

Oneway Experince programming

Notes

Output Created		20-DEC-2022 03:16:24
Comments		
Input	Data	C:\Users\walee\OneDrive\Desktop\analysis\Results of All Data\AllDataAfterAlteringOutliersFull.sav
	Active Dataset	DataSet2
	Filter	<none>
	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	112
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 GrdaesWithoutTypeHints GrdaesWithTypeHints BY ExperinceLevelProgrammin g /ES=OVERALL /STATISTICS DESCRIPTIVES /MISSING ANALYSIS /CRITERIA=CILEVEL (0.95).
Resources	Processor Time	00:00:00.00
	Elapsed Time	00:00:00.03

Descriptives

		N	Mean	Std. Deviation	Std. Error
Grdaes Without Type Hints	Beginner	6	1.33	1.033	.422
	Intermediate	44	4.23	3.326	.501
	Advanced	52	5.31	3.858	.535
	Proficent	10	6.90	3.315	1.048
	Total	112	4.81	3.655	.345
Grdaes With Type Hints	Beginner	6	1.67	1.506	.615
	Intermediate	44	4.68	4.102	.618
	Advanced	52	7.12	5.301	.735
	Proficent	10	9.20	5.432	1.718
	Total	112	6.05	5.013	.474

Descriptives

		95% Confidence Interval for Mean		Minimum	Maximum
		Lower Bound	Upper Bound		
Grdaes Without Type Hints	Beginner	.25	2.42	0	3
	Intermediate	3.22	5.24	0	12
	Advanced	4.23	6.38	0	13
	Proficent	4.53	9.27	3	13
	Total	4.13	5.50	0	13
Grdaes With Type Hints	Beginner	.09	3.25	0	4
	Intermediate	3.43	5.93	0	14
	Advanced	5.64	8.59	0	18
	Proficent	5.31	13.09	1	16
	Total	5.11	6.99	0	18

ANOVA

		Sum of Squares	df	Mean Square	F
Grdaes Without Type Hints	Between Groups	144.025	3	48.008	3.872
	Within Groups	1339.038	108	12.398	
	Total	1483.063	111		
Grdaes With Type Hints	Between Groups	355.892	3	118.631	5.264
	Within Groups	2433.786	108	22.535	
	Total	2789.679	111		

ANOVA

		Sig.
Grdaes Without Type Hints	Between Groups	.011
	Within Groups	
	Total	
Grdaes With Type Hints	Between Groups	.002
	Within Groups	
	Total	

ANOVA Effect Sizes^{a,b}

		Point Estimate	95% Confidence Interval	
			Lower	Upper
Grdaes Without Type Hints	Eta-squared	.097	.006	.193
	Epsilon-squared	.072	-.022	.171
	Omega-squared Fixed-effect	.071	-.022	.169
	Omega-squared Random-effect	.025	-.007	.064
Grdaes With Type Hints	Eta-squared	.128	.020	.230
	Epsilon-squared	.103	-.007	.209
	Omega-squared Fixed-effect	.103	-.007	.207
	Omega-squared Random-effect	.037	-.002	.080

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

b. Negative but less biased estimates are retained, not rounded to zero.

Oneway Experince Year

Notes

Output Created		20-DEC-2022 03:17:53
Comments		
Input	Data	C:\Users\walee\OneDrive\Desktop\analysis\Results of All Data\AllDataAfterAlteringOutliersFull.sav
	Active Dataset	DataSet2
	Filter	<none>
	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	112
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 GrdaesWithoutTypeHints GrdaesWithTypeHints BY ExperinceLevelProgrammin gYear /ES=OVERALL /STATISTICS DESCRIPTIVES /MISSING ANALYSIS /CRITERIA=CILEVEL (0.95).
Resources	Processor Time	00:00:00.03
	Elapsed Time	00:00:00.08

