

Analysis Report

This report is structured as follows.

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SAMPLE REPORT - Rafael Data Analysis Portfolio

Descriptive Statistics

The tables below show descriptive statistics of the variables under study. Perceived Agency was reorganized and calculated based on items Competent, Intelligent and Skilled only. The resulting scale was reliable ($\lambda = .864$). Social Evaluation was also constructed based on all the six items and reliability was acceptable ($\lambda = .787$).

Descriptive Statistics

	N	Mean	Std. Deviation	Skewness		Kurtosis	
	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
Willingness to Help	219	3.517	.661	-.468	.164	.531	.327
Leadership Potential	219	4.496	.839	-.061	.164	-.047	.327
Perceived Communalilty	219	4.942	.918	.034	.164	-.337	.327
Respondents likelihood of hiring employee	219	4.910	1.057	-.461	.164	.368	.327
Perceived Agency	219	5.266	.869	-.039	.164	.050	.327
Social Evaluation	219	5.104	.710	.103	.164	-.037	.327
Valid N (listwise)	219						

Skewness and Kurtosis remained between ± 1.000 which indicate normal distributions. The following tables show mean scores disaggregated by linguistic accent.

	Linguistic Accent			
	Eastern-European		Dutch	
	Mean	Standard Deviation	Mean	Standard Deviation
Willingness to Help	3.535	.695	3.501	.632
Leadership Potential	4.333	.897	4.641	.758
Perceived Communalilty	4.968	.907	4.920	.931
Perceived Agency	5.172	.924	5.351	.813
Respondents likelihood of hiring employee	4.786	1.081	5.026	1.025

Independent Samples T-test

To check whether or not the differences presented above are statistically significant, T-tests were performed. Levene's tests indicated the intergroup variances are homogeneous for all scales ($p > 0.05$).

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means				
		F	Sig.	t	df	Sig. (2- tailed)	Mean Difference	Std. Error Difference
Willingness to Help	Equal variances assumed	.400	.528	.381	217	.704	.034	.089
	Equal variances not assumed			.378	207.486	.706	.034	.090
Leadership Potential	Equal variances assumed	1.616	.205	-2.756	217	.006	-.308	.111
	Equal variances not assumed			-2.729	200.751	.007	-.308	.113
Perceived Communality	Equal variances assumed	.996	.319	.386	217	.700	.048	.124
	Equal variances not assumed			.387	215.132	.699	.048	.124
Respondents likelihood of hiring employee	Equal variances assumed	3.406	.066	-1.681	217	.094	-.239	.142
	Equal variances not assumed			-1.676	210.736	.095	-.239	.143
Perceived Agency	Equal variances assumed	.605	.438	-1.526	217	.129	-.179	.117
	Equal variances not assumed			-1.514	204.630	.132	-.179	.118
Social Evaluation	Equal variances assumed	.470	.494	-.680	217	.497	-.065	.096
	Equal variances not assumed			-.675	204.630	.500	-.065	.096

Linguistic accent has a significant effect on Leadership Potential ($t = -2.756$, $p = 0.006$). Leadership Potential is significantly higher on the Dutch accent group ($M = 4.641$) compared to the Eastern-European group ($M = 4.333$). At the 10% significance level, Likelihood to Hire is also affected by accent ($t = -1.681$, $p = 0.094$). It is also higher on the Dutch accent group ($M = 5.026$) compared to the Eastern European ($M = 4.786$).

Regression and Moderation Analyses

The first model evaluated the effects of Willingness to Help and Perceived Agency on Leadership Potential (Model 1). Model 1 showed good fit ($F = 42.852$, $p < 0.001$, $R^2 = 0.284$). Accent was added on Model 2, with Eastern-European being the reference group. Model 2 also showed good fit ($F = 30.950$, $p < 0.001$, $R^2 = 0.302$). Finally, interaction terms were inserted in the regression equation to evaluate moderation (Table below). This model was also significant ($F = 19.047$, $p < 0.001$, $R^2 = 0.309$). There was no multicollinearity in the model since Variance Inflation Factors for all variables were below 10.000.

