

The Distinguishing Personality Traits of Intelligent Fresh Graduates. A Comparison Study of High and Low GMA Individuals

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Abstract

The aim of this study was to explore the relationship between mental ability and personality traits and to decide whether there are differences in some personality traits between individuals who were classified as having high versus low general mental ability (GMA). 209 individual who achieved high score (percentile 84 or higher) on a general mental ability test were compared with 136 individuals who achieve low score (percentile 16 or less) on the same test. 15 personality characteristics were measured in both groups using the Jackson Personality Inventory. The results indicate that there are significant differences between high and low GMA individuals on the personality traits. Fresh graduates with high GMA have higher levels on the following traits: innovation, traditional values, responsibility, complexity, tolerance, breadth of interest, organization, energy level, social confidence, and risk taking. On the other side, low GMA have higher levels on traits of anxiety and cooperation. Furthermore, gender seems to have impact on personality traits. While the dominant traits of intelligent females are innovation and responsibility, the dominant traits of males are risk taking and innovation. The current results may help in better employee selection and career counseling for fresh university graduates. Some theoretical and empirical implications of the results are further discussed.

Keywords: general mental ability, intelligence, personality traits

1. Introduction

Intelligence is an important issue in academia, business, and day to day life. Societies, companies, organization and academia emphasize the importance of intelligence in order to keep up with development in technology and fast learning societies (Gottfredson, 1997). Research has indicated that fresh graduates with high mental abilities are more likely to leave better impressions during job interviews and show increased job performance in the future (Sjoberg et al., 2012; Marcus et al., 2009; Cook, 2009; Schmidt, Shaffer, & OH, 2008; Rode et al., 2008; Gerald, Witt, & Hochwarter, 2001; Livenes, Highhouse, & De Corte, 2005; Schmidt & Hunter, 2004; Gottfredson, 1997). Companies realize long ago that intelligent fresh graduates learn new tasks faster than low mental abilities graduates and make fewer mistakes (Salgado et al., 2003; Brand, 1987). Because of increasing job complexity, companies and organizations strongly address mental ability strongly and most companies in the United States are use some type of mental ability test or personality questionnaire in their recruitment procedures. The same applies to North Europe and the rest of the world is starting to follow (see Cook, 2009).

Intelligence has been linked to many influences such as gens and heredity, environment, interests, motivation, and personality traits (Johnson et al., 2007; Gilbert et al., 2006; Ackerman, 2009; DeYoung, 2011). Most of the research conducted on personality and intelligence show that the two variables are correlated. Some researchers believe that mental abilities influence personality traits. Therefore, some early theorists considered personality to include intelligence (e.g. Cattell, 1950; Guilford, 1959). However, other researchers rejected this idea and did not consider intelligence to be part of personality, instead asserting either that intelligence is unrelated to personality (e.g., Eysenck, 1994) or that intelligence and personality are related but categorically distinct (e.g. DeYoung, 2011; Chamorro-Premuzic & Furnham, 2005).

So far, most of the research linking personality to intelligence has used correlational designs to determine potential relationship between General Mental Ability (GMA) and some personality traits. Therefore, the current study employs a comparative design to decide whether there are personality trait differences between individuals who vary in their GMA. This approach has important advantages over cross-sectional studies relating personality

to intelligence as the utilization of a comparative design allows for the examination of the traits that differentiate individuals of high GMA from those who have low GMA.

We are using a well known personality questionnaire which is Jackson Personality Inventory-Revised JPI-R. Specifically, we compared traits from the JPI-R between high GMA graduates and Low GMA graduates.

1.1 General Mental Ability (GMA) and Personality

General Mental Ability can be defined as the ability to reason, plan, solve problems, think abstractly, comprehend complex ideas, learn quickly and learn from experience by using for example verbal ability and spatial thinking. As DeYoung (2011) indicated “intelligence is not merely book learning, or a narrow academic skill; Rather it reflects a broader and deeper capability for comprehending our surroundings, catching on, making sense of things, or figuring out what to do”.

On the other hand, personality is a broader concept than intelligence. McAdams and Pals (2006) defined personality as an individual’s unique variation on the general evolutionary design for human nature, expressed as a developing pattern of dispositional traits, characteristic adaptations, and integrative life stories, complexly and differentially situated in culture. Personality traits describe the individual’s stable patterns of behavior, and unique complex of motivation, emotion, and cognition (see Pytlik, Zillig, Hemenover, & Dienstbier, 2002; Wilt & Revelle, 2009).