Descriptives

		N	Mean	Std. Deviation	Std. Error
Grdaes Without Type Hints	1 to 2 years	70	4.13	3.392	.405
	2 to 4 years	33	5.61	3.913	.681
	4 to 6 years	6	8.00	4.000	1.633
	6 to 10 years	3	5.67	1.155	.667
	Total	112	4.81	3.655	.345
Grdaes With Type Hints	1 to 2 years	70	4.99	4.680	.559
	2 to 4 years	33	7.21	4.967	.865
	4 to 6 years	6	10.67	4.131	1.687
	6 to 10 years	3	9.00	7.937	4.583
	Total	112	6.05	5.013	.474

Descriptives

		95% Confidence Interval for Mean		Minimum	Maximum
		Lower Bound	Upper Bound		
Grdaes Without Type Hints	1 to 2 years	3.32	4.94	0	13
	2 to 4 years	4.22	6.99	0	13
	4 to 6 years	3.80	12.20	4	13
	6 to 10 years	2.80	8.54	5	7
	Total	4.13	5.50	0	13
Grdaes With Type Hints	1 to 2 years	3.87	6.10	0	16
	2 to 4 years	5.45	8.97	1	18
	4 to 6 years	6.33	15.00	5	16
	6 to 10 years	-10.72	28.72	0	15
	Total	5.11	6.99	0	18

ANOVA

		Sum of Squares	df	Mean Square	F
Grdaes Without Type Hints	Between Groups	116.674	3	38.891	3.074
	Within Groups	1366.388	108	12.652	
	Total	1483.063	111		
Grdaes With Type Hints	Between Groups	277.844	3	92.615	3.982
	Within Groups	2511.834	108	23.258	
	Total	2789.679	111		

ANOVA

		Sig.
Grdaes Without Type Hints	Between Groups	.031
	Within Groups	
	Total	
Grdaes With Type Hints	Between Groups	.010
	Within Groups	
	Total	

ANOVA Effect Sizes^{a,b}

		Point Estimate	95% Confidence Interval	
			Lower	Upper
Grdaes Without Type Hints	Eta-squared	.079	.000	.169
	Epsilon-squared	.053	-.028	.146
	Omega-squared Fixed-effect	.053	-.028	.145
	Omega-squared Random-effect	.018	-.009	.053
Grdaes With Type Hints	Eta-squared	.100	.007	.196
	Epsilon-squared	.075	-.021	.174
	Omega-squared Fixed-effect	.074	-.021	.173
	Omega-squared Random-effect	.026	-.007	.065

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

b. Negative but less biased estimates are retained, not rounded to zero.

Oneway Experince Software testing

Notes

Output Created		20-DEC-2022 03:20:24
Comments		
Input	Data	C:\Users\walee\OneDrive\Desktop\analysis\Results of All Data\AllDataAfterAlteringOutliersFull.sav
	Active Dataset	DataSet2
	Filter	<none>
	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	112
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 GrdaesWithoutTypeHints GrdaesWithTypeHints BY ExperinceST /ES=OVERALL /STATISTICS DESCRIPTIVES /MISSING ANALYSIS /CRITERIA=CILEVEL (0.95).
Resources	Processor Time	00:00:00.02
	Elapsed Time	00:00:00.05

Descriptives

		N	Mean	Std. Deviation	Std. Error
Grdaes Without Type Hints	Beginner	58	4.00	3.779	.496
	Intermediate	39	5.18	3.042	.487
	Advanced	13	7.46	3.865	1.072
	Proficient	2	4.00	1.414	1.000
	Total	112	4.81	3.655	.345
Grdaes With Type Hints	Beginner	58	5.17	4.838	.635
	Intermediate	39	6.05	4.850	.777
	Advanced	13	10.23	4.764	1.321
	Proficient	2	4.50	3.536	2.500
	Total	112	6.05	5.013	.474

Descriptives

		95% Confidence Interval for Mean		Minimum	Maximum
		Lower Bound	Upper Bound		
Grdaes Without Type Hints	Beginner	3.01	4.99	0	13
	Intermediate	4.19	6.17	0	12
	Advanced	5.13	9.80	2	13
	Proficient	-8.71	16.71	3	5
	Total	4.13	5.50	0	13
Grdaes With Type Hints	Beginner	3.90	6.44	0	16
	Intermediate	4.48	7.62	0	18
	Advanced	7.35	13.11	2	16
	Proficient	-27.27	36.27	2	7
	Total	5.11	6.99	0	18