Coefficients^a

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B	
	B	Std. Error	Beta			Lower Bound	Upper Bound
1 (Constant)	1.564	.373		4.194	.000	.829	2.300
Willingness to Help	.079	.073	.062	1.069	.286	-.066	.223
Perceived Agency	.504	.056	.523	9.024	.000	.394	.614
2 (Constant)	1.720	.375		4.583	.000	.980	2.459
Willingness to Help	.085	.073	.067	1.166	.245	-.059	.228
Perceived Agency	.491	.056	.508	8.816	.000	.381	.600
Eastern-European Accent	-.223	.096	-.133	-2.324	.021	-.413	-.034
3 (Constant)	1.230	.582		2.115	.036	.084	2.376
Willingness to Help	.197	.104	.155	1.893	.060	-.008	.403
Perceived Agency	.509	.081	.527	6.277	.000	.349	.668
Eastern-European Accent	.603	.753	.360	.801	.424	-.881	2.086
Perceived Agency X Eastern-European Accent	-.010	.113	-.033	-.093	.926	-.232	.211
Willingness to Help X Eastern-European Accent	-.219	.147	-.477	-1.486	.139	-.508	.071

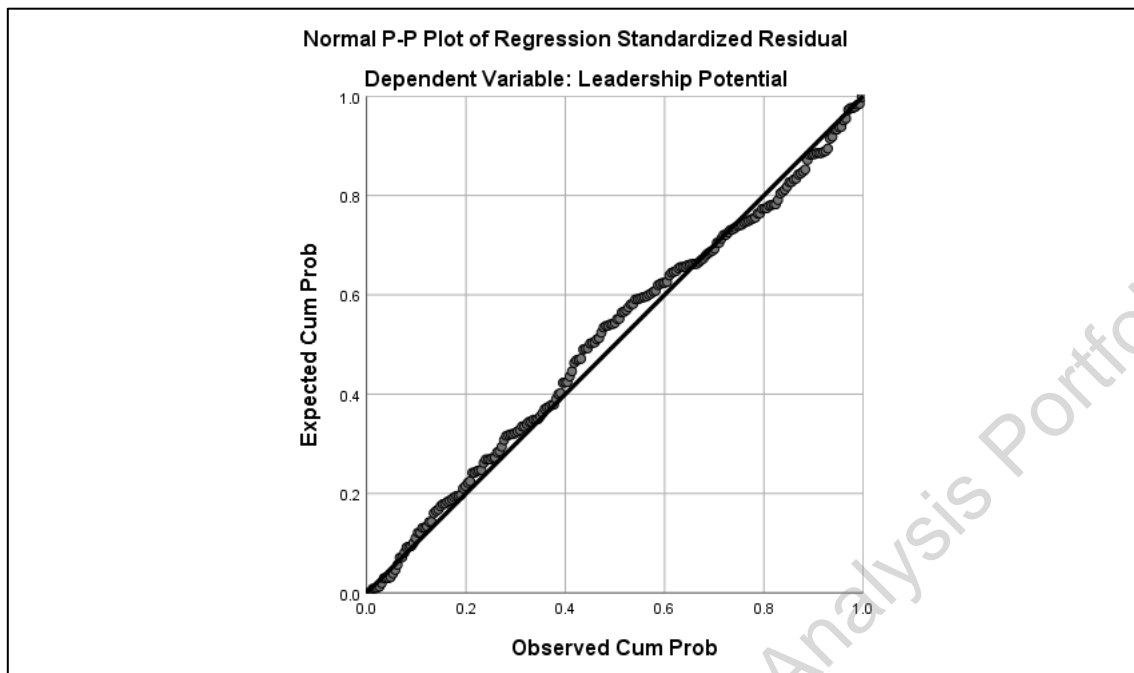
a. Dependent Variable: Leadership Potential

Perceived Agency has a positive effect on Leadership Potential ($\beta = 0.523$, $p < 0.001$) and the effect is also present when controlled for Linguistic Accent on model 2 ($\beta = 0.508$, $p < 0.001$). Willingness to Help (WTH) does not have a significant effect on Leadership Potential (LP) ($p > 0.05$). The Eastern-European accent shows a negative effect on LP ($\beta = -0.223$, $p = 0.021$). Being at the Eastern European group is expected to decrease the level of LP.