Regardless of the argument between the two views, many researchers indicated that intelligence and personality are distinct but might be correlated (see DeYoung, 2011). Therefore, many researchers explored the nature of the relationship between intelligence and personality. One of their aims was to identify the specific traits that may distinguish individuals with high mental ability from those of low mental ability. Research has indicated that the most prominent trait that distinguishes people with high mental ability is openness (one of the big five personality traits) (Ackerman, 2009; Johnson & Bouchard, 2007; Saucier, 1992). Intelligent individuals are more open to new experience, see issues from different angle, and are more tolerant towards new ideas and unusual thinking. Open individuals tend to be creative, imaginative, original, innovative, artistic, perceptive, poetic, and fantasy-prone. Some recent reviews show that openness is the highest correlated personality factor to intelligence with an average correlation of around 0.30 (Ashton, Lee, Vernon, & Jang, 2000; Austin, Deary, & Gibson, 1997; Austin et al., 2002; Chamorro-Premuzic & Furnham, 2008; DeYoung et al., 2009; Furnham & Chamorro-Premuzic, 2005; Furnham et al., 2007; Holland et al., 1995). In Jackson’s (1993) Personality Inventory the openness factor is measured by four traits: complexity, breadth of interest, innovation and tolerance. He pointed that these traits have been categorized under one factor labeled as “analytical”. Analytic individuals might be expected to consider arguments from multiple points of view and may be inclined towards drawing distinctions among otherwise unrelated elements of information. On the other hand, individual with low analytical traits might be expected to think of things in more black-and-white terms and to prefer straightforward, linear interpretations of events.

Another characteristic that distinguishes high mental individuals is the conscientiousness factor which includes traits such as organization, self discipline, and responsibility. Some studies show that these traits are positively correlated with intelligence because they contain some important personality traits to intellectuality such as organized thinking, self discipline and patience to achieve long term goals, and being responsible toward others. Some researchers propose that traits of conscientiousness are good predictor of academic and occupational performance, and that they can predict job performance independently (Barchard et al., 2003; Higgins et al., 2007; Mount, Barrick, & Strauss, 1999). Additionally, other studies were able to show that impulsivity (the opposite side of conscientiousness) correlates negatively with intelligence (Kuntsi et al., 2004; Lynam et al., 1993; Vigil-Colet & Morales-Vives, 2005).

However, other researchers reported that the correlation between conscientiousness and intelligence is ambiguous at best. For example, Ackerman and Heggestad’s (1997) meta-analysis suggested no correlation between conscientiousness and intelligence. Additionally, Chamorro-Premuzic and Furnham (2005) have hypothesized that individuals with high conscientiousness may be good performers and achievers without being highly intelligent. The researchers explained this issue by indicating that some low intelligent individuals might develop traits of responsibility that help them to accomplish tasks in order to avoid complexity that they find difficult to manage because of their low intelligence. Similarly, they may tend to work extra hard, so as to accomplish tasks that could be performed more quickly or easily by someone more intelligent. Hence, they develop the traits of conciseness without being intelligent.

Some studies reported weak or negative correlations between some personality traits and intelligence. Research has indicated that there is no correlation between cooperation, empathy (the traits of agreeableness) and high

mental ability (DeYoung & Gray, 2009; Nettle, 2006). Intelligent people might not be very cooperative because they prefer individual tasks and individual recognition rather than team or group recognition. Additionally, some studies pointed out that aggression is correlated negatively with intelligence (Ackerman & Heggestad, 1997; DeYoung et al., 2008). Also, intelligence is negatively correlated with antisocial behavior, impulsivity, and drug abuse (Krueger et al., 2002, 2007). Such correlations might exist because intelligent people are more aware of the consequences of their acts and behavior so they can predict the consequences of aggression or antisocial behavior.

Furthermore, research has shown that there are no correlations between social traits and intelligence (i.e. extroversion). Extroversion includes some social traits such as sociability, assertiveness, talkativeness, social confidence, and positive emotionality. Ackerman and Heggestad (1997) reported a very small positive correlation of extroversion with general mental ability ($r = .08$). In a more recent meta analysis including 50 studies, Wolf and Ackerman (2005) found a rather weak effect size ($r = .05$).

Finally, research showed weak correlation between anxiety (neuroticism in general) and intelligence. Ackerman and Heggestad (1997) reported a correlation of -0.15 . Such a negative correlation means that individuals with high anxiety do badly on GMA tests. This weak correlation is likely to be due to the fact that neurotic individuals are more likely to experience anxiety under the pressures of testing situations and that anxiety might affect their cognitive processing (Ackerman & Heggestad, 1997; Fales et al., 2008; Keightley et al., 2003).

In conclusion, it can be seen that there are some personality traits that distinguish intelligent individuals with openness, tolerance, and intellectual traits (e.g., imagination, breadth of interests, complexity) being the highest correlated traits. Research also indicates that intelligent individuals seem to be less cooperative, more organized, responsible, and have low anxiety. However, intelligence seems to have no effect on the social aspect of the individual. In light of this review the current study aims to test whether there are other traits that can be distinguished between high and low GMA individuals. For example, Jackson personality inventory measures rather more detailed traits such as complexity, breadth of interest, innovation, social confidence, energy level, social astuteness, risk taking, and Traditional Values. The use of this particular instrument may provide new information to the research paradigm.

