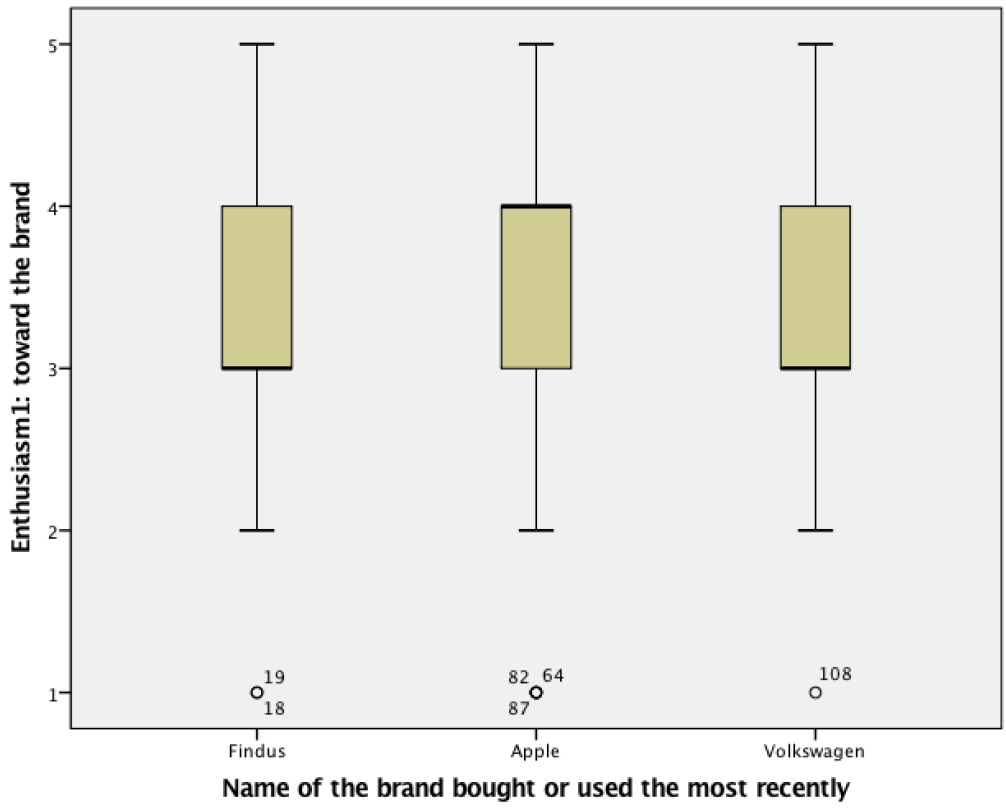
H1: Effect of different brands with different cases disclosed over the CE

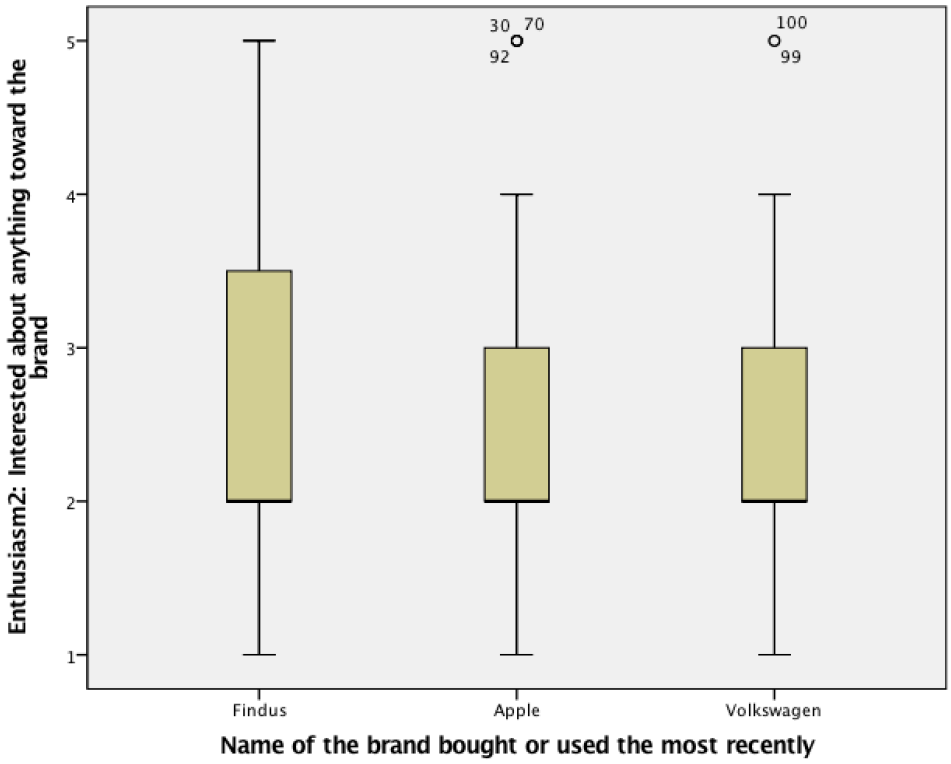
We will now test the hypotheses that the averages between the three groups, each about a brand linked to an unethical case disclosed, have different means for at least one of the item of the CE.

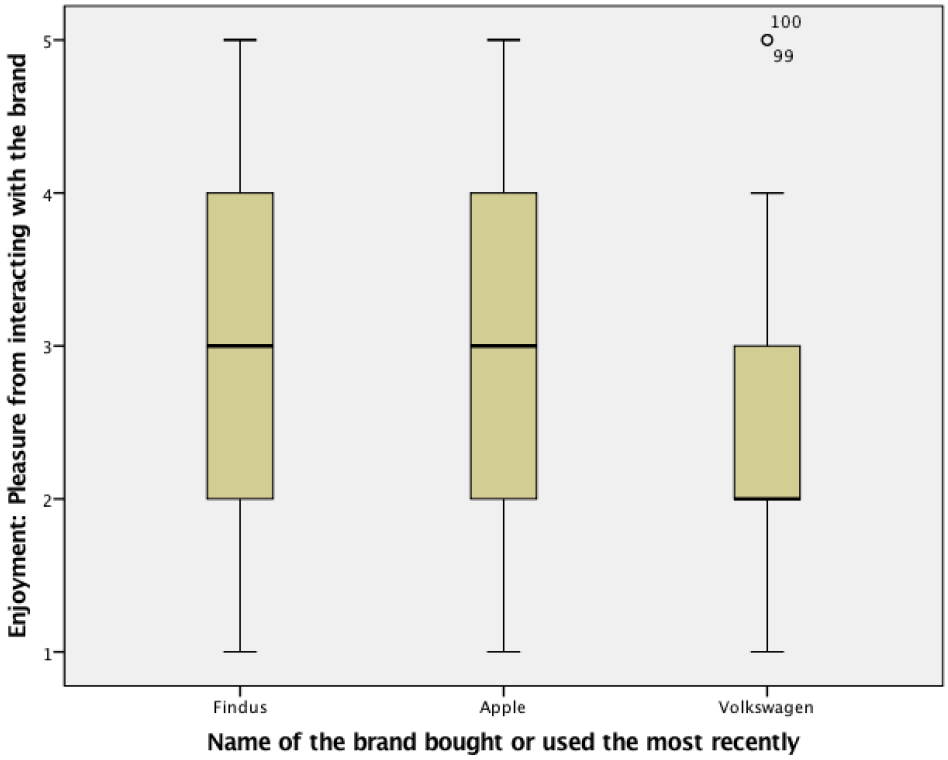
Effect size f	0,4	Noncentrality parameter λ	20,8000000
α err prob	0,05	Critical F	3,0675214
Total sample size	130	Numerator df	2
Number of groups	3	Denominator df	127
		Power (1-β err prob)	0,9864391

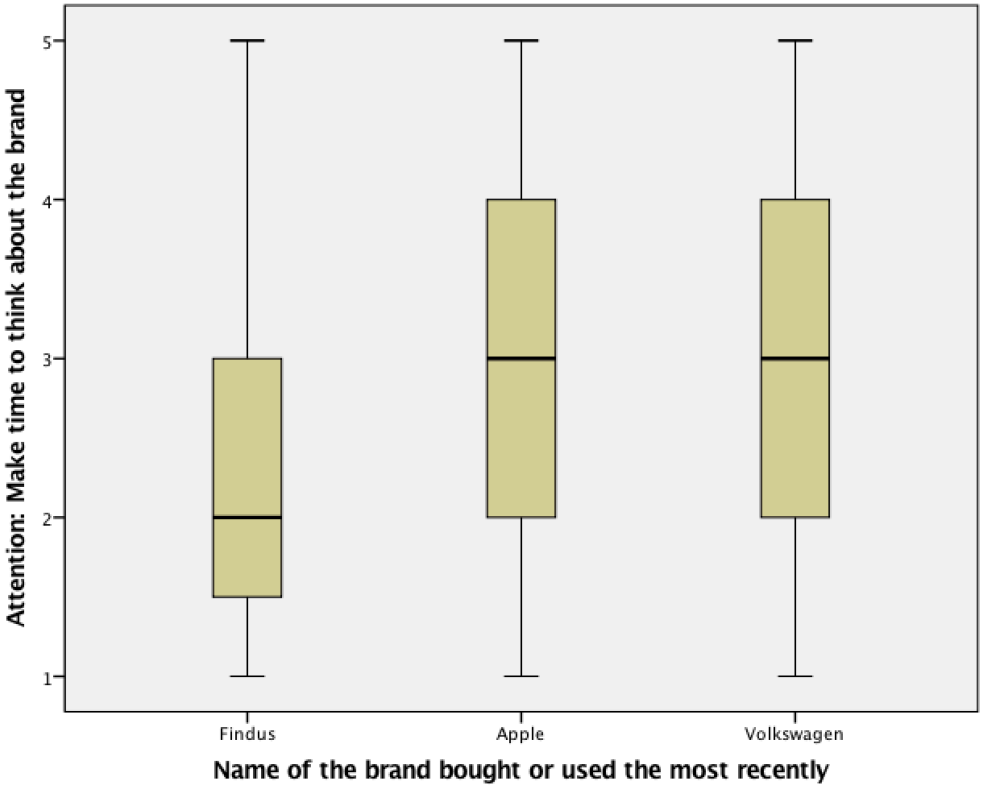
We have 10 items for the CE, and again the Power of our ANOVA test is the same as the previous one, of 98,64%.

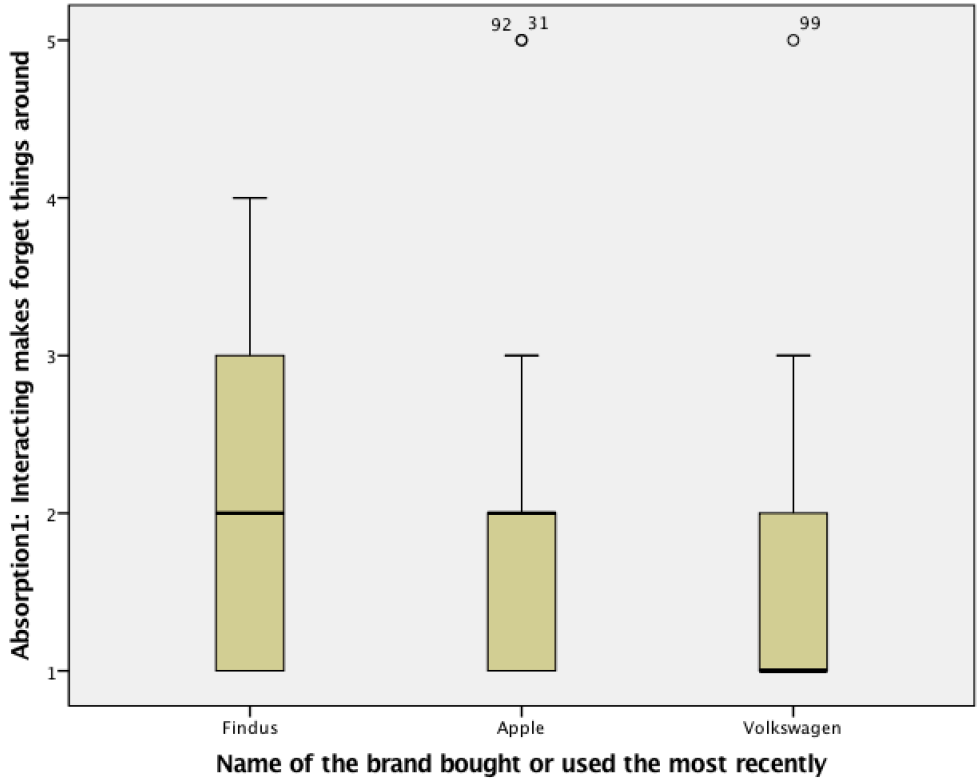
As we do not have 50 individuals per group, we will have first a look at the Boxplots, instead ot the Histogram.

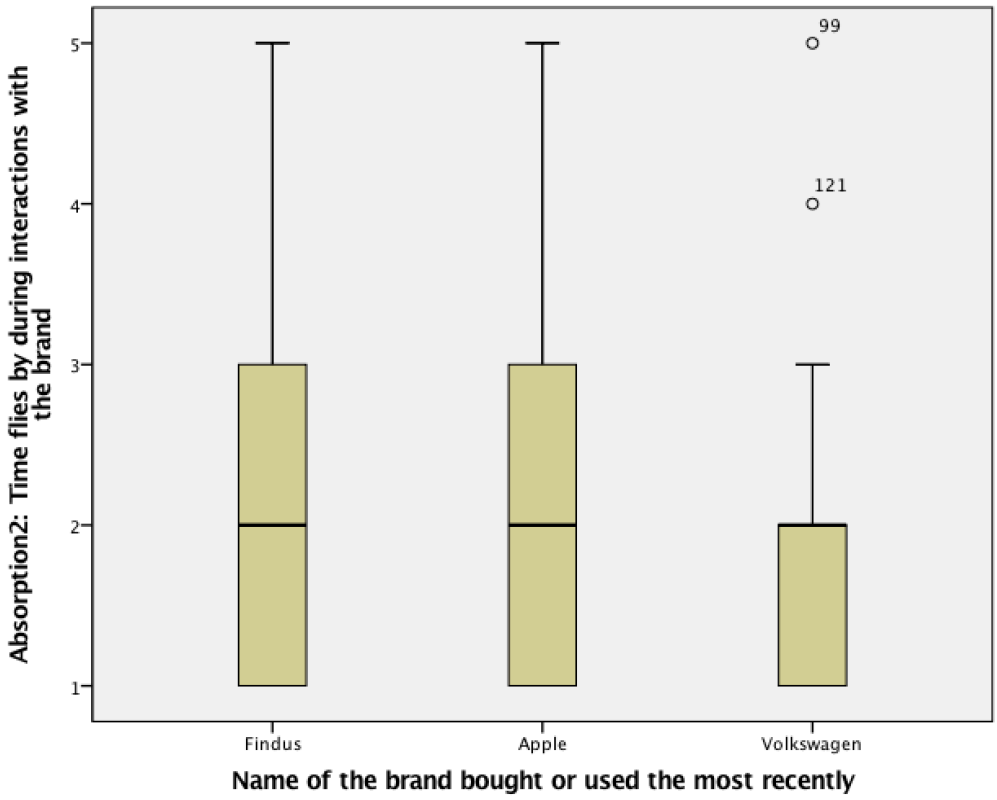


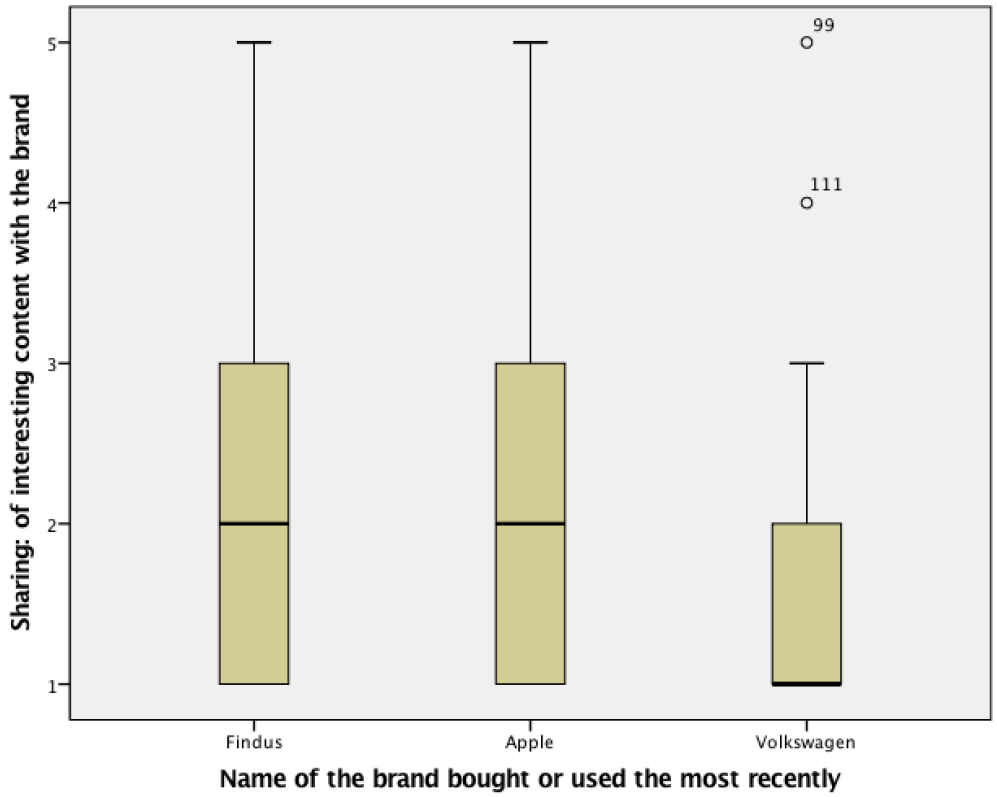

Enthusiasm2: Interested about anything toward the brand
5
4
3
2
1
30
70
92
100
99
Findus
Apple
Volkswagen
Name of the brand bought or used the most recently

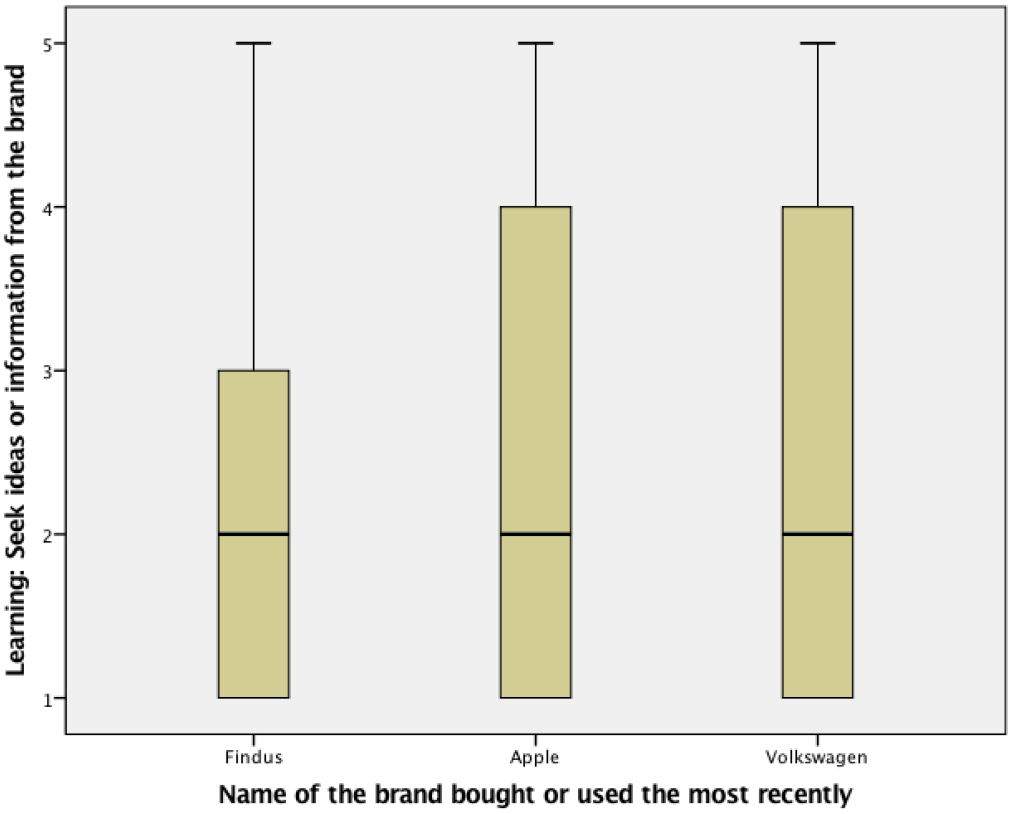

Enjoyment: Pleasure from interacting with the brand
5
4
3
2
1
100
99
Findus
Apple
Volkswagen
Name of the brand bought or used the most recently

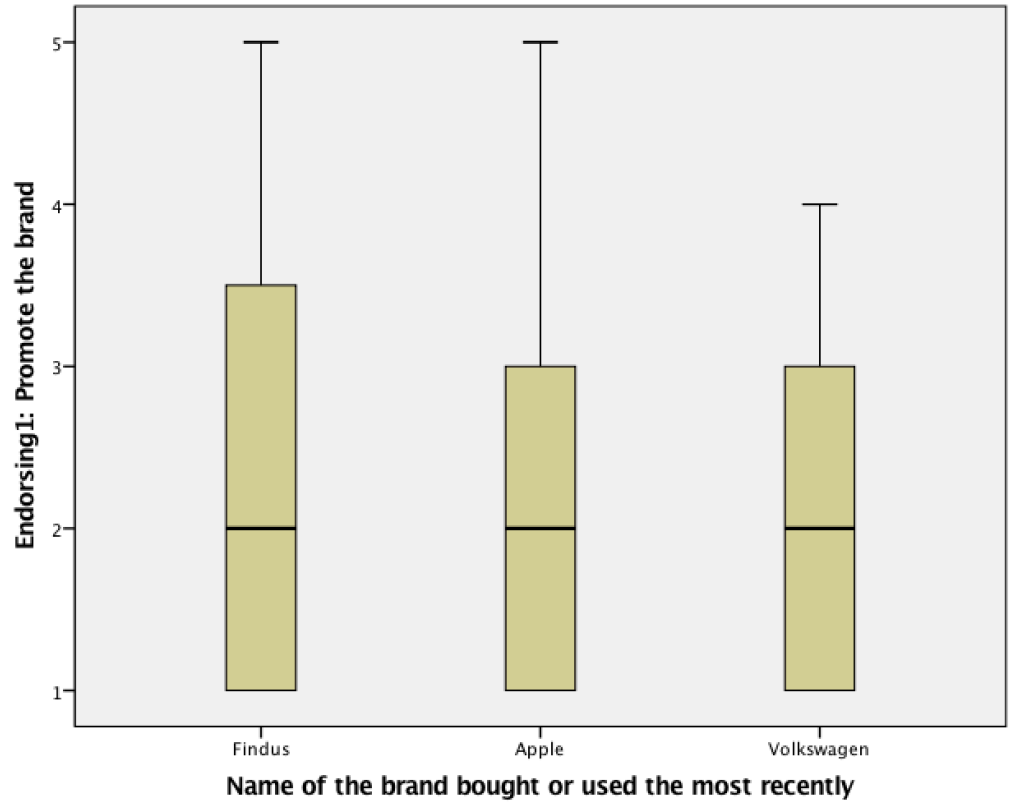

Attention: Make time to think about the brand
5
4
3
2
1
Findus
Apple
Volkswagen
Name of the brand bought or used the most recently

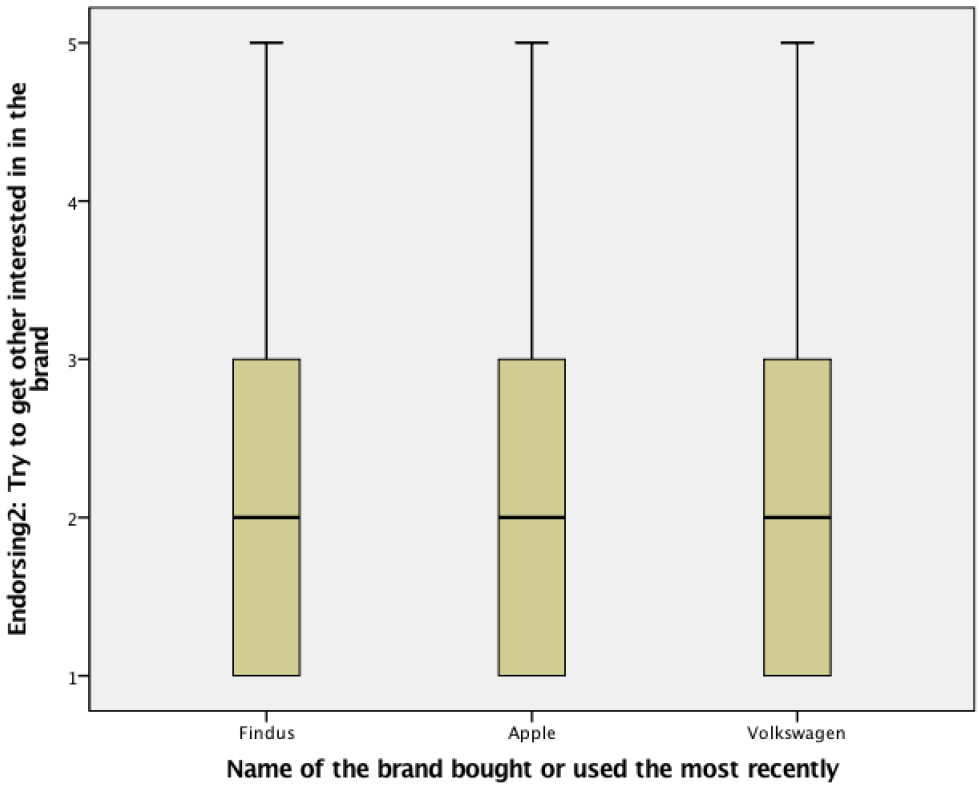

Absorption1: Interacting makes forget things around
92
31
99
5
4
3
2
1
Findus
Apple
Volkswagen
Name of the brand bought or used the most recently


Absorption2: Time flies by during interactions with the brand
5
4
3
2
1
99
121
Findus
Apple
Volkswagen
Name of the brand bought or used the most recently


Sharing: of interesting content with the brand
5
4
3
2
1
99
111
Findus
Apple
Volkswagen
Name of the brand bought or used the most recently


Learning: Seek ideas or information from the brand
5
4
3
2
1
Findus
Apple
Volkswagen
Name of the brand bought or used the most recently


Endorsing1: Promote the brand
5
4
3
2
1
Findus
Apple
Volkswagen
Name of the brand bought or used the most recently



Surprisingly, we only note a certain difference in the averages for the item about the ‘Attention’.

We make then the test of Levene.

Test of Homogeneity of Variances

	Levene Statistic	df1	df2	Sig.
Enthusiasm1: toward the brand	.208	2	127	.813
Enthusiasm2: Interested about anything toward the brand	.092	2	127	.913
Enjoyment: Pleasure from interacting with the brand	.553	2	127	.577
Attention: Make time to think about the brand	.869	2	127	.422
Absorption1: Interacting makes forget things around	.065	2	127	.937
Absorption2: Time flies by during interactions with the brand	1.713	2	127	.184
Sharing: of interesting content with the brand	2.311	2	127	.103
Learning: Seek ideas or information from the brand	.644	2	127	.527
Endorsing1: Promote the brand	1.026	2	127	.361
Endorsing2: Try to get other interested in in the brand	.127	2	127	.881

The p-value in the test is > 0.05 for each item. This means that basing ourselves on the sample we cannot assert that there is a difference in the variances depending of the brand from the three different product categories. We can then make the assumption that the variances are similar.

We can then compare the means.

Anova

		Sum of Squares	df	Mean Square	F	Sig.
Enthusiasm1: toward the brand	Between Groups	1.588	2	.794	.791	.456
	Within Groups	127.520	127	1.004		
	Total	129.108	129			
Enthusiasm2: Interested about anything toward the brand	Between Groups	.461	2	.231	.188	.829
	Within Groups	155.546	127	1.225		
	Total	156.008	129			
Enjoyment: Pleasure from interacting with the brand	Between Groups	1.781	2	.891	.593	.554
	Within Groups	190.842	127	1.503		
	Total	192.623	129			
Attention: Make time to think about the brand	Between Groups	10.638	2	5.319	3.526	.032
	Within Groups	191.585	127	1.509		
	Total	202.223	129			
Absorption1: Interacting makes forget things around	Between Groups	.884	2	.442	.504	.605
	Within Groups	111.393	127	.877		
	Total	112.277	129			
Absorption2: Time flies by during interactions with the brand	Between Groups	4.343	2	2.171	1.685	.190
	Within Groups	163.688	127	1.289		
	Total	168.031	129			
Sharing: of interesting content with the brand	Between Groups	6.277	2	3.139	2.169	.118
	Within Groups	183.754	127	1.447		
	Total	190.031	129			
Learning: Seek ideas or information from the brand	Between Groups	1.606	2	.803	.458	.634
	Within Groups	222.617	127	1.753		
	Total	224.223	129			
Endorsing1: Promote the brand	Between Groups	.546	2	.273	.202	.818
	Within Groups	171.985	127	1.354		
	Total	172.531	129			
Endorsing2: Try to get other interested in in the brand	Between Groups	.071	2	.035	.027	.974
	Within Groups	169.006	127	1.331		
	Total	169.077	129			

The p-value of the ‘Attention’ is significant at the level of error of 5%. At least one of the brand is different than others at this level.

Multiple Comparisons

Dependent Variable		(I) Name of the brand bought or used the most recently	(J) Name of the brand bought or used the most recently	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
							Lower Bound	Upper Bound
Enthusiasm1: toward the brand	Tukey HSD	Findus	Apple	-.280	.227	.435	-.82	.26
			Volkswagen	-.155	.260	.823	-.77	.46
		Apple	Findus	.280	.227	.435	-.26	.82
			Volkswagen	.126	.212	.824	-.38	.63
		Volkswagen	Findus	.155	.260	.823	-.46	.77
			Apple	-.126	.212	.824	-.63	.38
	Bonferroni	Findus	Apple	-.280	.227	.657	-.83	.27
			Volkswagen	-.155	.260	1.000	-.79	.48
		Apple	Findus	.280	.227	.657	-.27	.83
			Volkswagen	.126	.212	1.000	-.39	.64
		Volkswagen	Findus	.155	.260	1.000	-.48	.79
			Apple	-.126	.212	1.000	-.64	.39
	Games-Howell	Findus	Apple	-.280	.227	.437	-.83	.27
			Volkswagen	-.155	.252	.813	-.76	.45
		Apple	Findus	.280	.227	.437	-.27	.83
			Volkswagen	.126	.206	.816	-.37	.62
		Volkswagen	Findus	.155	.252	.813	-.45	.76
			Apple	-.126	.206	.816	-.62	.37
Enthusiasm2: Interested about anything toward the brand	Tukey HSD	Findus	Apple	.152	.251	.816	-.44	.75
			Volkswagen	.091	.287	.946	-.59	.77
		Apple	Findus	-.152	.251	.816	-.75	.44
			Volkswagen	-.061	.234	.963	-.62	.49
		Volkswagen	Findus	-.091	.287	.946	-.77	.59
			Apple	.061	.234	.963	-.49	.62
	Bonferroni	Findus	Apple	.152	.251	1.000	-.46	.76
			Volkswagen	.091	.287	1.000	-.61	.79
		Apple	Findus	-.152	.251	1.000	-.76	.46
			Volkswagen	-.061	.234	1.000	-.63	.51
		Volkswagen	Findus	-.091	.287	1.000	-.79	.61
			Apple	.061	.234	1.000	-.51	.63
	Games-Howell	Findus	Apple	.152	.241	.803	-.43	.73
			Volkswagen	.091	.279	.943	-.58	.76
		Apple	Findus	-.152	.241	.803	-.73	.43
			Volkswagen	-.061	.237	.964	-.63	.51
		Volkswagen	Findus	-.091	.279	.943	-.76	.58
			Apple	.061	.237	.964	-.51	.63
Enjoyment: Pleasure from interacting with the brand	Tukey HSD	Findus	Apple	.001	.278	1.000	-.66	.66
			Volkswagen	.269	.318	.675	-.49	1.02
		Apple	Findus	-.001	.278	1.000	-.66	.66
			Volkswagen	.269	.259	.554	-.35	.88
		Volkswagen	Findus	-.269	.318	.675	-1.02	.49
			Apple	-.269	.259	.554	-.88	.35
	Bonferroni	Findus	Apple	.001	.278	1.000	-.67	.67
			Volkswagen	.269	.318	1.000	-.50	1.04
		Apple	Findus	-.001	.278	1.000	-.67	.67
			Volkswagen	.269	.259	.903	-.36	.90
		Volkswagen	Findus	-.269	.318	1.000	-1.04	.50
			Apple	-.269	.259	.903	-.90	.36
	Games-Howell	Findus	Apple	.001	.291	1.000	-.71	.71
			Volkswagen	.269	.318	.675	-.50	1.04
		Apple	Findus	-.001	.291	1.000	-.71	.71
			Volkswagen	.269	.245	.520	-.32	.86
		Volkswagen	Findus	-.269	.318	.675	-1.04	.50
			Apple	-.269	.245	.520	-.86	.32