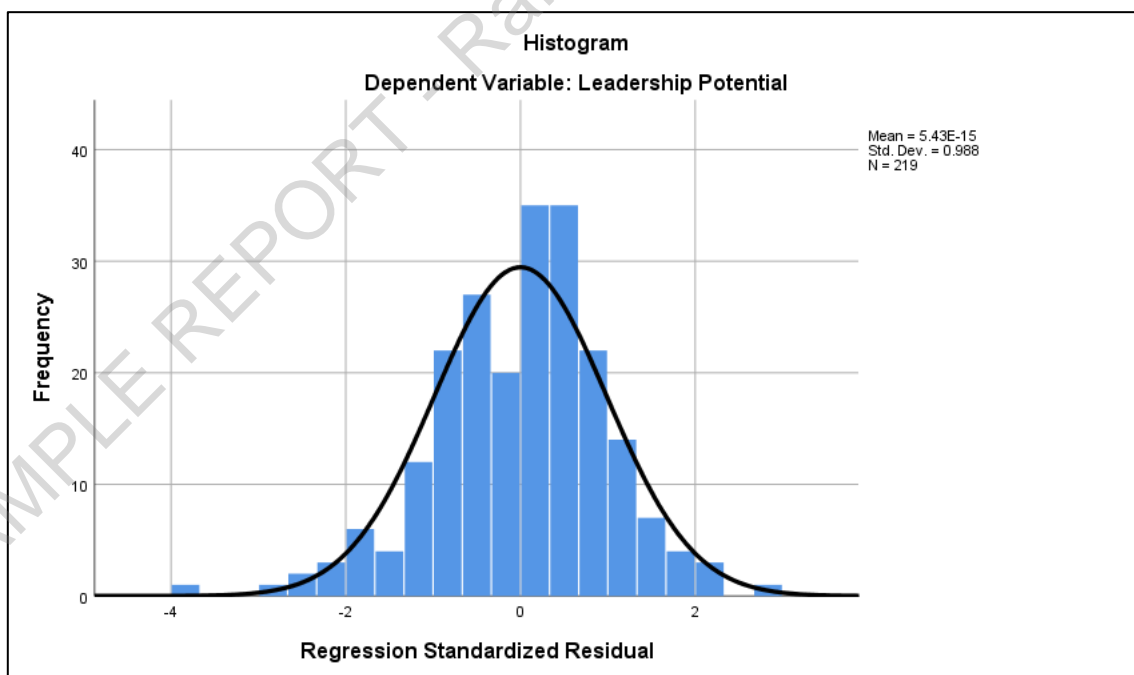
Model 3 indicated that no moderation is present ($p > 0.05$). The effect of Perceived Agency on LP does not depend on Linguistic Accent and is not related to accent whatsoever.

Lastly, violations of the assumptions of normality, linearity and homoscedasticity of residuals (errors) were examined for the regression model. The next figure shows a P-P plot, which is used to assess

the normality of residuals. The observations should follow a diagonal pattern to suggest normality of residuals (Tabachnick & Fidell, 2014).

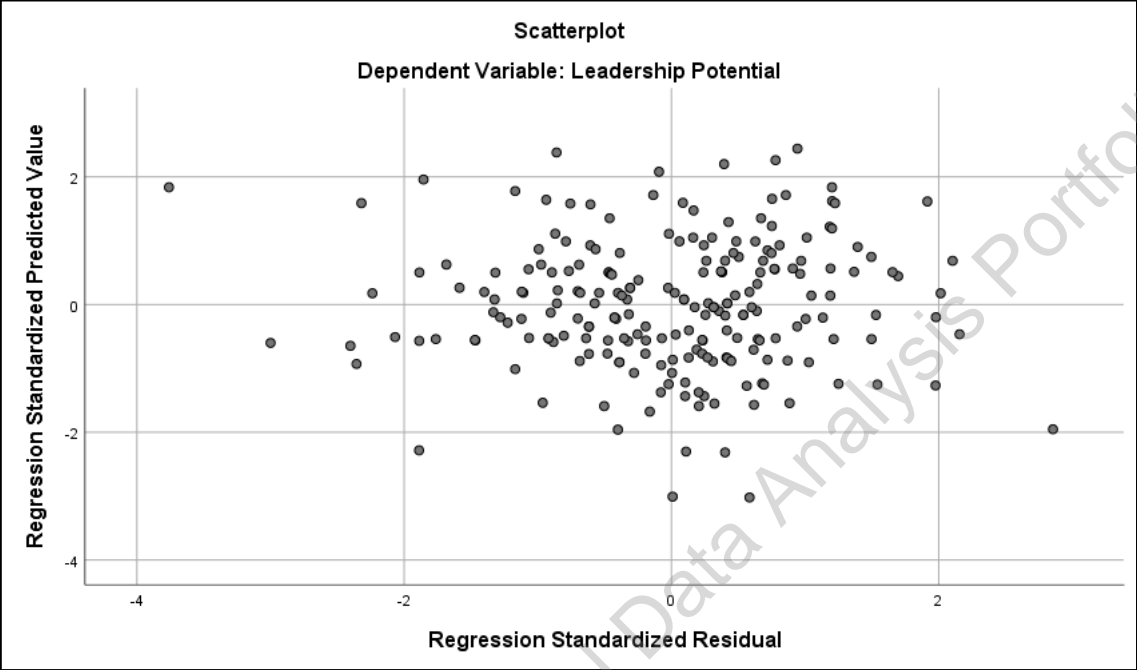


The graph suggests that no substantial violations of normality are present. The histogram below confirms a normal distribution of residuals.



