	.016099
	15	0242200*	.0005201	<.001	025961
	20	0621400*	.0005201	<.001	063881
	25	1442000 [*]	.0005201	<.001	145941
	30	2371800 [*]	.0005201	<.001	238921
	35	2477800 [*]	.0005201	<.001	249521

Dependent Variable: Difference

Tukey HSD

95% ...

(I) Temperature	(J) Temperature	Upper Bound
5	10	016099
	15	040319
	20	078239
	25	160299
	30	253279
	35	263879
	40	268599
	45	280179
	50	282139
10	5	.019581
	15	022479
	20	060399
	25	142459
	30	235439
	35	246039

Dependent Variable: Difference

Tukey HSD

Tukey HSD					95%
(I) Temperature	(J) Temperature	Mean Difference (I-J)	Std. Error	Sig.	Lower Bound
	40	2525000 [*]	.0005201	<.001	254241
	45	2640800 *	.0005201	<.001	265821
	50	2660400 *	.0005201	<.001	267781
15	5	.0420600*	.0005201	<.001	.040319
	10	.0242200*	.0005201	<.001	.022479
	20	0379200 *	.0005201	<.001	039661
	25	1199800 [*]	.0005201	<.001	121721
	30	2129600 [*]	.0005201	<.001	214701
	35	2235600 [*]	.0005201	<.001	225301
	40	2282800 [*]	.0005201	<.001	230021
	45	2398600 [*]	.0005201	<.001	241601
	50	2418200 [*]	.0005201	<.001	243561
20	5	.0799800*	.0005201	<.001	.078239
	10	.0621400*	.0005201	<.001	.060399
	15	.0379200*	.0005201	<.001	.036179
	25	0820600 [*]	.0005201	<.001	083801
	30	1750400 [*]	.0005201	<.001	176781
	35	1856400 [*]	.0005201	<.001	187381
	40	1903600 [*]	.0005201	<.001	192101
	45	2019400 [*]	.0005201	<.001	203681
	50	2039000 [*]	.0005201	<.001	205641
25	5	.1620400 *	.0005201	<.001	.160299
	10	.1442000*	.0005201	<.001	.142459
	15	.1199800 *	.0005201	<.001	.118239
	20	.0820600*	.0005201	<.001	.080319
	30	0929800 [*]	.0005201	<.001	094721
	35	1035800 [*]	.0005201	<.001	105321
	40	1083000 [*]	.0005201	<.001	110041
	45	1198800 [*]	.0005201	<.001	121621
	50	1218400 [*]	.0005201	<.001	123581
30	5	.2550200*	.0005201	<.001	.253279
	10	.2371800 *	.0005201	<.001	.235439
	15	.2129600*	.0005201	<.001	.211219
	20	.1750400 *	.0005201	<.001	.173299

Dependent Variable: Difference

Tukey HSD

95% ...