ANOVA

		Sum of Squares	df	Mean Square	F
Grdaes Without Type Hints	Between Groups	136.088	3	45.363	3.637
	Within Groups	1346.974	108	12.472	
	Total	1483.062	111		
Grdaes With Type Hints	Between Groups	276.698	3	92.233	3.964
	Within Groups	2512.981	108	23.268	
	Total	2789.679	111		

ANOVA

		Sig.
Grdaes Without Type Hints	Between Groups	.015
	Within Groups	
	Total	
Grdaes With Type Hints	Between Groups	.010
	Within Groups	
	Total	

ANOVA Effect Sizes^{a,b}

		Point Estimate	95% Confidence Interval	
			Lower	Upper
Grdaes Without Type Hints	Eta-squared	.092	.003	.186
	Epsilon-squared	.067	-.024	.164
	Omega-squared Fixed-effect	.066	-.024	.162
	Omega-squared Random-effect	.023	-.008	.061
Grdaes With Type Hints	Eta-squared	.099	.007	.196
	Epsilon-squared	.074	-.021	.173
	Omega-squared Fixed-effect	.074	-.021	.172
	Omega-squared Random-effect	.026	-.007	.065

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

b. Negative but less biased estimates are retained, not rounded to zero.

Oneway Experince in Dynamicly-typed

Notes

Output Created		20-DEC-2022 03:21:07
Comments		
Input	Data	C:\Users\walee\OneDrive\Desktop\analysis\Results of All Data\AllDataAfterAlteringOutliersFull.sav
	Active Dataset	DataSet2
	Filter	<none>
	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	112
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 GrdaesWithoutTypeHints GrdaesWithTypeHints BY ExperinceDaynamic /ES=OVERALL /STATISTICS DESCRIPTIVES /MISSING ANALYSIS /CRITERIA=CILEVEL (0.95).
Resources	Processor Time	00:00:00.02
	Elapsed Time	00:00:00.12

Descriptives

		N	Mean	Std. Deviation	Std. Error
Grdaes Without Type Hints	Beginner	56	3.18	2.855	.381
	Intermediate	33	5.67	3.533	.615
	Advanced	18	7.72	3.594	.847
	Proficient	5	7.00	4.062	1.817
	Total	112	4.81	3.655	.345
Grdaes With Type Hints	Beginner	56	3.73	3.245	.434
	Intermediate	33	7.48	5.328	.927
	Advanced	18	9.67	5.412	1.276
	Proficient	5	9.60	5.857	2.619
	Total	112	6.05	5.013	.474

Descriptives

		95% Confidence Interval for Mean		Minimum	Maximum
		Lower Bound	Upper Bound		
Grdaes Without Type Hints	Beginner	2.41	3.94	0	10
	Intermediate	4.41	6.92	0	12
	Advanced	5.93	9.51	2	13
	Proficient	1.96	12.04	2	13
	Total	4.13	5.50	0	13
Grdaes With Type Hints	Beginner	2.86	4.60	0	12
	Intermediate	5.60	9.37	0	18
	Advanced	6.98	12.36	1	18
	Proficient	2.33	16.87	2	16
	Total	5.11	6.99	0	18

ANOVA

		Sum of Squares	df	Mean Square	F
Grdaes Without Type Hints	Between Groups	349.904	3	116.635	11.116
	Within Groups	1133.159	108	10.492	
	Total	1483.063	111		
Grdaes With Type Hints	Between Groups	667.254	3	222.418	11.318
	Within Groups	2122.425	108	19.652	
	Total	2789.679	111		

ANOVA

		Sig.
Grdaes Without Type Hints	Between Groups	<.001
	Within Groups	
	Total	
Grdaes With Type Hints	Between Groups	<.001
	Within Groups	
	Total	