The next figure shows a scatterplot of standardized residuals and standardized predicted values of the dependent variable. If points are well distributed along the X and Y axes, this would suggest

homoscedasticity and linearity. Nonlinearity is indicated when most of the residuals are above the zero line on the plot at some predicted values and below the zero line at other predicted values. Lack of homoscedasticity is indicated if values are more dispersed for a given predicted values than at other values (Tabachnick and Fidell, 2014).



The graph also suggests no violation of assumptions.

The table below shows the results for a second analysis, which replicates the analysis presented above but this time for Likelihood to Hire (LTH).

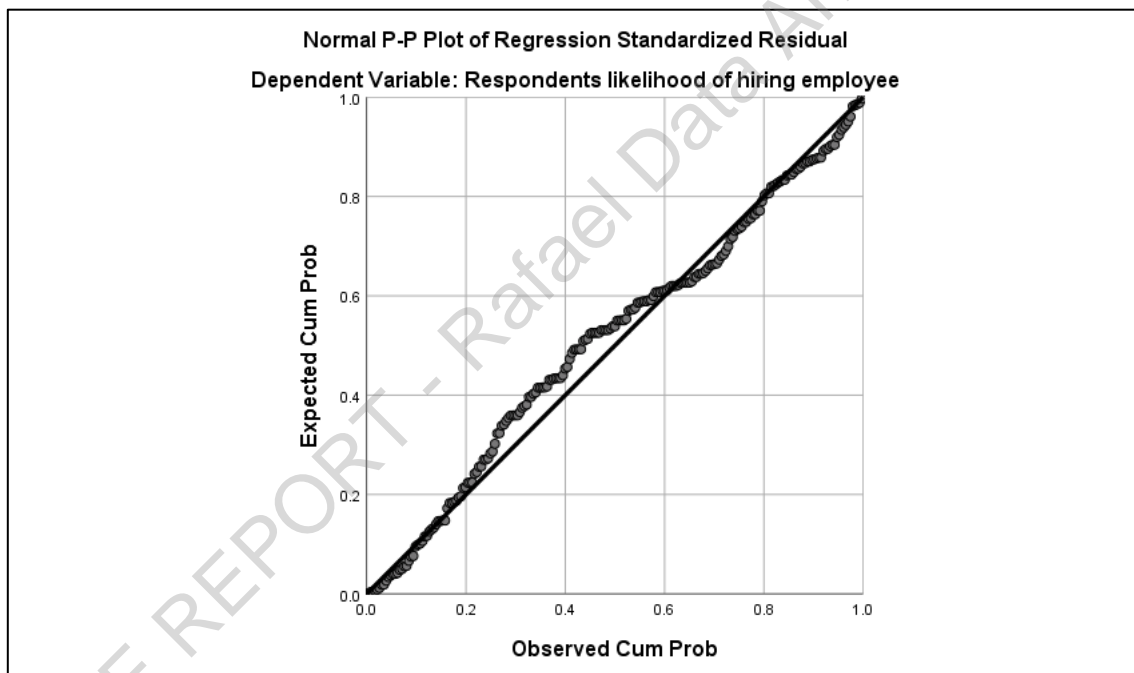
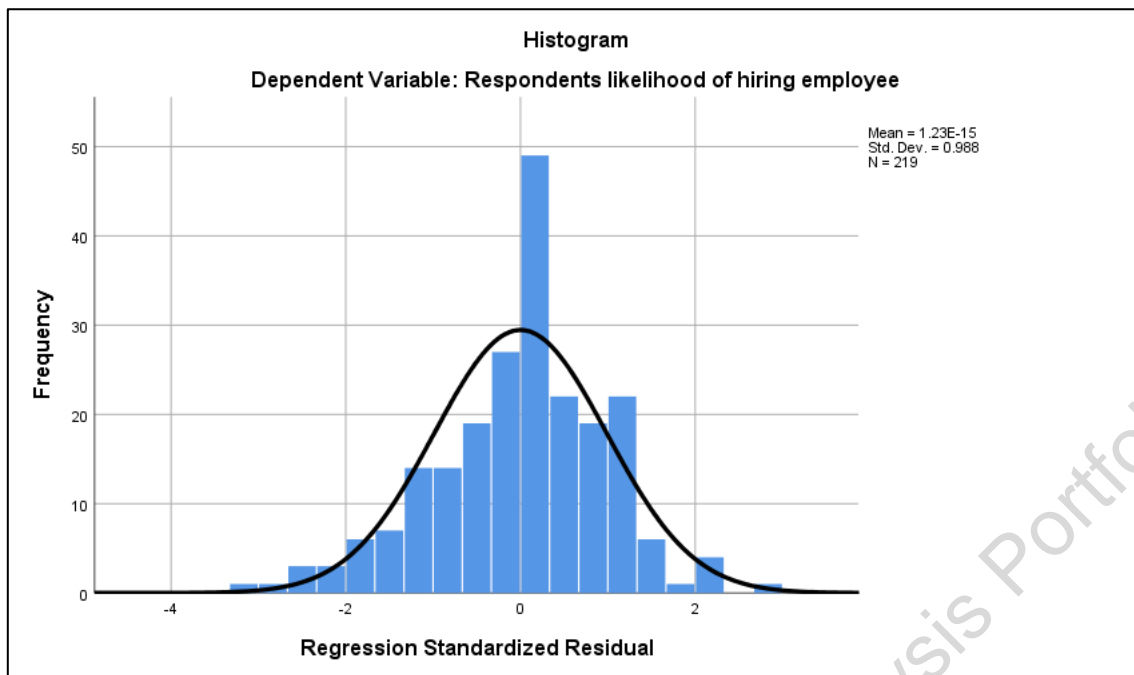
Coefficients^a