40	(I) Temperature	(J) Temperature	Upper Bound
50 264299 15 5 .043801 10 .025961 20 036179 25 118239 30 211219 35 221819 40 226539 45 238119 50 240079 20 5 .081721 10 .063881 15 .039661 25 080319 30 173299 35 183899 40 188619 45 200199 50 202159 25 5 .163781 10 .145941 15 .121721 20 .083801 30 091239 35 101839 40 106559 45 118139 50 120099 30 5 .256761 10 .238921 15 .214701		40	250759
15 5 .043801 10 .025961 20 036179 25 118239 30 211219 35 221819 40 226539 45 238119 50 240079 20 5 .081721 10 .063881 15 .039661 25 080319 30 173299 35 183899 40 188619 45 200199 50 202159 25 5 .163781 10 .145941 15 .121721 20 .083801 30 091239 35 101839 40 106559 45 118139 50 120099 30 5 .256761 10 .238921 15 .214701		45	262339
10		50	264299
20036179 25118239 30211219 35221819 40226539 45238119 50240079 20 5 .081721 10 .063881 15 .039661 25080319 30173299 35183899 40188619 45200199 50202159 25 5 .163781 10 .145941 15 .121721 20 .083801 30091239 35101839 40106559 45118139 50120099 30 5 .256761 10 .238921 15 .214701	15	5	.043801
25118239 30211219 35221819 40226539 45238119 50240079 20 5 .081721 10 .063881 15 .039661 25080319 30173299 35183899 40188619 45200199 50202159 25 5 .163781 10 .145941 15 .121721 20 .083801 30091239 35101839 40106559 45118139 50120099 30 5 .256761 10 .238921 15 .214701		10	.025961
30 211219 35 221819 40 226539 45 238119 50 240079 20 5 .081721 10 .063881 15 .039661 25 080319 30 173299 35 183899 40 188619 45 200199 50 202159 25 5 10 .145941 15 .121721 20 .083801 30 091239 35 101839 40 106559 45 118139 50 120099 30 5 256761 10 15 .214701		20	036179
35221819 40226539 45238119 50240079 20 5 .081721 10 .063881 15 .039661 25080319 30173299 35183899 40188619 45200199 50202159 25 5 .163781 10 .145941 15 .121721 20 .083801 30091239 35101839 40106559 45118139 50120099 30 5 .256761 10 .238921 15 .214701		25	118239
40 226539 45 238119 50 240079 20 5 .081721 10 .063881 15 .039661 25 080319 30 173299 35 183899 40 188619 45 200199 50 202159 25 5 .163781 10 .145941 15 .121721 20 .083801 30 091239 35 101839 40 106559 45 118139 50 120099 30 5 .256761 10 .238921 15 .214701		30	211219
45 238119 50 240079 20 5 .081721 10 .063881 15 .039661 25 080319 30 173299 35 183899 40 188619 45 200199 50 202159 25 5 10 .145941 15 .121721 20 .083801 30 091239 35 101839 40 106559 45 118139 50 120099 30 5 .256761 10 .238921 15 .214701		35	221819
50 240079 20 5 .081721 10 .063881 15 .039661 25 080319 30 173299 35 183899 40 188619 45 200199 50 202159 25 5 .163781 10 .145941 15 .121721 20 .083801 30 091239 35 101839 40 106559 45 118139 50 120099 30 5 .256761 10 .238921 15 .214701		40	226539
5 .081721 10 .063881 15 .039661 25 080319 30 173299 35 183899 40 188619 45 200199 50 202159 25 5 10 .145941 15 .121721 20 .083801 30 091239 35 101839 40 106559 45 118139 50 120099 30 5 256761 .238921 15 .214701		45	238119
10 .063881 15 .039661 25 080319 30 173299 35 183899 40 188619 45 200199 50 202159 25 5 10 .145941 15 .121721 20 .083801 30 091239 35 101839 40 106559 45 118139 50 120099 30 5 .256761 .238921 15 .214701		50	240079
15 .039661 25 080319 30 173299 35 183899 40 188619 45 200199 50 202159 25 5 10 .145941 15 .121721 20 .083801 30 091239 35 101839 40 106559 45 118139 50 120099 30 5 .256761 .238921 15 .214701	20	5	.081721
25080319 30173299 35183899 40188619 45200199 50202159 25 5 .163781 10 .145941 15 .121721 20 .083801 30091239 35101839 40106559 45118139 50120099 30 5 .256761 10 .238921 15 .214701		10	.063881
30173299 35183899 40188619 45200199 50202159 25 5 .163781 10 .145941 15 .121721 20 .083801 30091239 35101839 40106559 45118139 50120099 30 5 .256761 10 .238921 15 .214701		15	.039661
35183899 40188619 45200199 50202159 25 5 .163781 10 .145941 15 .121721 20 .083801 30091239 35101839 40106559 45118139 50120099 30 5 .256761 10 .238921 15 .214701		25	080319
40188619 45200199 50202159 25 5 .163781 10 .145941 15 .121721 20 .083801 30091239 35101839 40106559 45118139 50120099 30 5 .256761 10 .238921 15 .214701		30	173299
45200199 50202159 25 5 .163781 10 .145941 15 .121721 20 .083801 30091239 35101839 40106559 45118139 50120099 30 5 .256761 10 .238921 15 .214701		35	183899
50202159 25 5 .163781 10 .145941 15 .121721 20 .083801 30091239 35101839 40106559 45118139 50120099 30 5 .256761 10 .238921 15 .214701		40	188619
5 .163781 10 .145941 15 .121721 20 .083801 30 091239 35 101839 40 106559 45 118139 50 120099 30 5 .256761 10 .238921 15 .214701		45	200199
10 .145941 15 .121721 20 .083801 30091239 35101839 40106559 45118139 50120099 30 5 .256761 10 .238921 15 .214701		50	202159
15 .121721 20 .083801 30091239 35101839 40106559 45118139 50120099 30 5 .256761 10 .238921 15 .214701	25	5	.163781
20 .083801 30091239 35101839 40106559 45118139 50120099 30 5 .256761 10 .238921 15 .214701		10	.145941
30091239 35101839 40106559 45118139 50120099 30 5 .256761 10 .238921 15 .214701		15	.121721
35101839 40106559 45118139 50120099 30 5 .256761 10 .238921 15 .214701		20	.083801
40 106559 45 118139 50 120099 30 5 .256761 10 .238921 15 .214701		30	091239
45 118139 50 120099 30 5 .256761 10 .238921 15 .214701		35	101839
50 120099 30 5 .256761 10 .238921 15 .214701		40	106559
30 5 .256761 10 .238921 15 .214701		45	118139
10 .238921 15 .214701		50	120099
15 .214701	30	5	.256761
		10	.238921
20 .176781		15	.214701
		20	.176781