ANOVA Effect Sizes^a

		Point Estimate	95% Confidence Interval	
			Lower	Upper
Grdaes Without Type Hints	Eta-squared	.236	.095	.347
	Epsilon-squared	.215	.070	.329
	Omega-squared Fixed-effect	.213	.069	.327
	Omega-squared Random-effect	.083	.024	.140
Grdaes With Type Hints	Eta-squared	.239	.098	.351
	Epsilon-squared	.218	.072	.333
	Omega-squared Fixed-effect	.217	.072	.331
	Omega-squared Random-effect	.084	.025	.141

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

Oneway Experince in Staticlly-typed

Notes

Output Created		20-DEC-2022 03:24:38
Comments		
Input	Data	C:\Users\walee\OneDrive\Desktop\analysis\Results of All Data\AllDataAfterAlteringOutliersFull.sav
	Active Dataset	DataSet2
	Filter	<none>
	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	112
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 GrdaesWithoutTypeHints GrdaesWithTypeHints BY ExperinceSTL /ES=OVERALL /STATISTICS DESCRIPTIVES /MISSING ANALYSIS /CRITERIA=CILEVEL (0.95).
Resources	Processor Time	00:00:00.02
	Elapsed Time	00:00:00.04

Descriptives

		N	Mean	Std. Deviation	Std. Error
Grdaes Without Type Hints	Beginner	8	4.75	3.655	1.292
	Intermediate	34	3.15	2.687	.461
	Advanced	46	5.43	4.042	.596
	Proficent	24	6.00	3.426	.699
	Total	112	4.81	3.655	.345
Grdaes With Type Hints	Beginner	8	4.75	4.027	1.424
	Intermediate	34	3.26	2.678	.459
	Advanced	46	7.50	5.537	.816
	Proficent	24	7.67	5.206	1.063
	Total	112	6.05	5.013	.474

Descriptives

		95% Confidence Interval for Mean		Minimum	Maximum
		Lower Bound	Upper Bound		
Grdaes Without Type Hints	Beginner	1.69	7.81	1	10
	Intermediate	2.21	4.08	0	9
	Advanced	4.23	6.64	0	13
	Proficent	4.55	7.45	0	12
	Total	4.13	5.50	0	13
Grdaes With Type Hints	Beginner	1.38	8.12	0	11
	Intermediate	2.33	4.20	0	11
	Advanced	5.86	9.14	0	16
	Proficent	5.47	9.86	0	18
	Total	5.11	6.99	0	18

ANOVA

		Sum of Squares	df	Mean Square	F
Grdaes Without Type Hints	Between Groups	145.993	3	48.664	3.931
	Within Groups	1337.069	108	12.380	
	Total	1483.063	111		
Grdaes With Type Hints	Between Groups	436.728	3	145.576	6.682
	Within Groups	2352.951	108	21.787	
	Total	2789.679	111		

ANOVA

		Sig.
Grdaes Without Type Hints	Between Groups	.010
	Within Groups	
	Total	
Grdaes With Type Hints	Between Groups	<.001
	Within Groups	
	Total	

ANOVA Effect Sizes^{a,b}

		Point Estimate	95% Confidence Interval	
			Lower	Upper
Grdaes Without Type Hints	Eta-squared	.098	.006	.195
	Epsilon-squared	.073	-.021	.172
	Omega-squared Fixed-effect	.073	-.021	.171
	Omega-squared Random-effect	.026	-.007	.064
Grdaes With Type Hints	Eta-squared	.157	.037	.264
	Epsilon-squared	.133	.011	.243
	Omega-squared Fixed-effect	.132	.011	.241
	Omega-squared Random-effect	.048	.004	.096

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

b. Negative but less biased estimates are retained, not rounded to zero.