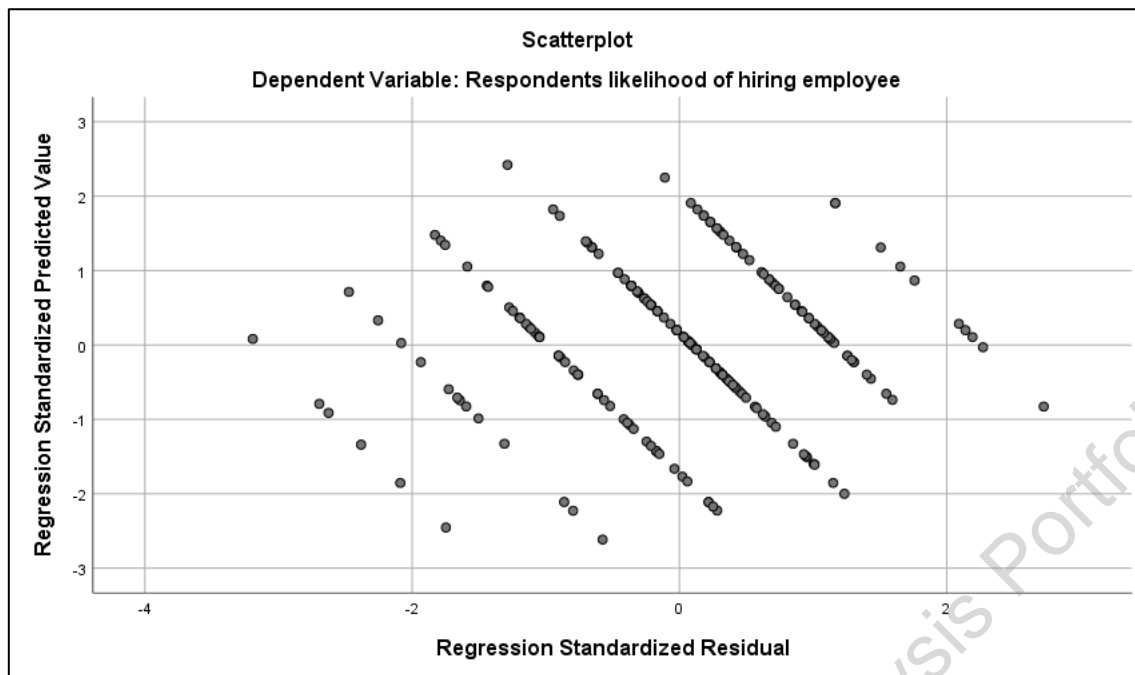
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95,0% Confidence Interval for B	
		B	Std. Error	Beta			Lower Bound	Upper Bound
1	(Constant)	.979	.485		2.019	.045	.023	1.935
	Willingness to Help	.516	.096	.323	5.401	.000	.328	.704
	Perceived Agency	.403	.073	.331	5.541	.000	.259	.546
2	(Constant)	1.109	.491		2.257	.025	.141	2.078
	Willingness to Help	.521	.095	.326	5.468	.000	.333	.709
	Perceived Agency	.391	.073	.322	5.367	.000	.247	.535
	Eastern-European Accent	-.187	.126	-.089	-1.487	.138	-.435	.061
3	(Constant)	.641	.763		.840	.402	-.864	2.145
	Willingness to Help	.632	.137	.396	4.626	.000	.363	.902
	Perceived Agency	.406	.106	.334	3.816	.000	.196	.615
	Eastern-European Accent	.604	.988	.286	.611	.542	-1.343	2.551
	Perceived Agency X Eastern-European Accent	-.004	.148	-.011	-.029	.977	-.295	.287
	Willingness to Help X Eastern-European Accent	-.218	.193	-.377	-1.128	.261	-.598	.163