Attention: Make time to think about the brand	Tukey HSD	Findus	Apple	-.689*	.278	.038	-1.35	-.03
			Volkswagen	-.734	.319	.059	-1.49	.02
		Apple	Findus	.689*	.278	.038	.03	1.35
			Volkswagen	-.045	.259	.984	-.66	.57
		Volkswagen	Findus	.734	.319	.059	-.02	1.49
			Apple	.045	.259	.984	-.57	.66
	Bonferroni	Findus	Apple	-.689*	.278	.044	-1.36	-.01
			Volkswagen	-.734	.319	.069	-1.51	.04
		Apple	Findus	.689*	.278	.044	.01	1.36
			Volkswagen	-.045	.259	1.000	-.67	.58
		Volkswagen	Findus	.734	.319	.069	-.04	1.51
			Apple	.045	.259	1.000	-.58	.67
	Games-Howell	Findus	Apple	-.689*	.264	.031	-1.33	-.05
			Volkswagen	-.734*	.290	.037	-1.43	-.04
		Apple	Findus	.689*	.264	.031	.05	1.33
			Volkswagen	-.045	.252	.983	-.65	.56
		Volkswagen	Findus	.734*	.290	.037	.04	1.43
			Apple	.045	.252	.983	-.56	.65
Absorption1: Interacting makes forget things around	Tukey HSD	Findus	Apple	.069	.212	.944	-.43	.57
			Volkswagen	.229	.243	.615	-.35	.81
		Apple	Findus	-.069	.212	.944	-.57	.43
			Volkswagen	.160	.198	.698	-.31	.63
		Volkswagen	Findus	-.229	.243	.615	-.81	.35
			Apple	-.160	.198	.698	-.63	.31
	Bonferroni	Findus	Apple	.069	.212	1.000	-.45	.58
			Volkswagen	.229	.243	1.000	-.36	.82
		Apple	Findus	-.069	.212	1.000	-.58	.45
			Volkswagen	.160	.198	1.000	-.32	.64
		Volkswagen	Findus	-.229	.243	1.000	-.82	.36
			Apple	-.160	.198	1.000	-.64	.32
	Games-Howell	Findus	Apple	.069	.210	.943	-.44	.58
			Volkswagen	.229	.238	.604	-.34	.80
		Apple	Findus	-.069	.210	.943	-.58	.44
			Volkswagen	.160	.196	.694	-.31	.63
		Volkswagen	Findus	-.229	.238	.604	-.80	.34
			Apple	-.160	.196	.694	-.63	.31
Absorption2: Time flies by during interactions with the brand	Tukey HSD	Findus	Apple	-.109	.257	.906	-.72	.50
			Volkswagen	.330	.295	.504	-.37	1.03
		Apple	Findus	.109	.257	.906	-.50	.72
			Volkswagen	.439	.240	.164	-.13	1.01
		Volkswagen	Findus	-.330	.295	.504	-1.03	.37
			Apple	-.439	.240	.164	-1.01	.13
	Bonferroni	Findus	Apple	-.109	.257	1.000	-.73	.51
			Volkswagen	.330	.295	.794	-.38	1.04
		Apple	Findus	.109	.257	1.000	-.51	.73
			Volkswagen	.439	.240	.208	-.14	1.02
		Volkswagen	Findus	-.330	.295	.794	-1.04	.38
			Apple	-.439	.240	.208	-1.02	.14
	Games-Howell	Findus	Apple	-.109	.256	.905	-.73	.51
			Volkswagen	.330	.276	.460	-.33	.99
		Apple	Findus	.109	.256	.905	-.51	.73
			Volkswagen	.439	.227	.138	-.11	.98
		Volkswagen	Findus	-.330	.276	.460	-.99	.33
			Apple	-.439	.227	.138	-.98	.11
Sharing: of interesting content with the brand	Tukey HSD	Findus	Apple	-.138	.273	.869	-.78	.51
			Volkswagen	.391	.312	.425	-.35	1.13
		Apple	Findus	.138	.273	.869	-.51	.78
			Volkswagen	.528	.254	.098	-.07	1.13
		Volkswagen	Findus	-.391	.312	.425	-1.13	.35
			Apple	-.528	.254	.098	-1.13	.07
	Bonferroni	Findus	Apple	-.138	.273	1.000	-.80	.52
			Volkswagen	.391	.312	.639	-.37	1.15
		Apple	Findus	.138	.273	1.000	-.52	.80
			Volkswagen	.528	.254	.119	-.09	1.14
		Volkswagen	Findus	-.391	.312	.639	-1.15	.37
			Apple	-.528	.254	.119	-1.14	.09
	Games-Howell	Findus	Apple	-.138	.272	.869	-.79	.52
			Volkswagen	.391	.288	.370	-.30	1.08
		Apple	Findus	.138	.272	.869	-.52	.79
			Volkswagen	.528	.236	.072	-.04	1.09
		Volkswagen	Findus	-.391	.288	.370	-1.08	.30
			Apple	-.528	.236	.072	-1.09	.04

Learning: Seek ideas or information from the brand	Tukey HSD	Findus	Apple	-.284	.300	.613	-.99	.43
			Volkswagen	-.165	.344	.881	-.98	.65
		Apple	Findus	.284	.300	.613	-.43	.99
			Volkswagen	.119	.280	.906	-.54	.78
		Volkswagen	Findus	.165	.344	.881	-.65	.98
			Apple	-.119	.280	.906	-.78	.54
	Bonferroni	Findus	Apple	-.284	.300	1.000	-1.01	.44
			Volkswagen	-.165	.344	1.000	-1.00	.67
		Apple	Findus	.284	.300	1.000	-.44	1.01
			Volkswagen	.119	.280	1.000	-.56	.80
		Volkswagen	Findus	.165	.344	1.000	-.67	1.00
			Apple	-.119	.280	1.000	-.80	.56
	Games-Howell	Findus	Apple	-.284	.298	.610	-1.00	.44
			Volkswagen	-.165	.348	.884	-1.00	.67
		Apple	Findus	.284	.298	.610	-.44	1.00
			Volkswagen	.119	.285	.909	-.57	.80
		Volkswagen	Findus	.165	.348	.884	-.67	1.00
			Apple	-.119	.285	.909	-.80	.57
Endorsing1: Promote the brand	Tukey HSD	Findus	Apple	-.058	.264	.973	-.68	.57
			Volkswagen	.098	.302	.944	-.62	.81
		Apple	Findus	.058	.264	.973	-.57	.68
			Volkswagen	.156	.246	.802	-.43	.74
		Volkswagen	Findus	-.098	.302	.944	-.81	.62
			Apple	-.156	.246	.802	-.74	.43
	Bonferroni	Findus	Apple	-.058	.264	1.000	-.70	.58
			Volkswagen	.098	.302	1.000	-.63	.83
		Apple	Findus	.058	.264	1.000	-.58	.70
			Volkswagen	.156	.246	1.000	-.44	.75
		Volkswagen	Findus	-.098	.302	1.000	-.83	.63
			Apple	-.156	.246	1.000	-.75	.44
	Games-Howell	Findus	Apple	-.058	.288	.978	-.76	.64
			Volkswagen	.098	.326	.952	-.69	.88
		Apple	Findus	.058	.288	.978	-.64	.76
			Volkswagen	.156	.240	.793	-.42	.73
		Volkswagen	Findus	-.098	.326	.952	-.88	.69
			Apple	-.156	.240	.793	-.73	.42
Endorsing2: Try to get other interested in in the brand	Tukey HSD	Findus	Apple	-.058	.261	.974	-.68	.56
			Volkswagen	-.057	.299	.980	-.77	.65
		Apple	Findus	.058	.261	.974	-.56	.68
			Volkswagen	.000	.244	1.000	-.58	.58
		Volkswagen	Findus	.057	.299	.980	-.65	.77
			Apple	.000	.244	1.000	-.58	.58
	Bonferroni	Findus	Apple	-.058	.261	1.000	-.69	.58
			Volkswagen	-.057	.299	1.000	-.78	.67
		Apple	Findus	.058	.261	1.000	-.58	.69
			Volkswagen	.000	.244	1.000	-.59	.59
		Volkswagen	Findus	.057	.299	1.000	-.67	.78
			Apple	.000	.244	1.000	-.59	.59
	Games-Howell	Findus	Apple	-.058	.264	.974	-.70	.58
			Volkswagen	-.057	.305	.981	-.79	.68
		Apple	Findus	.058	.264	.974	-.58	.70
			Volkswagen	.000	.245	1.000	-.59	.59
		Volkswagen	Findus	.057	.305	.981	-.68	.79
			Apple	.000	.245	1.000	-.59	.59

*. The mean difference is significant at the 0.05 level.

Following the results of the tests of Turkey and Games-Howell we can assert at the level of error of 5% that about the ‘Attention’ the consumers of the brand Findus show a smaller level in comparison to the ones of Apple and Volkswagen. To have those results complying with the tests of Bonferrini we need to increase this level of error to 10%, otherwise we can only assert that the consumers of Findus in comparison to the ones of Apple only have a lower level of ‘Attention’. The fact that the means are smaller for Findus and not bigger could have been seen in the Boxplot analyses. It can be verified in the next Descriptives table also.

Descriptives

		N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
						Lower Bound	Upper Bound		
Enthusiasm1: toward the brand	Findus	27	3.15	.989	.190	2.76	3.54	1	5
	Apple	70	3.43	1.030	.123	3.18	3.67	1	5
	Volkswagen	33	3.30	.951	.166	2.97	3.64	1	5
	Total	130	3.34	1.000	.088	3.16	3.51	1	5
Enthusiasm2: Interested about anything toward the brand	Findus	27	2.67	1.038	.200	2.26	3.08	1	5
	Apple	70	2.51	1.126	.135	2.25	2.78	1	5
	Volkswagen	33	2.58	1.119	.195	2.18	2.97	1	5
	Total	130	2.56	1.100	.096	2.37	2.75	1	5
Enjoyment: Pleasure from interacting with the brand	Findus	27	2.81	1.302	.251	2.30	3.33	1	5
	Apple	70	2.81	1.243	.149	2.52	3.11	1	5
	Volkswagen	33	2.55	1.121	.195	2.15	2.94	1	5
	Total	130	2.75	1.222	.107	2.53	2.96	1	5
Attention: Make time to think about the brand	Findus	27	2.30	1.103	.212	1.86	2.73	1	5
	Apple	70	2.99	1.313	.157	2.67	3.30	1	5
	Volkswagen	33	3.03	1.132	.197	2.63	3.43	1	5
	Total	130	2.85	1.252	.110	2.64	3.07	1	5
Absorption1: Interacting makes forget things around	Findus	27	1.93	.917	.176	1.56	2.29	1	4
	Apple	70	1.86	.952	.114	1.63	2.08	1	5
	Volkswagen	33	1.70	.918	.160	1.37	2.02	1	5
	Total	130	1.83	.933	.082	1.67	1.99	1	5
Absorption2: Time flies by during interactions with the brand	Findus	27	2.15	1.099	.212	1.71	2.58	1	5
	Apple	70	2.26	1.200	.143	1.97	2.54	1	5
	Volkswagen	33	1.82	1.014	.177	1.46	2.18	1	5
	Total	130	2.12	1.141	.100	1.93	2.32	1	5
Sharing: of interesting content with the brand	Findus	27	2.15	1.167	.225	1.69	2.61	1	5
	Apple	70	2.29	1.287	.154	1.98	2.59	1	5
	Volkswagen	33	1.76	1.032	.180	1.39	2.12	1	5
	Total	130	2.12	1.214	.106	1.91	2.33	1	5
Learning: Seek ideas or information from the brand	Findus	27	2.26	1.318	.254	1.74	2.78	1	5
	Apple	70	2.54	1.304	.156	2.23	2.85	1	5
	Volkswagen	33	2.42	1.370	.238	1.94	2.91	1	5
	Total	130	2.45	1.318	.116	2.23	2.68	1	5
Endorsing1: Promote the brand	Findus	27	2.37	1.334	.257	1.84	2.90	1	5
	Apple	70	2.43	1.098	.131	2.17	2.69	1	5
	Volkswagen	33	2.27	1.153	.201	1.86	2.68	1	4
	Total	130	2.38	1.156	.101	2.18	2.58	1	5
Endorsing2: Try to get other interested in in the brand	Findus	27	2.19	1.178	.227	1.72	2.65	1	5
	Apple	70	2.24	1.135	.136	1.97	2.51	1	5
	Volkswagen	33	2.24	1.173	.204	1.83	2.66	1	5
	Total	130	2.23	1.145	.100	2.03	2.43	1	5

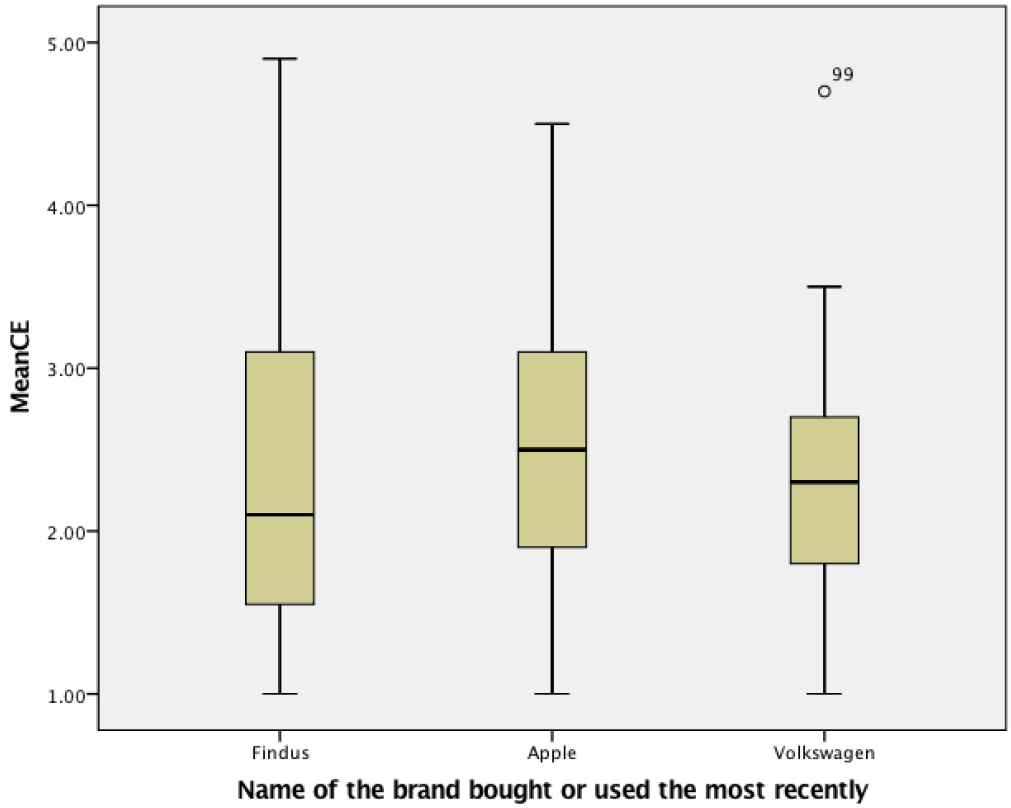
At this point we made a total mean of the values of the CE items, this variable has been called ‘MeanCE’. We then looked at the total mean to be able to create a new binary variable about engaged and unengaged consumers. Anyone with a mean of more than the following mean will be seen as an engaged consumer. While any individual having a total mean orf the items of CE under this following mean will be see as an unengaged consumer.

Statistics

MeanCE

N	Valid	130
	Missing	0
Mean		2.4638

But first, we would like to test the effect of brand love as a moderator on the CE after the disclosure of the brand. For doing so, we need to be sure there is well an effect from the brand consumed on the new MeanCE variable. The binary variable of the CE will be used to analyse further hypotheses.



The Boxplot does not show any major differences between the means. Though we will test it statistically.

Descriptives

MeanCE

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
Findus	27	2.3963	1.02525	.19731	1.9907	2.8019	1.00	4.90
Apple	70	2.5357	.89135	.10654	2.3232	2.7482	1.00	4.50
Volkswagen	33	2.3667	.79123	.13774	2.0861	2.6472	1.00	4.70
Total	130	2.4638	.89347	.07836	2.3088	2.6189	1.00	4.90

Test of Homogeneity of Variances

MeanCE

Levene Statistic	df1	df2	Sig.
1.717	2	127	.184

The test of the homogeneity of variances if verified as non significant.

Multiple Comparisons

Dependent Variable: MeanCE

	(I) Name of the brand bought or used the most recently	(J) Name of the brand bought or used the most recently	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
						Lower Bound	Upper Bound
Tukey HSD	Findus	Apple	-.13942	.20321	.772	-.6213	.3425
		Volkswagen	.02963	.23277	.991	-.5224	.5816
	Apple	Findus	.13942	.20321	.772	-.3425	.6213
		Volkswagen	.16905	.18941	.646	-.2801	.6182
	Volkswagen	Findus	-.02963	.23277	.991	-.5816	.5224
		Apple	-.16905	.18941	.646	-.6182	.2801
Bonferroni	Findus	Apple	-.13942	.20321	1.000	-.6324	.3536
		Volkswagen	.02963	.23277	1.000	-.5351	.5944
	Apple	Findus	.13942	.20321	1.000	-.3536	.6324
		Volkswagen	.16905	.18941	1.000	-.2905	.6286
	Volkswagen	Findus	-.02963	.23277	1.000	-.5944	.5351
		Apple	-.16905	.18941	1.000	-.6286	.2905
Games-Howell	Findus	Apple	-.13942	.22423	.809	-.6842	.4053
		Volkswagen	.02963	.24063	.992	-.5522	.6115
	Apple	Findus	.13942	.22423	.809	-.4053	.6842
		Volkswagen	.16905	.17413	.598	-.2479	.5860
	Volkswagen	Findus	-.02963	.24063	.992	-.6115	.5522
		Apple	-.16905	.17413	.598	-.5860	.2479

ANOVA

MeanCE

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	.796	2	.398	.495	.611
Within Groups	102.184	127	.805		
Total	102.980	129			

Though the means are not significantly different.

H2: Moderator effect of brand love between the relationship of the type of brand related to an unethical case and the CE

We will test the different effects of brand love on the relation between the brand and the consumer engagement, supported by the theory written previously. We will test then the items

remaining from the two factors of brand love. We will start by testing the moderation of the first item: Pleasure1: Pleasure in buying.

```
Model = 1
    Y = MeanCE
    X = Brand
    M = Pleasu1

Sample size
        130

Coding of categorical X variable for analysis:
 Brand    D1    D2
  1.00   .00   .00
  2.00  1.00   .00
  3.00   .00  1.00

************************************************************************
Outcome: MeanCE

Model Summary
          R       R-sq        MSE          F        df1        df2          p
      .5495      .3019      .5798    10.7257     5.0000   124.0000      .0000

Model
              coeff         se          t          p       LLCI       ULCI
constant      .2444      .5675      .4307      .6674     -.8788     1.3677
Pleasu1       .6917      .1762     3.9247      .0001      .3429     1.0405
D1            .4547      .6581      .6909      .4909     -.8478     1.7572
D2            .9134      .8397     1.0878      .2788     -.7485     2.5753
int_1        -.1855      .1971     -.9411      .3485     -.5757      .2046
int_2        -.3620      .2413    -1.5000      .1362     -.8396      .1157

Product terms key:
 int_1     :       D1        X       Pleasu1
 int_2     :       D2        X       Pleasu1

R-square increase due to interaction:
    R2-chng          F        df1        df2          p
      .0127     1.1263     2.0000   124.0000      .3275

------------------------------------------------------------------------
```

The interaction is not significant. We test then the second item: Pleasure2: Pleasure in discovering new products.

```
Model = 1
    Y = MeanCE
    X = Brand
    M = Pleasu2

Sample size
        130

Coding of categorical X variable for analysis:
 Brand    D1    D2
  1.00   .00   .00
  2.00  1.00   .00
  3.00   .00  1.00

*************************************************************************
Outcome: MeanCE

Model Summary
          R       R-sq        MSE          F        df1        df2          p
      .5226      .2731      .6037     9.3161     5.0000   124.0000      .0000

Model
              coeff         se          t          p       LLCI       ULCI
constant     1.3489      .5786     2.3312      .0214      .2036     2.4942
Pleasu2       .3535      .1887     1.8738      .0633     -.0199      .7269
D1           -.3572      .6434     -.5552      .5797    -1.6306      .9162
D2           -.1030      .7153     -.1440      .8858    -1.5187     1.3128
int_1         .1400      .2069      .6769      .4997     -.2694      .5495
int_2         .0164      .2299      .0711      .9434     -.4387      .4714

Product terms key:
 int_1     :       D1        X       Pleasu2
 int_2     :       D2        X       Pleasu2

R-square increase due to interaction:
    R2-chng           F        df1        df2          p
      .0052      .4447     2.0000   124.0000      .6421
```

The effects of interactions are not significant. We test then the third item: Intimacy1: Emotionally close with the brand.

```
Model = 1
    Y = MeanCE
    X = Brand
    M = Intima1

Sample size
        130

Coding of categorical X variable for analysis:
 Brand    D1    D2
  1.00   .00   .00
  2.00  1.00   .00
  3.00   .00  1.00

*************************************************************************
Outcome: MeanCE

Model Summary
          R       R-sq        MSE          F        df1        df2          p
      .5099      .2600      .6145     8.7145     5.0000   124.0000      .0000

Model
              coeff         se          t          p       LLCI       ULCI
constant     1.0852      .4229     2.5661      .0115      .2482     1.9222
Intima1       .4917      .1481     3.3187      .0012      .1984      .7849
D1            .3132      .4893      .6401      .5233     -.6553     1.2816
D2            .4507      .5543      .8132      .4177     -.6463     1.5478
int_1        -.0636      .1711     -.3718      .7106     -.4023      .2751
int_2        -.1937      .1899    -1.0198      .3098     -.5696      .1822

Product terms key:
 int_1     :       D1        X       Intima1
 int_2     :       D2        X       Intima1

R-square increase due to interaction:
    R2-chng          F        df1        df2          p
      .0073      .6123     2.0000   124.0000      .5437
```

The effects of interactions are not significant. We test then the fourth item: Intimacy2: Value of the brand in own life.

```
Model = 1
    Y = MeanCE
    X = Brand
    M = Intima2

Sample size
        130

Coding of categorical X variable for analysis:
 Brand    D1    D2
  1.00   .00   .00
  2.00  1.00   .00
  3.00   .00  1.00

*************************************************************************
Outcome: MeanCE

Model Summary
          R       R-sq        MSE          F        df1        df2          p
      .6319      .3993      .4988    16.4873     5.0000   124.0000      .0000

Model
              coeff         se          t          p       LLCI       ULCI
constant      .7457      .3441     2.1670      .0321      .0646     1.4267
Intima2       .6652      .1274     5.2217      .0000      .4130      .9173
D1            .6468      .3989     1.6213      .1075     -.1428     1.4363
D2            .2603      .5096      .5107      .6104     -.7484     1.2690
int_1        -.2395      .1445    -1.6571      .1000     -.5255      .0466
int_2        -.1717      .1812     -.9479      .3450     -.5303      .1869

Product terms key:
 int_1     :       D1        X       Intima2
 int_2     :       D2        X       Intima2

R-square increase due to interaction:
    R2-chng          F        df1        df2          p
      .0134     1.3781     2.0000   124.0000      .2559
```

The effects of interactions are not significant. We test then the fifth item: Idealisation: of the brand.

```
Model = 1
    Y = MeanCE
    X = Brand
    M = Idealism

Sample size
        130

Coding of categorical X variable for analysis:
 Brand    D1    D2
  1.00   .00   .00
  2.00  1.00   .00
  3.00   .00  1.00

*************************************************************************
Outcome: MeanCE

Model Summary
          R       R-sq        MSE          F        df1        df2          p
      .6055      .3666      .5260    14.3532     5.0000   124.0000      .0000

Model
              coeff         se          t          p       LLCI       ULCI
constant     1.2976      .3365     3.8561      .0002      .6316     1.9636
Idealism      .4564      .1272     3.5882      .0005      .2046      .7081
D1            .0647      .3898      .1660      .8684     -.7068      .8362
D2            .1546      .4386      .3525      .7251     -.7135     1.0227
int_1         .0475      .1481      .3209      .7488     -.2456      .3406
int_2        -.0645      .1667     -.3868      .6996     -.3944      .2654

Product terms key:
 int_1     :       D1        X       Idealism
 int_2     :       D2        X       Idealism

R-square increase due to interaction:
    R2-chng          F        df1        df2          p
      .0037      .3640     2.0000   124.0000      .6956
```

Again the effects of interactions are not significant. We test then the sixth item, the first one from the second factor of brand love: Duration1: Accompaniement during years.

```
Model = 1
    Y = MeanCE
    X = Brand
    M = Duratio1

Sample size
        130

Coding of categorical X variable for analysis:
 Brand    D1    D2
  1.00   .00   .00
  2.00  1.00   .00
  3.00   .00  1.00

*************************************************************************
Outcome: MeanCE

Model Summary
          R       R-sq        MSE          F        df1        df2          p
      .5791      .3353      .5520    12.5128     5.0000   124.0000      .0000

Model
              coeff         se          t          p       LLCI       ULCI
constant      .7902      .4769     1.6571      .1000     -.1536     1.7341
Duratio1      .4765      .1350     3.5304      .0006      .2094      .7437
D1            .3921      .5309      .7386      .4616     -.6586     1.4428
D2            .3726      .6327      .5889      .5570     -.8797     1.6248
int_1        -.0419      .1517     -.2765      .7826     -.3422      .2583
int_2        -.1280      .1769     -.7236      .4706     -.4782      .2222

Product terms key:
 int_1     :       D1        X       Duratio1
 int_2     :       D2        X       Duratio1

R-square increase due to interaction:
    R2-chng          F        df1        df2          p
      .0033      .3046     2.0000   124.0000      .7380
```

Again the effects of interactions are not significant. We test then the seventh item, the second one from the second factor of brand love: Duration2: Use of the brand for a long time.

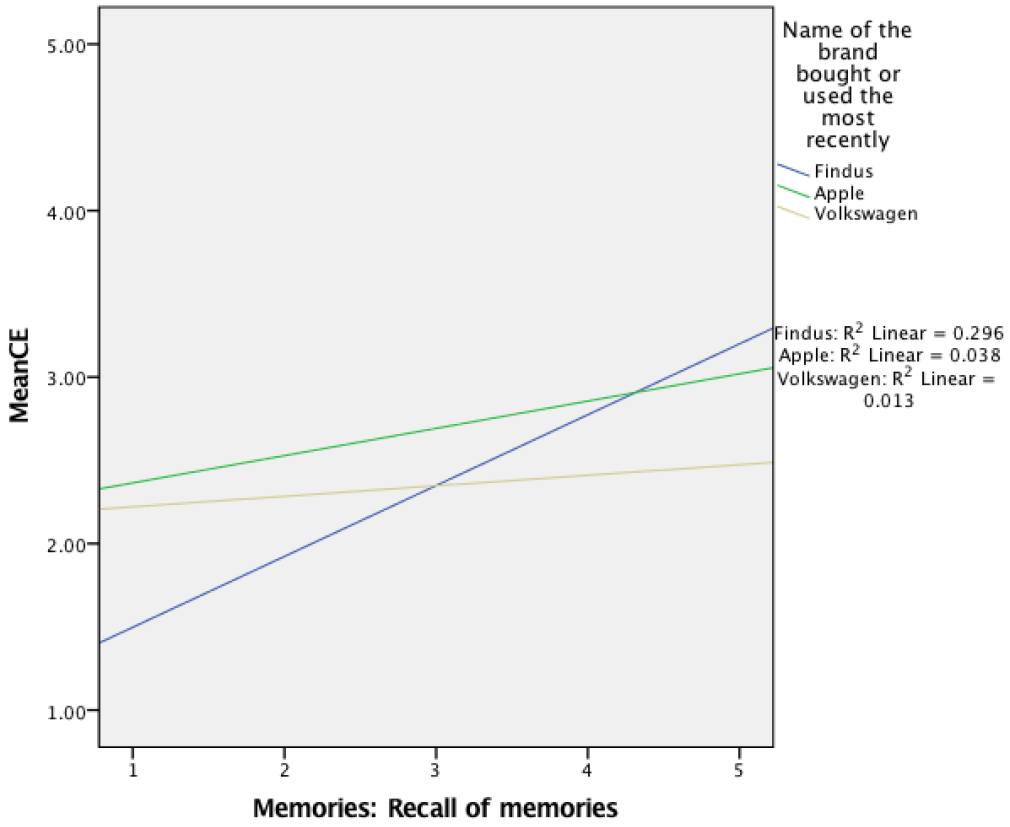
```
Model = 1
    Y = MeanCE
    X = Brand
    M = Duratio2

Sample size
        130

Coding of categorical X variable for analysis:
 Brand    D1    D2
  1.00   .00   .00
  2.00  1.00   .00
  3.00   .00  1.00

*************************************************************************
Outcome: MeanCE

Model Summary
          R       R-sq        MSE          F        df1        df2          p
      .3778      .1427      .7120     4.1288     5.0000   124.0000      .0017

Model
              coeff         se          t          p       LLCI       ULCI
constant      .8420      .5043     1.6697      .0975     -.1561     1.8400
Duratio2      .4769      .1465     3.2559      .0015      .1870      .7668
D1            .8665      .5853     1.4804      .1413     -.2920     2.0250
D2           1.3015      .7565     1.7203      .0879     -.1959     2.7989
int_1        -.2443      .1662    -1.4699      .1441     -.5733      .0847
int_2        -.4139      .2122    -1.9504      .0534     -.8340      .0061

Product terms key:
 int_1     :       D1        X       Duratio2
 int_2     :       D2        X       Duratio2

R-square increase due to interaction:
    R2-chng          F        df1        df2          p
      .0272     1.9660     2.0000   124.0000      .1444
```

The effects of interactions are just not significant, being close to the 5% of error. We test then the eighth item, the third one from the second factor of brand love: Memories: Recall of memories.

```
Model = 1
    Y = MeanCE
    X = Brand
    M = Memories

Sample size
        130

Coding of categorical X variable for analysis:
 Brand    D1    D2
  1.00   .00   .00
  2.00  1.00   .00
  3.00   .00  1.00

************************************************************************
Outcome: MeanCE

Model Summary
          R       R-sq        MSE          F        df1        df2          p
      .3301      .1089      .7400     3.0320     5.0000   124.0000      .0129

Model
              coeff         se          t          p       LLCI       ULCI
constant     1.0721      .4333     2.4743      .0147      .2145     1.9298
Memories      .4256      .1287     3.3067      .0012      .1709      .6804
D1           1.1289      .4884     2.3116      .0225      .1623     2.0956
D2           1.0857      .5751     1.8879      .0614     -.0526     2.2240
int_1        -.2618      .1618    -1.6176      .1083     -.5821      .0585
int_2        -.3624      .1662    -2.1808      .0311     -.6913     -.0335

Product terms key:
 int_1     :       D1        X       Memories
 int_2     :       D2        X       Memories

R-square increase due to interaction:
    R2-chng          F        df1        df2          p
      .0350     2.4385     2.0000   124.0000      .0915
```

The effect of the interaction 2 for the item ‘Memories’ is significant < 0.05. The model is significant too as it has a p-value of 0.0129 < 0.05. The item ‘Memories’ in the model is significant as well. The interaction in general is significant at the level of error of 10%.

```
Conditional effect of X on Y at values of the moderator:

Moderator value:
Memories     1.2390

        Coeff         se          t          p       LLCI       ULCI
D1      .8045      .3198     2.5159      .0132      .1716     1.4375
D2      .6367      .3937     1.6174      .1083     -.1425     1.4159

Test of equality of conditional means at this value of the moderator
    R2-chng          F        df1        df2          p
      .0456     3.1724     2.0000   124.0000      .0453

Estimated conditional means at this value of the moderator
      Brand       yhat
     1.0000     1.5995
     2.0000     2.4040
     3.0000     2.2362
--------------
Moderator value:
Memories     2.5846

        Coeff         se          t          p       LLCI       ULCI
D1      .4523      .2131     2.1226      .0358      .0305      .8740
D2      .1490      .2452      .6078      .5444     -.3363      .6344

Test of equality of conditional means at this value of the moderator
    R2-chng          F        df1        df2          p
      .0379     2.6362     2.0000   124.0000      .0756

Estimated conditional means at this value of the moderator
      Brand       yhat
     1.0000     2.1722
     2.0000     2.6245
     3.0000     2.3213
--------------
Moderator value:
Memories     3.9302

        Coeff         se          t          p       LLCI       ULCI
D1      .1000      .2888      .3462      .7298     -.4716      .6715
D2     -.3386      .2555    -1.3251      .1876     -.8444      .1672

Test of equality of conditional means at this value of the moderator
    R2-chng          F        df1        df2          p
      .0233     1.6186     2.0000   124.0000      .2023

Estimated conditional means at this value of the moderator
      Brand       yhat
     1.0000     2.7449
     2.0000     2.8449
     3.0000     2.4063

Moderator values are the sample mean and plus/minus one SD from mean
```

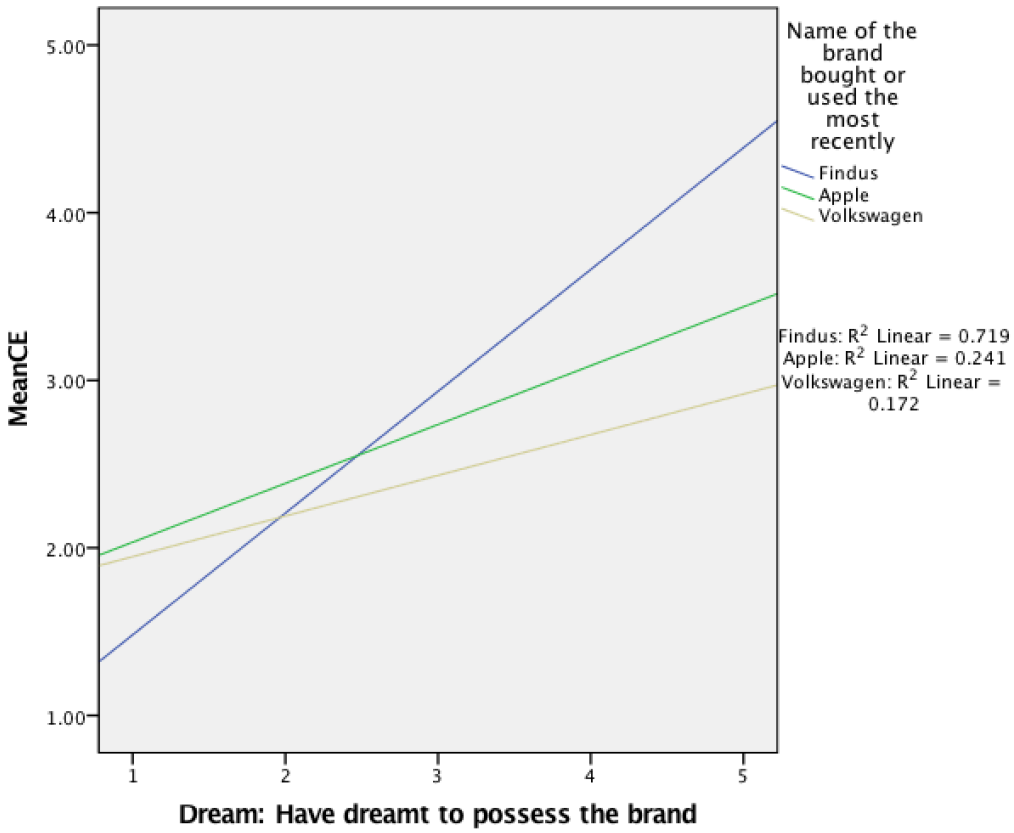


We can see on the graph the interaction. Where the customer engagement is evolving mainly for Findus depending on the ‘Recall of memories’ with the brand, while the other brands are more constant.

```
Model = 1
    Y = MeanCE
    X = Brand
    M = Dream

Sample size
        130

Coding of categorical X variable for analysis:
 Brand    D1    D2
  1.00   .00   .00
  2.00  1.00   .00
  3.00   .00  1.00

*************************************************************************
Outcome: MeanCE

Model Summary
          R       R-sq        MSE          F        df1        df2          p
      .6002      .3602      .5313    13.9648     5.0000   124.0000      .0000

Model
              coeff         se          t          p       LLCI       ULCI
constant      .7543      .3043     2.4786      .0145      .1520     1.3566
Dream         .7268      .1195     6.0803      .0000      .4902      .9634
D1            .9285      .3598     2.5808      .0110      .2164     1.6406
D2            .9509      .4198     2.2653      .0252      .1200     1.7817
int_1        -.3756      .1387    -2.7073      .0077     -.6502     -.1010
int_2        -.4842      .1529    -3.1681      .0019     -.7868     -.1817

Product terms key:
 int_1     :       D1        X       Dream
 int_2     :       D2        X       Dream

R-square increase due to interaction:
    R2-chng          F        df1        df2          p
      .0549     5.3187     2.0000   124.0000      .0061
```

The effect of the both interaction for the item ‘Dream’ is significant < 0.05. The model is significant too as it has a p-value of 0.000< 0.05. The item ‘Dream’ in the model is significant as well. The interaction in general is significant at the level of error of 5%.

```
Conditional effect of X on Y at values of the moderator:

Moderator value:
Dream     1.2044

        Coeff         se          t          p       LLCI       ULCI
D1      .4762      .2249     2.1168      .0363      .0309      .9214
D2      .3677      .2697     1.3634      .1752     -.1661      .9014

Test of equality of conditional means at this value of the moderator
    R2-chng          F        df1        df2          p
      .0232     2.2518     2.0000   124.0000      .1095

Estimated conditional means at this value of the moderator
      Brand       yhat
     1.0000     1.6296
     2.0000     2.1058
     3.0000     1.9973
--------------
Moderator value:
Dream     2.4692

        Coeff         se          t          p       LLCI       ULCI
D1      .0011      .1671      .0065      .9948     -.3296      .3317
D2     -.2448      .1924    -1.2726      .2056     -.6256      .1360

Test of equality of conditional means at this value of the moderator
    R2-chng          F        df1        df2          p
      .0140     1.3567     2.0000   124.0000      .2613

Estimated conditional means at this value of the moderator
      Brand       yhat
     1.0000     2.5489
     2.0000     2.5500
     3.0000     2.3041
--------------
Moderator value:
Dream     3.7341

        Coeff         se          t          p       LLCI       ULCI
D1     -.4740      .2585    -1.8339      .0691     -.9855      .0376
D2     -.8573      .2758    -3.1087      .0023    -1.4032     -.3115

Test of equality of conditional means at this value of the moderator
    R2-chng          F        df1        df2          p
      .0514     4.9783     2.0000   124.0000      .0083

Estimated conditional means at this value of the moderator
      Brand       yhat
     1.0000     3.4682
     2.0000     2.9942
     3.0000     2.6109

Moderator values are the sample mean and plus/minus one SD from mean
```



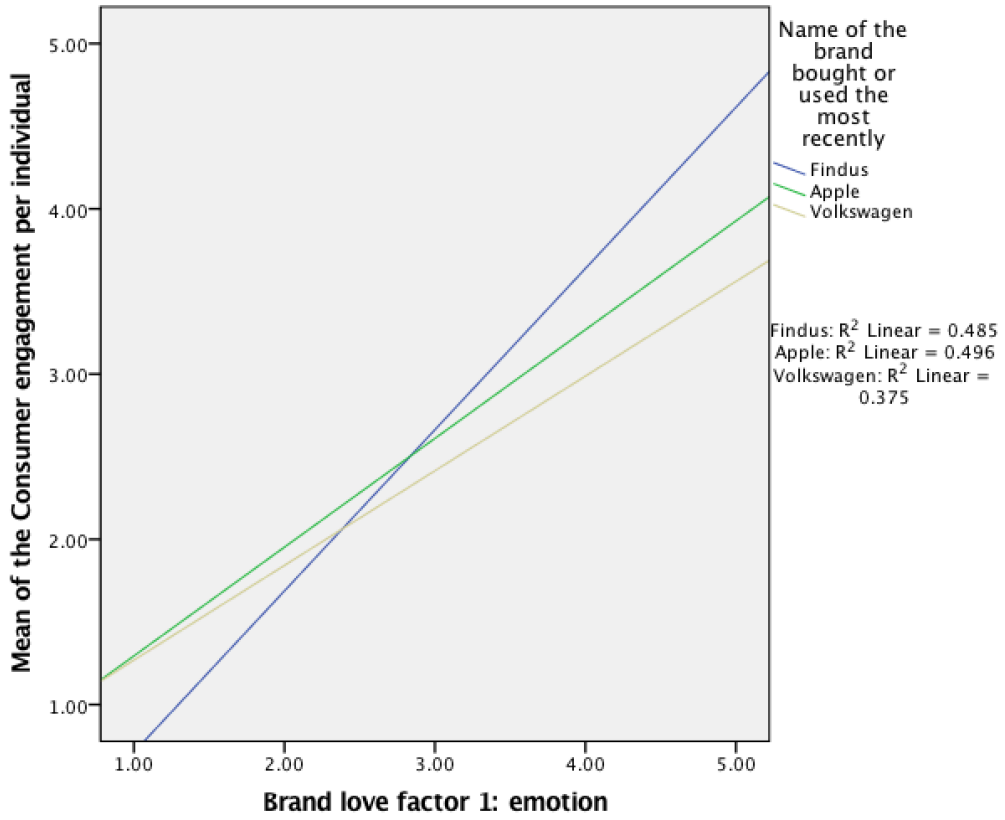
We can see the interaction on the graph. This gives us the assumption of a significative interaction per factor of brand love. We computed so the means for the factor 1 and the factor 2, based on the items remaining.