Oneway Type hints Assists in detecting bugs

Notes

Output Created		20-DEC-2022 03:25:47
Comments		
Input	Data	C:\Users\walee\OneDrive\Desktop\analysis\Results of All Data\AllDataAfterAlteringOutliersFull.sav
	Active Dataset	DataSet2
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	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	112
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 GrdaesWithoutTypeHints GrdaesWithTypeHints BY TypeHintsAssists /ES=OVERALL /STATISTICS DESCRIPTIVES /MISSING ANALYSIS /CRITERIA=CILEVEL (0.95).
Resources	Processor Time	00:00:00.03
	Elapsed Time	00:00:00.04

Descriptives

		N	Mean	Std. Deviation	Std. Error
Grdaes Without Type Hints	Strongly Disagree	6	6.00	3.347	1.366
	Disagree	6	2.83	.983	.401
	Neutral	29	2.48	2.029	.377
	Agree	55	5.44	3.881	.523
	Strongly Agree	16	7.19	3.582	.895
	Total	112	4.81	3.655	.345
Grdaes With Type Hints	Strongly Disagree	6	6.83	6.911	2.822
	Disagree	6	4.50	4.764	1.945
	Neutral	29	2.62	1.935	.359
	Agree	55	7.07	4.811	.649
	Strongly Agree	16	9.06	5.893	1.473
	Total	112	6.05	5.013	.474

Descriptives

		95% Confidence Interval for Mean		Minimum	Maximum
		Lower Bound	Upper Bound		
Grdaes Without Type Hints	Strongly Disagree	2.49	9.51	2	12
	Disagree	1.80	3.87	2	4
	Neutral	1.71	3.25	0	6
	Agree	4.39	6.49	0	13
	Strongly Agree	5.28	9.10	0	12
	Total	4.13	5.50	0	13
Grdaes With Type Hints	Strongly Disagree	-.42	14.09	0	18
	Disagree	-.50	9.50	0	11
	Neutral	1.88	3.36	0	6
	Agree	5.77	8.37	1	18
	Strongly Agree	5.92	12.20	1	16
	Total	5.11	6.99	0	18

ANOVA

		Sum of Squares	df	Mean Square	F
Grdaes Without Type Hints	Between Groups	301.023	4	75.256	6.812
	Within Groups	1182.039	107	11.047	
	Total	1483.063	111		
Grdaes With Type Hints	Between Groups	561.871	4	140.468	6.747
	Within Groups	2227.808	107	20.821	
	Total	2789.679	111		

ANOVA

		Sig.
Grdaes Without Type Hints	Between Groups	<.001
	Within Groups	
	Total	
Grdaes With Type Hints	Between Groups	<.001
	Within Groups	
	Total	

ANOVA Effect Sizes^a

		Point Estimate	95% Confidence Interval	
			Lower	Upper
Grdaes Without Type Hints	Eta-squared	.203	.062	.307
	Epsilon-squared	.173	.027	.281
	Omega-squared Fixed-effect	.172	.027	.279
	Omega-squared Random-effect	.049	.007	.088
Grdaes With Type Hints	Eta-squared	.201	.061	.306
	Epsilon-squared	.172	.026	.280
	Omega-squared Fixed-effect	.170	.026	.278
	Omega-squared Random-effect	.049	.007	.088

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

Oneway Type hints affect in readiability

Notes

Output Created		20-DEC-2022 03:27:13
Comments		
Input	Data	C:\Users\walee\OneDrive\Desktop\analysis\Results of All Data\AllDataAfterAlteringOutliersFull.sav
	Active Dataset	DataSet2
	Filter	<none>
	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	112
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 GrdaesWithoutTypeHints GrdaesWithTypeHints BY TypeHintsReadability /ES=OVERALL /STATISTICS DESCRIPTIVES /MISSING ANALYSIS /CRITERIA=CILEVEL (0.95).
Resources	Processor Time	00:00:00.02
	Elapsed Time	00:00:00.02

Descriptives

		N	Mean	Std. Deviation	Std. Error
Grdaes Without Type Hints	Strongly Disagree	6	3.67	2.503	1.022
	Disagree	8	5.63	4.307	1.523
	Neutral	16	2.94	2.568	.642
	Agree	57	5.19	3.810	.505
	Strongly Agree	25	5.16	3.705	.741
	Total	112	4.81	3.655	.345
Grdaes With Type Hints	Strongly Disagree	6	5.17	3.869	1.579
	Disagree	8	7.75	6.042	2.136
	Neutral	16	2.50	1.633	.408
	Agree	57	6.11	5.013	.664
	Strongly Agree	25	7.88	5.395	1.079
	Total	112	6.05	5.013	.474