a. Dependent Variable: Respondent's likelihood of hiring employee

Model 1 was significant ($F = 33.606$, $p < 0.001$, $R^2 = 0.237$). WTH ($\beta = 0.323$, $p < 0.001$) and PA ($\beta = 0.331$, $p < 0.001$) showed positive significant effects on LTH. Model 2 was significant ($F = 23.267$, $p < 0.001$, $R^2 = 0.235$) but there was no effect of Accent on LTH. Model 3 was also significant ($F = 14.173$, $p < 0.001$, $R^2 = 0.232$). Moderation was not present on this model either ($p > 0.05$), indicating that all effects are unrelated to linguistic accent.

The figures below indicate no violation of regression assumptions and the models can be considered valid.





Correlation Analysis

The table below shows Pearson's correlation coefficients for the Eastern-European group, along with sample sizes (N) and p-values (Sig.). WTH is not correlated to LP ($r = 0.112$, $p = 0.260$). LP is not associated with Communality ($r = 0.073$, $p = 0.462$). All other pair of variables are positively or negatively correlated ($p < 0.05$).

Correlations

		Willingness to Help	Leadership Potential	Perceived Communality	Respondents likelihood of hiring employee	Perceived Agency	Social Evaluation
Willingness to Help	Pearson Correlation	1	.112	.663**	.353**	.251*	.550**
	Sig. (2-tailed)		.260	.000	.000	.011	.000
	N	103	103	103	103	103	103
Leadership Potential	Pearson Correlation	.112	1	.073	.523**	.509**	.354**
	Sig. (2-tailed)	.260		.462	.000	.000	.000
	N	103	103	103	103	103	103
Perceived Communality	Pearson Correlation	.663**	.073	1	.263**	.371**	.824**
	Sig. (2-tailed)	.000	.462		.007	.000	.000
	N	103	103	103	103	103	103
Respondents likelihood of hiring employee	Pearson Correlation	.353**	.523**	.263**	1	.410**	.407**
	Sig. (2-tailed)	.000	.000	.007		.000	.000
	N	103	103	103	103	103	103
Perceived Agency	Pearson Correlation	.251*	.509**	.371**	.410**	1	.831**

	Sig. (2-tailed)	.011	.000	.000	.000		.000
	N	103	103	103	103	103	103
Social Evaluation	Pearson Correlation	.550**	.354**	.824**	.407**	.831**	1
	Sig. (2-tailed)	.000	.000	.000	.000	.000	
	N	103	103	103	103	103	103

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

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

Table below shows the same correlation matrix for the Dutch group. A similar pattern of association is observed. LP is not correlated with WTH either ($r = 0.142$, $p = 0.128$), but Perceived Commuality is positively associated with LP ($r = 0.191$, $p = 0.040$). Perceived Agency is not correlated with WTH for the Dutch group ($r = -0.41$, $p = 0.661$) in contrast to the EE group.

Correlations

		Willingness to Help	Leadership Potential	Perceived Commuality	Respondents likelihood of hiring employee	Perceived Agency	Social Evaluation
Willingness to Help	Pearson Correlation	1	.142	.510**	.377**	-.041	.331**
	Sig. (2-tailed)		.128	.000	.000	.661	.000
	N	116	116	116	116	116	116
Leadership Potential	Pearson Correlation	.142	1	.191*	.445**	.538**	.462**
	Sig. (2-tailed)	.128		.040	.000	.000	.000
	N	116	116	116	116	116	116
Perceived Commuality	Pearson Correlation	.510**	.191*	1	.400**	.165	.799**
	Sig. (2-tailed)	.000	.040		.000	.076	.000
	N	116	116	116	116	116	116
Respondents likelihood of hiring employee	Pearson Correlation	.377**	.445**	.400**	1	.306**	.466**
	Sig. (2-tailed)	.000	.000	.000		.001	.000
	N	116	116	116	116	116	116
Perceived Agency	Pearson Correlation	-.041	.538**	.165	.306**	1	.725**
	Sig. (2-tailed)	.661	.000	.076	.001		.000
	N	116	116	116	116	116	116
Social Evaluation	Pearson Correlation	.331**	.462**	.799**	.466**	.725**	1
	Sig. (2-tailed)	.000	.000	.000	.000	.000	
	N	116	116	116	116	116	116

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

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

The correlation matrix below shows the associations observed for all groups altogether.