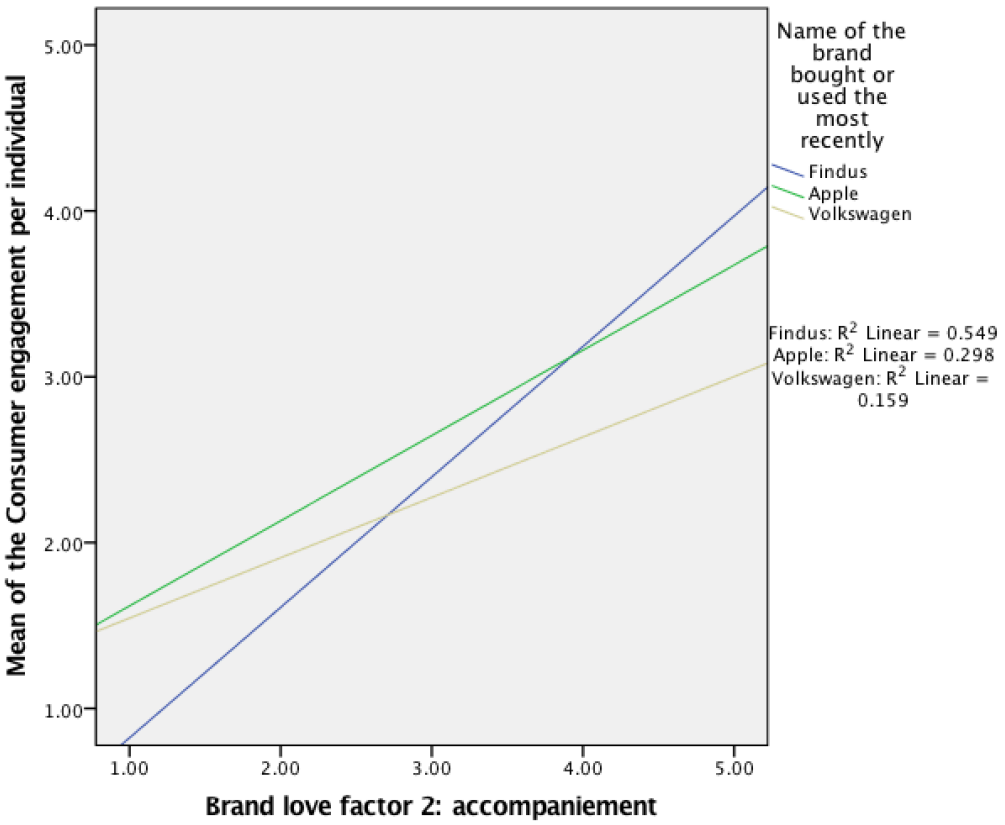
```
Model = 1
    Y = MeanCE
    X = Brand
    M = Fact1BL

Sample size
        130

Coding of categorical X variable for analysis:
 Brand    D1    D2
  1.00   .00   .00
  2.00  1.00   .00
  3.00   .00  1.00

*************************************************************************
Outcome: MeanCE

Model Summary
          R       R-sq        MSE          F        df1        df2          p
      .6880      .4734      .4374    22.2924     5.0000   124.0000      .0000

Model
              coeff         se          t          p       LLCI       ULCI
constant     -.2632      .4995     -.5271      .5991    -1.2518      .7253
Fact1BL       .9756      .1772     5.5066      .0000      .6250     1.3263
D1            .8999      .5601     1.6066      .1107     -.2087     2.0085
D2            .9602      .6520     1.4726      .1434     -.3304     2.2507
int_1        -.3176      .1959    -1.6214      .1075     -.7052      .0701
int_2        -.4029      .2247    -1.7926      .0755     -.8477      .0419

Product terms key:
 int_1     :       D1        X       Fact1BL
 int_2     :       D2        X       Fact1BL

R-square increase due to interaction:
    R2-chng          F        df1        df2          p
      .0147     1.7264     2.0000   124.0000      .1822
```

Even though for the factor 1 of brand love (emotion) the model is significant, the interactions are not. We can not also the effect of the factor 1 of brand love on the CE, which is significant at the level of error of 5% as < 0.05.

```
Model = 1
    Y = MeanCE
    X = Brand
    M = Fact2BL

Sample size
        130

Coding of categorical X variable for analysis:
 Brand    D1    D2
  1.00   .00   .00
  2.00  1.00   .00
  3.00   .00  1.00

*************************************************************************
Outcome: MeanCE

Model Summary
          R       R-sq        MSE          F        df1        df2          p
      .5856      .3429      .5457    12.9435     5.0000   124.0000      .0000

Model
              coeff         se          t          p       LLCI       ULCI
constant      .0365      .4719      .0773      .9385     -.8976      .9706
Fact2BL       .7866      .1500     5.2437      .0000      .4897     1.0835
D1           1.0672      .5469     1.9515      .0532     -.0152     2.1496
D2           1.1444      .6928     1.6519      .1011     -.2268     2.5156
int_1        -.2726      .1770    -1.5397      .1262     -.6229      .0778
int_2        -.4226      .2126    -1.9881      .0490     -.8433     -.0019

Product terms key:
 int_1     :       D1        X       Fact2BL
 int_2     :       D2        X       Fact2BL

R-square increase due to interaction:
    R2-chng          F        df1        df2          p
      .0220     2.0720     2.0000   124.0000      .1303
```

Looking at the factor 2 of brand love (accompaniement) we can see the model is significant, and that the interaction number 2 is significant as well at the level of error of 5%. Though, the effect of interaction in general is not significant at the level of error of 10%. We can see also that the effect of the factor 2 of brand love on the CE is significant. We will then have a quick look at the graphs to see how the tendency was about the interactions, even though they are not significant.


Mean of the Consumer engagement per individual
5.00
4.00
3.00
2.00
1.00
1.00
2.00
3.00
4.00
5.00
Brand love factor 1: emotion
Name of the brand bought or used the most recently
Findus
Apple
Volkswagen
Findus: R2 Linear = 0.485
Apple: R2 Linear = 0.496
Volkswagen: R2 Linear = 0.375


Mean of the Consumer engagement per individual
5.00
4.00
3.00
2.00
1.00
1.00
2.00
3.00
4.00
5.00
Brand love factor 2: accompaniement
Name of the brand bought or used the most recently
Findus
Apple
Volkswagen
Findus: R2 Linear = 0.549
Apple: R2 Linear = 0.298
Volkswagen: R2 Linear = 0.159

This encourages us to make a test of correlation between the two factors of brand love and the CE. We looked first sperately per brand to be consistent with the precedent graph, then all together.

Correlations

Name of the brand bought or used the most recently			Mean of the Consumer engagement per individual	Brand love factor 1: emotion
Findus	Mean of the Consumer engagement per individual	Pearson Correlation	1	.697**
		Sig. (2-tailed)		.000
		N	27	27
	Brand love factor 1: emotion	Pearson Correlation	.697**	1
		Sig. (2-tailed)	.000	
		N	27	27
Apple	Mean of the Consumer engagement per individual	Pearson Correlation	1	.704**
		Sig. (2-tailed)		.000
		N	70	70
	Brand love factor 1: emotion	Pearson Correlation	.704**	1
		Sig. (2-tailed)	.000	
		N	70	70
Volkswagen	Mean of the Consumer engagement per individual	Pearson Correlation	1	.612**
		Sig. (2-tailed)		.000
		N	33	33
	Brand love factor 1: emotion	Pearson Correlation	.612**	1
		Sig. (2-tailed)	.000	
		N	33	33

**. Correlation is significant at the 0.01 level (2-tailed).

The effects per brand are significant at the level of error of 1%.

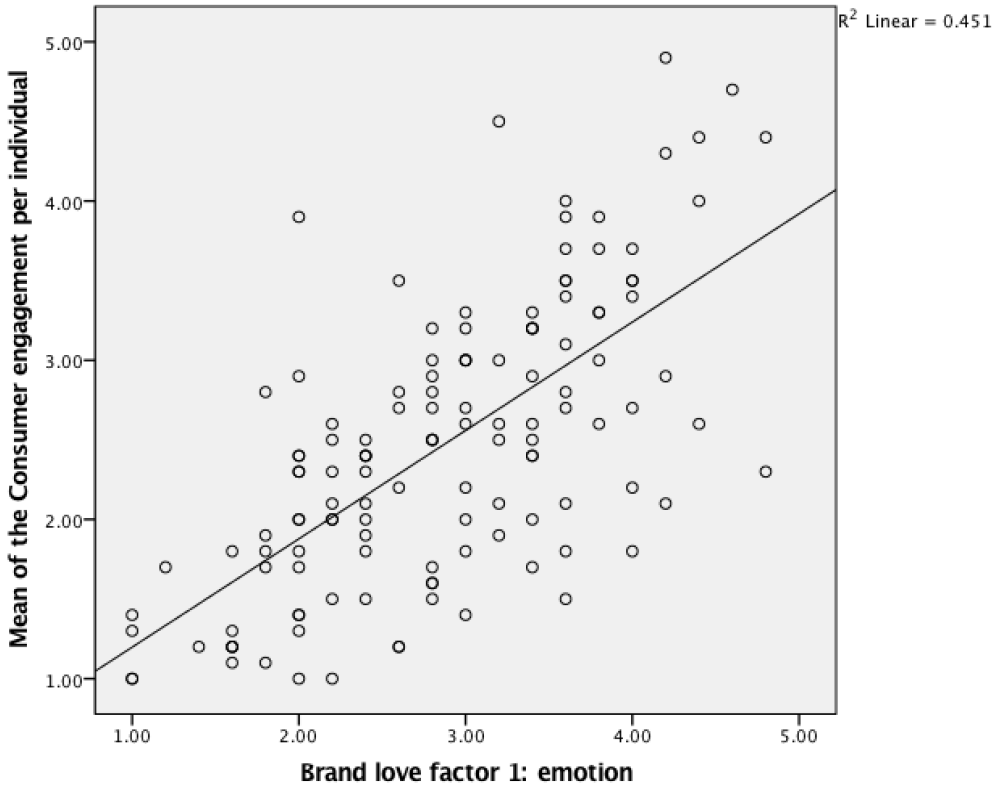
Correlations

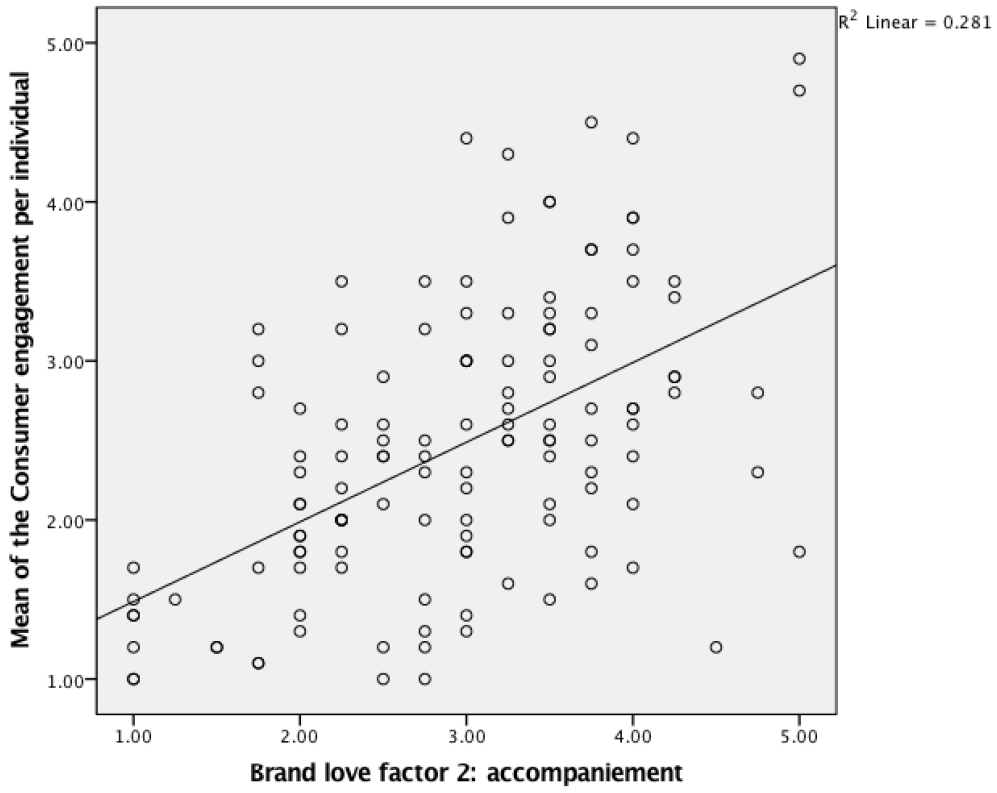
Name of the brand bought or used the most recently			Mean of the Consumer engagement per individual	Brand love factor 2: accompaniement
Findus	Mean of the Consumer engagement per individual	Pearson Correlation	1	.741**
		Sig. (2-tailed)		.000
		N	27	27
	Brand love factor 2: accompaniement	Pearson Correlation	.741**	1
		Sig. (2-tailed)	.000	
		N	27	27
Apple	Mean of the Consumer engagement per individual	Pearson Correlation	1	.546**
		Sig. (2-tailed)		.000
		N	70	70
	Brand love factor 2: accompaniement	Pearson Correlation	.546**	1
		Sig. (2-tailed)	.000	
		N	70	70
Volkswagen	Mean of the Consumer engagement per individual	Pearson Correlation	1	.399*
		Sig. (2-tailed)		.021
		N	33	33
	Brand love factor 2: accompaniement	Pearson Correlation	.399*	1
		Sig. (2-tailed)	.021	
		N	33	33

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

The effects per brand are significant at the level of error of 5%. We now look at the general effect of the brand love factors on the CE.


R² Linear = 0.451
Mean of the Consumer engagement per individual
5.00
4.00
3.00
2.00
1.00
1.00
2.00
3.00
4.00
5.00
Brand love factor 1: emotion


R² Linear = 0.281
Mean of the Consumer engagement per individual
5.00
4.00
3.00
2.00
1.00
1.00
2.00
3.00
4.00
5.00
Brand love factor 2: accompaniement

Correlations

		Mean of the Consumer engagement per individual	Brand love factor 1: emotion
Mean of the Consumer engagement per individual	Pearson Correlation	1	.671**
	Sig. (2-tailed)		.000
	N	130	130
Brand love factor 1: emotion	Pearson Correlation	.671**	1
	Sig. (2-tailed)	.000	
	N	130	130

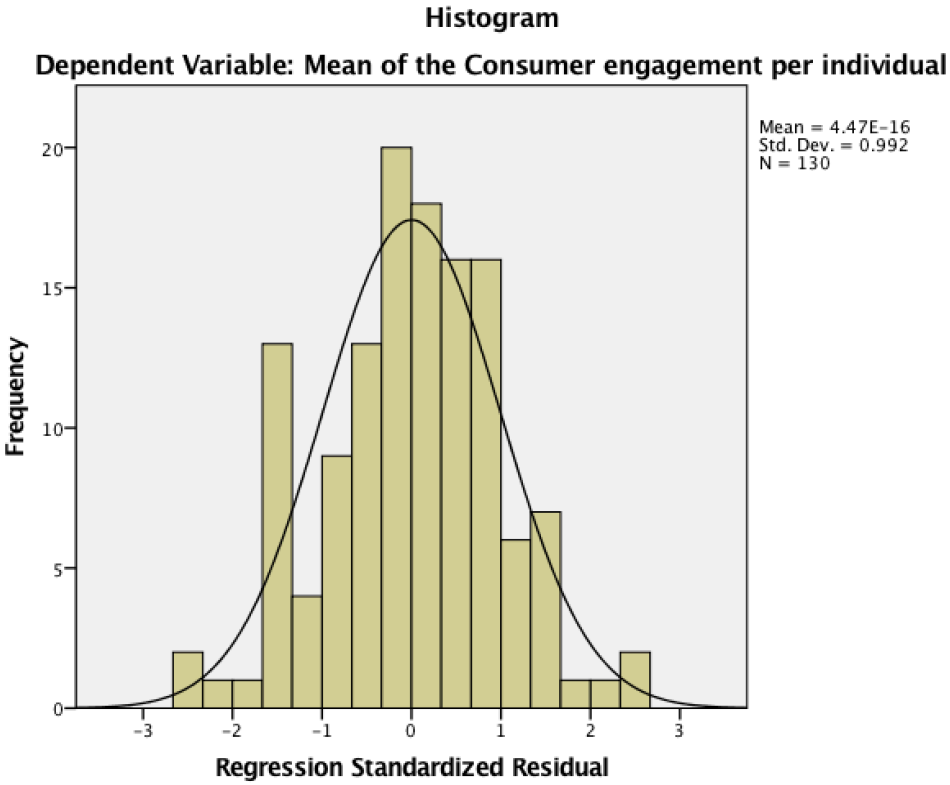
**. Correlation is significant at the 0.01 level (2-tailed).

Correlations

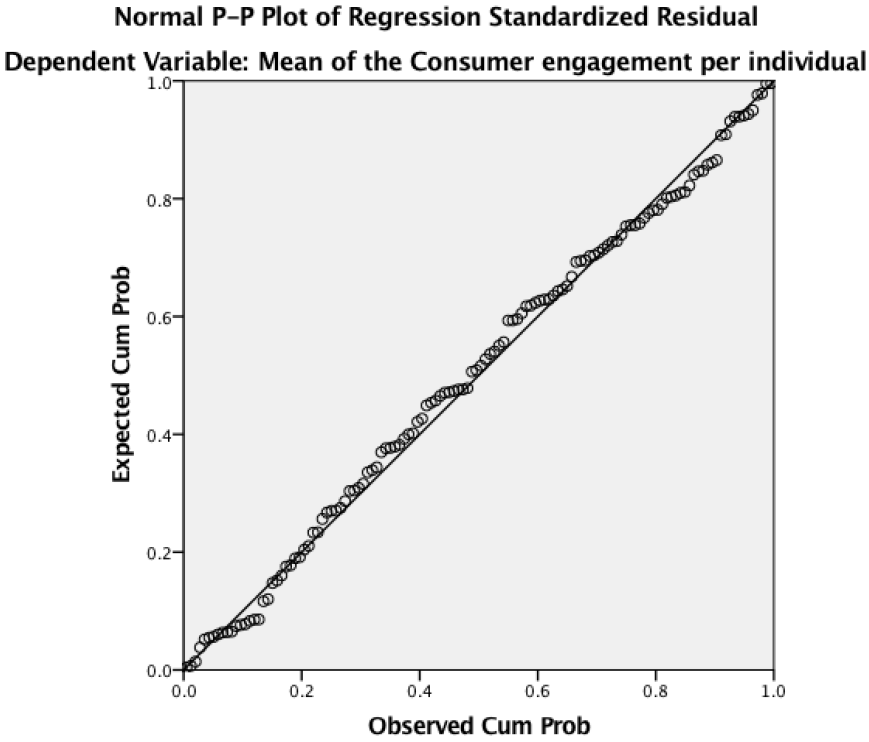
		Mean of the Consumer engagement per individual	Brand love factor 2: accompaniement
Mean of the Consumer engagement per individual	Pearson Correlation	1	.530**
	Sig. (2-tailed)		.000
	N	130	130
Brand love factor 2: accompaniement	Pearson Correlation	.530**	1
	Sig. (2-tailed)	.000	
	N	130	130

**. Correlation is significant at the 0.01 level (2-tailed).

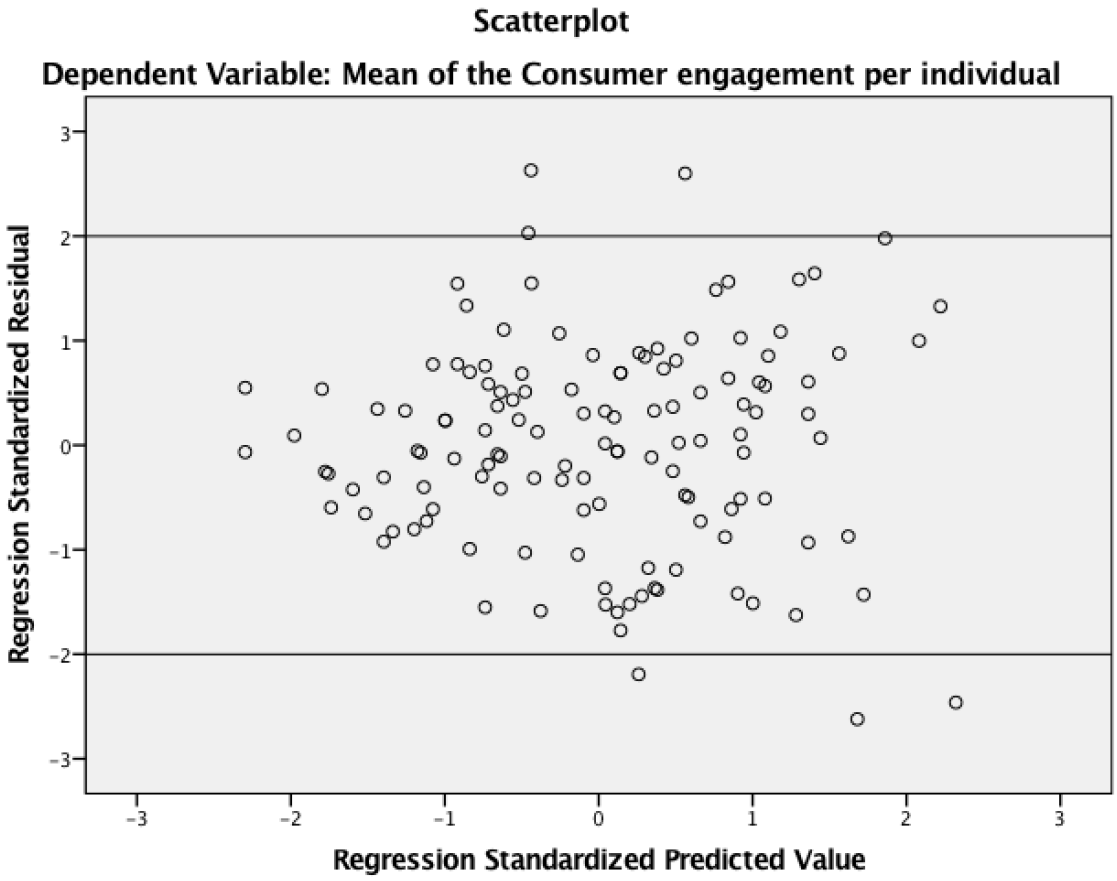
The effect is significant. We make then a linear regression of the two factors of brand love on the CE mean. We start by checking the underlying assumptions.



The residuals are globally following a normal distribution of mean equal to 0.



This second graph supports also the assumption of normal distribution. The data are close to the Henry line.



We can verify that the residuals are randomly distributed. We can verify there is no problem of heteroscedasticity, as globally the residuals are not more distant from 0 in one side of the X domain than the other. Also, 95% of the data are comprised between 2 and -2, which confirms the normality assumption.

The three graphs are so reassuring about the underlying assumptions for a residual model.

Variables Entered/Removed[a]

Model	Variables Entered	Variables Removed	Method
1	Brand love factor 2: accompaniement, Brand love factor 1: emotion[b]	.	Enter

a. Dependent Variable: Mean of the Consumer engagement per individual

b. All requested variables entered.

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.692[a]	.479	.471	.64973

a. Predictors: (Constant), Brand love factor 2: accompaniement, Brand love factor 1: emotion

b. Dependent Variable: Mean of the Consumer engagement per individual

47,9% of the variability of the CE mean variable is explained by the model.

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	49.367	2	24.683	58.470	.000[b]
	Residual	53.613	127	.422		
	Total	102.980	129			

a. Dependent Variable: Mean of the Consumer engagement per individual

b. Predictors: (Constant), Brand love factor 2: accompaniement, Brand love factor 1: emotion

The p-value associated to the F test is < 0.05. It means our model is significant at the level of error of 5% in our population, and that the prediction of the CE is better than without the information of the brand love factors.

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	.289	.213		1.360	.176
	Brand love factor 1: emotion	.557	.080	.549	6.963	.000
	Brand love factor 2: accompaniement	.197	.075	.209	2.643	.009

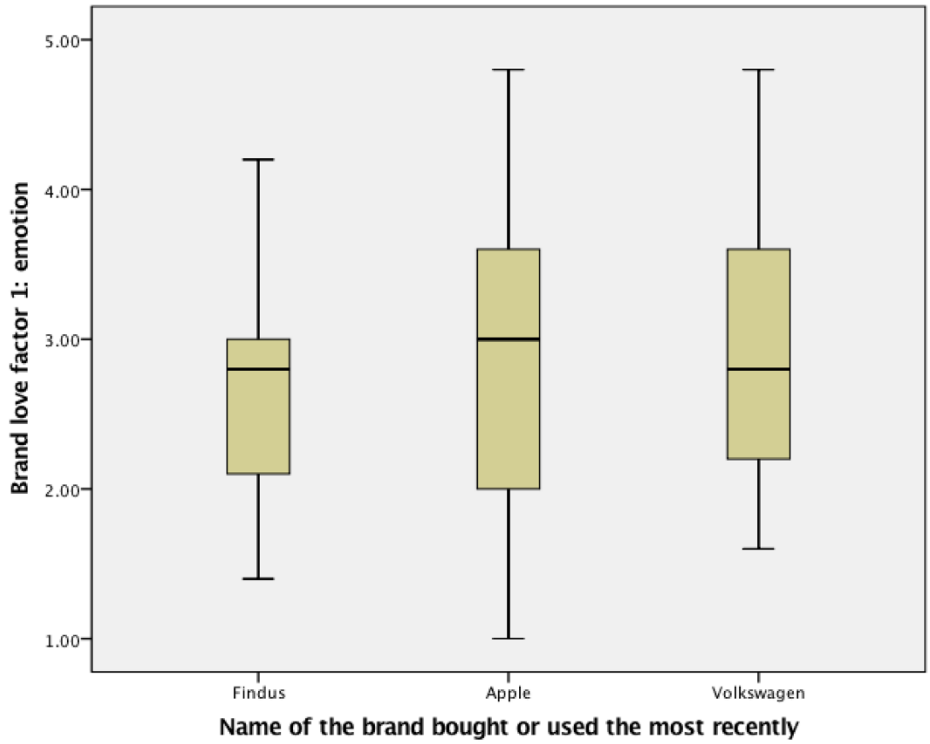
a. Dependent Variable: Mean of the Consumer engagement per individual

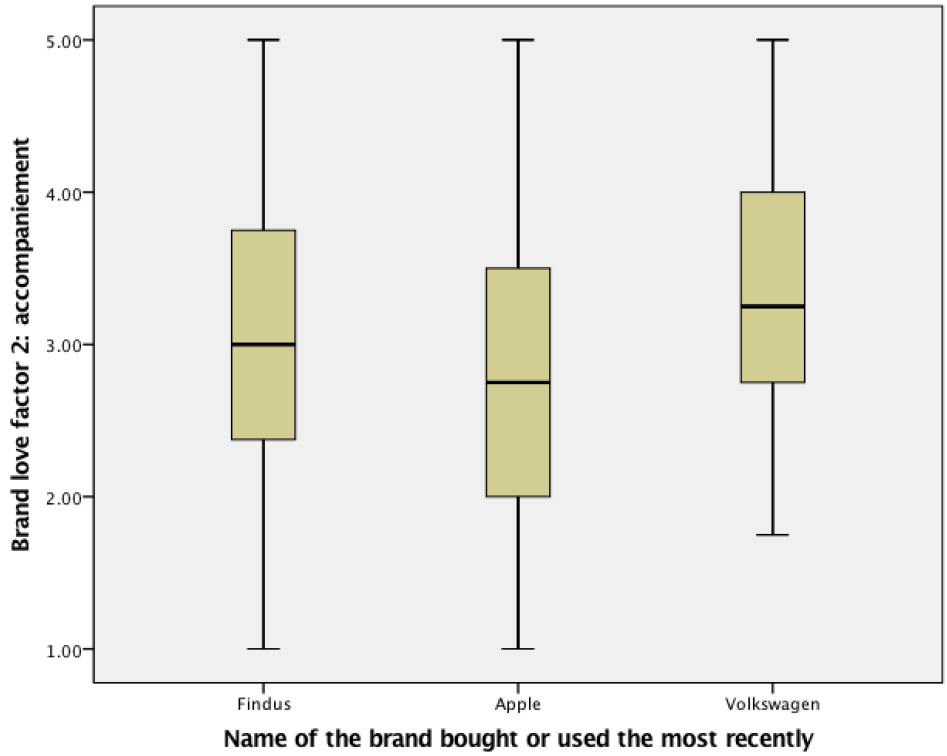
The two p-value are < 0.05 for the factors which means the slope is significantly different from 0 in our population. Though our constant is not significant, this means that persons without the brand love attribute might not be engaged at all.

Y = 0.289 + 0.557*X1 + 0.197*X2

We can affirm that the relationship is positive.

Before ending the analysis of the hypothesis we will also quickly analyse the two factors of brand love. Let us have a look first at the box plots.





We will compare the means with a One Way ANOVA.

Test of Homogeneity of Variances

	Levene Statistic	df1	df2	Sig.
Brand love factor 1: emotion	1.903	2	127	.153
Brand love factor 2: accompaniement	.188	2	127	.829

The test of homogeneity of variances is respected as non significant.

ANOVA

		Sum of Squares	df	Mean Square	F	Sig.
Brand love factor 1: emotion	Between Groups	.632	2	.316	.403	.669
	Within Groups	99.580	127	.784		
	Total	100.212	129			
Brand love factor 2: accompaniement	Between Groups	5.079	2	2.539	2.929	.057
	Within Groups	110.096	127	.867		
	Total	115.175	129			

At a levelo of error of 10%, there is a significant difference in the means of the factor accompaniement of brand love, whith at least one of the means being significantly different.