Descriptives

		95% Confidence Interval for Mean		Minimum	Maximum
		Lower Bound	Upper Bound		
Grdaes Without Type Hints	Strongly Disagree	1.04	6.29	0	7
	Disagree	2.02	9.23	1	12
	Neutral	1.57	4.31	0	8
	Agree	4.18	6.20	0	13
	Strongly Agree	3.63	6.69	0	13
	Total	4.13	5.50	0	13
Grdaes With Type Hints	Strongly Disagree	1.11	9.23	0	11
	Disagree	2.70	12.80	2	18
	Neutral	1.63	3.37	0	6
	Agree	4.78	7.44	0	16
	Strongly Agree	5.65	10.11	1	18
	Total	5.11	6.99	0	18

ANOVA

		Sum of Squares	df	Mean Square	F
Grdaes Without Type Hints	Between Groups	80.679	4	20.170	1.539
	Within Groups	1402.383	107	13.106	
	Total	1483.063	111		
Grdaes With Type Hints	Between Groups	313.337	4	78.334	3.385
	Within Groups	2476.342	107	23.143	
	Total	2789.679	111		

ANOVA

		Sig.
Grdaes Without Type Hints	Between Groups	.196
	Within Groups	
	Total	
Grdaes With Type Hints	Between Groups	.012
	Within Groups	
	Total	

ANOVA Effect Sizes^{a,b}

		Point Estimate	95% Confidence Interval	
			Lower	Upper
Grdaes Without Type Hints	Eta-squared	.054	.000	.124
	Epsilon-squared	.019	-.037	.091
	Omega-squared Fixed-effect	.019	-.037	.091
	Omega-squared Random-effect	.005	-.009	.024
Grdaes With Type Hints	Eta-squared	.112	.006	.204
	Epsilon-squared	.079	-.031	.174
	Omega-squared Fixed-effect	.078	-.031	.173
	Omega-squared Random-effect	.021	-.007	.050

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

b. Negative but less biased estimates are retained, not rounded to zero.

Oneway difficulty of the experiment

Notes

Output Created		20-DEC-2022 03:28:09
Comments		
Input	Data	C:\Users\walee\OneDrive\Desktop\analysis\Results of All Data\AllDataAfterAlteringOutliersFull.sav
	Active Dataset	DataSet2
	Filter	<none>
	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	112
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 GrdaesWithoutTypeHints GrdaesWithTypeHints BY DifficultyLevel /ES=OVERALL /STATISTICS DESCRIPTIVES /MISSING ANALYSIS /CRITERIA=CILEVEL (0.95).
Resources	Processor Time	00:00:00.03
	Elapsed Time	00:00:00.09

Descriptives

		N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean Lower Bound
Grdaes Without Type Hints	Very Easy	2	8.50	2.121	1.500	-10.56
	Easy	9	5.67	2.739	.913	3.56
	Moderate	78	5.29	3.804	.431	4.44
	Hard	21	2.43	2.501	.546	1.29
	Very Hard	2	3.50	2.121	1.500	-15.56
	Total	112	4.81	3.655	.345	4.13
Grdaes With Type Hints	Very Easy	2	11.00	.000	.000	11.00
	Easy	9	8.33	5.937	1.979	3.77
	Moderate	78	6.58	5.065	.573	5.44
	Hard	21	2.62	2.312	.505	1.57
	Very Hard	2	6.50	7.778	5.500	-63.38
	Total	112	6.05	5.013	.474	5.11

Descriptives

		95% Confidence Interval for Mean Upper Bound	Minimum	Maximum
Grdaes Without Type Hints	Very Easy	27.56	7	10
	Easy	7.77	2	10
	Moderate	6.15	0	13
	Hard	3.57	0	8
	Very Hard	22.56	2	5
	Total	5.50	0	13
Grdaes With Type Hints	Very Easy	11.00	11	11
	Easy	12.90	2	18
	Moderate	7.72	0	18
	Hard	3.67	0	8
	Very Hard	76.38	1	12
	Total	6.99	0	18