Dependent Variable: Difference

Tukey HSD

Tukey HSD					95%
<i></i>	, n =	Mean	0.1.5	0:	
(I) Temperature	(J) Temperature	Difference (I-J)	Std. Error	Sig.	Lower Bound
	25	.0929800	.0005201	<.001	.091239
	35	0106000	.0005201	<.001	012341
	40	0153200	.0005201	<.001	017061
	45	0269000	.0005201	<.001	028641
	50	0288600	.0005201	<.001	030601
35	5	.2656200	.0005201	<.001	.263879
	10	.2477800	.0005201	<.001	.246039
	15	.2235600	.0005201	<.001	.221819
	20	.1856400	.0005201	<.001	.183899
	25	.1035800	.0005201	<.001	.101839
	30	.0106000	.0005201	<.001	.008859
	40	0047200	.0005201	<.001	006461
	45	0163000*	.0005201	<.001	018041
	50	0182600 [*]	.0005201	<.001	020001
40	5	.2703400*	.0005201	<.001	.268599
	10	.2525000*	.0005201	<.001	.250759
	15	.2282800*	.0005201	<.001	.226539
	20	.1903600*	.0005201	<.001	.188619
	25	.1083000*	.0005201	<.001	.106559
	30	.0153200 *	.0005201	<.001	.013579
	35	.0047200*	.0005201	<.001	.002979
	45	0115800 [*]	.0005201	<.001	013321
	50	0135400 [*]	.0005201	<.001	015281
45	5	.2819200 *	.0005201	<.001	.280179
	10	.2640800*	.0005201	<.001	.262339
	15	.2398600*	.0005201	<.001	.238119
	20	.2019400*	.0005201	<.001	.200199
	25	.1198800 *	.0005201	<.001	.118139
	30	.0269000*	.0005201	<.001	.025159
	35	.0163000*	.0005201	<.001	.014559
	40	.0115800*	.0005201	<.001	.009839
	50	0019600 [*]	.0005201	.017	003701
50	5	.2838800*	.0005201	<.001	.282139
	10	.2660400*	.0005201	<.001	.264299

Dependent Variable: Difference

Tukey HSD

95% ...