Multiple Comparisons

Dependent Variable		(I) Name of the brand bought or used the most recently	(J) Name of the brand bought or used the most recently	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
							Lower Bound	Upper Bound
Brand love factor 1: emotion	Tukey HSD	Findus	Apple	-.15979	.20060	.706	-.6355	.3159
			Volkswagen	-.18923	.22978	.689	-.7342	.3557
		Apple	Findus	.15979	.20060	.706	-.3159	.6355
			Volkswagen	-.02944	.18698	.986	-.4729	.4140
		Volkswagen	Findus	.18923	.22978	.689	-.3557	.7342
			Apple	.02944	.18698	.986	-.4140	.4729
	Bonferroni	Findus	Apple	-.15979	.20060	1.000	-.6465	.3269
			Volkswagen	-.18923	.22978	1.000	-.7467	.3683
		Apple	Findus	.15979	.20060	1.000	-.3269	.6465
			Volkswagen	-.02944	.18698	1.000	-.4831	.4242
		Volkswagen	Findus	.18923	.22978	1.000	-.3683	.7467
			Apple	.02944	.18698	1.000	-.4242	.4831
	Games-Howell	Findus	Apple	-.15979	.18122	.654	-.5951	.2755
			Volkswagen	-.18923	.20375	.625	-.6794	.3009
		Apple	Findus	.15979	.18122	.654	-.2755	.5951
			Volkswagen	-.02944	.18618	.986	-.4752	.4164
		Volkswagen	Findus	.18923	.20375	.625	-.3009	.6794
			Apple	.02944	.18618	.986	-.4164	.4752
Brand love factor 2: accompaniement	Tukey HSD	Findus	Apple	.21429	.21093	.568	-.2859	.7145
			Volkswagen	-.25758	.24161	.537	-.8306	.3154
		Apple	Findus	-.21429	.21093	.568	-.7145	.2859
			Volkswagen	-.47186*	.19661	.047	-.9381	-.0056
		Volkswagen	Findus	.25758	.24161	.537	-.3154	.8306
			Apple	.47186*	.19661	.047	.0056	.9381
	Bonferroni	Findus	Apple	.21429	.21093	.935	-.2975	.7260
			Volkswagen	-.25758	.24161	.865	-.8438	.3286
		Apple	Findus	-.21429	.21093	.935	-.7260	.2975
			Volkswagen	-.47186	.19661	.054	-.9488	.0051
		Volkswagen	Findus	.25758	.24161	.865	-.3286	.8438
			Apple	.47186	.19661	.054	-.0051	.9488
	Games-Howell	Findus	Apple	.21429	.21757	.590	-.3125	.7410
			Volkswagen	-.25758	.23943	.533	-.8349	.3198
		Apple	Findus	-.21429	.21757	.590	-.7410	.3125
			Volkswagen	-.47186*	.18862	.039	-.9238	-.0199
		Volkswagen	Findus	.25758	.23943	.533	-.3198	.8349
			Apple	.47186*	.18862	.039	.0199	.9238

*. The mean difference is significant at the 0.05 level.

At a level of error of 10% we can assert that there is a significant difference in the means of Apple and Volkswagen for the factor accompaniement.

Descriptives

		N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
						Lower Bound	Upper Bound		
Brand love factor 1: emotion	Findus	27	2.7259	.73201	.14088	2.4364	3.0155	1.40	4.20
	Apple	70	2.8857	.95375	.11400	2.6583	3.1131	1.00	4.80
	Volkswagen	33	2.9152	.84562	.14720	2.6153	3.2150	1.60	4.80
	Total	130	2.8600	.88138	.07730	2.7071	3.0129	1.00	4.80
Brand love factor 2: accompaniement	Findus	27	3.0000	.96576	.18586	2.6180	3.3820	1.00	5.00
	Apple	70	2.7857	.94628	.11310	2.5601	3.0113	1.00	5.00
	Volkswagen	33	3.2576	.86712	.15095	2.9501	3.5650	1.75	5.00
	Total	130	2.9500	.94490	.08287	2.7860	3.1140	1.00	5.00

At a level of error of 10% the means for the consumers of Apple about the accompaniement factor of brand love is lower than the one of the consumers Volkswagen.

H3: CE effect on the type of explanation

We will now base ourselves on the binary variable created for the CE. We start first by verifying the power of the test.

Consumer engagement (binary)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Non engaged consum	67	51.5	51.5	51.5
	Engaged consum	63	48.5	48.5	100.0
	Total	130	100.0	100.0	

Tail(s)	Two	Noncentrality parameter δ	4,5585423
Effect size d	0,8	Critical t	1,9786708
α err prob	0,05	Df	128
Sample size group 1	67	Power (1-β err prob)	0,9948282
Sample size group 2	63		

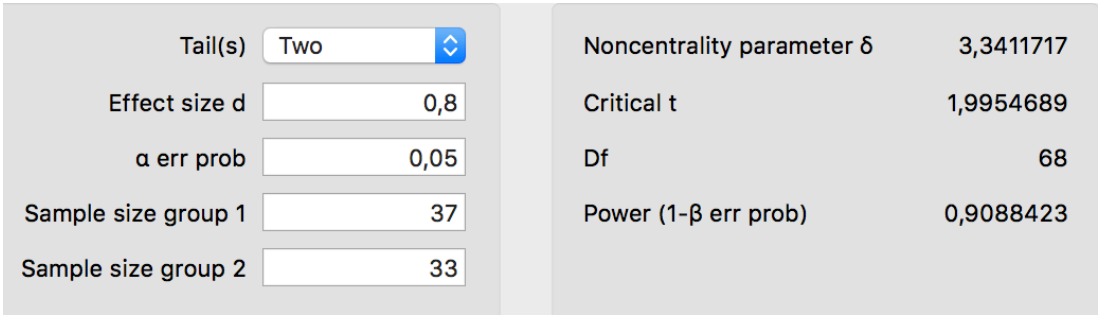
The power of the test is of 99,48% with a large effect size d of 0.8. This is thanks to the fact that our sample is quite big. We look now at the number of engaged and non-engaged consumer per brand. Though we will split the sample depending of the brand.

Consumer engagement (binary)

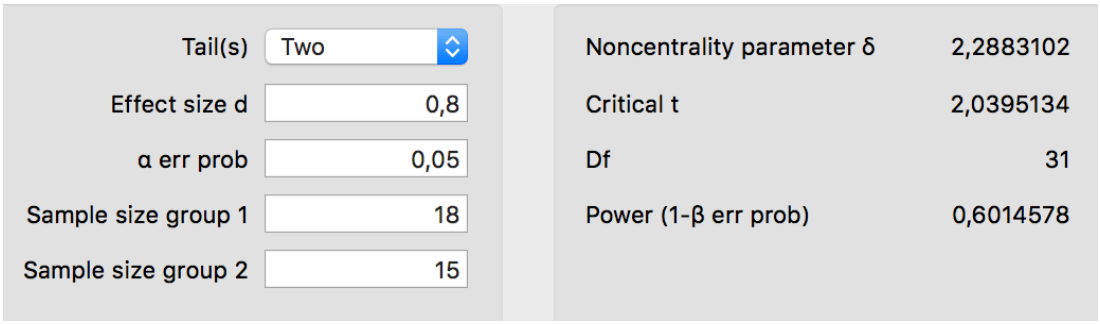
Name of the brand bought or used the most recently			Frequency	Percent	Valid Percent	Cumulative Percent
Findus	Valid	Non engaged consum	16	59.3	59.3	59.3
		Engaged consum	11	40.7	40.7	100.0
		Total	27	100.0	100.0	
Apple	Valid	Engaged consum	37	52.9	52.9	52.9
		Non engaged consum	33	47.1	47.1	100.0
		Total	70	100.0	100.0	
Volkswagen	Valid	Non engaged consum	18	54.5	54.5	54.5
		Engaged consum	15	45.5	45.5	100.0
		Total	33	100.0	100.0	

Tail(s)	Two	Noncentrality parameter δ	2,0425112
Effect size d	0,8	Critical t	2,0595386
α err prob	0,05	Df	25
Sample size group 1	16	Power (1-β err prob)	0,5015766
Sample size group 2	11		

The power of the t-test for the brand Findus is so of 50,16%.

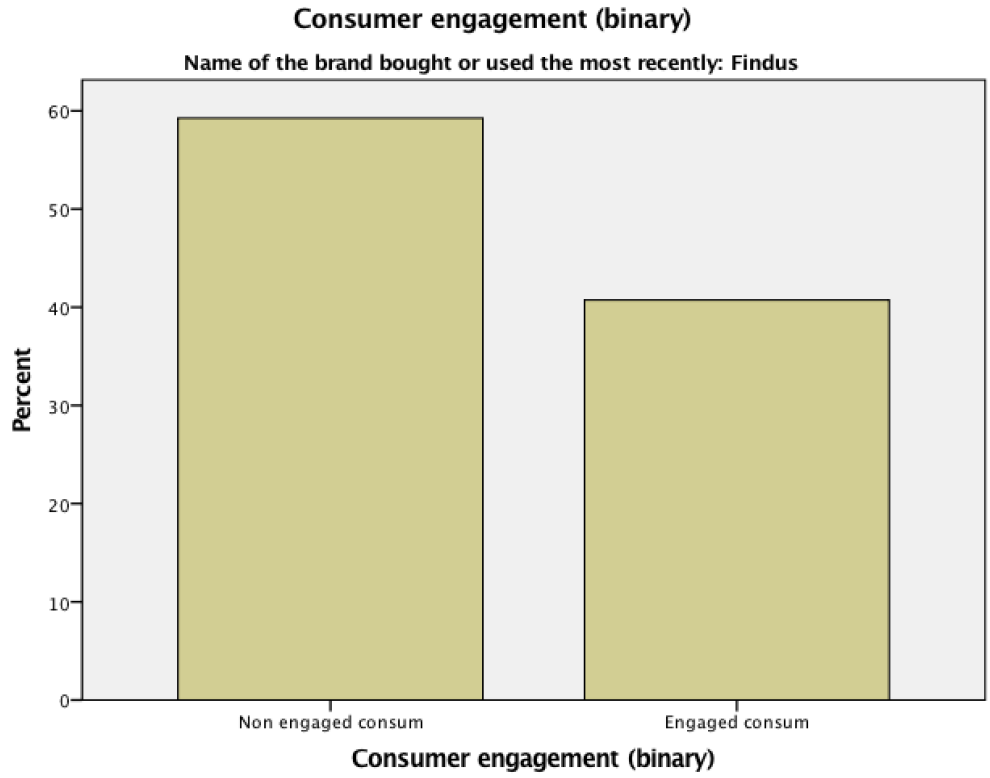


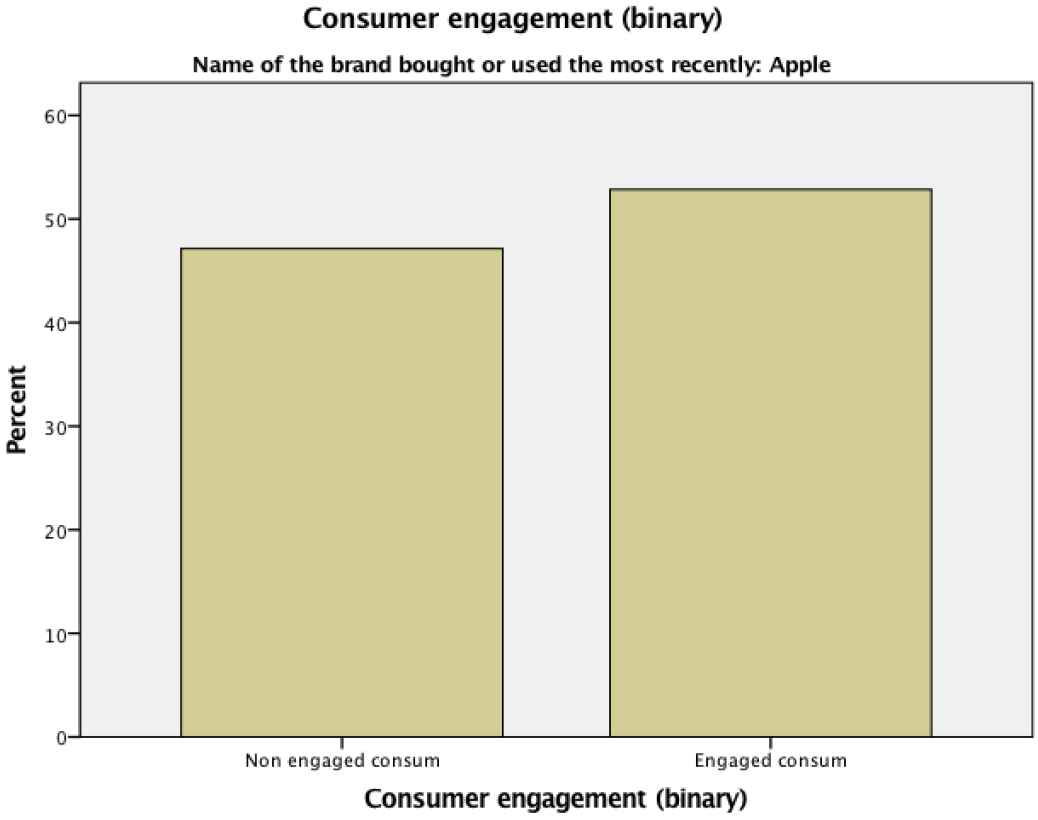
The power of the t-test for the brand Apple is of 90,88%.

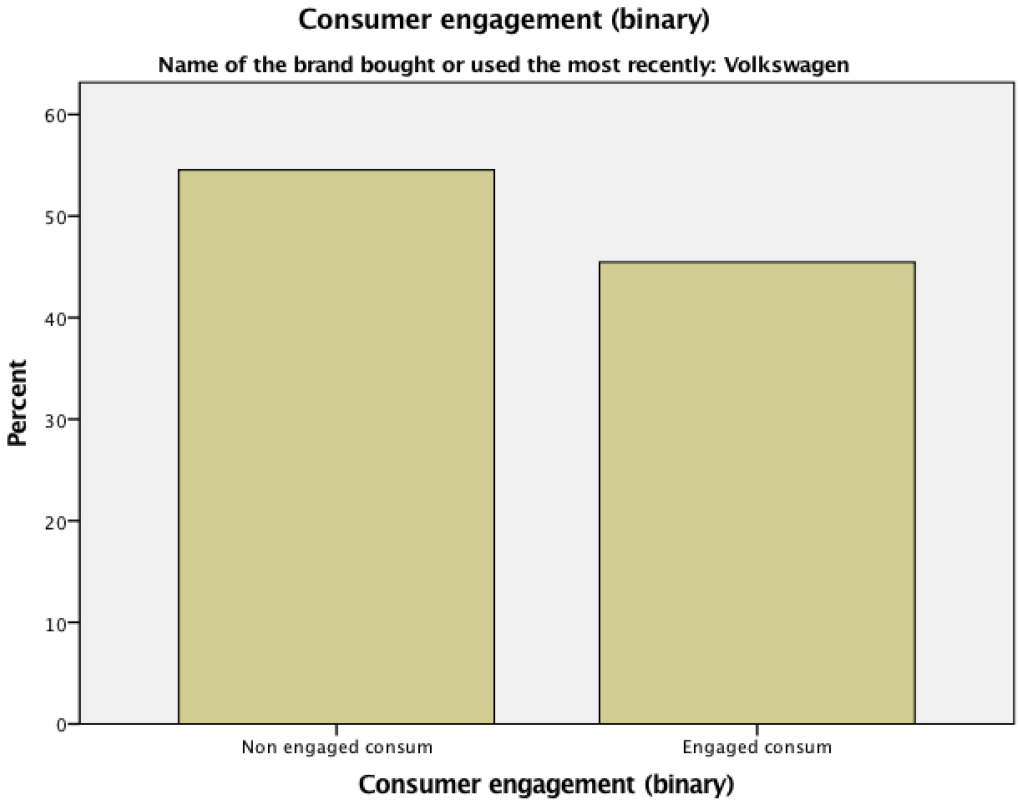


And the power of the t-test for the brand Volkswagen is of 60,15%.

Here below are the histograms to compare the different brands. On the left side are the consumers seen as non-engaged, and on the right side the consumers seen as engaged with the brand.


Consumer engagement (binary)
Name of the brand bought or used the most recently: Findus
Percent
60
50
40
30
20
10
0
Non engaged consum
Engaged consum
Consumer engagement (binary)


Consumer engagement (binary)
Name of the brand bought or used the most recently: Apple
Percent
60
50
40
30
20
10
0
Non engaged consum
Engaged consum
Consumer engagement (binary)


Consumer engagement (binary)
Name of the brand bought or used the most recently: Volkswagen
Percent
60
50
40
30
20
10
0
Non engaged consum
Engaged consum
Consumer engagement (binary)

Independent Samples Test

Name of the brand bought or used the most recently			Levene's Test for Equality of Variances: F	Levene's Test for Equality of Variances: Sig.	t-test for Equality of Means: t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference: Lower	Upper
Findus	Prefer to omit to mention the case	Equal variances assumed	2.124	.157	-1.454	25	.158	-.619	.426	-1.497	.258
		Equal variances not assumed			-1.384	17.853	.183	-.619	.447	-1.560	.321
	Feeling to defend the brand	Equal variances assumed	4.210	.051	-5.665	25	.000	-1.915	.338	-2.611	-1.219
		Equal variances not assumed			-5.163	14.850	.000	-1.915	.371	-2.706	-1.124
	Case perceived as not so serious	Equal variances assumed	.145	.706	-4.747	25	.000	-1.659	.350	-2.379	-.939
		Equal variances not assumed			-4.659	20.206	.000	-1.659	.356	-2.401	-.917
Apple	Prefer to omit to mention the case	Equal variances assumed	.033	.856	-2.229	68	.029	-.510	.229	-.967	-.053
		Equal variances not assumed			-2.214	64.459	.030	-.510	.231	-.971	-.050
	Feeling to defend the brand	Equal variances assumed	.979	.326	-2.937	68	.005	-.594	.202	-.997	-.190
		Equal variances not assumed			-2.914	64.060	.005	-.594	.204	-1.001	-.187
	Case perceived as not so serious	Equal variances assumed	.005	.943	-3.475	68	.001	-.631	.181	-.993	-.269
		Equal variances not assumed			-3.486	67.740	.001	-.631	.181	-.992	-.270
Volkswagen	Prefer to omit to mention the case	Equal variances assumed	1.264	.270	-1.924	31	.064	-.522	.271	-1.076	.031
		Equal variances not assumed			-1.900	28.042	.068	-.522	.275	-1.085	.041
	Feeling to defend the brand	Equal variances assumed	.050	.824	-2.038	31	.050	-.756	.371	-1.511	.000
		Equal variances not assumed			-2.017	28.418	.053	-.756	.375	-1.522	.011
	Case perceived as not so serious	Equal variances assumed	.516	.478	-3.480	31	.002	-1.167	.335	-1.850	-.483
		Equal variances not assumed			-3.455	28.936	.002	-1.167	.338	-1.857	-.476

First we make the test for the items remaining of the factor explanation. Though as what imports is here first the type of answer, we will then make a second test with the ones remaining. There is no impact on the significance of the items if the T test is made with all of them together or in two times. This will help us also to have a better readability.

Independent Samples Test

Name of the brand bought or used the most recently			Levene's Test for Equality of Variances		t-test for Equality of Means						
										95% Confidence Interval of the Difference	
			F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Findus	No responsibility for the brand or the organisation	Equal variances assumed	.531	.473	-2.907	25	.008	-1.080	.371	-1.844	-.315
		Equal variances not assumed			-2.821	19.316	.011	-1.080	.383	-1.880	-.279
	Reversed Will to reject or punish the brand (rev.)	Equal variances assumed	8.906	.006	.960	25	.346	.352	.367	-.403	1.108
		Equal variances not assumed			1.102	21.250	.283	.352	.320	-.312	1.016
	Reversed Feeling to reject or punish the brand (rev.)	Equal variances assumed	.314	.580	-1.172	25	.252	-.483	.412	-1.332	.366
		Equal variances not assumed			-1.178	22.022	.251	-.483	.410	-1.333	.367
	Other brands did the same	Equal variances assumed	1.673	.208	.368	25	.716	.114	.309	-.522	.750
		Equal variances not assumed			.385	24.441	.704	.114	.295	-.495	.722
Apple	No responsibility for the brand or the organisation	Equal variances assumed	.040	.842	-.792	68	.431	-.210	.265	-.738	.319
		Equal variances not assumed			-.782	61.625	.437	-.210	.268	-.746	.326
	Reversed Will to reject or punish the brand (rev.)	Equal variances assumed	3.152	.080	1.517	68	.134	.415	.274	-.131	.961
		Equal variances not assumed			1.496	60.363	.140	.415	.278	-.140	.970
	Reversed Feeling to reject or punish the brand (rev.)	Equal variances assumed	2.913	.092	-1.043	68	.301	-.233	.223	-.678	.212
		Equal variances not assumed			-1.026	58.830	.309	-.233	.227	-.686	.221
	Other brands did the same	Equal variances assumed	.070	.792	-1.181	68	.242	-.265	.225	-.714	.183
		Equal variances not assumed			-1.186	67.836	.240	-.265	.224	-.712	.181
Volkswagen	No responsibility for the brand or the organisation	Equal variances assumed	2.518	.123	-.073	31	.942	-.033	.457	-.965	.898
		Equal variances not assumed			-.074	30.974	.941	-.033	.448	-.946	.880
	Reversed Will to reject or punish the brand (rev.)	Equal variances assumed	.141	.710	.697	31	.491	.333	.478	-.642	1.309
		Equal variances not assumed			.693	29.170	.494	.333	.481	-.650	1.317
	Reversed Feeling to reject or punish the brand (rev.)	Equal variances assumed	.067	.798	-.869	31	.392	-.300	.345	-1.004	.404
		Equal variances not assumed			-.868	29.877	.392	-.300	.345	-1.006	.406
	Other brands did the same	Equal variances assumed	2.069	.160	.685	31	.498	.233	.341	-.461	.928
		Equal variances not assumed			.705	30.507	.486	.233	.331	-.442	.909

The fact of thinking of the case as not so serious differs from engaged and non-engaged consumers for each of the brands, as all are significantly < 0.025 at the level of error of 5%. The feeling to defend the brand is also significantly different between the two groups of engaged and non-engaged consumers at the level of error of 5%. It is equally the case for Volkswagen if we take a level of error of 10%.

Group Statistics

Name of the brand bought or used the most recently		Consumer engagement (binary)	N	Mean	Std. Deviation	Std. Error Mean
Findus	Prefer to omit to mention the case	Non engaged consum	16	2.56	.964	.241
		Engaged consum	11	3.18	1.250	.377
	Feeling to defend the brand	Non engaged consum	16	1.81	.655	.164
		Engaged consum	11	3.73	1.104	.333
	Case perceived as not so serious	Non engaged consum	16	2.25	.856	.214
		Engaged consum	11	3.91	.944	.285
Apple	Prefer to omit to mention the case	Non engaged consum	33	2.03	1.015	.177
		Engaged consum	37	2.54	.900	.148
	Feeling to defend the brand	Non engaged consum	33	1.76	.902	.157
		Engaged consum	37	2.35	.789	.130
	Case perceived as not so serious	Non engaged consum	33	1.67	.736	.128
		Engaged consum	37	2.30	.777	.128
Volkswagen	Prefer to omit to mention the case	Non engaged consum	18	1.94	.725	.171
		Engaged consum	15	2.47	.834	.215
	Feeling to defend the brand	Non engaged consum	18	1.78	1.003	.236
		Engaged consum	15	2.53	1.125	.291
	Case perceived as not so serious	Non engaged consum	18	1.83	.924	.218
		Engaged consum	15	3.00	1.000	.258

Looking at the means, we can see on this first table that engaged consumers are more willing to perceive the case as not so serious in comparison to unengaged consumers respectively for each brand. Also, about the feeling to defend the brand, we can see that the means is doubled the one from engaged to unengaged consumers about defending the brand Findus about the unethical and fraudulent case. The engaged consumers of Apple have also a bigger mean about defending the brand about the case than unengaged consumers.

Group Statistics

Name of the brand bought or used the most recently		Consumer engagement (binary)	N	Mean	Std. Deviation	Std. Error Mean
Findus	No responsibility for the brand or the organisation	Non engaged consum	16	2.38	.885	.221
		Engaged consum	11	3.45	1.036	.312
	Reversed Will to reject or punish the brand (rev.)	Non engaged consum	16	2.63	1.147	.287
		Engaged consum	11	2.27	.467	.141
	Reversed Feeling to reject or punish the brand (rev.)	Non engaged consum	16	3.06	1.063	.266
		Engaged consum	11	3.55	1.036	.312
	Other brands did the same	Non engaged consum	16	3.75	.856	.214
		Engaged consum	11	3.64	.674	.203
Apple	No responsibility for the brand or the organisation	Non engaged consum	33	2.06	1.223	.213
		Engaged consum	37	2.27	.990	.163
	Reversed Will to reject or punish the brand (rev.)	Non engaged consum	33	3.09	1.284	.223
		Engaged consum	37	2.68	1.002	.165
	Reversed Feeling to reject or punish the brand (rev.)	Non engaged consum	33	2.85	1.064	.185
		Engaged consum	37	3.08	.795	.131
	Other brands did the same	Non engaged consum	33	3.55	.905	.157
		Engaged consum	37	3.81	.967	.159
Volkswagen	No responsibility for the brand or the organisation	Non engaged consum	18	2.17	1.425	.336
		Engaged consum	15	2.20	1.146	.296
	Reversed Will to reject or punish the brand (rev.)	Non engaged consum	18	3.33	1.328	.313
		Engaged consum	15	3.00	1.414	.365
	Reversed Feeling to reject or punish the brand (rev.)	Non engaged consum	18	2.83	.985	.232
		Engaged consum	15	3.13	.990	.256
	Other brands did the same	Non engaged consum	18	4.17	1.098	.259
		Engaged consum	15	3.93	.799	.206

Only for the brand of Findus the engaged consumers have significantly a bigger mean about saying that there is no responsibility about the case for the brand or the organisation. This seems in coherence with the case as a public organism recognised that the brand was not responsible.

We will now compare the different means of the significant items to see if significantly we could say that the means are different from one groupe of consumers of one brand and one of another.

Test of Homogeneity of Variances

	Levene Statistic	df1	df2	Sig.
Feeling to defend the brand	3.345	2	127	.038
Case perceived as not so serious	4.937	2	127	.009
No responsibility for the brand or the organisation	.731	2	127	.484

The test of homogeneity of variances is only verified for the ‘no responsibility for the brand or the organisation’.

ANOVA

		Sum of Squares	df	Mean Square	F	Sig.
Feeling to defend the brand	Between Groups	5.516	2	2.758	2.563	.081
	Within Groups	136.677	127	1.076		
	Total	142.192	129			
Case perceived as not so serious	Between Groups	16.981	2	8.491	8.732	.000
	Within Groups	123.488	127	.972		
	Total	140.469	129			
No responsibility for the brand or the organisation	Between Groups	8.766	2	4.383	3.335	.039
	Within Groups	166.926	127	1.314		
	Total	175.692	129			

As a result, we can only say for the differences of the means about the fact of not giving responsibility for the case to the brand or the organisation is significant at the level of error of 5%.

Multiple Comparisons

Dependent Variable: No responsibility for the brand or the organisation

	(I) Name of the brand bought or used the most recently	(J) Name of the brand bought or used the most recently	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
						Lower Bound	Upper Bound
Tukey HSD	Findus	Apple	.643*	.260	.038	.03	1.26
		Volkswagen	.633	.298	.088	-.07	1.34
	Apple	Findus	-.643*	.260	.038	-1.26	-.03
		Volkswagen	-.010	.242	.999	-.58	.56
	Volkswagen	Findus	-.633	.298	.088	-1.34	.07
		Apple	.010	.242	.999	-.56	.58
Bonferroni	Findus	Apple	.643*	.260	.044	.01	1.27
		Volkswagen	.633	.298	.106	-.09	1.35
	Apple	Findus	-.643*	.260	.044	-1.27	-.01
		Volkswagen	-.010	.242	1.000	-.60	.58
	Volkswagen	Findus	-.633	.298	.106	-1.35	.09
		Apple	.010	.242	1.000	-.58	.60
Games-Howell	Findus	Apple	.643*	.245	.031	.05	1.24
		Volkswagen	.633	.305	.104	-.10	1.37
	Apple	Findus	-.643*	.245	.031	-1.24	-.05
		Volkswagen	-.010	.260	.999	-.64	.62
	Volkswagen	Findus	-.633	.305	.104	-1.37	.10
		Apple	.010	.260	.999	-.62	.64

*. The mean difference is significant at the 0.05 level.

The fact to have the tendency of not giving the responsibility of the case to the brand or the organisation is significantly different at the level of error of 5% between the brands Findus and Apple.

We will now compare the means splitting the sample in two groups: the unengaged and engaged consumers. We will then compare the means between the groups about each brand and the fact

of feeling to defend the brand about the case. We will launch an ANOVA test but first we verify the power of the thest.

Name of the brand bought or used the most recently

Consumer engagement (binary)			Frequency	Percent	Valid Percent	Cumulative Percent
Non engaged consum	Valid	Apple	33	49.3	49.3	49.3
		Volkswagen	18	26.9	26.9	76.1
		Findus	16	23.9	23.9	100.0
		Total	67	100.0	100.0	
Engaged consum	Valid	Apple	37	58.7	58.7	58.7
		Volkswagen	15	23.8	23.8	82.5
		Findus	11	17.5	17.5	100.0
		Total	63	100.0	100.0	

Effect size f	0,4	Noncentrality parameter λ	10,7200000
α err prob	0,05	Critical F	3,1404376
Total sample size	67	Numerator df	2
Number of groups	3	Denominator df	64
		Power (1-β err prob)	0,8244367

The power of the ANOVA test within the group of non-engaged consumer is of 82,44%.

Effect size f	0,4	Noncentrality parameter λ	10,0800000
α err prob	0,05	Critical F	3,1504113
Total sample size	63	Numerator df	2
Number of groups	3	Denominator df	60
		Power (1-β err prob)	0,7978177

The power of the ANOVA test within the group of engaged consumer is of 79,78%.

Test of Homogeneity of Variances

Consumer engagement (binary)		Levene Statistic	df1	df2	Sig.
Non engaged consum	No responsibility for the brand or the organisation	2.234	2	64	.115
	Feeling to defend the brand	3.202	2	64	.047
	Case perceived as not so serious	.331	2	64	.719
Engaged consum	No responsibility for the brand or the organisation	.012	2	60	.988
	Feeling to defend the brand	1.535	2	60	.224
	Case perceived as not so serious	.555	2	60	.577

Only the 'Feeling to defend the brand' does not verify the assumption of the homogeneity of variances.

ANOVA

Consumer engagement (binary)			Sum of Squares	df	Mean Square	F	Sig.
Non engaged consum	No responsibility for the brand or the organisation	Between Groups	1.065	2	.533	.362	.698
		Within Groups	94.129	64	1.471		
		Total	95.194	66			
	Feeling to defend the brand	Between Groups	.033	2	.016	.021	.979
		Within Groups	49.609	64	.775		
		Total	49.642	66			
	Case perceived as not so serious	Between Groups	3.674	2	1.837	2.745	.072
		Within Groups	42.833	64	.669		
		Total	46.507	66			
Engaged consum	No responsibility for the brand or the organisation	Between Groups	13.226	2	6.613	6.159	.004
		Within Groups	64.425	60	1.074		
		Total	77.651	62			
	Feeling to defend the brand	Between Groups	16.256	2	8.128	9.316	.000
		Within Groups	52.348	60	.872		
		Total	68.603	62			
	Case perceived as not so serious	Between Groups	23.298	2	11.649	15.657	.000
		Within Groups	44.639	60	.744		
		Total	67.937	62			

Only for engaged consumers we can say that the means are different significantly at the level of error of 5% at least between one brand and another per item.