ANOVA

		Sum of Squares	df	Mean Square	F
Grdaes Without Type Hints	Between Groups	174.702	4	43.675	3.572
	Within Groups	1308.361	107	12.228	
	Total	1483.063	111		
Grdaes With Type Hints	Between Groups	365.188	4	91.297	4.029
	Within Groups	2424.491	107	22.659	
	Total	2789.679	111		

ANOVA

		Sig.
Grdaes Without Type Hints	Between Groups	.009
	Within Groups	
	Total	
Grdaes With Type Hints	Between Groups	.004
	Within Groups	
	Total	

ANOVA Effect Sizes^{a,b}

		Point Estimate	95% Confidence Interval	
			Lower	Upper
Grdaes Without Type Hints	Eta-squared	.118	.009	.211
	Epsilon-squared	.085	-.028	.181
	Omega-squared Fixed-effect	.084	-.028	.180
	Omega-squared Random-effect	.022	-.007	.052
Grdaes With Type Hints	Eta-squared	.131	.016	.227
	Epsilon-squared	.098	-.021	.198
	Omega-squared Fixed-effect	.098	-.021	.196
	Omega-squared Random-effect	.026	-.005	.058

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

b. Negative but less biased estimates are retained, not rounded to zero.

T-Test (Level of education)

Notes

Output Created		20-DEC-2022 18:50:20
Comments		
Input	Data	C:\Users\walee\OneDrive\Desktop\analysis\Results of All Data\AllDataAfterAlteringOutliersFull.sav
	Active Dataset	DataSet2
	Filter	<none>
	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	112
Missing Value Handling	Definition of Missing	User defined missing values are treated as missing.
	Cases Used	Statistics for each analysis are based on the cases with no missing or out-of-range data for any variable in the analysis.
Syntax		T-TEST GROUPS=EducationLevel (0 1) /MISSING=ANALYSIS /VARIABLES=GrdaesWithoutTypeHints GrdaesWithTypeHints /ES DISPLAY(TRUE) /CRITERIA=CI(.95).
Resources	Processor Time	00:00:00.00
	Elapsed Time	00:00:00.00

Group Statistics

	Education Level	N	Mean	Std. Deviation	Std. Error Mean
Grdaes Without Type Hints	Graduate	30	5.90	3.916	.715
	Undergraduate	82	4.41	3.496	.386
Grdaes With Type Hints	Graduate	30	7.73	5.527	1.009
	Undergraduate	82	5.44	4.699	.519

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means
		F	Sig.	t
Grdaes Without Type Hints	Equal variances assumed	.333	.565	1.928
	Equal variances not assumed			1.828
Grdaes With Type Hints	Equal variances assumed	2.600	.110	2.181
	Equal variances not assumed			2.022

Independent Samples Test

		t-test for Equality of Means		
		df	Significance	
			One-Sided p	Two-Sided p
Grdaes Without Type Hints	Equal variances assumed	110	.028	.056
	Equal variances not assumed	46.948	.037	.074
Grdaes With Type Hints	Equal variances assumed	110	.016	.031
	Equal variances not assumed	45.231	.025	.049

Independent Samples Test

		t-test for Equality of Means		
		Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference Lower
Grdaes Without Type Hints	Equal variances assumed	1.485	.771	-.042
	Equal variances not assumed	1.485	.813	-.149
Grdaes With Type Hints	Equal variances assumed	2.294	1.052	.209
	Equal variances not assumed	2.294	1.135	.009

Independent Samples Test

t-test for Equality
of Means

95% Confidence
Interval of the ...