25	(I) Temperature	(J) Temperature	Upper Bound
40 013579 45 025159 50 027119 35 5 .267361 10 .249521 .15 .225301 20 .187381 .25 .105321 30 .012341 .40 002979 45 014559 .50 016519 40 5 .272081 10 .254241 .15 .230021 20 .192101 .25 .110041 30 .017061 .35 .006461 45 009839 .50 011799 45 5 .283661 .265821 15 .241601 .20 .203681 25 .121621 .30 .028641 35 .018041 .40 .013321 50 5 .285621		25	.094721
45 025159 50 027119 35 5 .267361 10 .249521 .15 .225301 20 .187381 .25 .105321 30 .012341 .002979 45 014559 .50 016519 40 5 .272081 10 .254241 .230021 .20 .192101 25 .110041 .30 .017061 .35 .006461 .45 009839 50 011799 45 5 .283661 .265821 .241601 .20 .203681 .25 .121621 .30 .028641 .35 .018041 .40 .013321 .50 000219 .50 .285621 .		35	008859
50 027119 35 5 .267361 10 .249521 15 .225301 20 .187381 25 .105321 30 .012341 40 002979 45 014559 50 016519 40 5 .272081 10 .254241 15 .230021 20 .192101 25 .110041 30 .017061 35 .006461 45 009839 50 011799 45 5 .283661 10 .265821 15 .241601 20 .203681 25 .121621 30 .028641 35 .018041 40 .013321 50 000219 50 5 .285621		40	013579
35 5 .267361 10 .249521 15 .225301 20 .187381 25 .105321 30 .012341 40 002979 45 014559 50 016519 40 5 .272081 10 .254241 15 .230021 20 .192101 25 .110041 30 .017061 35 .006461 45 009839 50 011799 45 .283661 10 .265821 15 .241601 20 .203681 25 .121621 30 .028641 35 .018041 40 .013321 50 000219 50 5 .285621		45	025159
10 .249521 15 .225301 20 .187381 25 .105321 30 .012341 40002979 45014559 50016519 40 5 .272081 10 .254241 15 .230021 20 .192101 25 .110041 30 .017061 35 .006461 45009839 50011799 45 5 .283661 10 .265821 15 .241601 20 .203681 25 .121621 30 .028641 35 .018041 40 .013321 50000219		50	027119
15	35	5	.267361
20		10	.249521
25 .105321 30 .012341 40002979 45014559 50016519 40 5 .272081 10 .254241 15 .230021 20 .192101 25 .110041 30 .017061 35 .006461 45009839 50011799 45 5 .283661 10 .265821 15 .241601 20 .203681 25 .121621 30 .028641 35 .018041 40 .013321 50000219		15	.225301
30 .012341 40 002979 45 014559 50 016519 40 5 .272081 10 .254241 15 .230021 20 .192101 25 .110041 30 .017061 35 .006461 45 009839 50 011799 45 5 283661 .265821 15 .241601 20 .203681 25 .121621 30 .028641 35 .018041 40 .013321 50 000219 50 5		20	.187381
40 002979 45 014559 50 016519 40 5 .272081 10 .254241 15 .230021 20 .192101 25 .110041 30 .017061 35 .006461 45 009839 50 011799 45 5 283661 .283661 10 .265821 15 .241601 20 .203681 25 .121621 30 .028641 35 .018041 40 .013321 50 000219 50 5		25	.105321
45 014559 50 016519 40 5 .272081 10 .254241 15 .230021 20 .192101 25 .110041 30 .017061 35 .006461 45 009839 50 011799 45 5 283661 .265821 15 .241601 20 .203681 25 .121621 30 .028641 35 .018041 40 .013321 50 000219 50 5 .285621		30	.012341
50 016519 40 5 .272081 10 .254241 .230021 20 .192101 .25 25 .110041 .30 .017061 35 .006461 .009839 50 011799 45 5 .283661 10 .265821 15 .241601 20 .203681 25 .121621 30 .028641 35 .018041 40 .013321 50 000219 50 5 .285621		40	002979
40 5 .272081 10 .254241 15 .230021 20 .192101 25 .110041 30 .017061 35 .006461 45 009839 50 011799 45 5 10 .265821 15 .241601 20 .203681 25 .121621 30 .028641 35 .018041 40 .013321 50 000219 50 5		45	014559
10 .254241 15 .230021 20 .192101 25 .110041 30 .017061 35 .006461 45009839 50011799 45 5 .283661 10 .265821 15 .241601 20 .203681 25 .121621 30 .028641 35 .018041 40 .013321 50000219		50	016519
15 .230021 20 .192101 25 .110041 30 .017061 35 .006461 45009839 50011799 45 5 .283661 10 .265821 15 .241601 20 .203681 25 .121621 30 .028641 35 .018041 40 .013321 50000219 50 5 .285621	40	5	.272081
20 .192101 25 .110041 30 .017061 35 .006461 45009839 50011799 45 5 .283661 10 .265821 15 .241601 20 .203681 25 .121621 30 .028641 35 .018041 40 .013321 50000219		10	.254241
25110041 30017061 35006461 45009839 50011799 45 5283661 10265821 15241601 20203681 25121621 30028641 35018041 40013321 50000219		15	.230021
30 .017061 35 .006461 45009839 50011799 45 5 .283661 10 .265821 15 .241601 20 .203681 25 .121621 30 .028641 35 .018041 40 .013321 50000219		20	.192101
35 .006461 45009839 50011799 45 5 .283661 10 .265821 15 .241601 20 .203681 25 .121621 30 .028641 35 .018041 40 .013321 50000219 50 5 .285621		25	.110041
45009839 50011799 45 5 .283661 10 .265821 15 .241601 20 .203681 25 .121621 30 .028641 35 .018041 40 .013321 50000219 50 5 .285621		30	.017061
50 011799 45 5 .283661 10 .265821 15 .241601 20 .203681 25 .121621 30 .028641 35 .018041 40 .013321 50 000219 50 5 .285621		35	.006461
45 5 .283661 10 .265821 15 .241601 20 .203681 25 .121621 30 .028641 35 .018041 40 .013321 50 000219 50 5 .285621		45	009839
10 .265821 15 .241601 20 .203681 25 .121621 30 .028641 35 .018041 40 .013321 50 000219 50 5 .285621		50	011799
15 .241601 20 .203681 25 .121621 30 .028641 35 .018041 40 .013321 50000219 50 5 .285621	45	5	.283661
20 .203681 25 .121621 30 .028641 35 .018041 40 .013321 50 000219 50 5 .285621		10	.265821
25 .121621 30 .028641 35 .018041 40 .013321 50000219 50 5 .285621		15	.241601
30 .028641 35 .018041 40 .013321 50 000219 50 5 .285621		20	.203681
35 .018041 40 .013321 50 000219 50 5 .285621		25	.121621
40 .013321 50 000219 50 5 .285621		30	.028641
50 000219 50 5 .285621		35	.018041
50 000219 50 5 .285621		40	.013321
		50	
10 .267781	50	5	.285621
		10	.267781