Multiple Comparisons

Consumer engagement (binary)	Dependent Variable		(I) Name of the brand bought or used the most recently	(J) Name of the brand bought or used the most recently	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
								Lower Bound	Upper Bound
Non engaged consum	No responsibility for the brand or the organisation	Tukey HSD	Findus	Apple	.314	.369	.673	-.57	1.20
				Volkswagen	.208	.417	.872	-.79	1.21
			Apple	Findus	-.314	.369	.673	-1.20	.57
				Volkswagen	-.106	.355	.952	-.96	.75
			Volkswagen	Findus	-.208	.417	.872	-1.21	.79
				Apple	.106	.355	.952	-.75	.96
		Bonferroni	Findus	Apple	.314	.369	1.000	-.59	1.22
				Volkswagen	.208	.417	1.000	-.82	1.23
			Apple	Findus	-.314	.369	1.000	-1.22	.59
				Volkswagen	-.106	.355	1.000	-.98	.77
			Volkswagen	Findus	-.208	.417	1.000	-1.23	.82
				Apple	.106	.355	1.000	-.77	.98
		Games-Howell	Findus	Apple	.314	.307	.566	-.43	1.06
				Volkswagen	.208	.402	.863	-.79	1.20
			Apple	Findus	-.314	.307	.566	-1.06	.43
				Volkswagen	-.106	.398	.962	-1.08	.87
			Volkswagen	Findus	-.208	.402	.863	-1.20	.79
				Apple	.106	.398	.962	-.87	1.08
	Feeling to defend the brand	Tukey HSD	Findus	Apple	.055	.268	.977	-.59	.70
				Volkswagen	.035	.303	.993	-.69	.76
			Apple	Findus	-.055	.268	.977	-.70	.59
				Volkswagen	-.020	.258	.997	-.64	.60
			Volkswagen	Findus	-.035	.303	.993	-.76	.69
				Apple	.020	.258	.997	-.60	.64
		Bonferroni	Findus	Apple	.055	.268	1.000	-.60	.71
				Volkswagen	.035	.303	1.000	-.71	.78
			Apple	Findus	-.055	.268	1.000	-.71	.60
				Volkswagen	-.020	.258	1.000	-.65	.61
			Volkswagen	Findus	-.035	.303	1.000	-.78	.71
				Apple	.020	.258	1.000	-.61	.65
		Games-Howell	Findus	Apple	.055	.227	.968	-.50	.61
				Volkswagen	.035	.288	.992	-.67	.74
			Apple	Findus	-.055	.227	.968	-.61	.50
				Volkswagen	-.020	.284	.997	-.72	.68
			Volkswagen	Findus	-.035	.288	.992	-.74	.67
				Apple	.020	.284	.997	-.68	.72
	Case perceived as not so serious	Tukey HSD	Findus	Apple	.583	.249	.057	-.01	1.18
				Volkswagen	.417	.281	.306	-.26	1.09
			Apple	Findus	-.583	.249	.057	-1.18	.01
				Volkswagen	-.167	.240	.767	-.74	.41
			Volkswagen	Findus	-.417	.281	.306	-1.09	.26
				Apple	.167	.240	.767	-.41	.74
		Bonferroni	Findus	Apple	.583	.249	.067	-.03	1.20
				Volkswagen	.417	.281	.429	-.27	1.11
			Apple	Findus	-.583	.249	.067	-1.20	.03
				Volkswagen	-.167	.240	1.000	-.76	.42
			Volkswagen	Findus	-.417	.281	.429	-1.11	.27
				Apple	.167	.240	1.000	-.42	.76
		Games-Howell	Findus	Apple	.583	.249	.068	-.04	1.20
				Volkswagen	.417	.305	.371	-.33	1.17
			Apple	Findus	-.583	.249	.068	-1.20	.04
				Volkswagen	-.167	.253	.788	-.79	.46
			Volkswagen	Findus	-.417	.305	.371	-1.17	.33
				Apple	.167	.253	.788	-.46	.79

Engaged consum	No responsibility for the brand or the organisation	Tukey HSD	Findus	Apple	1.184*	.356	.004	.33	2.04
				Volkswagen	1.255*	.411	.009	.27	2.24
			Apple	Findus	-1.184*	.356	.004	-2.04	-.33
				Volkswagen	.070	.317	.973	-.69	.83
			Volkswagen	Findus	-1.255*	.411	.009	-2.24	-.27
				Apple	-.070	.317	.973	-.83	.69
		Bonferroni	Findus	Apple	1.184*	.356	.004	.31	2.06
				Volkswagen	1.255*	.411	.010	.24	2.27
			Apple	Findus	-1.184*	.356	.004	-2.06	-.31
				Volkswagen	.070	.317	1.000	-.71	.85
			Volkswagen	Findus	-1.255*	.411	.010	-2.27	-.24
				Apple	-.070	.317	1.000	-.85	.71
		Games-Howell	Findus	Apple	1.184*	.352	.011	.27	2.09
				Volkswagen	1.255*	.430	.021	.18	2.33
			Apple	Findus	-1.184*	.352	.011	-2.09	-.27
				Volkswagen	.070	.338	.976	-.78	.92
			Volkswagen	Findus	-1.255*	.430	.021	-2.33	-.18
				Apple	-.070	.338	.976	-.92	.78
	Feeling to defend the brand	Tukey HSD	Findus	Apple	1.376*	.321	.000	.61	2.15
				Volkswagen	1.194*	.371	.006	.30	2.09
			Apple	Findus	-1.376*	.321	.000	-2.15	-.61
				Volkswagen	-.182	.286	.801	-.87	.51
			Volkswagen	Findus	-1.194*	.371	.006	-2.09	-.30
				Apple	.182	.286	.801	-.51	.87
		Bonferroni	Findus	Apple	1.376*	.321	.000	.59	2.17
				Volkswagen	1.194*	.371	.006	.28	2.11
			Apple	Findus	-1.376*	.321	.000	-2.17	-.59
				Volkswagen	-.182	.286	1.000	-.89	.52
			Volkswagen	Findus	-1.194*	.371	.006	-2.11	-.28
				Apple	.182	.286	1.000	-.52	.89
		Games-Howell	Findus	Apple	1.376*	.357	.005	.43	2.32
				Volkswagen	1.194*	.442	.033	.08	2.30
			Apple	Findus	-1.376*	.357	.005	-2.32	-.43
				Volkswagen	-.182	.318	.837	-.99	.62
			Volkswagen	Findus	-1.194*	.442	.033	-2.30	-.08
				Apple	.182	.318	.837	-.62	.99
	Case perceived as not so serious	Tukey HSD	Findus	Apple	1.612*	.296	.000	.90	2.32
				Volkswagen	.909*	.342	.027	.09	1.73
			Apple	Findus	-1.612*	.296	.000	-2.32	-.90
				Volkswagen	-.703*	.264	.027	-1.34	-.07
			Volkswagen	Findus	-.909*	.342	.027	-1.73	-.09
				Apple	.703*	.264	.027	.07	1.34
		Bonferroni	Findus	Apple	1.612*	.296	.000	.88	2.34
				Volkswagen	.909*	.342	.030	.07	1.75
			Apple	Findus	-1.612*	.296	.000	-2.34	-.88
				Volkswagen	-.703*	.264	.030	-1.35	-.05
			Volkswagen	Findus	-.909*	.342	.030	-1.75	-.07
				Apple	.703*	.264	.030	.05	1.35
		Games-Howell	Findus	Apple	1.612*	.312	.000	.80	2.43
				Volkswagen	.909	.384	.067	-.05	1.87
			Apple	Findus	-1.612*	.312	.000	-2.43	-.80
				Volkswagen	-.703	.288	.059	-1.43	.02
			Volkswagen	Findus	-.909	.384	.067	-1.87	.05
				Apple	.703	.288	.059	-.02	1.43

Findus and Apple, and Findus and Volkswagen are significantly different at the level of error of 5% for the fact of giving the responsibility or not to the brand or the organisation about the case, about feeling to defend the brand. This has been verified in the three different tests of Turkey HSD, Bonferroni, and Games-Howell. At the level of error of 5% we can also assert that Findus and Apple have a significant difference of means for the engaged consuemrs about the perception of the case about not being so serious. At the level of error of 10% we can also say that Findus and Volkswagen have a difference in the means about the perception of the case about not being so serious, as well as Apple and Volkswagen.

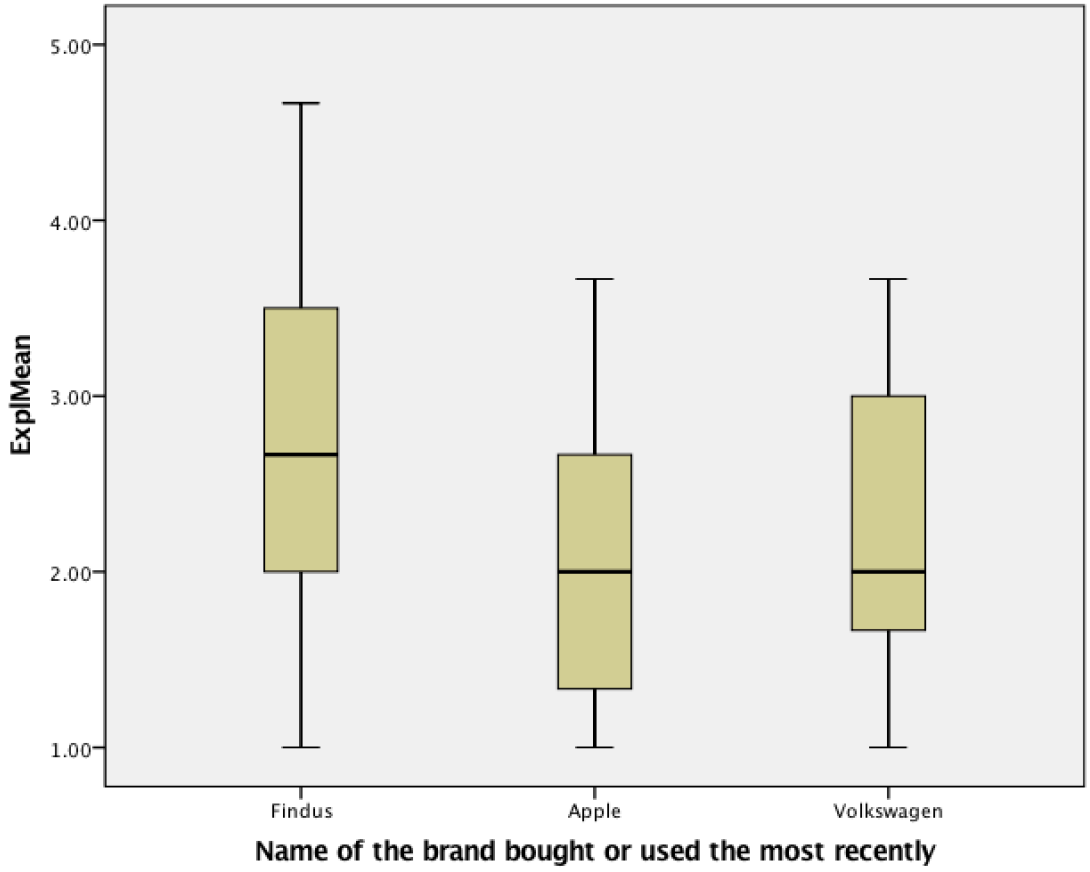
Descriptives

Consumer engagement (binary)			N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
							Lower Bound	Upper Bound		
Non engaged consum	No responsibility for the brand or the organisation	Findus	16	2.38	.885	.221	1.90	2.85	1	4
		Apple	33	2.06	1.223	.213	1.63	2.49	1	5
		Volkswagen	18	2.17	1.425	.336	1.46	2.88	1	5
		Total	67	2.16	1.201	.147	1.87	2.46	1	5
	Feeling to defend the brand	Findus	16	1.81	.655	.164	1.46	2.16	1	3
		Apple	33	1.76	.902	.157	1.44	2.08	1	4
		Volkswagen	18	1.78	1.003	.236	1.28	2.28	1	4
		Total	67	1.78	.867	.106	1.56	1.99	1	4
	Case perceived as not so serious	Findus	16	2.25	.856	.214	1.79	2.71	1	3
		Apple	33	1.67	.736	.128	1.41	1.93	1	3
		Volkswagen	18	1.83	.924	.218	1.37	2.29	1	4
		Total	67	1.85	.839	.103	1.65	2.06	1	4
Engaged consum	No responsibility for the brand or the organisation	Findus	11	3.45	1.036	.312	2.76	4.15	2	5
		Apple	37	2.27	.990	.163	1.94	2.60	1	4
		Volkswagen	15	2.20	1.146	.296	1.57	2.83	1	5
		Total	63	2.46	1.119	.141	2.18	2.74	1	5
	Feeling to defend the brand	Findus	11	3.73	1.104	.333	2.99	4.47	2	5
		Apple	37	2.35	.789	.130	2.09	2.61	1	4
		Volkswagen	15	2.53	1.125	.291	1.91	3.16	1	5
		Total	63	2.63	1.052	.133	2.37	2.90	1	5
	Case perceived as not so serious	Findus	11	3.91	.944	.285	3.27	4.54	2	5
		Apple	37	2.30	.777	.128	2.04	2.56	1	4
		Volkswagen	15	3.00	1.000	.258	2.45	3.55	1	4
		Total	63	2.75	1.047	.132	2.48	3.01	1	5

For unengaged consumers we could not significantly assert any difference between the means of the difference brands. While for engaged consumers, the consumers of Findus have then a higher mean about not giving the responsibility of the case to the brand or the organisation than the ones of the brands Apple and Volkswagen who do not have a significant difference in the means between them. They have also a bigger mean about feeling to defend the brand than the ones of Apple and Volkswagen, who do not have a significance difference in the means between them either. Finally, at the level of error of 5% the engaged consumers of Findus have a bigger mean also about perceiving the case as not so serious in comparison to the ones of Apple. While at the level of error of 10% we can say the same for the engaged consumers of Findus and Volkswagen, while the engaged consumers of Volkswagen have a bigger mean about perceiving the case as not so serious in comparison to the ones of Apple. Which is surprising.

H4: Moderator effect of feeling personally affected by the case between the relationship of CE and the type of explanation

For this purpose, we made a mean with the three items remaining of the explanation type. Those three items appeared to represent well the fact of defending the brand when their values are, or contrarily to reject the brand when the value of the three items are very low. Let us have a look at the box plot first.



We can then make a One-way ANOVA to see if significantly the means would be different from one brand to another.

Test of Homogeneity of Variances

ExplMean

Levene Statistic	df1	df2	Sig.
1.698	2	127	.187

The test of homogeneity of the variances is verified as it non significant.

ANOVA

ExplMean

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	8.505	2	4.253	6.250	.003
Within Groups	86.408	127	.680		
Total	94.914	129			

There is significantly at least one difference between two means of the group, at a level of error of 5% as the p-value < 0.05.

Multiple Comparisons

Dependent Variable: ExplMean

	(I) Name of the brand bought or used the most recently	(J) Name of the brand bought or used the most recently	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
						Lower Bound	Upper Bound
Tukey HSD	Findus	Apple	.65397*	.18687	.002	.2108	1.0971
		Volkswagen	.55556*	.21405	.028	.0479	1.0632
	Apple	Findus	-.65397*	.18687	.002	-1.0971	-.2108
		Volkswagen	-.09841	.17418	.839	-.5115	.3146
	Volkswagen	Findus	-.55556*	.21405	.028	-1.0632	-.0479
		Apple	.09841	.17418	.839	-.3146	.5115
Bonferroni	Findus	Apple	.65397*	.18687	.002	.2006	1.1073
		Volkswagen	.55556*	.21405	.032	.0363	1.0749
	Apple	Findus	-.65397*	.18687	.002	-1.1073	-.2006
		Volkswagen	-.09841	.17418	1.000	-.5210	.3242
	Volkswagen	Findus	-.55556*	.21405	.032	-1.0749	-.0363
		Apple	.09841	.17418	1.000	-.3242	.5210
Games-Howell	Findus	Apple	.65397*	.21533	.012	.1288	1.1791
		Volkswagen	.55556	.23712	.059	-.0179	1.1290
	Apple	Findus	-.65397*	.21533	.012	-1.1791	-.1288
		Volkswagen	-.09841	.16315	.819	-.4902	.2933
	Volkswagen	Findus	-.55556	.23712	.059	-1.1290	.0179
		Apple	.09841	.16315	.819	-.2933	.4902

*. The mean difference is significant at the 0.05 level.

The differences are significant at the level of error of 5% between the brand Findus and Apple, while it is only significant at the level of error of 10% for the test of Games-Howell between the brand Findus and Volkswagen. Findus and Volkswagen are significantly different at the level of error of 5% for the two other tests.

Descriptives

ExplMean

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
Findus	27	2.7778	1.01274	.19490	2.3772	3.1784	1.00	4.67
Apple	70	2.1238	.76597	.09155	1.9412	2.3064	1.00	3.67
Volkswagen	33	2.2222	.77579	.13505	1.9471	2.4973	1.00	3.67
Total	130	2.2846	.85777	.07523	2.1358	2.4335	1.00	4.67

The mean of Findus in comparison to Apple and Volkswagen is so significantly higher about the fact of giving explanations tending to defend the brand about the case, at a level of error of 5% for Findus and Apple, and a level of error of 10% between Findus and Volkswagen.

We will now start by testing the first item: Concerned1: Personally affected by the case for investigating any effect of moderation.

```
Model = 1
    Y = ExplMean
    X = CE
    M = Concern1

Sample size
        130

Coding of categorical X variable for analysis:
    CE    D1
   .00   .00
  1.00  1.00

*************************************************************************
Outcome: ExplMean

Model Summary
          R       R-sq        MSE          F        df1        df2          p
      .5142      .2644      .5541    15.0990     3.0000   126.0000      .0000

Model
              coeff         se          t          p       LLCI       ULCI
constant     2.6214      .2337    11.2155      .0000     2.1588     3.0839
Concern1     -.2184      .0671    -3.2557      .0015     -.3512     -.0857
D1            .4685      .4156     1.1273      .2618     -.3540     1.2910
int_1         .0868      .1239      .7006      .4849     -.1584      .3320

Product terms key:
 int_1     :       D1        X       Concern1

R-square increase due to interaction:
    R2-chng          F        df1        df2          p
      .0029      .4908     1.0000   126.0000      .4849
```

The model is significant at the level of error of 5%. The effect of the item Concern1 over the dependent variable is significant at the level of error of 5% as 0.0015 < 0.05. Though the interaction effect is not significant. We test then the second item which had been reverse coded: Concerned2: Personally care little about the consequences of the case (rev.).

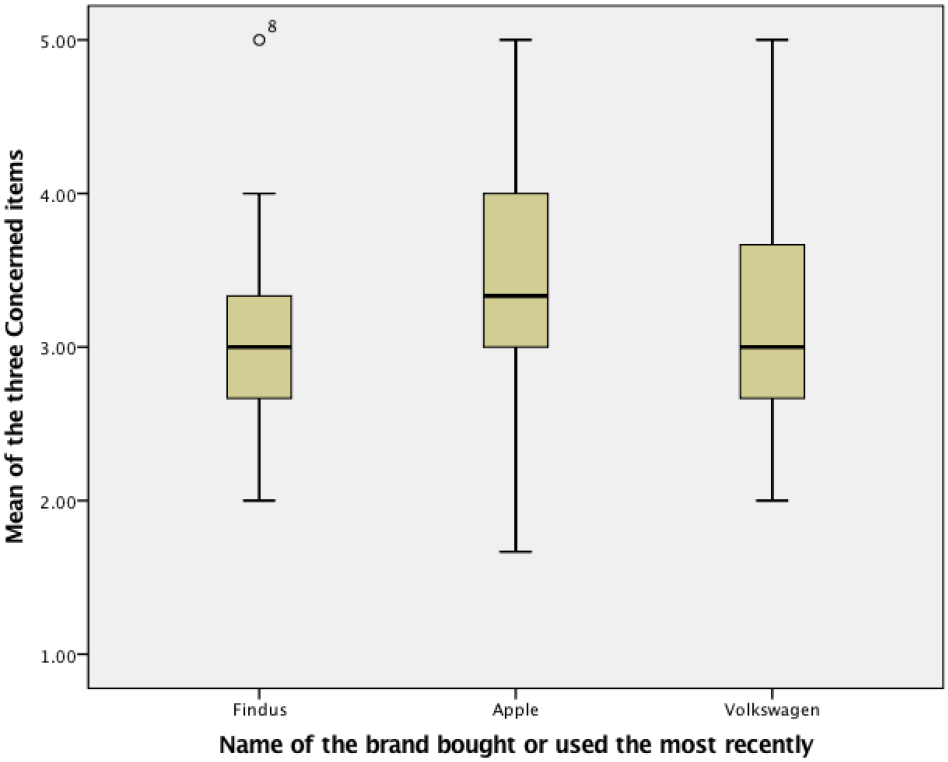
```
Model = 1
    Y = ExplMean
    X = CE
    M = Concern2

Sample size
        130

Coding of categorical X variable for analysis:
    CE    D1
   .00   .00
  1.00  1.00

*************************************************************************
Outcome: ExplMean

Model Summary
          R       R-sq        MSE          F        df1        df2          p
      .6300      .3969      .4543    27.6355     3.0000   126.0000      .0000

Model
              coeff         se          t          p       LLCI       ULCI
constant     3.0328      .2766    10.9631      .0000     2.4853     3.5802
Concern2     -.3042      .0722    -4.2121      .0000     -.4471     -.1613
D1           1.0249      .4015     2.5530      .0119      .2304     1.8194
int_1        -.1280      .1129    -1.1336      .2591     -.3514      .0955

Product terms key:
 int_1     :       D1        X       Concern2

R-square increase due to interaction:
    R2-chng          F        df1        df2          p
      .0062     1.2850     1.0000   126.0000      .2591
```

The model is significant at the level of error of 5%. The effect of the item Concern2 over the dependent variable is significant at the level of error of 5% as 0.0000 < 0.05. Though the interaction effect is not significant. We test then the third item: Concerned3: The case could impact negatively persons around me.

```
**************************************************************************
Model = 1
    Y = ExplMean
    X = CE
    M = Concern3

Sample size
        130

Coding of categorical X variable for analysis:
    CE    D1
   .00   .00
  1.00  1.00

**************************************************************************
Outcome: ExplMean

Model Summary
          R       R-sq        MSE          F        df1        df2          p
      .4512      .2035      .6000    10.7334     3.0000   126.0000      .0000

Model
              coeff         se          t          p       LLCI       ULCI
constant     2.1022      .2762     7.6104      .0000     1.5555     2.6488
Concern3     -.0575      .0820     -.7005      .4849     -.2198      .1049
D1            .2486      .4198      .5922      .5548     -.5822     1.0794
int_1         .1607      .1268     1.2676      .2073     -.0902      .4115

Product terms key:
 int_1     :       D1        X       Concern3

R-square increase due to interaction:
    R2-chng          F        df1        df2          p
      .0102     1.6068     1.0000   126.0000      .2073
```

The model is significant at the level of error of 5%. The effect of the item Concern3 over the dependent variable is non significant at the level of error of 5%.

We will now launch a regression of the mean between Concern1, Concern2, Concern3 to see if, even though they are not moderators, they could explain the type explanation given about the case. Let us have a look first at the box plots.



To investigate if the means are significantly different from one brand to another about the fact of being personally concerned by the case we launch a One-way ANOVA.

Test of Homogeneity of Variances

Mean of the three Concerned items

Levene Statistic	df1	df2	Sig.
1.079	2	127	.343

ANOVA

Mean of the three Concerned items

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	1.888	2	.944	1.696	.187
Within Groups	70.676	127	.557		
Total	72.564	129			

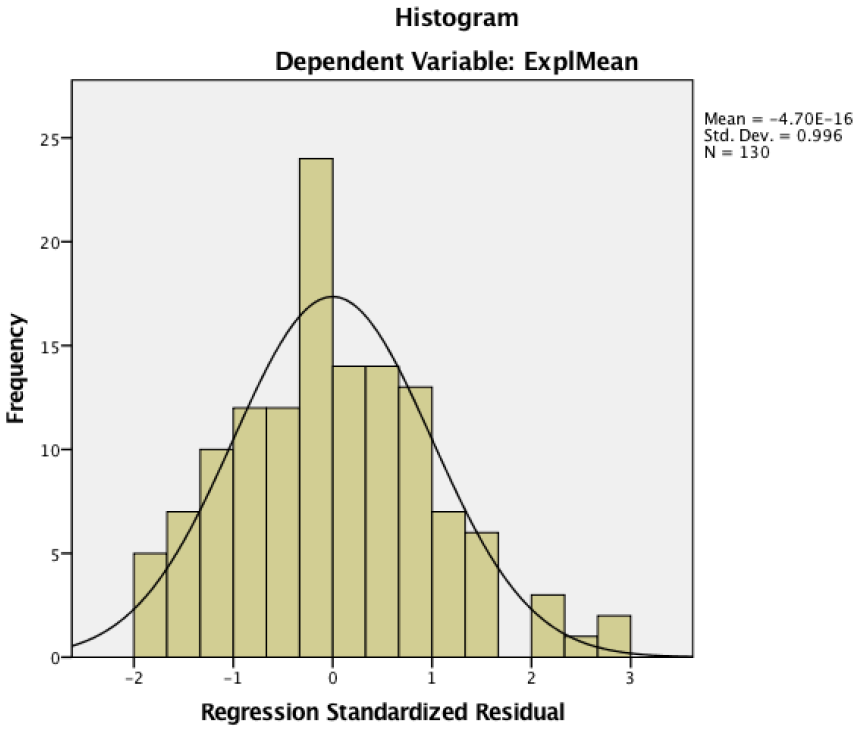
Even though the test of homogeneity of the variances is verified, there is no significant difference between the means of the group at an error level of 5%. We stop here and then start the regression.

Correlations

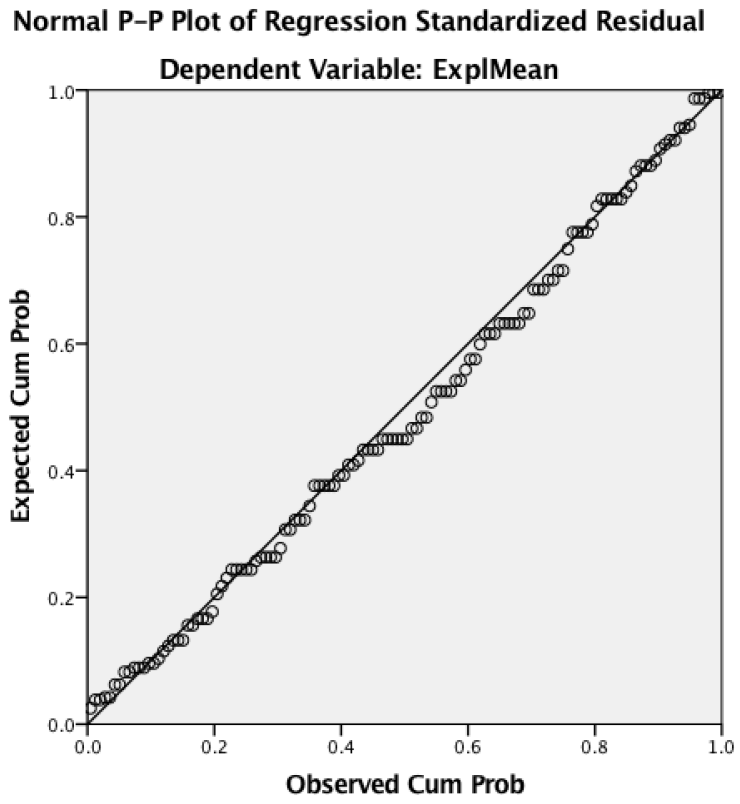
		ExplMean	Mean of the three Concerned items
ExplMean	Pearson Correlation	1	-.393**
	Sig. (2-tailed)		.000
	N	130	130
Mean of the three Concerned items	Pearson Correlation	-.393**	1
	Sig. (2-tailed)	.000	
	N	130	130

**. Correlation is significant at the 0.01 level (2-tailed).

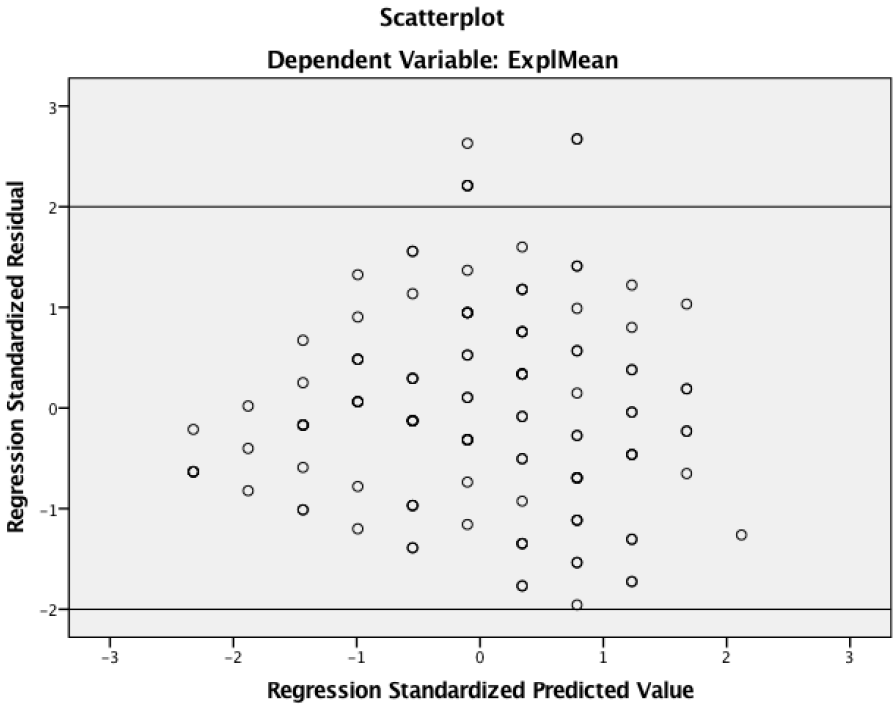
The correlation effect is significant at the level of error of 5%.



The residuals are globally following a normal distribution of mean equal to 0.



This second graph supports also the assumption of normal distribution. The data are close to the Henry line.



We can verify that the residuals are randomly distributed. We can verify there is no problem of heteroscedasticity, as globally the residuals are not more distant from 0 in one side of the X domain than the other. Also, 95% of the data are comprised between 2 and -2, which confirms the normality assumption.

The three graphs are so reassuring about the underlying assumptions for a residual model. We can then analyse the results of the test.

Variables Entered/Removed[a]

Model	Variables Entered	Variables Removed	Method
1	Mean of the three Concerned items[b]	.	Enter

a. Dependent Variable: ExplMean

b. All requested variables entered.

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.393[a]	.154	.148	.79190

a. Predictors: (Constant), Mean of the three Concerned items

b. Dependent Variable: ExplMean

15,4% of the variability of the explanation type variable is explained by the model.

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	14.644	1	14.644	23.352	.000[b]
	Residual	80.269	128	.627		
	Total	94.914	129			

a. Dependent Variable: ExplMean

b. Predictors: (Constant), Mean of the three Concerned items

The p-value associated to the F test is < 0.05. It means our model is significant at the level of error of 5% in our population, and that the prediction of the explanation type is better than without the information of the fact of being 'Concerned' with the case.

Coefficients[a]

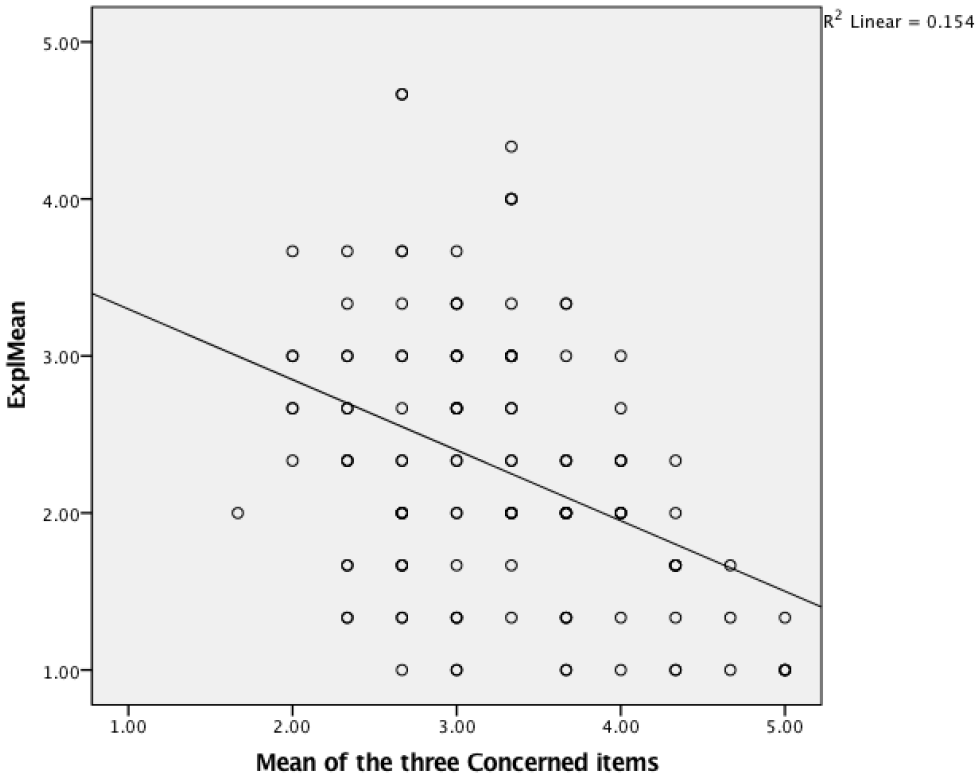
Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	3.748	.311		12.066	.000
	Mean of the three Concerned items	-.449	.093	-.393	-4.832	.000

a. Dependent Variable: ExplMean

The p-value is < 0.05 for the factor of being concerned, which means the slope is significantly different from 0 in our population. The constant is significant as well at the level of error of 5%, which means it is significantly not passing by 0.

Y = 3.748 - 0.449*X

We can affirm that the relationship is negative.



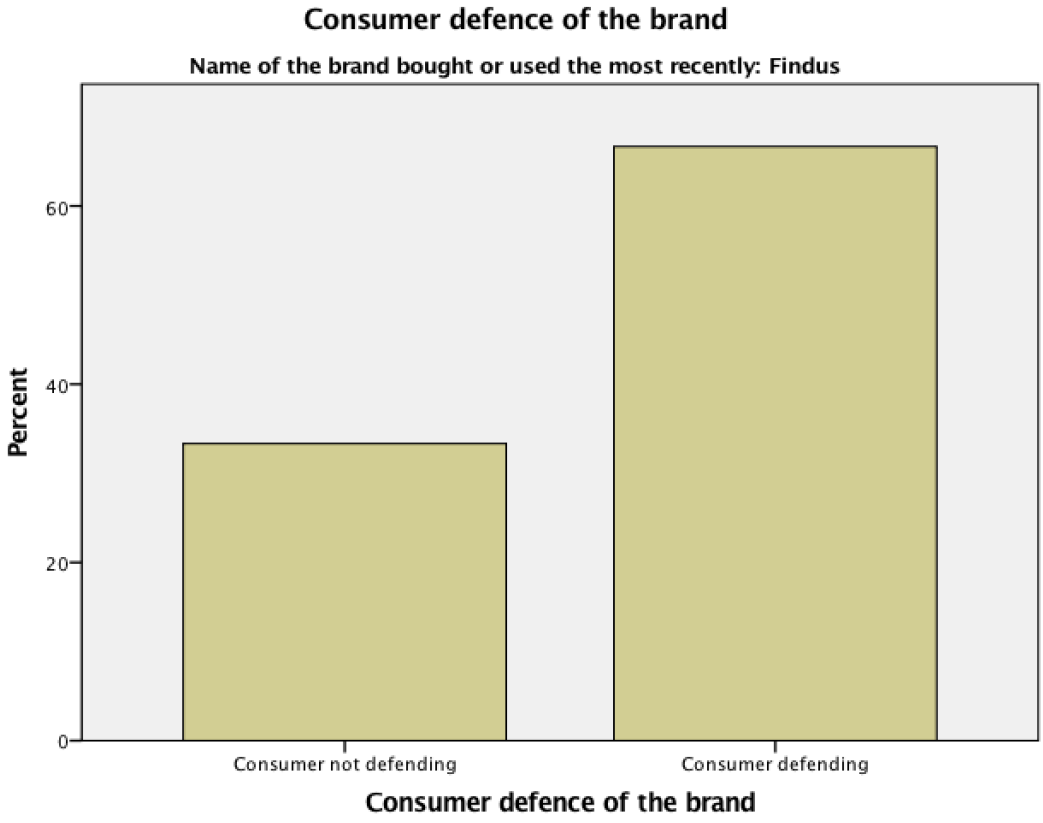
H5.1: The explanantion type over PI

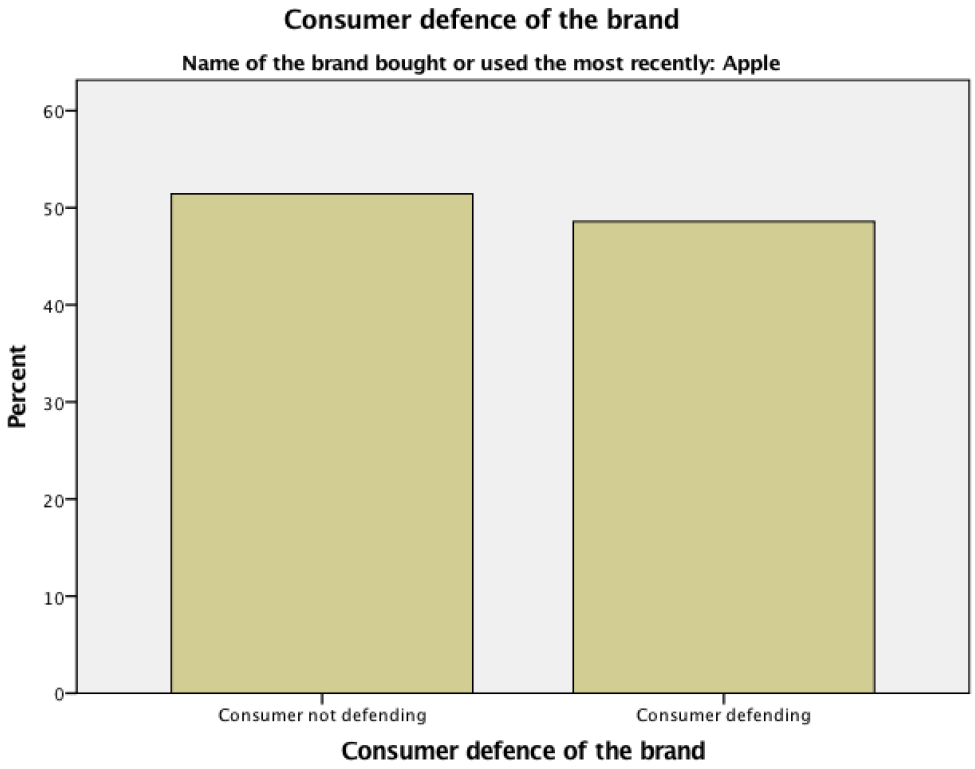
Statistics

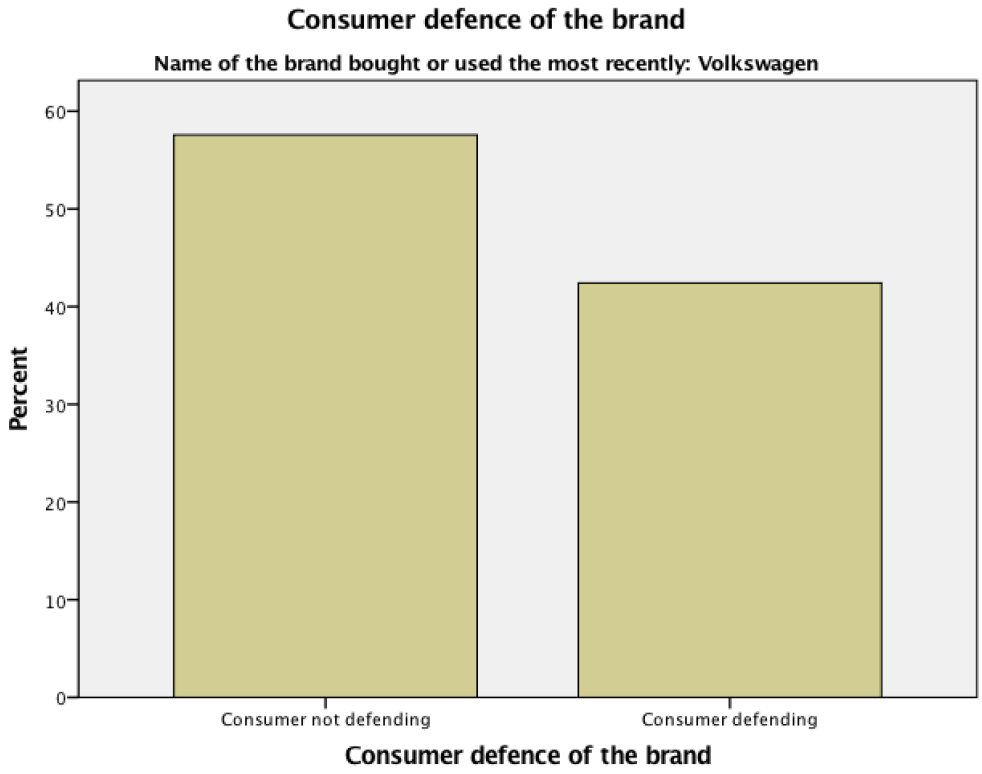
ExplMean

N	Valid	130
	Missing	0
Mean		2.2846

We will first make a binary variable with the consumers defending the brands, and the ones not defending it. We will have the consumers defending the brand with an average over or equal to 2.2846, while the consumers not defending the brand about the case will have an average of below 2.2846.