Correlations

		Willingness to Help	Leadership Potential	Perceived Communality	Respondents likelihood of hiring employee	Perceived Agency	Social Evaluation
Willingness to Help	Pearson Correlation	1	.119	.584**	.359**	.109	.444**
	Sig. (2-tailed)		.079	.000	.000	.107	.000
	N	219	219	219	219	219	219
Leadership Potential	Pearson Correlation	.119	1	.124	.494**	.529**	.404**
	Sig. (2-tailed)	.079		.067	.000	.000	.000
	N	219	219	219	219	219	219
Perceived Communality	Pearson Correlation	.584**	.124	1	.329**	.262**	.807**
	Sig. (2-tailed)	.000	.067		.000	.000	.000
	N	219	219	219	219	219	219
Respondents likelihood of hiring employee	Pearson Correlation	.359**	.494**	.329**	1	.366**	.437**
	Sig. (2-tailed)	.000	.000	.000		.000	.000
	N	219	219	219	219	219	219
Perceived Agency	Pearson Correlation	.109	.529**	.262**	.366**	1	.782**
	Sig. (2-tailed)	.107	.000	.000	.000		.000
	N	219	219	219	219	219	219
Social Evaluation	Pearson Correlation	.444**	.404**	.807**	.437**	.782**	1
	Sig. (2-tailed)	.000	.000	.000	.000	.000	
	N	219	219	219	219	219	219

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

The effect of Accent on Leadership Potential Mediated by Perceived Agency and Communality

This test was performed using PROCESS macro in SPSS v26, Model n. 4 (two parallel mediations). The reference category for Accent was 'Eastern-European'. Having an Eastern-European Accent had no effect on PA ($\beta = -0.206$, $p = 0.129$) nor on PC ($\beta = 0.052$, $p = 0.700$) (figure below).

OUTCOME VARIABLE:							
PA							
Model Summary							
	R	R-sq	MSE	F	df1	df2	p
	.103	.011	.751	2.328	1.000	217.000	.129
Model							
	coeff	se	t	p	LLCI	ULCI	
constant	5.351	.080	66.482	.000	5.192	5.509	
EE_ACC	-.179	.117	-1.526	.129	-.410	.052	
Standardized coefficients							
	coeff						
EE_ACC	-.206						

OUTCOME VARIABLE:							
PC							
Model Summary							
	R	R-sq	MSE	F	df1	df2	p
	.026	.001	.846	.149	1.000	217.000	.700
Model							
	coeff	se	t	p	LLCI	ULCI	
constant	4.920	.085	57.606	.000	4.751	5.088	
EE_ACC	.048	.125	.386	.700	-.197	.294	
Standardized coefficients							
	coeff						
EE_ACC	.052						

The model testing the effect of Accent, PA and PC on LP was significant ($F = 30.315$, $p < 0.001$, $R^2 = 0.297$). Eastern-European Accent showed a significant negative effect on LP ($\beta = -0.260$, $p = 0.025$).

PA had a positive effect on LP ($\beta = 0.518$, $p < 0.001$). PC showed no effect on LP ($\beta = -0.009$, $p = 0.885$) (Figure below).

OUTCOME VARIABLE:						
LP						
Model Summary						
	R	R-sq	MSE	F	df1	df2
	.545	.297	.501	30.315	3.000	215.000
Model						
	coeff	se	t	p	LLCI	ULCI
constant	2.004	.356	5.636	.000	1.303	2.706
EE_ACC	-.218	.097	-2.263	.025	-.409	-.028
PA	.500	.058	8.691	.000	.387	.613
PC	-.008	.054	-.144	.885	-.115	.099
Standardized coefficients						
	coeff					
EE_ACC	-.260					
PA	.518					
PC	-.009					

An examination of indirect effects (Figure below) showed that the effect of Accent on LP is not mediated by either PA (LLCI = -0.207, ULCI = 0.025) or PC (LLCI = -0.024, ULCI = 0.017) according to a 1000-sample Bootstrap confidence interval (95% Confidence Level). In conclusion, the significant effect of accent on LP is only direct, without intervention of either PA or PC.

***** TOTAL, DIRECT, AND INDIRECT EFFECTS OF X ON Y *****						
Total effect of X on Y						
Effect	se	t	p	LLCI	ULCI	c'_ps
-.308	.112	-2.756	.006	-.529	-.088	-.368
Direct effect of X on Y						
Effect	se	t	p	LLCI	ULCI	c'_ps
-.218	.097	-2.263	.025	-.409	-.028	-.260
Indirect effect(s) of X on Y:						
	Effect	BootSE	BootLLCI	BootULCI		
TOTAL	-.090	.060	-.209	.024		
PA	-.090	.059	-.207	.025		
PC	.000	.009	-.024	.017		
(CI)	-.089	.060	-.207	.032		
Partially standardized indirect effect(s) of X on Y:						
	Effect	BootSE	BootLLCI	BootULCI		
TOTAL	-.107	.070	-.248	.029		
PA	-.107	.070	-.245	.031		
PC	.000	.011	-.028	.020		
(CI)	-.106	.071	-.245	.038		