Upper

Grdaes Without Type Hints	Equal variances assumed	3.012
	Equal variances not assumed	3.120
Grdaes With Type Hints	Equal variances assumed	4.379
	Equal variances not assumed	4.579

Independent Samples Effect Sizes

		Standardizer ^a	Point Estimate	95% Confidence Interval	
				Lower	Upper
Grdaes Without Type Hints	Cohen's d	3.611	.411	-.011	.832
	Hedges' correction	3.636	.408	-.011	.826
	Glass's delta	3.496	.425	.000	.847
Grdaes With Type Hints	Cohen's d	4.930	.465	.042	.887
	Hedges' correction	4.964	.462	.041	.881
	Glass's delta	4.699	.488	.062	.912

a. The denominator used in estimating the effect sizes.

Cohen's d uses the pooled standard deviation.

Hedges' correction uses the pooled standard deviation, plus a correction factor.

Glass's delta uses the sample standard deviation of the control group.

T-Test (Paired t test)

Notes

Output Created		20-DEC-2022 18:53:09
Comments		
Input	Data	C:\Users\walee\OneDrive\Desktop\analysis\Results of All Data\all+onewayAnova\Last updated\AllDataAfterAlteringOutliersFull.sav
	Active Dataset	DataSet2
	Filter	<none>
	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	112
Missing Value Handling	Definition of Missing	User defined missing values are treated as missing.
	Cases Used	Statistics for each analysis are based on the cases with no missing or out-of-range data for any variable in the analysis.
Syntax		T-TEST PAIRS=GrdaesWithTypeHints WITH GrdaesWithoutTypeHints (PAIRED) /ES DISPLAY(TRUE) STANDARDIZER(SD) /CRITERIA=CI(.9500) /MISSING=ANALYSIS.
Resources	Processor Time	00:00:00.02
	Elapsed Time	00:00:00.01

[DataSet2] C:\Users\walee\OneDrive\Desktop\analysis\Results of All Data\all+onewayAnova\Last updated\AllDataAfterAlteringOutliersFull.sav

Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Grdaes With Type Hints	6.05	112	5.013	.474
	Grdaes Without Type Hints	4.81	112	3.655	.345

Paired Samples Correlations

			Correlation	Significance	
N				One-Sided p	Two-Sided p
Pair 1	Grdaes With Type Hints & Grdaes Without Type Hints	112	.796	<.001	<.001

Paired Samples Test

		Paired Differences			
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the ...
					Lower
Pair 1	Grdaes With Type Hints - Grdaes Without Type Hints	1.241	3.056	.289	.669

Paired Samples Test

		Paired ...	Significance			
		95% Confidence Interval of the ...	t	df	One-Sided p	Two-Sided p
		Upper				
Pair 1	Grdaes With Type Hints - Grdaes Without Type Hints	1.813	4.298	111	<.001	<.001

Paired Samples Effect Sizes

		Standardizer ^a		Point Estimate	95% ...
					Lower
Pair 1	Grdaes With Type Hints - Grdaes Without Type Hints	Cohen's d	3.056	.406	.213
		Hedges' correction	3.077	.403	.211

Paired Samples Effect Sizes

		95% ...	
		Upper	
Pair 1	Grdaes With Type Hints - Grdaes Without Type Hints	Cohen's d	.598
		Hedges' correction	.594

a. The denominator used in estimating the effect sizes.

Cohen's d uses the sample standard deviation of the mean difference.

Hedges' correction uses the sample standard deviation of the mean difference, plus a correction factor.

T-Test

Notes

Output Created		21-DEC-2022 23:28:55
Comments		
Input	Data	C:\Users\walee\OneDrive\Desktop\analysis\Results of All Data\all+onewayAnova\Last updated\AllDataAfterAlteringOutliersFull.sav
	Active Dataset	DataSet2
	Filter	<none>
	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	112
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Syntax		T-TEST GROUPS=EducationLevel (0 1) /MISSING=ANALYSIS /VARIABLES=GrdaesWithoutTypeHints GrdaesWithTypeHints /ES DISPLAY(TRUE) /CRITERIA=CI(.95).
Resources	Processor Time	00:00:00.02
	Elapsed Time	00:00:00.09

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Independent Samples Test

t-test for Equality
of Means

95% Confidence
Interval of the ...

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