We will have a look at the power of the test.

Consumer defence of the brand

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Consumer defending	66	50.8	50.8	50.8
	Consumer not defending	64	49.2	49.2	100.0
	Total	130	100.0	100.0	

Tail(s)	Two	Noncentrality parameter δ	4,5601619
Effect size d	0,8	Critical t	1,9786708
α err prob	0,05	Df	128
Sample size group 1	66	Power (1-β err prob)	0,9948521
Sample size group 2	64		

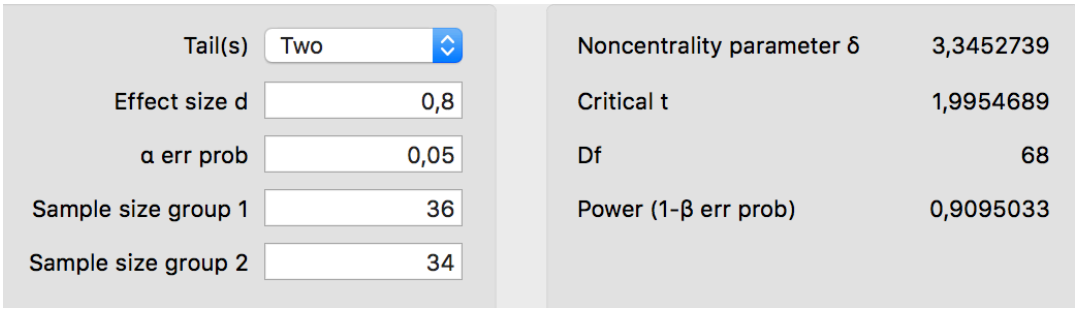
The power of the T test on the total sample with an effect size of 0,8 is of 99,49% which is excellent. Though we will split the sample in three according to the name of the brand.

Consumer defence of the brand

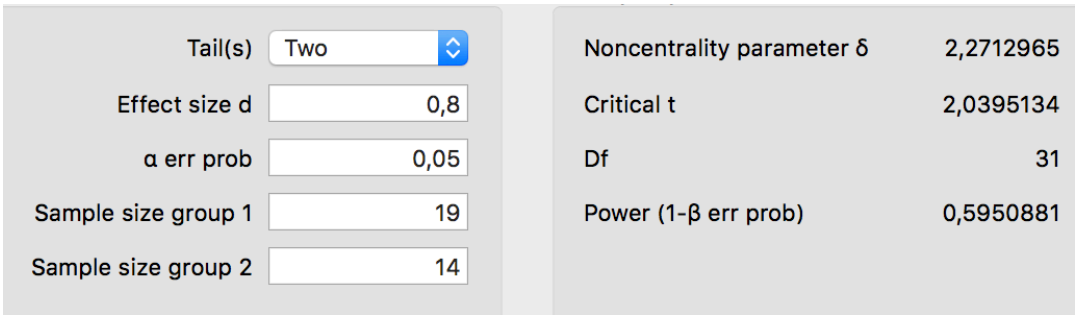
Name of the brand bought or used the most recently			Frequency	Percent	Valid Percent	Cumulative Percent
Findus	Valid	Consumer defending	18	66.7	66.7	66.7
		Consumer not defending	9	33.3	33.3	100.0
		Total	27	100.0	100.0	
Apple	Valid	Consumer not defending	36	51.4	51.4	51.4
		Consumer defending	34	48.6	48.6	100.0
		Total	70	100.0	100.0	
Volkswagen	Valid	Consumer not defending	19	57.6	57.6	57.6
		Consumer defending	14	42.4	42.4	100.0
		Total	33	100.0	100.0	

Tail(s)	Two	Noncentrality parameter δ	1,9595918
Effect size d	0,8	Critical t	2,0595386
α err prob	0,05	Df	25
Sample size group 1	18	Power (1-β err prob)	0,4698481
Sample size group 2	9		

The power of the t-test for the brand Findus is so of 46,98%.



The power of the t-test for the brand Apple is of 90,95%.



And the power of the t-test for the brand Volkswagen is of 59,51%.

Independent Samples Test

Name of the brand bought or used the most recently			Levene's Test for Equality of Variances		t-test for Equality of Means						
										95% Confidence Interval of the Difference	
			F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Findus	PI1: Intent to buy again the brand	Equal variances assumed	.132	.719	-1.443	25	.161	-.667	.462	-1.618	.285
		Equal variances not assumed			-1.325	13.012	.208	-.667	.503	-1.754	.420
	PI2: Purchase interest toward the brand	Equal variances assumed	.108	.745	-1.370	25	.183	-.611	.446	-1.530	.307
		Equal variances not assumed			-1.370	16.095	.190	-.611	.446	-1.556	.334
Apple	PI1: Intent to buy again the brand	Equal variances assumed	1.949	.167	-3.628	68	.001	-.781	.215	-1.211	-.351
		Equal variances not assumed			-3.647	67.030	.001	-.781	.214	-1.209	-.354
	PI2: Purchase interest toward the brand	Equal variances assumed	.031	.860	-2.806	68	.007	-.711	.253	-1.216	-.205
		Equal variances not assumed			-2.813	67.924	.006	-.711	.253	-1.215	-.207
Volkswagen	PI1: Intent to buy again the brand	Equal variances assumed	.016	.901	-4.304	31	.000	-1.053	.245	-1.551	-.554
		Equal variances not assumed			-4.329	28.746	.000	-1.053	.243	-1.550	-.555
	PI2: Purchase interest toward the brand	Equal variances assumed	1.030	.318	-2.059	31	.048	-.662	.321	-1.317	-.006
		Equal variances not assumed			-1.963	22.676	.062	-.662	.337	-1.360	.036

Group Statistics

Name of the brand bought or used the most recently		Consumer defence of the brand	N	Mean	Std. Deviation	Std. Error Mean
Findus	PI1: Intent to buy again the brand	Consumer not defending	9	3.00	1.323	.441
		Consumer defending	18	3.67	1.029	.243
	PI2: Purchase interest toward the brand	Consumer not defending	9	2.78	1.093	.364
		Consumer defending	18	3.39	1.092	.257
Apple	PI1: Intent to buy again the brand	Consumer not defending	36	3.28	.974	.162
		Consumer defending	34	4.06	.814	.140
	PI2: Purchase interest toward the brand	Consumer not defending	36	3.08	1.105	.184
		Consumer defending	34	3.79	1.008	.173
Volkswagen	PI1: Intent to buy again the brand	Consumer not defending	19	2.95	.705	.162
		Consumer defending	14	4.00	.679	.182
	PI2: Purchase interest toward the brand	Consumer not defending	19	3.05	.780	.179
		Consumer defending	14	3.71	1.069	.286

The means about the intent to buy again the brand are significantly bigger for consumers defending the Apple and Volkswagen brands, in comparison to the ones not or less defending. The purchase interest toward the brand is equally significantly bigger at a level of 5% for the consumers defending the brand of Apple in comparison to the ones not defending it.

We would like to make an ANOVA to compare the differences between the brands, splitting the test in two from consumers defending and consumers not defending the brand.

Name of the brand bought or used the most recently

Consumer defence of the brand			Frequency	Percent	Valid Percent	Cumulative Percent
Consumer not defending	Valid	Apple	36	56.3	56.3	56.3
		Volkswagen	19	29.7	29.7	85.9
		Findus	9	14.1	14.1	100.0
		Total	64	100.0	100.0	
Consumer defending	Valid	Apple	34	51.5	51.5	51.5
		Findus	18	27.3	27.3	78.8
		Volkswagen	14	21.2	21.2	100.0
		Total	66	100.0	100.0	

We will split the sample in two, with from one side the consumers not defending the brand, and on the other the consumers defening the brand.

Effect size f	0,4	Noncentrality parameter λ	10,2400000
α err prob	0,05	Critical F	3,1477912
Total sample size	64	Numerator df	2
Number of groups	3	Denominator df	61
		Power (1-β err prob)	0,8047686

The power of the test is of 80,48% for the test on the consumers not defending the brand.

Effect size f	0,4	Noncentrality parameter λ	10,5600000
α err prob	0,05	Critical F	3,1428085
Total sample size	66	Numerator df	2
Number of groups	3	Denominator df	63
		Power (1-β err prob)	0,8180744

While the power of the ANOVA test is of 81,81% for the test on the consumers defending the brand.

Test of Homogeneity of Variances

Consumer defence of the brand		Levene Statistic	df1	df2	Sig.
Consumer not defending	PI1: Intent to buy again the brand	2.412	2	61	.098
	PI2: Purchase interest toward the brand	1.463	2	61	.240
Consumer defending	PI1: Intent to buy again the brand	1.495	2	63	.232
	PI2: Purchase interest toward the brand	.201	2	63	.819

The assumption of homogeneity of the variances is verified for both variables in both categories of not defending and defending the brand.

ANOVA

Consumer defence of the brand			Sum of Squares	df	Mean Square	F	Sig.
Consumer not defending	PI1: Intent to buy again the brand	Between Groups	1.565	2	.782	.850	.433
		Within Groups	56.170	61	.921		
		Total	57.734	63			
	PI2: Purchase interest toward the brand	Between Groups	.685	2	.342	.330	.720
		Within Groups	63.253	61	1.037		
		Total	63.938	63			
Consumer defending	PI1: Intent to buy again the brand	Between Groups	1.875	2	.938	1.287	.283
		Within Groups	45.882	63	.728		
		Total	47.758	65			
	PI2: Purchase interest toward the brand	Between Groups	1.973	2	.986	.905	.410
		Within Groups	68.694	63	1.090		
		Total	70.667	65			

None is significant at the level of error of 5%. We stop here.

H5.2: The explanation type over CR

We will make also first an independent sample T test. The power of the test is the same as in H5.1.

Independent Samples Test

Name of the brand bought or used the most recently			Levene's Test for Equality of Variances: F	Levene's Test for Equality of Variances: Sig.	t-test for Equality of Means: t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference: Lower	Upper
Findus	Recommend1: Recommendation of the brand	Equal variances assumed	.333	.569	-2.107	25	.045	-.778	.369	-1.538	-.017
		Equal variances not assumed			-2.153	17.055	.046	-.778	.361	-1.540	-.016
	Recommend2: Entousiasm in recommendations of the brand	Equal variances assumed	.333	.569	-2.463	25	.021	-.944	.383	-1.734	-.155
		Equal variances not assumed			-2.420	15.380	.028	-.944	.390	-1.775	-.114
	Negative WOM1 reversed: Recommend to friends not to buy (rev.)	Equal variances assumed	.063	.805	.304	25	.763	.111	.365	-.641	.863
		Equal variances not assumed			.324	19.111	.749	.111	.342	-.605	.828
	Negative WOM2 reversed: Encourage friends to buy other brands (rev.)	Equal variances assumed	.011	.918	.164	25	.871	.056	.338	-.641	.752
		Equal variances not assumed			.164	15.984	.872	.056	.339	-.664	.775
Apple	Recommend1: Recommendation of the brand	Equal variances assumed	.145	.704	-2.285	68	.025	-.525	.230	-.982	-.067
		Equal variances not assumed			-2.278	66.118	.026	-.525	.230	-.984	-.065
	Recommend2: Entousiasm in recommendations of the brand	Equal variances assumed	.037	.848	-2.619	68	.011	-.603	.230	-1.062	-.144
		Equal variances not assumed			-2.610	65.997	.011	-.603	.231	-1.064	-.142
	Negative WOM1 reversed: Recommend to friends not to buy (rev.)	Equal variances assumed	1.704	.196	-3.016	68	.004	-.632	.210	-1.051	-.214
		Equal variances not assumed			-3.035	66.122	.003	-.632	.208	-1.048	-.216
	Negative WOM2 reversed: Encourage friends to buy other brands (rev.)	Equal variances assumed	.616	.435	-2.030	68	.046	-.423	.208	-.839	-.007
		Equal variances not assumed			-2.028	67.393	.047	-.423	.209	-.840	-.007

Volkswagen	Recommend1: Recommendation of the brand	Equal variances assumed	2.473	.126	-3.086	31	.004	-.846	.274	-1.405	-.287
		Equal variances not assumed			-3.290	30.589	.003	-.846	.257	-1.371	-.321
	Recommend2: Entousiasm in recommendations of the brand	Equal variances assumed	4.051	.053	-2.298	31	.028	-.737	.321	-1.391	-.083
		Equal variances not assumed			-2.449	30.617	.020	-.737	.301	-1.351	-.123
	Negative WOM1 reversed: Recommend to friends not to buy (rev.)	Equal variances assumed	.512	.480	-.891	31	.380	-.278	.312	-.915	.358
		Equal variances not assumed			-.897	28.820	.377	-.278	.310	-.913	.356
	Negative WOM2 reversed: Encourage friends to buy other brands (rev.)	Equal variances assumed	.007	.932	-.103	31	.919	-.038	.366	-.784	.709
		Equal variances not assumed			-.103	28.496	.919	-.038	.365	-.785	.709

For Findus, the means about the recommendation enthousiasm are significant at the level of error of 5%. For Apple the means about the recommendation enthousiasm, and the reverse coded recommendion to friends not to buy are significant are significantly different. For Volkswagen, it is the mean for the recommation of the brand which is significant.

Group Statistics

Name of the brand bought or used the most recently		Consumer defence of the brand	N	Mean	Std. Deviation	Std. Error Mean
Findus	Recommend1: Recommendation of the brand	Consumer not defending	9	2.67	.866	.289
		Consumer defending	18	3.44	.922	.217
	Recommend2: Entousiasm in recommendations of the brand	Consumer not defending	9	2.22	.972	.324
		Consumer defending	18	3.17	.924	.218
	Negative WOM1 reversed: Recommend to friends not to buy (rev.)	Consumer not defending	9	3.89	.782	.261
		Consumer defending	18	3.78	.943	.222
	Negative WOM2 reversed: Encourage friends to buy other brands (rev.)	Consumer not defending	9	3.78	.833	.278
		Consumer defending	18	3.72	.826	.195
Apple	Recommend1: Recommendation of the brand	Consumer not defending	36	3.42	.906	.151
		Consumer defending	34	3.94	1.013	.174
	Recommend2: Entousiasm in recommendations of the brand	Consumer not defending	36	3.25	.906	.151
		Consumer defending	34	3.85	1.019	.175
	Negative WOM1 reversed: Recommend to friends not to buy (rev.)	Consumer not defending	36	3.25	.967	.161
		Consumer defending	34	3.88	.769	.132
	Negative WOM2 reversed: Encourage friends to buy other brands (rev.)	Consumer not defending	36	3.19	.856	.143
		Consumer defending	34	3.62	.888	.152
Volkswagen	Recommend1: Recommendation of the brand	Consumer not defending	19	3.37	.895	.205
		Consumer defending	14	4.21	.579	.155
	Recommend2: Entousiasm in recommendations of the brand	Consumer not defending	19	3.26	1.046	.240
		Consumer defending	14	4.00	.679	.182
	Negative WOM1 reversed: Recommend to friends not to buy (rev.)	Consumer not defending	19	3.58	.902	.207
		Consumer defending	14	3.86	.864	.231
	Negative WOM2 reversed: Encourage friends to buy other brands (rev.)	Consumer not defending	19	3.11	1.049	.241
		Consumer defending	14	3.14	1.027	.275

The recommendation We will now make an ANOVA to check the differences between the brands based on a split of the consumers defending and not defending. The power of the test is the same as in H5.1.

Test of Homogeneity of Variances

Consumer defence of the brand		Levene Statistic	df1	df2	Sig.
Consumer not defending	Recommend1: Recommendation of the brand	.074	2	61	.929
	Recommend2: Entousiasm in recommendations of the brand	.484	2	61	.619
	Negative WOM1 reversed: Recommend to friends not to buy (rev.)	.341	2	61	.712
	Negative WOM2 reversed: Encourage friends to buy other brands (rev.)	.306	2	61	.737
Consumer defending	Recommend1: Recommendation of the brand	1.193	2	63	.310
	Recommend2: Entousiasm in recommendations of the brand	1.495	2	63	.232
	Negative WOM1 reversed: Recommend to friends not to buy (rev.)	.124	2	63	.883
	Negative WOM2 reversed: Encourage friends to buy other brands (rev.)	.141	2	63	.868

The hypothese of the homogeneity of the variances is verified for each item.

ANOVA

Consumer defence of the brand			Sum of Squares	df	Mean Square	F	Sig.
Consumer not defending	Recommend1: Recommendation of the brand	Between Groups	4.188	2	2.094	2.598	.083
		Within Groups	49.171	61	.806		
		Total	53.359	63			
	Recommend2: Entousiasm in recommendations of the brand	Between Groups	8.245	2	4.122	4.491	.015
		Within Groups	55.990	61	.918		
		Total	64.234	63			
	Negative WOM1 reversed: Recommend to friends not to buy (rev.)	Between Groups	3.480	2	1.740	2.030	.140
		Within Groups	52.270	61	.857		
		Total	55.750	63			
	Negative WOM2 reversed: Encourage friends to buy other brands (rev.)	Between Groups	3.016	2	1.508	1.804	.173
		Within Groups	50.984	61	.836		
		Total	54.000	63			
Consumer defending	Recommend1: Recommendation of the brand	Between Groups	5.089	2	2.544	3.043	.055
		Within Groups	52.684	63	.836		
		Total	57.773	65			
	Recommend2: Entousiasm in recommendations of the brand	Between Groups	7.175	2	3.587	4.127	.021
		Within Groups	54.765	63	.869		
		Total	61.939	65			
	Negative WOM1 reversed: Recommend to friends not to buy (rev.)	Between Groups	.130	2	.065	.092	.912
		Within Groups	44.355	63	.704		
		Total	44.485	65			
	Negative WOM2 reversed: Encourage friends to buy other brands (rev.)	Between Groups	3.009	2	1.504	1.846	.166
		Within Groups	51.355	63	.815		
		Total	54.364	65			

Only Recommend 2 is significant at a level of error of 5% about one or more difference of mean inside their groups, for consumers defending and not defending the brands.

Multiple Comparisons

Consumer defence of the brand	Dependent Variable		(I) Name of the brand bought or used the most recently	(J) Name of the brand bought or used the most recently	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
								Lower Bound	Upper Bound
Consumer not defending	Recommend1: Recommendation of the brand	Tukey HSD	Findus	Apple	-.750	.335	.072	-1.55	.05
				Volkswagen	-.702	.363	.139	-1.57	.17
			Apple	Findus	.750	.335	.072	-.05	1.55
				Volkswagen	.048	.255	.980	-.56	.66
			Volkswagen	Findus	.702	.363	.139	-.17	1.57
				Apple	-.048	.255	.980	-.66	.56
		Bonferroni	Findus	Apple	-.750	.335	.086	-1.57	.07
				Volkswagen	-.702	.363	.174	-1.60	.19
			Apple	Findus	.750	.335	.086	-.07	1.57
				Volkswagen	.048	.255	1.000	-.58	.67
			Volkswagen	Findus	.702	.363	.174	-.19	1.60
				Apple	-.048	.255	1.000	-.67	.58
		Games-Howell	Findus	Apple	-.750	.326	.092	-1.61	.11
				Volkswagen	-.702	.354	.149	-1.61	.21
			Apple	Findus	.750	.326	.092	-.11	1.61
				Volkswagen	.048	.255	.980	-.57	.67
			Volkswagen	Findus	.702	.354	.149	-.21	1.61
				Apple	-.048	.255	.980	-.67	.57
	Recommend2: Entousiasm in recommendations of the brand	Tukey HSD	Findus	Apple	-1.028*	.357	.015	-1.89	-.17
				Volkswagen	-1.041*	.388	.025	-1.97	-.11
			Apple	Findus	1.028*	.357	.015	.17	1.89
				Volkswagen	-.013	.272	.999	-.67	.64
			Volkswagen	Findus	1.041*	.388	.025	.11	1.97
				Apple	.013	.272	.999	-.64	.67
		Bonferroni	Findus	Apple	-1.028*	.357	.017	-1.91	-.15
				Volkswagen	-1.041*	.388	.028	-2.00	-.09
			Apple	Findus	1.028*	.357	.017	.15	1.91
				Volkswagen	-.013	.272	1.000	-.68	.66
			Volkswagen	Findus	1.041*	.388	.028	.09	2.00
				Apple	.013	.272	1.000	-.66	.68

	Games-Howell	Findus	Apple	-1.028*	.357	.035	-1.98	-.07
			Volkswagen	-1.041*	.403	.048	-2.08	-.01
		Apple	Findus	1.028*	.357	.035	.07	1.98
			Volkswagen	-.013	.284	.999	-.71	.68
		Volkswagen	Findus	1.041*	.403	.048	.01	2.08
			Apple	.013	.284	.999	-.68	.71
Negative WOM1 reversed: Recommend to friends not to buy (rev.)	Tukey HSD	Findus	Apple	.639	.345	.162	-.19	1.47
			Volkswagen	.310	.375	.688	-.59	1.21
		Apple	Findus	-.639	.345	.162	-1.47	.19
			Volkswagen	-.329	.262	.427	-.96	.30
		Volkswagen	Findus	-.310	.375	.688	-1.21	.59
			Apple	.329	.262	.427	-.30	.96
	Bonferroni	Findus	Apple	.639	.345	.207	-.21	1.49
			Volkswagen	.310	.375	1.000	-.61	1.23
		Apple	Findus	-.639	.345	.207	-1.49	.21
			Volkswagen	-.329	.262	.645	-.98	.32
		Volkswagen	Findus	-.310	.375	1.000	-1.23	.61
			Apple	.329	.262	.645	-.32	.98
	Games-Howell	Findus	Apple	.639	.306	.127	-.16	1.44
			Volkswagen	.310	.333	.628	-.54	1.16
		Apple	Findus	-.639	.306	.127	-1.44	.16
			Volkswagen	-.329	.262	.429	-.97	.31
		Volkswagen	Findus	-.310	.333	.628	-1.16	.54
			Apple	.329	.262	.429	-.31	.97
Negative WOM2 reversed: Encourage friends to buy other brands (rev.)	Tukey HSD	Findus	Apple	.583	.341	.209	-.24	1.40
			Volkswagen	.673	.370	.172	-.22	1.56
		Apple	Findus	-.583	.341	.209	-1.40	.24
			Volkswagen	.089	.259	.937	-.53	.71
		Volkswagen	Findus	-.673	.370	.172	-1.56	.22
			Apple	-.089	.259	.937	-.71	.53
	Bonferroni	Findus	Apple	.583	.341	.276	-.26	1.42
			Volkswagen	.673	.370	.222	-.24	1.58
		Apple	Findus	-.583	.341	.276	-1.42	.26
			Volkswagen	.089	.259	1.000	-.55	.73
		Volkswagen	Findus	-.673	.370	.222	-1.58	.24
			Apple	-.089	.259	1.000	-.73	.55

		Games-Howell	Findus	Apple	.583	.312	.188	-.24	1.41
				Volkswagen	.673	.367	.186	-.26	1.60
			Apple	Findus	-.583	.312	.188	-1.41	.24
				Volkswagen	.089	.280	.946	-.60	.78
			Volkswagen	Findus	-.673	.367	.186	-1.60	.26
				Apple	-.089	.280	.946	-.78	.60
Consumer defending	Recommend1: Recommendation of the brand	Tukey HSD	Findus	Apple	-.497	.267	.158	-1.14	.14
				Volkswagen	-.770	.326	.055	-1.55	.01
			Apple	Findus	.497	.267	.158	-.14	1.14
				Volkswagen	-.273	.290	.617	-.97	.42
			Volkswagen	Findus	.770	.326	.055	-.01	1.55
				Apple	.273	.290	.617	-.42	.97
		Bonferroni	Findus	Apple	-.497	.267	.201	-1.15	.16
				Volkswagen	-.770	.326	.064	-1.57	.03
			Apple	Findus	.497	.267	.201	-.16	1.15
				Volkswagen	-.273	.290	1.000	-.99	.44
			Volkswagen	Findus	.770	.326	.064	-.03	1.57
				Apple	.273	.290	1.000	-.44	.99
		Games-Howell	Findus	Apple	-.497	.278	.188	-1.18	.18
				Volkswagen	-.770*	.267	.019	-1.43	-.11
			Apple	Findus	.497	.278	.188	-.18	1.18
				Volkswagen	-.273	.233	.475	-.84	.29
			Volkswagen	Findus	.770*	.267	.019	.11	1.43
				Apple	.273	.233	.475	-.29	.84
	Recommend2: Entousiasm in recommendations of the brand	Tukey HSD	Findus	Apple	-.686*	.272	.037	-1.34	-.03
				Volkswagen	-.833*	.332	.039	-1.63	-.04
			Apple	Findus	.686*	.272	.037	.03	1.34
				Volkswagen	-.147	.296	.873	-.86	.56
			Volkswagen	Findus	.833*	.332	.039	.04	1.63
				Apple	.147	.296	.873	-.56	.86
		Bonferroni	Findus	Apple	-.686*	.272	.042	-1.35	-.02
				Volkswagen	-.833*	.332	.044	-1.65	-.02
			Apple	Findus	.686*	.272	.042	.02	1.35
				Volkswagen	-.147	.296	1.000	-.88	.58
			Volkswagen	Findus	.833*	.332	.044	.02	1.65
				Apple	.147	.296	1.000	-.58	.88

About the recommendation enthousiasm, the brand Findus and Apple, and Findus and Volkswagen, have significantly their means different at a level of error of 5% for both consumers who had been seen as defending the brand, and for the ones have been seen as not defending it.

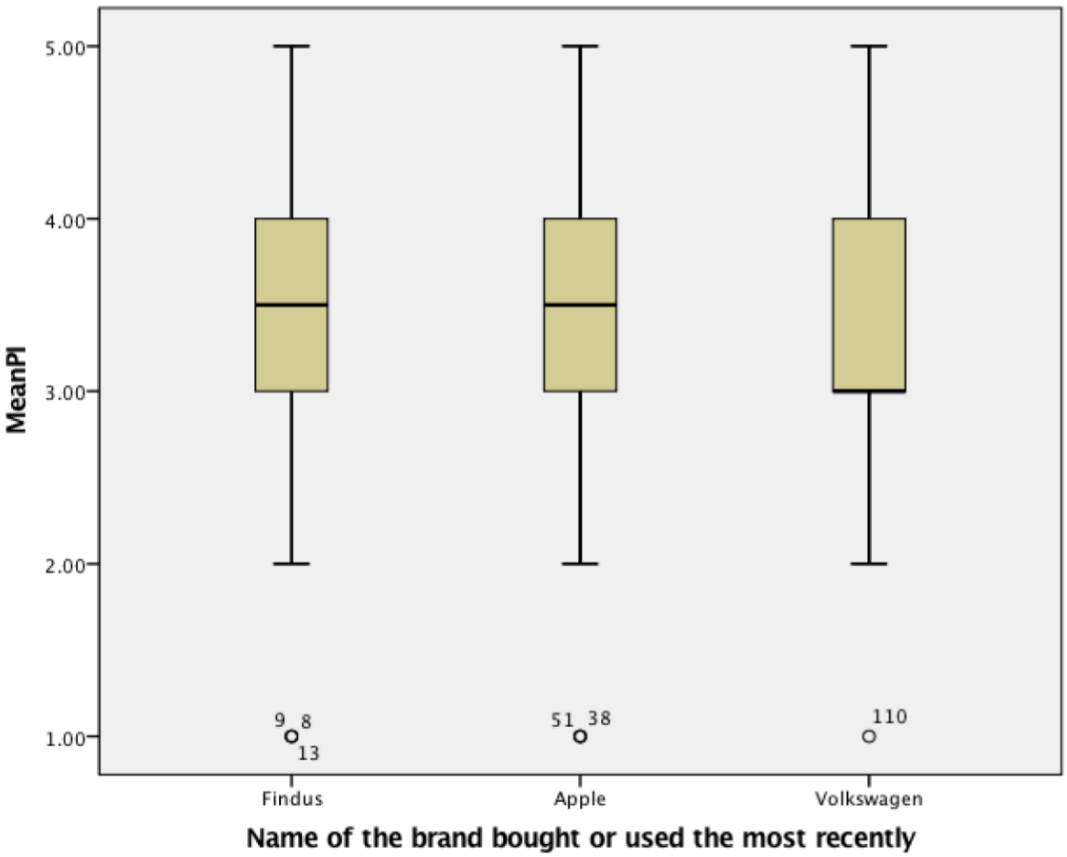
Descriptives

Consumer defence of the brand			N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
							Lower Bound	Upper Bound		
Consumer not defending	Recommend1: Recommendation of the brand	Findus	9	2.67	.866	.289	2.00	3.33	1	4
		Apple	36	3.42	.906	.151	3.11	3.72	1	5
		Volkswagen	19	3.37	.895	.205	2.94	3.80	1	5
		Total	64	3.30	.920	.115	3.07	3.53	1	5
	Recommend2: Entousiasm in recommendations of the brand	Findus	9	2.22	.972	.324	1.48	2.97	1	3
		Apple	36	3.25	.906	.151	2.94	3.56	1	4
		Volkswagen	19	3.26	1.046	.240	2.76	3.77	1	5
		Total	64	3.11	1.010	.126	2.86	3.36	1	5
	Negative WOM1 reversed: Recommend to friends not to buy (rev.)	Findus	9	3.89	.782	.261	3.29	4.49	3	5
		Apple	36	3.25	.967	.161	2.92	3.58	1	5
		Volkswagen	19	3.58	.902	.207	3.14	4.01	2	5
		Total	64	3.44	.941	.118	3.20	3.67	1	5
	Negative WOM2 reversed: Encourage friends to buy other brands (rev.)	Findus	9	3.78	.833	.278	3.14	4.42	3	5
		Apple	36	3.19	.856	.143	2.90	3.48	1	5
		Volkswagen	19	3.11	1.049	.241	2.60	3.61	1	5
		Total	64	3.25	.926	.116	3.02	3.48	1	5
Consumer defending	Recommend1: Recommendation of the brand	Findus	18	3.44	.922	.217	2.99	3.90	2	5
		Apple	34	3.94	1.013	.174	3.59	4.29	1	5
		Volkswagen	14	4.21	.579	.155	3.88	4.55	3	5
		Total	66	3.86	.943	.116	3.63	4.10	1	5
	Recommend2: Entousiasm in recommendations of the brand	Findus	18	3.17	.924	.218	2.71	3.63	2	5
		Apple	34	3.85	1.019	.175	3.50	4.21	1	5
		Volkswagen	14	4.00	.679	.182	3.61	4.39	3	5
		Total	66	3.70	.976	.120	3.46	3.94	1	5
	Negative WOM1 reversed: Recommend to friends not to buy (rev.)	Findus	18	3.78	.943	.222	3.31	4.25	1	5
		Apple	34	3.88	.769	.132	3.61	4.15	2	5
		Volkswagen	14	3.86	.864	.231	3.36	4.36	2	5
		Total	66	3.85	.827	.102	3.65	4.05	1	5
	Negative WOM2 reversed: Encourage friends to buy other brands (rev.)	Findus	18	3.72	.826	.195	3.31	4.13	2	5
		Apple	34	3.62	.888	.152	3.31	3.93	2	5
		Volkswagen	14	3.14	1.027	.275	2.55	3.74	1	5
		Total	66	3.55	.915	.113	3.32	3.77	1	5

While the mean of enthousiasm in the recommendation is lower for Findus in comparison to the ones of Apple and Volkswagen in both groups.

H6.1: Brand trust as a moderator of PI

We have made first a mean with the two factors of the PI.



The means appear too similar to intent any test to see if they are significantly different per brand. We start then the moderation tests, using the binary variable of the consumer defence, with the first item remaining from brand trust after the factorial analysis: Credibility1: Confidence in product quality.

```
..........................................................................
Model = 1
    Y = MeanPI
    X = ConDefen
    M = Credibi1

Sample size
        130

Coding of categorical X variable for analysis:
 ConDefen       D1
      .00      .00
     1.00     1.00

**************************************************************************
Outcome: MeanPI

Model Summary
          R       R-sq        MSE          F        df1        df2          p
      .5844      .3416      .6345    21.7878     3.0000   126.0000      .0000

Model
              coeff         se          t          p       LLCI       ULCI
constant     1.3034      .3709     3.5138      .0006      .5693     2.0374
Credibi1      .4875      .0977     4.9887      .0000      .2941      .6809
D1            .8925      .5743     1.5540      .1227     -.2441     2.0290
int_1        -.0903      .1439     -.6272      .5317     -.3750      .1945

Product terms key:
 int_1     :       D1        X       Credibi1

R-square increase due to interaction:
    R2-chng          F        df1        df2          p
      .0021      .3933     1.0000   126.0000      .5317
```

The model is significant at the level of error of 5%, as well as the effect of ‘Credibility 1’ on the variable Y which is the PI. The interaction is not significant as p-value of 0.5317 > 0.05.