Dependent Variable: Difference

Tukey HSD

					95%
		Mean			
(I) Temperature	(J) Temperature	Difference (I-J)	Std. Error	Sig.	Lower Bound
	15	.2418200 *	.0005201	<.001	.240079
	20	.2039000*	.0005201	<.001	.202159
	25	.1218400 *	.0005201	<.001	.120099
	30	.0288600*	.0005201	<.001	.027119
	35	.0182600*	.0005201	<.001	.016519
	40	.0135400 *	.0005201	<.001	.011799
	45	.0019600*	.0005201	.017	.000219

Multiple Comparisons

Dependent Variable: Difference

Tukey HSD

95% ...

(I) Temperature	(J) Temperature	Upper Bound
	15	.243561
	20	.205641
	25	.123581
	30	.030601
	35	.020001
	40	.015281
	45	.003701

 $^{^{\}star}.$ The mean difference is significant at the 0.05 level.

Homogeneous Subsets

Difference

Tukey HSD^a

		Subset for alpha = 0.05						
Temperature	N	1	2	3	4	5	6	
5	5	293660						
10	5		275820					
15	5			251600				
20	5				213680			
25	5					131620		
30	5						038640	
35	5							
40	5							
45	5							
50	5							
Sig.		1.000	1.000	1.000	1.000	1.000	1.000	

Difference

Tukey HSD^a

	Subset for alpha = 0.05							
Temperature	7	8	9	10				
5								
10								
15								
20								
25								
30								
35	028040							
40		023320						
45			011740					
50				009780				
Sig.	1.000	1.000	1.000	1.000				

Means for groups in homogeneous subsets are displayed.

a. Uses Harmonic Mean Sample Size = 5.000.