The effect of Accent on Hireability Mediated by Perceived Agency and Communality

Accent has no effect on Hireability ($\beta = -0.206$, $p = 0.129$). The explained variance of Hireability from Accent was only 1.1% ($R^2 = 0.011$) (figure below). As observed in the previous model, Accent has no effect on PC ($\beta = 0.052$, $p = 0.700$) nor on PA ($\beta = -0.206$, $p = 0.129$).

OUTCOME VARIABLE:							
PA							
Model Summary							
	R	R-sq	MSE	F	df1	df2	p
	.103	.011	.751	2.328	1.000	217.000	.129
Model							
	coeff	se	t	p	LLCI	ULCI	
constant	5.351	.080	66.482	.000	5.192	5.509	
EE_ACC	-.179	.117	-1.526	.129	-.410	.052	
Standardized coefficients							
	coeff						
EE_ACC	-.206						

OUTCOME VARIABLE:							
PC							
Model Summary							
	R	R-sq	MSE	F	df1	df2	p
	.026	.001	.846	.149	1.000	217.000	.700
Model							
	coeff	se	t	p	LLCI	ULCI	
constant	4.920	.085	57.606	.000	4.751	5.088	
EE_ACC	.048	.125	.386	.700	-.197	.294	
Standardized coefficients							
	coeff						
EE_ACC	.052						

PA has a significant positive effect on Hireability ($\beta = 0.290$, $p < 0.001$). The same is true for PC ($\beta = 0.255$, $p < 0.001$). In this model, accent also shows no effect on Hireability whatsoever ($\beta = -0.180$, $p = 0.143$)

OUTCOME VARIABLE:							
HIRE							
Model Summary							
	R	R-sq	MSE	F	df1	df2	p
	.448	.201	.905	17.986	3.000	215.000	.000
Model							
	coeff	se	t	p	LLCI	ULCI	
constant	1.693	.478	3.543	.000	.751	2.634	
EE_ACC	-.190	.130	-1.469	.143	-.446	.065	
PA	.353	.077	4.565	.000	.200	.505	
PC	.294	.073	4.035	.000	.150	.437	
Standardized coefficients							
	coeff						
EE_ACC	-.180						
PA	.290						
PC	.255						

When considering both direct and indirect effects (mediated by PC and PA), Accent still shows no total effect on Hireability ($\beta = -0.227$, $p = 0.094$). The effect would be significant if a 90% confidence interval was considered instead, since the probability of Type I error is 9.4% ($p = 0.094$).

No significant indirect effects were observed, neither mediated by PC (LLCI = -0.066, ULCI = 0.088) nor PA (LLCI = -0.158, ULCI = 0.020) (figure below).

***** TOTAL EFFECT MODEL *****						
OUTCOME VARIABLE:						
HIRE						
Model Summary						
	R	R-sq	MSE	F	df1	df2
	.113	.013	1.107	2.826	1.000	217.000
	p					
	.094					
Model						
	coeff	se	t	p	LLCI	ULCI
constant	5.026	.098	51.447	.000	4.833	5.218
EE_ACC	-.239	.142	-1.681	.094	-.520	.041
Standardized coefficients						
	coeff					
EE_ACC	-.227					
***** TOTAL, DIRECT, AND INDIRECT EFFECTS OF X ON Y *****						
Total effect of X on Y						
	Effect	se	t	p	LLCI	ULCI
	-.239	.142	-1.681	.094	-.520	.041
	c_ps					
	-.227					
Direct effect of X on Y						
	Effect	se	t	p	LLCI	ULCI
	-.190	.130	-1.469	.143	-.446	.065
	c'_ps					
	-.180					
Indirect effect(s) of X on Y:						
	Effect	BootSE	BootLLCI	BootULCI		
TOTAL	-.049	.065	-.179	.077		
PA	-.063	.044	-.158	.020		
PC	.014	.038	-.066	.088		
(CI)	-.077	.051	-.178	.022		
Partially standardized indirect effect(s) of X on Y:						
	Effect	BootSE	BootLLCI	BootULCI		
TOTAL	-.046	.061	-.171	.074		
PA	-.060	.042	-.148	.019		
PC	.013	.036	-.061	.083		
(CI)	-.073	.048	-.169	.020		

References

Tabachnick, B. G., & Fidell, L. S. (2014). *Using multivariate statistics* / Barbara G. Tabachnick, Linda S. Fidell.