We test then the second item of the brand trust: Credibility2: Product brand purchase guarantee.

```
Model = 1
    Y = MeanPI
    X = ConDefen
    M = Credibi2

Sample size
        130

Coding of categorical X variable for analysis:
 ConDefen       D1
      .00      .00
     1.00     1.00

************************************************************************
Outcome: MeanPI

Model Summary
          R       R-sq        MSE          F        df1        df2          p
      .5506      .3032      .6715    18.2737     3.0000   126.0000      .0000

Model
              coeff         se          t          p       LLCI       ULCI
constant     1.8173      .3484     5.2167      .0000     1.1279     2.5066
Credibi2      .3759      .0987     3.8104      .0002      .1807      .5711
D1            .4764      .5285      .9014      .3691     -.5694     1.5222
int_1         .0102      .1393      .0734      .9416     -.2654      .2859

Product terms key:
 int_1     :       D1        X       Credibi2

R-square increase due to interaction:
    R2-chng          F        df1        df2          p
      .0000      .0054     1.0000   126.0000      .9416
```

The model is significant at the level of error of 5%, as well as the effect of ‘Credibility 2’ on the variable Y which is the PI. The interaction is not significant as p-value of 0.9416 > 0.05.

We test then the third item of the brand trust: Integrity1: Sincerity of the brand.

```
Model = 1
    Y = MeanPI
    X = ConDefen
    M = Sincerit

Sample size
        130

Coding of categorical X variable for analysis:
 ConDefen       D1
      .00      .00
     1.00     1.00

*************************************************************************
Outcome: MeanPI

Model Summary
          R       R-sq        MSE          F        df1        df2          p
      .4493      .2019      .7691    10.6241     3.0000   126.0000      .0000

Model
              coeff         se          t          p       LLCI       ULCI
constant     2.4918      .3077     8.0977      .0000     1.8829     3.1008
Sincerit      .2569      .1243     2.0662      .0409      .0108      .5030
D1            .4770      .4740     1.0063      .3162     -.4611     1.4151
int_1         .0065      .1651      .0395      .9686     -.3202      .3333

Product terms key:
 int_1     :       D1        X       Sincerit

R-square increase due to interaction:
    R2-chng          F        df1        df2          p
      .0000      .0016     1.0000   126.0000      .9686
```

The model is significant at the level of error of 5%, as well as the effect of the ‘Sincerity’ on the variable Y which is the PI. The interaction is not significant as p-value of 0.9686 > 0.05.

We test then the fourth item of the brand trust: Integrity2: Honesty of the brand.

```
Model = 1
    Y = MeanPI
    X = ConDefen
    M = Honesty

Sample size
        130

Coding of categorical X variable for analysis:
 ConDefen       D1
      .00      .00
     1.00     1.00

************************************************************************
Outcome: MeanPI

Model Summary
          R       R-sq        MSE          F        df1        df2          p
      .4978      .2478      .7249    13.8354     3.0000   126.0000      .0000

Model
              coeff         se          t          p       LLCI       ULCI
constant     2.0476      .3087     6.6338      .0000     1.4368     2.6585
Honesty       .4551      .1270     3.5836      .0005      .2038      .7065
D1            .9628      .4670     2.0615      .0413      .0385     1.8871
int_1        -.2107      .1636    -1.2878      .2002     -.5345      .1131

Product terms key:
 int_1     :       D1        X       Honesty

R-square increase due to interaction:
    R2-chng          F        df1        df2          p
      .0099     1.6583     1.0000   126.0000      .2002
```

The model is significant at the level of error of 5%, as well as the effect of the ‘Honesty’ on the variable Y which is the PI. The interaction is not significant as p-value of 0.2002 > 0.05.

We test then the fifth item of the brand trust: Commitment: Small sacrifices to continue using the brand.

```
Model = 1
    Y = MeanPI
    X = ConDefen
    M = Commitm

Sample size
        130

Coding of categorical X variable for analysis:
 ConDefen       D1
      .00      .00
     1.00     1.00

************************************************************************
Outcome: MeanPI

Model Summary
          R       R-sq        MSE          F        df1        df2          p
      .5850      .3422      .6339    21.8482     3.0000   126.0000      .0000

Model
              coeff         se          t          p       LLCI       ULCI
constant     2.0983      .2378     8.8254      .0000     1.6278     2.5688
Commitm       .4451      .0973     4.5742      .0000      .2526      .6377
D1            .4452      .3911     1.1382      .2572     -.3289     1.2193
int_1        -.0455      .1350     -.3370      .7367     -.3126      .2216

Product terms key:
 int_1     :       D1        X       Commitm

R-square increase due to interaction:
    R2-chng          F        df1        df2          p
      .0006      .1135     1.0000   126.0000      .7367
```

The model is significant at the level of error of 5%, as well as the effect of the ‘Commitement’ on the variable Y which is the PI. The interaction is not significant as p-value of 0.7367 > 0.05.

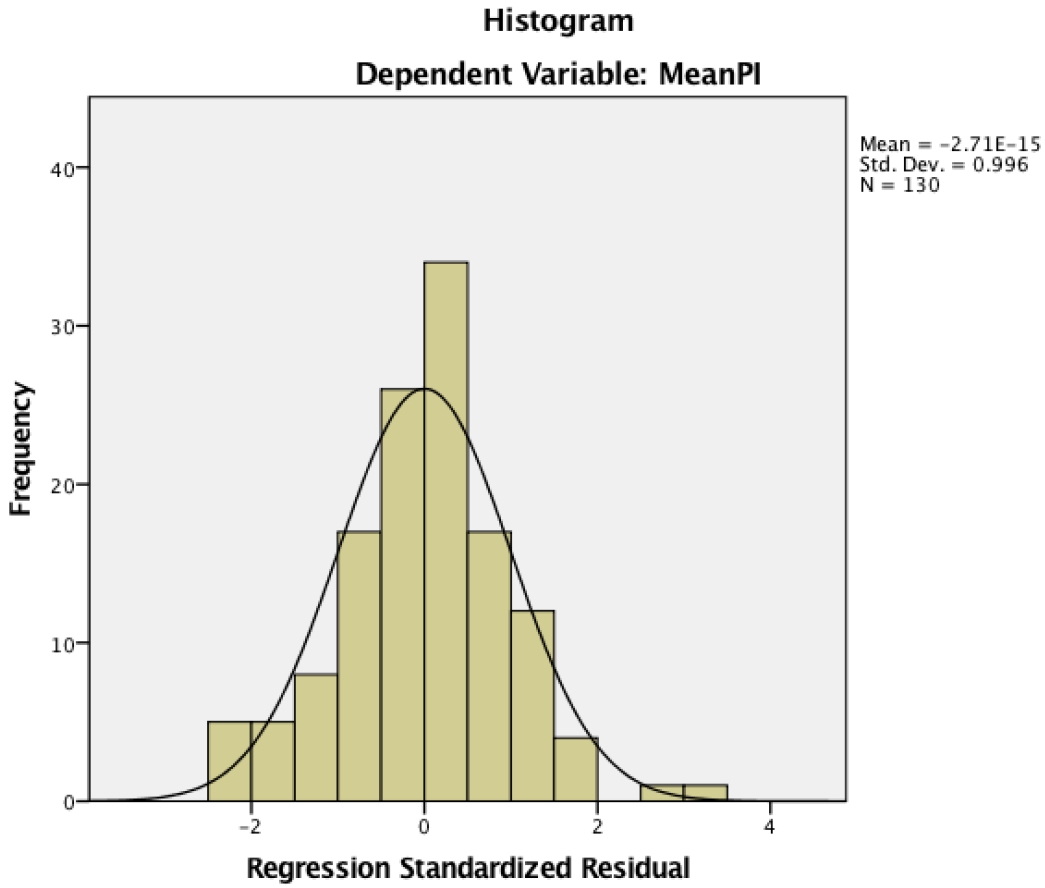
Even though any level of interaction was analysed, we could see the direct effect of the brand trust items on the dependent variable PI. We will then make a mean with the items and test a model of regression.

Correlations

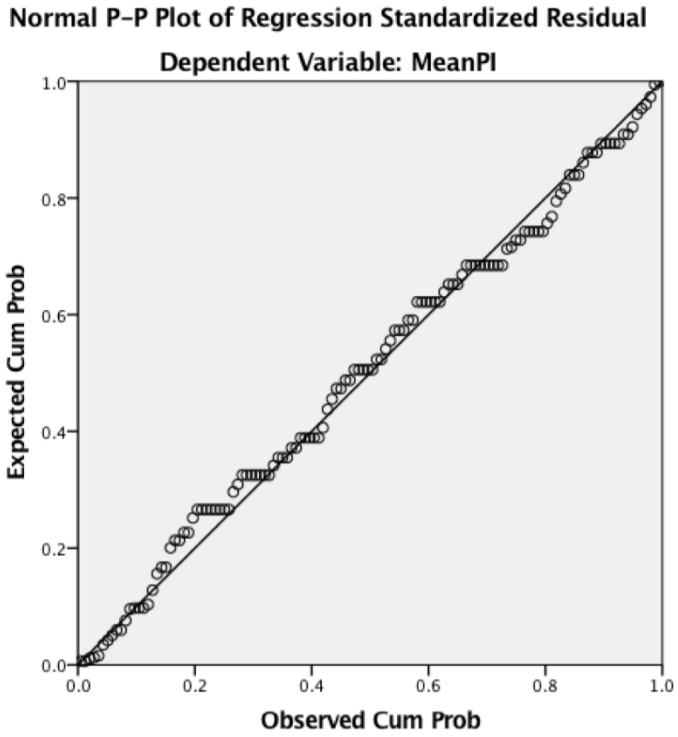
		MeanBTrus	MeanPI
MeanBTrus	Pearson Correlation	1	.593**
	Sig. (2-tailed)		.000
	N	130	130
MeanPI	Pearson Correlation	.593**	1
	Sig. (2-tailed)	.000	
	N	130	130

**. Correlation is significant at the 0.01 level (2-tailed).

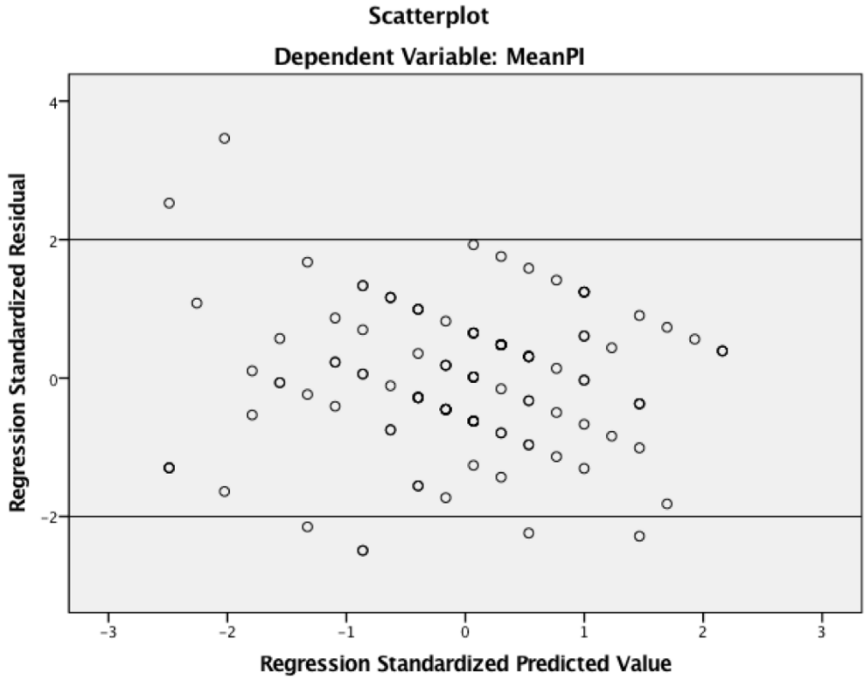
The correlation effect is significant at the error level of 5%. We make then a linear regression of the factor of brand trust on the PI. We start by checking the underlying assumptions.



The residuals are globally following a normal distribution of mean equal to 0.



This second graph supports also the assumption of normal distribution. The data are close to the Henry line.



We can verify that the residuals are randomly distributed. We can verify there is no problem of heteroscedasticity, as globally the residuals are not more distant from 0 in one side of the X

domain than the other. Also, 95% of the data are comprised between 2 and -2, which confirms the normality assumption.

The three graphs are so reassuring about the underlying assumptions for a residual model.

Variables Entered/Removed[a]

Model	Variables Entered	Variables Removed	Method
1	MeanBTrus[b]	.	Enter

a. Dependent Variable: MeanPI

b. All requested variables entered.

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.593[a]	.352	.347	.78427

a. Predictors: (Constant), MeanBTrus

b. Dependent Variable: MeanPI

35,2% of the variability of the PI mean variable is explained by the model.

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	42.696	1	42.696	69.416	.000[b]
	Residual	78.729	128	.615		
	Total	121.425	129			

a. Dependent Variable: MeanPI

b. Predictors: (Constant), MeanBTrus

The p-value associated to the F test is < 0.05. It means our model is significant at the level of error of 5% in our population, and that the prediction of the PI is better than without the information of the brand trust.

Coefficients[a]

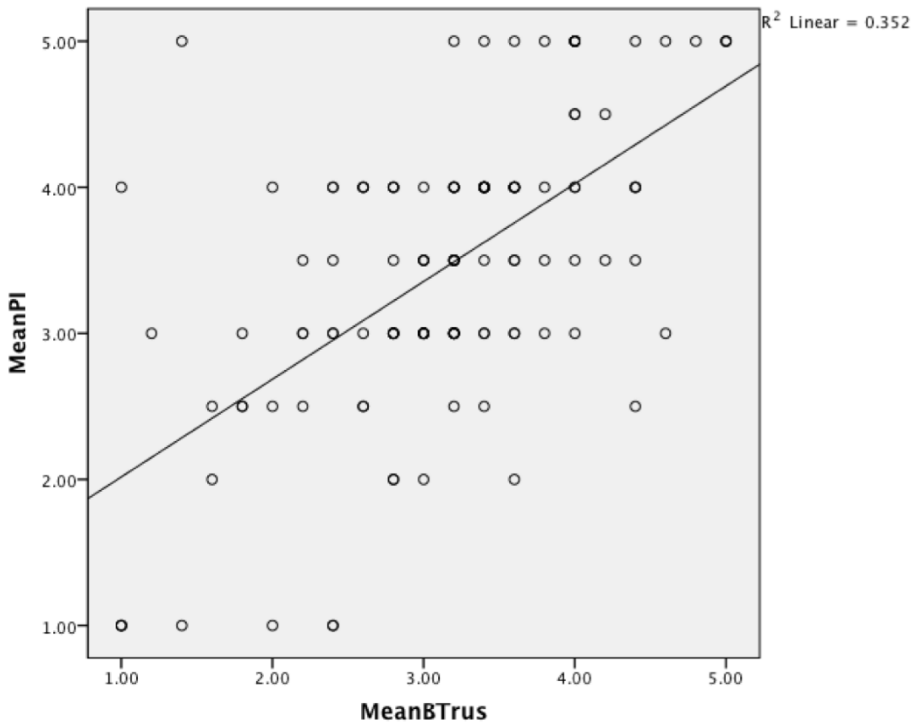
Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	1.348	.261		5.157	.000
	MeanBTrus	.669	.080	.593	8.332	.000

a. Dependent Variable: MeanPI

The p-value is < 0.05 for brand trsut which means the slope is significantly different from 0 in our population. Our constant is significant too, which means it is not passing by 0 significantly.

Y = 1.348 + 0.669*X

We can affirm that the relationship is positive.



H6.2: Brand trust as a moderator of CR

We will test one per one the items of brand trust on the mean of CR with the independent variable of having given explanations tending to defend the brand or not.

We will start by testing the first item of brand turst: Credibility1: Confidence in product quality.

```
Model = 1
    Y = MeanCR
    X = ConDefen
    M = Credibi1

Sample size
        130

Coding of categorical X variable for analysis:
 ConDefen       D1
      .00      .00
     1.00     1.00

************************************************************************
Outcome: MeanCR

Model Summary
          R       R-sq        MSE          F        df1        df2          p
      .6843      .4683      .2561    36.9880     3.0000   126.0000      .0000

Model
              coeff         se          t          p       LLCI       ULCI
constant     1.9105      .2356     8.1080      .0000     1.4442     2.3768
Credibi1      .3728      .0621     6.0045      .0000      .2499      .4956
D1           -.0418      .3648     -.1146      .9089     -.7638      .6802
int_1         .0895      .0914      .9786      .3296     -.0914      .2704

Product terms key:
 int_1     :       D1        X       Credibi1

R-square increase due to interaction:
    R2-chng          F        df1        df2          p
      .0040      .9577     1.0000   126.0000      .3296
```

The model is significant at the level of error of 5%. The effect of the item Credibility 1 over the dependent variable is significant at the level of error of 5% as 0.0000 < 0.05. Though the interaction effect is not significant. We test then the second item: Credibility2: Product brand purchase guarantee.

```
Model = 1
    Y = MeanCR
    X = ConDefen
    M = Credibi2

Sample size
        130

Coding of categorical X variable for analysis:
 ConDefen       D1
      .00      .00
     1.00     1.00

*************************************************************************
Outcome: MeanCR

Model Summary
          R       R-sq        MSE          F        df1        df2          p
      .6196      .3839      .2967    26.1762     3.0000   126.0000      .0000

Model
              coeff         se          t          p       LLCI       ULCI
constant     2.1882      .2315     9.4508      .0000     1.7300     2.6464
Credibi2      .3216      .0656     4.9040      .0000      .1918      .4513
D1            .1332      .3512      .3791      .7053     -.5619      .8283
int_1         .0410      .0926      .4429      .6586     -.1422      .2242

Product terms key:
 int_1     :       D1        X       Credibi2

R-square increase due to interaction:
    R2-chng          F        df1        df2          p
      .0010      .1962     1.0000   126.0000      .6586
```

The model is significant at the level of error of 5%. The effect of the item Credibility 2 over the dependent variable is significant at the level of error of 5% as 0.0000 < 0.05. Though the interaction effect is not significant. We test then the third item: Integrity1: Sincerity of the brand.

```
Model = 1
    Y = MeanCR
    X = ConDefen
    M = Sincerit

Sample size
        130

Coding of categorical X variable for analysis:
 ConDefen       D1
      .00      .00
     1.00     1.00

*************************************************************************
Outcome: MeanCR

Model Summary
          R       R-sq        MSE          F        df1        df2          p
      .4922      .2422      .3649    13.4272     3.0000   126.0000      .0000

Model
              coeff         se          t          p       LLCI       ULCI
constant     2.9001      .2120    13.6828      .0000     2.4807     3.3196
Sincerit      .1614      .0856     1.8850      .0617     -.0081      .3309
D1           -.1516      .3265     -.4643      .6433     -.7977      .4946
int_1         .1512      .1137     1.3297      .1860     -.0738      .3763

Product terms key:
 int_1     :       D1        X       Sincerit

R-square increase due to interaction:
    R2-chng          F        df1        df2          p
      .0106     1.7682     1.0000   126.0000      .1860
```

The model is significant at the level of error of 5%. The effect of the item ‘Sincerity’ over the dependent variable is not significant at the level of error of 5% as 0.0617 < 0.05. Though the interaction effect is not significant. We test then the fourth item of the brand trust: Integrity2: Honesty of the brand.

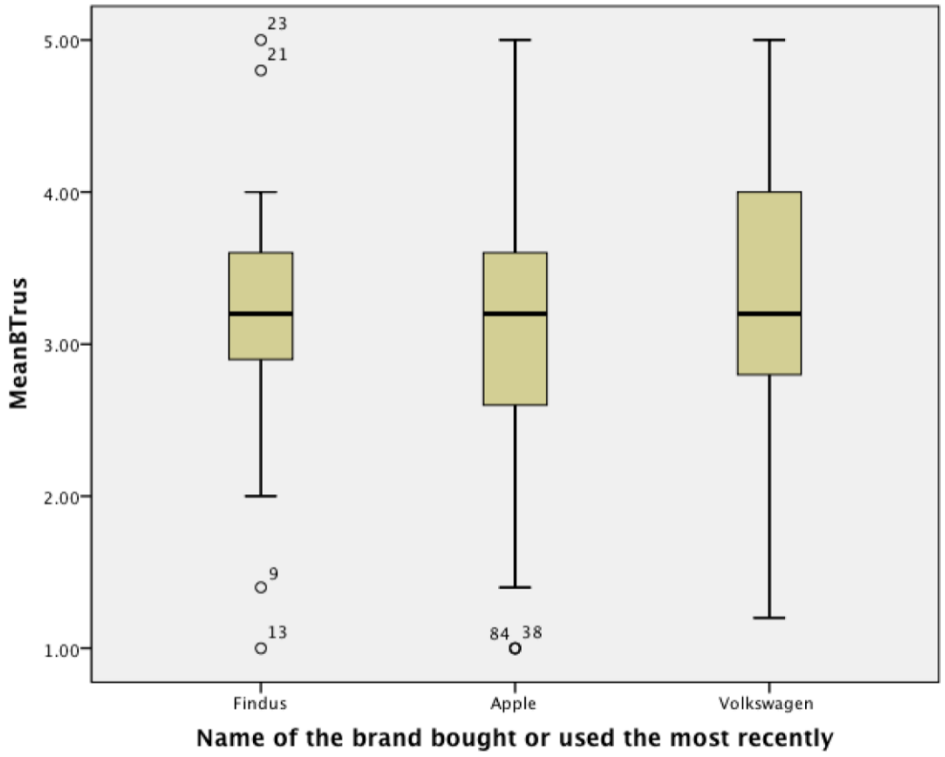
```
Model = 1
    Y = MeanCR
    X = ConDefen
    M = Honesty

Sample size
        130

Coding of categorical X variable for analysis:
 ConDefen       D1
      .00      .00
     1.00     1.00

************************************************************************
Outcome: MeanCR

Model Summary
          R       R-sq        MSE          F        df1        df2          p
      .5265      .2772      .3481    16.1039     3.0000   126.0000      .0000

Model
              coeff         se          t          p       LLCI       ULCI
constant     2.5968      .2139    12.1409      .0000     2.1735     3.0201
Honesty       .2966      .0880     3.3699      .0010      .1224      .4708
D1            .1931      .3236      .5966      .5518     -.4474      .8336
int_1        -.0040      .1134     -.0353      .9719     -.2284      .2204

Product terms key:
 int_1     :       D1        X       Honesty

R-square increase due to interaction:
    R2-chng          F        df1        df2          p
      .0000      .0012     1.0000   126.0000      .9719
```

The model is significant at the level of error of 5%. The effect of the item ‘Honesty’ over the dependent variable is significant at the level of error of 5% as 0.0010 < 0.05. Though the interaction effect is not significant. We test then the fifth item: Commitment: Small sacrifices to continue using the brand.

```
Model = 1
    Y = MeanCR
    X = ConDefen
    M = Commitm

Sample size
        130

Coding of categorical X variable for analysis:
 ConDefen       D1
      .00      .00
     1.00     1.00

*************************************************************************
Outcome: MeanCR

Model Summary
          R       R-sq        MSE          F        df1        df2          p
      .5928      .3514      .3124    22.7507     3.0000   126.0000      .0000

Model
              coeff         se          t          p       LLCI       ULCI
constant     2.6131      .1669    15.6576      .0000     2.2828     2.9434
Commitm       .2976      .0683     4.3568      .0000      .1624      .4328
D1            .0554      .2746      .2017      .8405     -.4880      .5987
int_1         .0420      .0947      .4428      .6587     -.1455      .2294

Product terms key:
 int_1     :       D1        X       Commitm

R-square increase due to interaction:
    R2-chng          F        df1        df2          p
      .0010      .1961     1.0000   126.0000      .6587
```

The model is significant at the level of error of 5%. The effect of the item ‘Commitment’ over the dependent variable is significant at the level of error of 5% as 0.0000 < 0.05. Though the interaction effect is not significant.

As all the items had a significant relation with the dependent variable, we will compute a mean for brand trust based on the result of each item per individual in a way to test the direct effect. Let us have a look first at the box plot of the brand trust mean per individual.



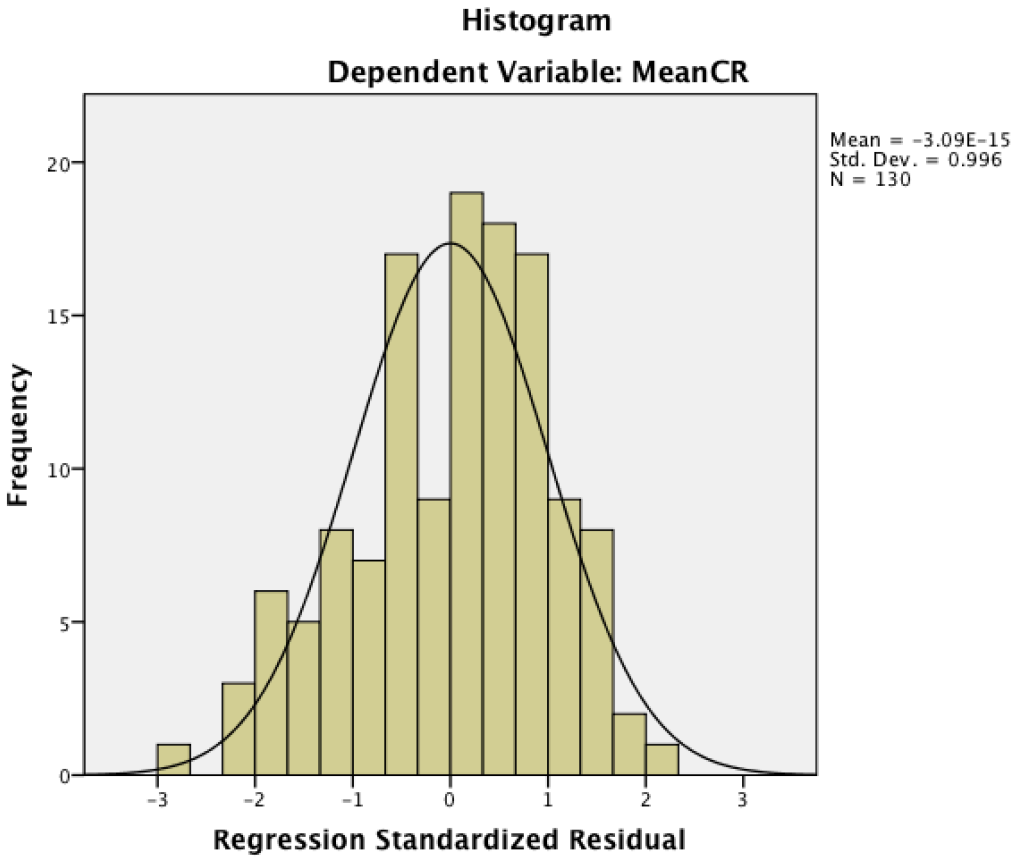
The means do not appear different from one brand to another. We go directly to the regression analysis.

Correlations

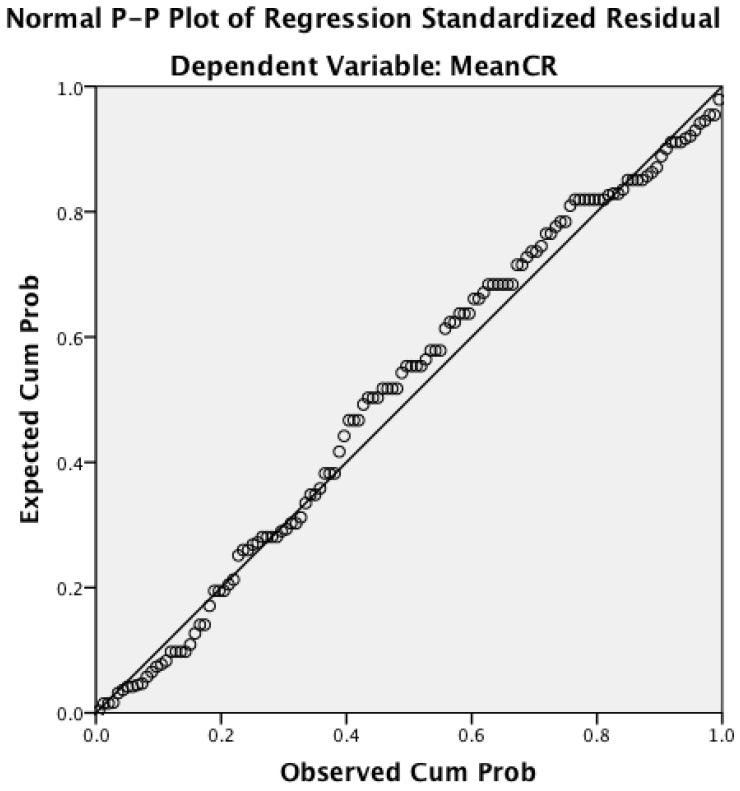
		MeanBTrus	MeanCR
MeanBTrus	Pearson Correlation	1	.684**
	Sig. (2-tailed)		.000
	N	130	130
MeanCR	Pearson Correlation	.684**	1
	Sig. (2-tailed)	.000	
	N	130	130

**. Correlation is significant at the 0.01 level (2-tailed).

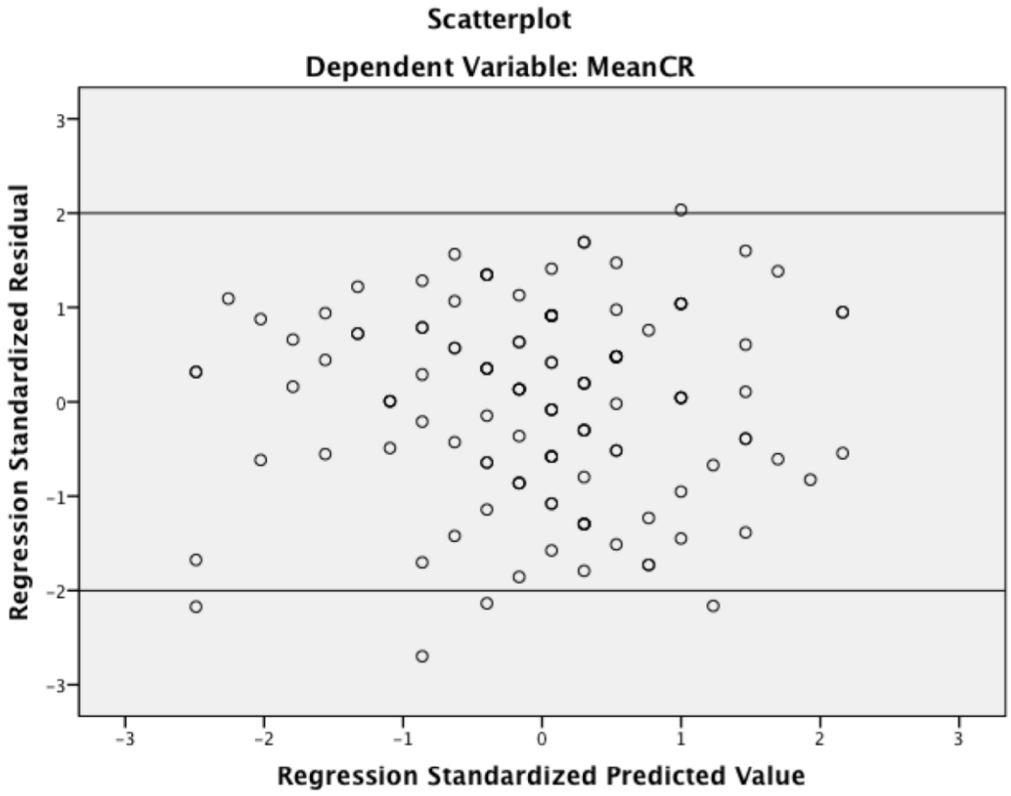
The correlation effect is significant at the level of error of 5%.



The residuals are globally following a normal distribution of mean equal to 0.



This second graph supports also the assumption of normal distribution. The data are close to the Henry line.



We can verify that the residuals are randomly distributed. We can verify there is no problem of heteroscedasticity, as globally the residuals are not more distant from 0 in one side of the X domain than the other. Also, 95% of the data are comprised between 2 and -2, which confirms the normality assumption.

The three graphs are so reassuring about the underlying assumptions for a residual model. We can then analyse the results of the test.

Variables Entered/Removed[a]

Model	Variables Entered	Variables Removed	Method
1	MeanBTrus[b]	.	Enter

a. Dependent Variable: MeanCR

b. All requested variables entered.

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.684[a]	.468	.463	.50238

a. Predictors: (Constant), MeanBTrus

b. Dependent Variable: MeanCR

46,8% of the variability of the CR variable is explained by the model.

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	28.370	1	28.370	112.409	.000[b]
	Residual	32.305	128	.252		
	Total	60.675	129			

a. Dependent Variable: MeanCR

b. Predictors: (Constant), MeanBTrus

The p-value associated to the F test is < 0.05. It means our model is significant at the level of error of 5% in our population, and that the prediction of the explanation type is better than without the information of the fact of being trusting the brand.

Coefficients[a]

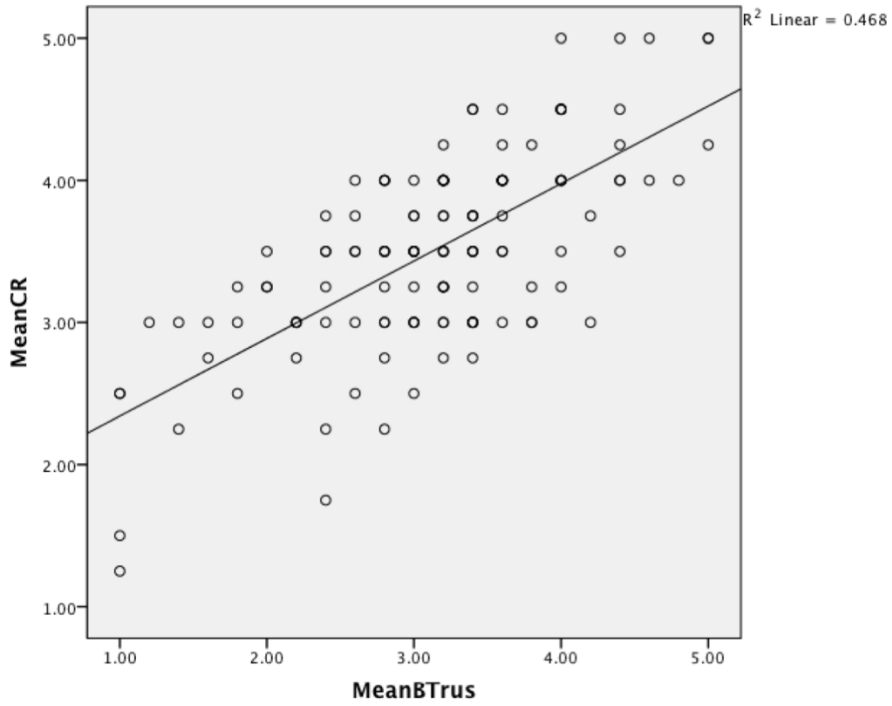
Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	1.796	.167		10.726	.000
	MeanBTrus	.545	.051	.684	10.602	.000

a. Dependent Variable: MeanCR

The p-value is < 0.05 for the factor of trusting the brand, which means the slope is significantly different from 0 in our population. The constant is significant as well at the level of error of 5%, which means it is significantly not passing by 0.

$Y = 1.796 + 0.545*X$

We can affirm that the relationship is positive.



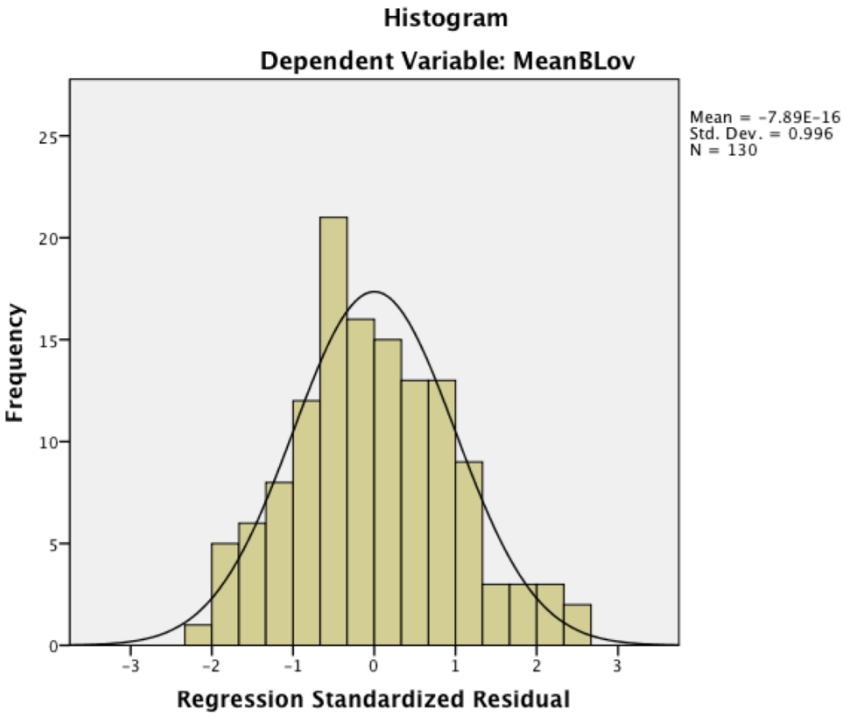
H7.1: Direct effect of brand trust on brand love

Correlations

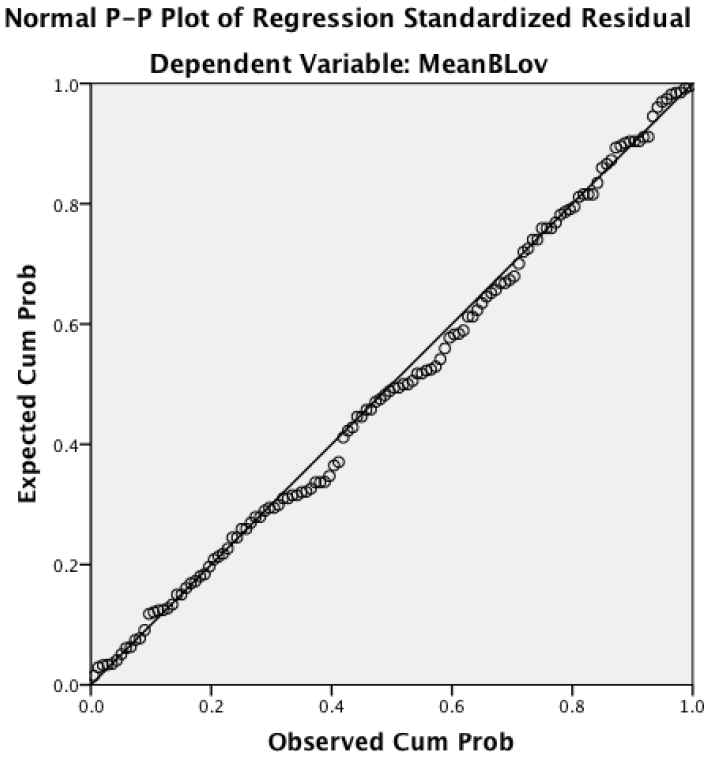
		MeanBTrus	MeanBLov
MeanBTrus	Pearson Correlation	1	.412**
	Sig. (2-tailed)		.000
	N	130	130
MeanBLov	Pearson Correlation	.412**	1
	Sig. (2-tailed)	.000	
	N	130	130

**. Correlation is significant at the 0.01 level (2-tailed).

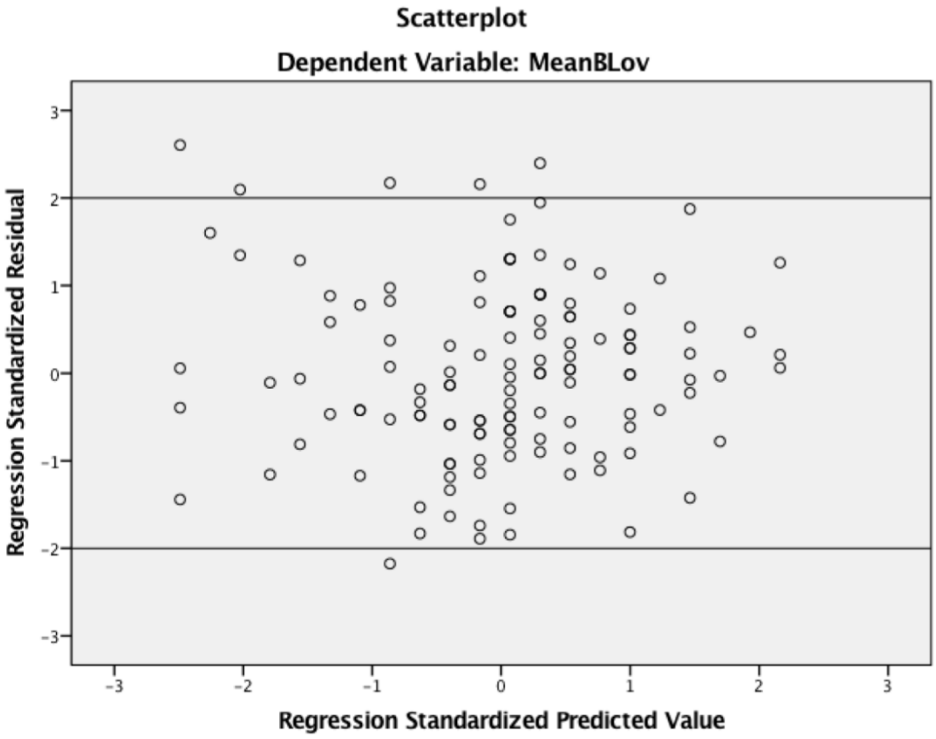
The correlation effect is significant at the level of error of 5%.



The residuals are globally following a normal distribution of mean equal to 0.



This second graph supports also the assumption of normal distribution. The data are close to the Henry line.



We can verify that the residuals are randomly distributed. We can verify there is no problem of heteroscedasticity, as globally the residuals are not more distant from 0 in one side of the X domain than the other. Also, 95% of the data are comprised between 2 and -2, which confirms the normality assumption.

The three graphs are so reassuring about the underlying assumptions for a residual model. We can then analyse the results of the test.

Variables Entered/Removed[a]

Model	Variables Entered	Variables Removed	Method
1	MeanBTrus[b]	.	Enter

a. Dependent Variable: MeanBLov

b. All requested variables entered.

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.412[a]	.170	.163	.74121

a. Predictors: (Constant), MeanBTrus

b. Dependent Variable: MeanBLov

17% of the variability of the Brand love variable is explained by the model.

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	14.365	1	14.365	26.146	.000[b]
	Residual	70.323	128	.549		
	Total	84.688	129			

a. Dependent Variable: MeanBLov

b. Predictors: (Constant), MeanBTrus

The p-value associated to the F test is < 0.05. It means our model is significant at the level of error of 5% in our population, and that the prediction of brand love is better than without the information of the fact of trusting the brand.

Coefficients[a]

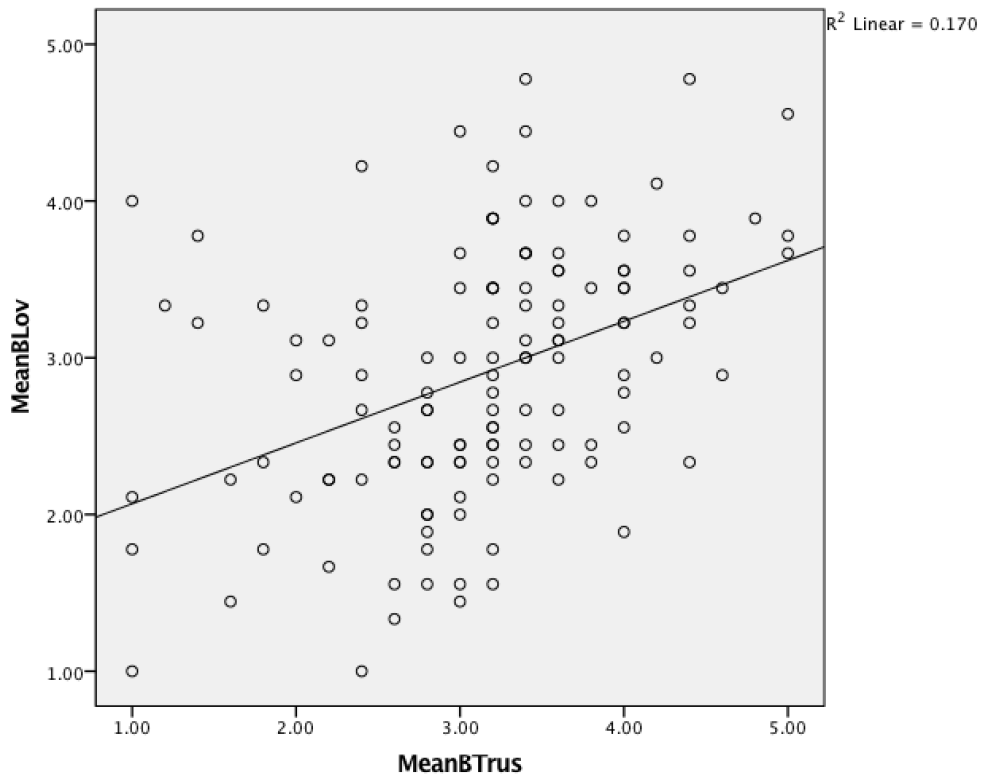
Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	1.681	.247		6.802	.000
	MeanBTrus	.388	.076	.412	5.113	.000

a. Dependent Variable: MeanBLov

The p-value is < 0.05 for the factor of trusting the brand, which means the slope is significantly different from 0 in our population. The constant is significant as well at the level of error of 5%, which means it is significantly not passing by 0.

$Y = 1.681 + 0.388*X$

We can affirm that the relationship is positive.



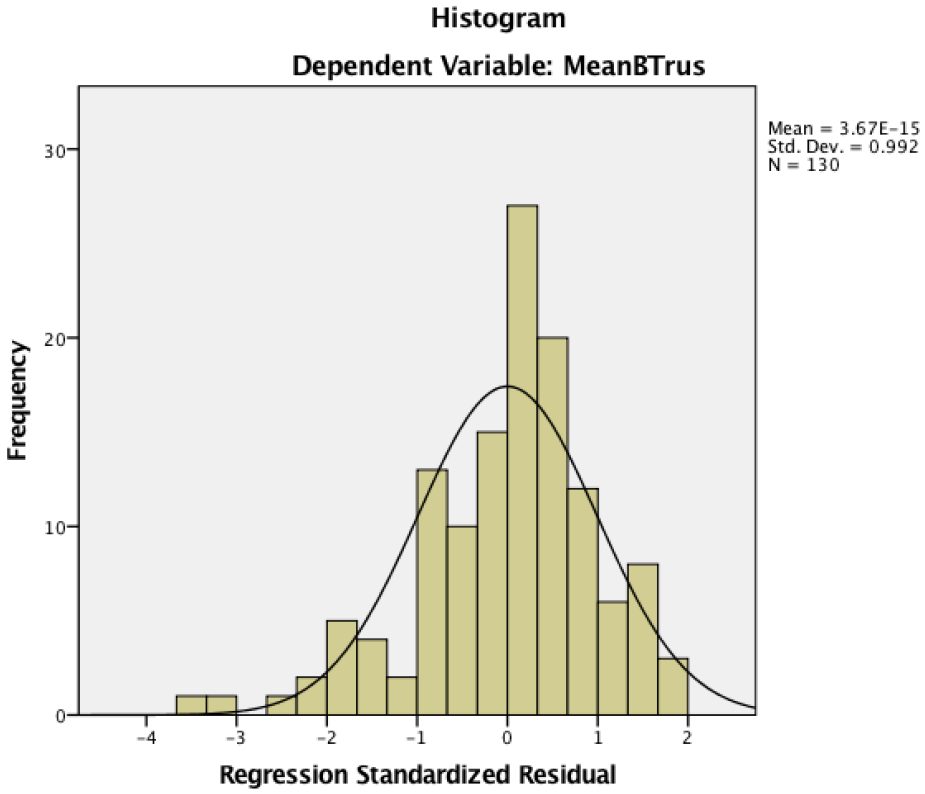
H7.2: Direct effect of brand love on brand trust

We will test the two factors of brand love separately, instead of the total mean of the remaining items after the factorial analysis, to have more detailed information about the effect.

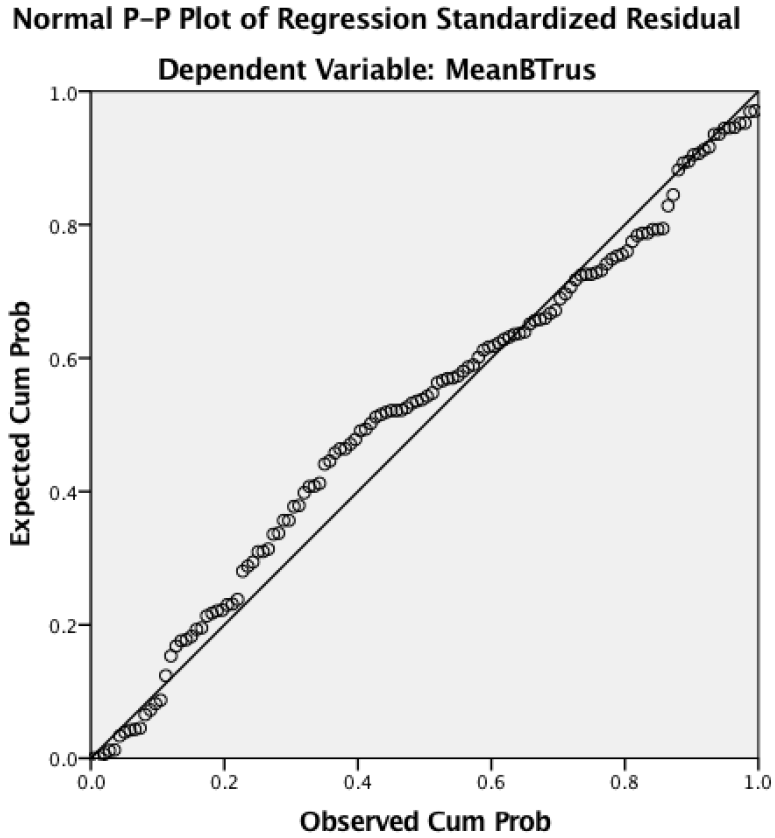
Correlations

		MeanBTrus	Brand love factor 1: emotion	Brand love factor 2: accompaniement
MeanBTrus	Pearson Correlation	1	.441**	.280**
	Sig. (2-tailed)		.000	.001
	N	130	130	130
Brand love factor 1: emotion	Pearson Correlation	.441**	1	.584**
	Sig. (2-tailed)	.000		.000
	N	130	130	130
Brand love factor 2: accompaniement	Pearson Correlation	.280**	.584**	1
	Sig. (2-tailed)	.001	.000	
	N	130	130	130

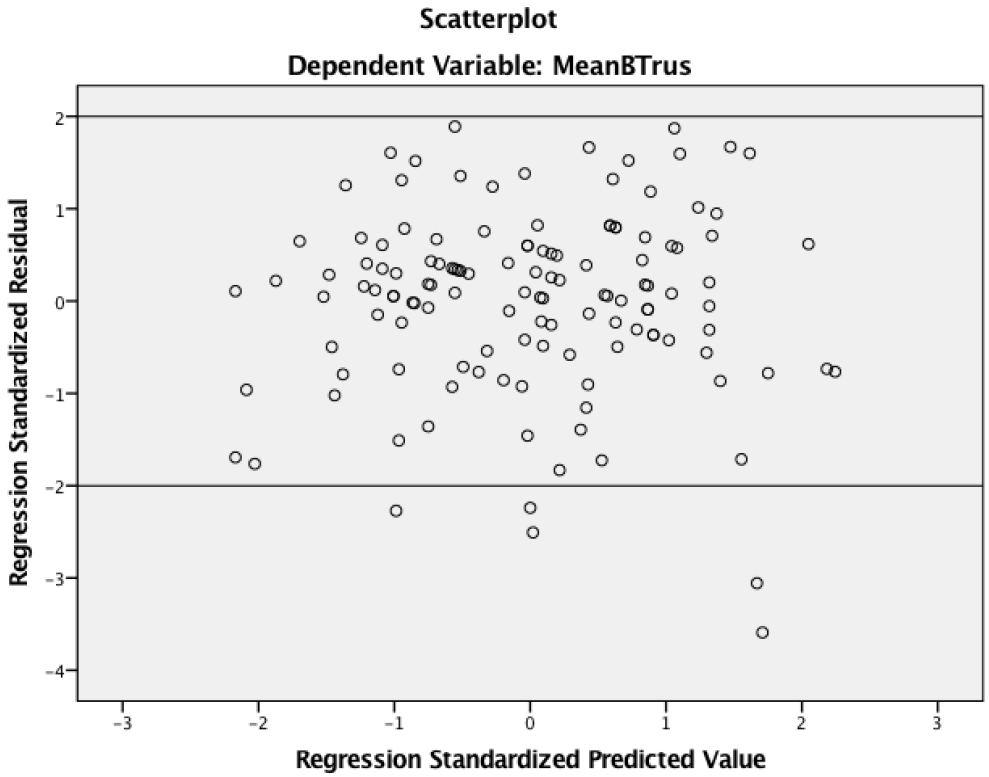
**. Correlation is significant at the 0.01 level (2-tailed).



The residuals are globally following a normal distribution of mean equal to 0.



This second graph supports also the assumption of normal distribution. The data are close to the Henry line.



We can verify that the residuals are randomly distributed. We can verify there is no problem of heteroscedasticity, as globally the residuals are not more distant from 0 in one side of the X domain than the other. Also, 95% of the data are comprised between 2 and -2, which confirms the normality assumption.

The three graphs are so reassuring about the underlying assumptions for a residual model. We can then analyse the results of the test.

Variables Entered/Removed[a]

Model	Variables Entered	Variables Removed	Method
1	Brand love factor 2: accompaniement, Brand love factor 1: emotion[b]	.	Enter

a. Dependent Variable: MeanBTrus

b. All requested variables entered.

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.442[a]	.195	.183	.77742

a. Predictors: (Constant), Brand love factor 2: accompaniement, Brand love factor 1: emotion

b. Dependent Variable: MeanBTrus

19.5% of the variability of the Brand trust variable is explained by the model.

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	18.640	2	9.320	15.421	.000[b]
	Residual	76.756	127	.604		
	Total	95.396	129			

a. Dependent Variable: MeanBTrus

b. Predictors: (Constant), Brand love factor 2: accompaniement, Brand love factor 1: emotion

The p-value associated to the F test is < 0.05. It means our model is significant at the level of error of 5% in our population, and that the prediction of brand trust is better than without the information of the factors about loving the brand.

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	1.875	.254		7.372	.000
	Brand love factor 1: emotion	.411	.096	.421	4.295	.000
	Brand love factor 2: accompaniement	.031	.089	.034	.346	.730

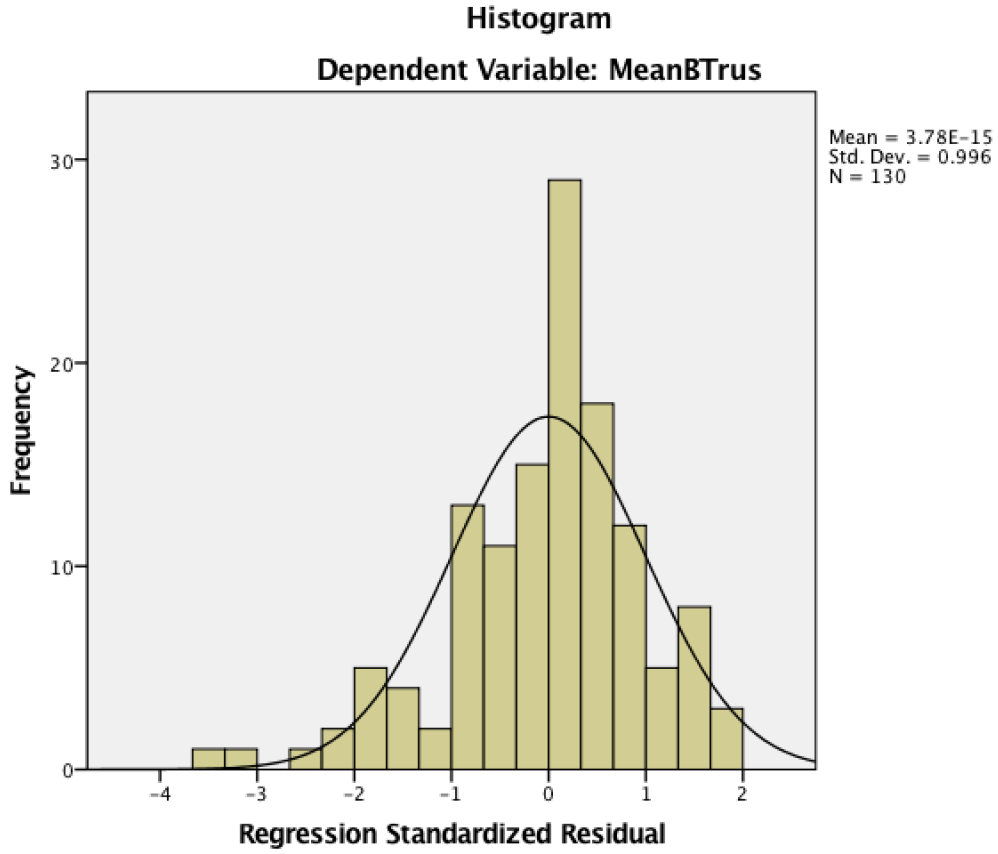
a. Dependent Variable: MeanBTrus

The p-value is < 0.05 for the factor of trusting the brand, which means the slope is significantly different from 0 in our population. The constant is significant as well at the level of error of 5%, which means it is significantly not passing by 0.

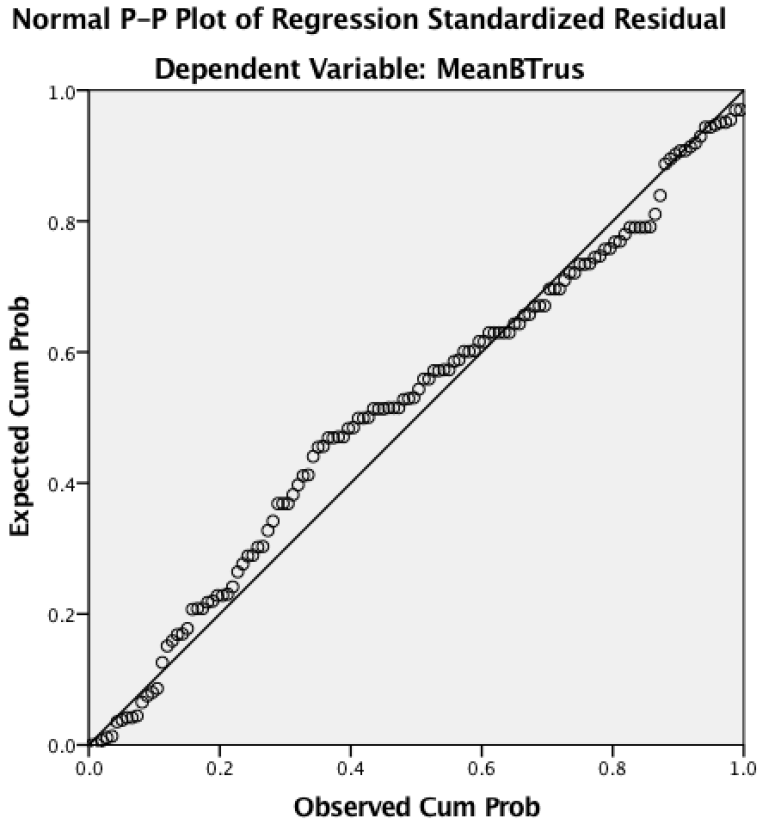
$Y = 1.875 + 0.411*X1$

We can affirm that the relationship is positive.

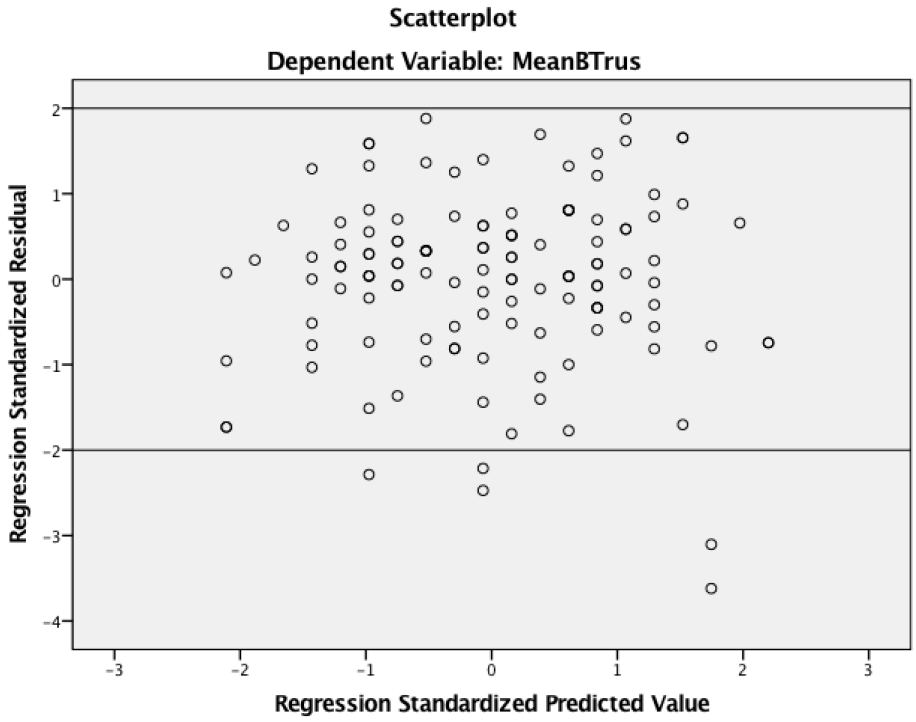
As the factor 2 of brand love: accompaniement is far from being significant with a p-value of 0.730 > 0.05, we then launch again the regression model without it.



The residuals are globally following a normal distribution of mean equal to 0.



This second graph supports also the assumption of normal distribution. The data are close to the Henry line.



We can verify that the residuals are randomly distributed. We can verify there is no problem of heteroscedasticity, as globally the residuals are not more distant from 0 in one side of the X domain than the other. Also, 95% of the data are comprised between 2 and -2, which confirms the normality assumption.

The three graphs are so reassuring about the underlying assumptions for a residual model. We can then analyse the results of the test.

Variables Entered/Removed[a]

Model	Variables Entered	Variables Removed	Method
1	Brand love factor 1: emotion[b]	.	Enter

a. Dependent Variable: MeanBTrus

b. All requested variables entered.

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.441[a]	.195	.188	.77474

a. Predictors: (Constant), Brand love factor 1: emotion

b. Dependent Variable: MeanBTrus

19.5% of the variability of the Brand trust variable is explained by the model, which is as much as the previous model with the two factors of brand love.

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	18.568	1	18.568	30.935	.000[b]
	Residual	76.828	128	.600		
	Total	95.396	129			

a. Dependent Variable: MeanBTrus

b. Predictors: (Constant), Brand love factor 1: emotion

The p-value associated to the F test is < 0.05. It means our model is significant at the level of error of 5% in our population, and that the prediction of brand trust is better than without the information of the factor of emotion of the brand love.

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	1.910	.232		8.251	.000
	Brand love factor 1: emotion	.430	.077	.441	5.562	.000

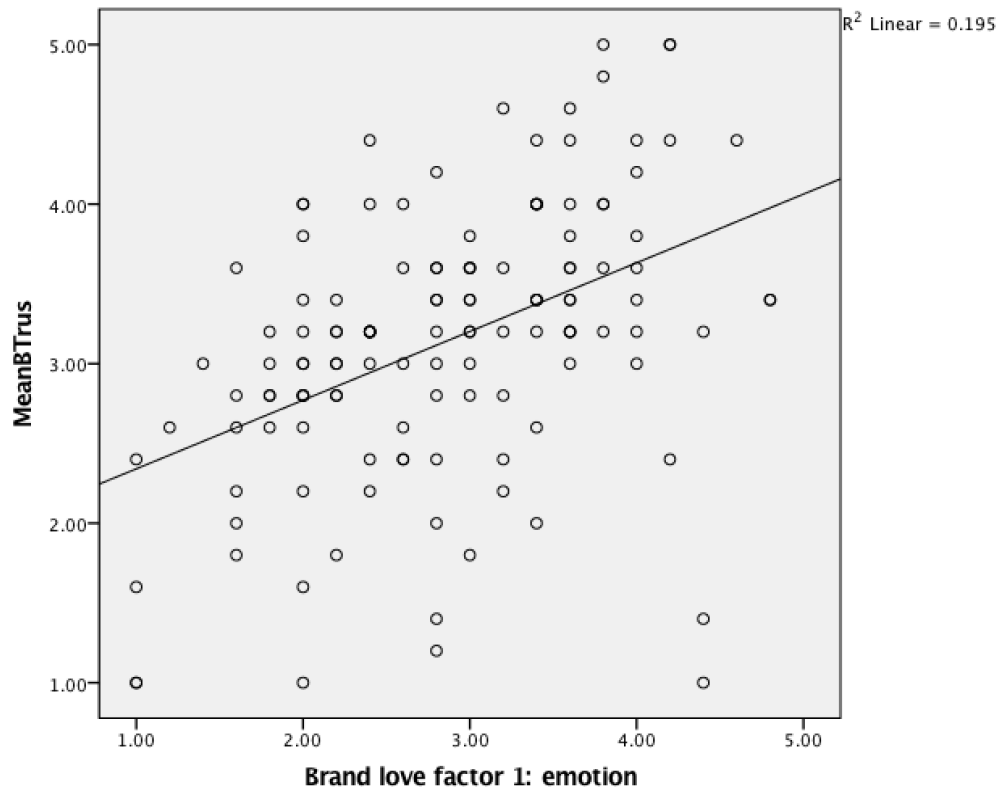
a. Dependent Variable: MeanBTrus

The p-value is < 0.05 for the factor of trusting the brand, which means the slope is significantly different from 0 in our population. The constant is significant as well at the level of error of 5%, which means it is significantly not passing by 0.

Y = 1.910 + 0.430*X

We can affirm that the relationship is positive.

Graph



Effect of brand trust on the brand defence

Correlations

		MeanBTrus	Mean of the defending explanations
MeanBTrus	Pearson Correlation	1	.470**
	Sig. (2-tailed)		.000
	N	130	130
Mean of the defending explanations	Pearson Correlation	.470**	1
	Sig. (2-tailed)	.000	
	N	130	130

**. Correlation is significant at the 0.01 level (2-tailed).

Variables Entered/Removed[a]

Model	Variables Entered	Variables Removed	Method
1	MeanBTrus[b]	.	Enter

a. Dependent Variable: Mean of the defending explanations

b. All requested variables entered.

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.470[a]	.221	.215	.75988

a. Predictors: (Constant), MeanBTrus

22.1% of the variability of the Brand defence variable is explained by the model.

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	21.004	1	21.004	36.377	.000[b]
	Residual	73.909	128	.577		
	Total	94.914	129			

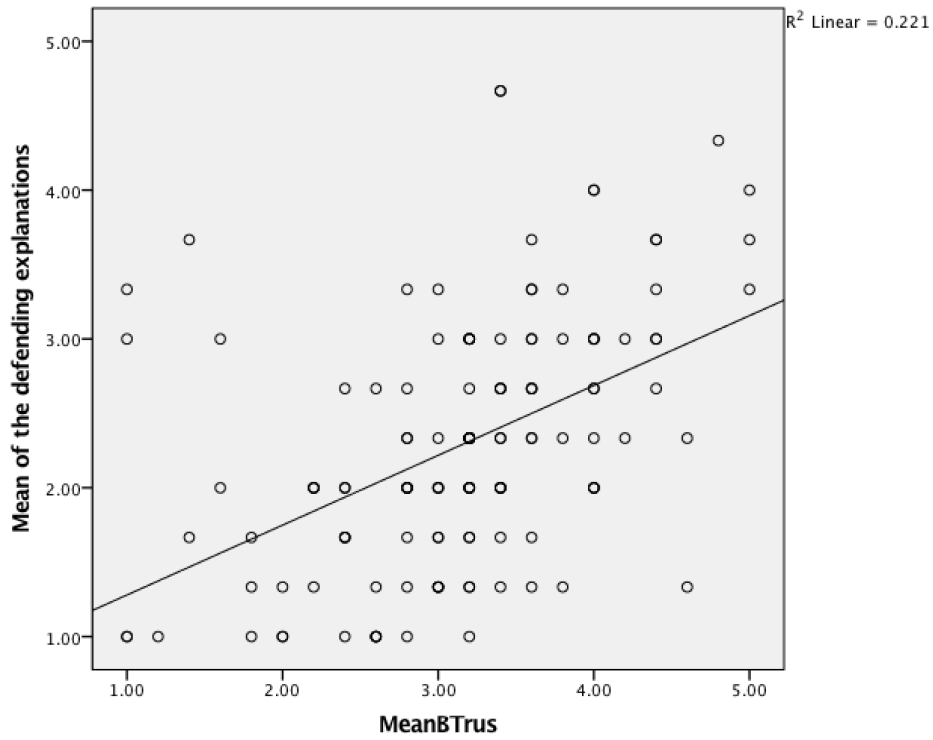
a. Dependent Variable: Mean of the defending explanations

b. Predictors: (Constant), MeanBTrus

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.810	.253		3.199	.002
	MeanBTrus	.469	.078	.470	6.031	.000

a. Dependent Variable: Mean of the defending explanations



We can assert a positive relationship at the level of error of 1% with the equation: Y = 0.810 + 0.469*X