1.2 Study Aims and Questions

The aim of this study is to explore the relationship between general mental ability and personality for fresh graduates. This may help to determine whether there are differences in certain personality traits between fresh graduates who vary in their general mental ability. Another objective is to decide whether there are gender differences in the relationship between personality and mental abilities.

Specifically, the study aims to investigate the following questions:

- 1) What are the distinguishing personality traits of high mental ability participants using Jackson personality inventory JPI-R.
- 2) Does gender affect the relationship between personality and GMA of fresh graduates?

2. Methodology

2.1 Sample

The sample consists of 345 individuals who were recent university graduates. The average age is 23 years. 63.5% ($n = 219$) of the total sample were females and 36.5% ($n = 126$) were males. 37.8 % ($n = 129$) of the sample were studying in scientific colleges (e.g., medical school, pharmacology, pure sciences, agriculture, computer sciences) and the rest ($n = 216$) in social and humanities colleges (e.g., education school, law, management, linguistics). Individuals were included in the sample if they achieved a certain score on a general mental ability test (percentile of 84 or above for high GMA and percentile 16 or lower for low GMA). Table 1 provides information about the distribution of the sample according to gender and faculty type.

Table 1. Distribution of the sample according to gender and faculty type

		N	Percent
Sex	Male	126	36.5%
	Female	219	63.5%
	Total	345	100%
Faculty type	Scientific	129	37.4%
	Humanities	216	62.6%
	Total	345	100%

2.2 Tools

2.2.1 General Mental Ability

General mental ability was measured using a standardized test that was developed specifically for selection and career counseling for fresh graduates from Jordanian Universities (Al-Zoubi, 2015). The test consists of 45 questions that measure three cognitive abilities: verbal reasoning (the ability to reason using words, understand, interpret and communicate verbal information), numerical reasoning (ability to reason with and to understand numerical information when it is presented in different formats) and spatial thinking (the ability in interpretation and manipulation of shapes and analyzing diagrams). Such categories are widely accepted for assessing general mental ability (see Gottfredson, 1997; Gensen, 1998; Cook, 2009). The test is a computerized multiple choice questionnaire in which each question has 4-5 choices. The test is limited to 20 minutes. Individuals who answer a question correctly receive one point and no deduction is made for wrong answers. The total score of the test is the sum of correct answers. The total score is transformed to standardized percentile score ranging from 1-99. The test is fully computerized so that the system records the answers and produces the total score and the standardized score automatically.

Al-Zoubi (2015) provided some information about the validity of the test. The researcher provided information about the relationship between the test scores and previous academic records such as University GBA and the national secondary exam (i.e., predictive validity). Additionally, the researcher provided indications about the construct validity and the ability of the test to discriminate between individuals. The test in general, has an acceptable levels of validity.

2.2.2 Jackson Personality Inventory-Revised JPI-R

The personality characteristics of participated individuals were measured using Jackson Personality Inventory Revised (JPI-R) developed by Douglas Jackson (Jackson, 1993). The JPI-R consists of 15 subscales that assess 15 personality traits. These traits are: complexity, breadth of interest, innovation, tolerance, empathy, sociability, social confidence, energy level, anxiety, cooperativeness, social astuteness, risk taking, organization, traditional values, and responsibility. The 15 traits represent five main factors (see Table 2) which are: an analytical factor (complexity, breadth of interest, innovation and tolerance), an emotional factor (traits of empathy, cooperativeness, and anxiety), an extroverted factor (energy level, sociability, social confidence), an opportunistic factor (risk taking and social astuteness), and a dependable factor (organization, responsibility, and traditional values). The JPI-R is used worldwide to determine important characteristics such as leadership, discipline, dependability, and the ability to make a good impression on others. The JPI-R provides an assessment of personality and demonstrates a variety of cognitive, social and value orientations, which affect an individual's functioning. The test contains 300 true/false statements and takes about 45 minutes to complete.

The measurement has an Arabic version that was validated with Jordanian samples (Al-Hourani, 2009). The Arabic version consists of 300 short yes/no items. Al-Hourani was able to replicate the original factor structure of the JPI-R for the Arabic version. Additionally, the reliability coefficients using Cronbach's Alpha showed that the items have acceptable internal consistency. The total scores for each personality trait are transformed to a standardized T score (mean = 50, SD = 10) ranging from 1-100.

Table 2 provides the results of internal consistencies for the present sample for the 15 dimensions of JPI-R using Cronpach Alpha formula.

Table 2. Internal consistency coefficients for the dimensions of JPI-R

Personality factors	Sub traits	Cronbach' s Alpha
Analytical	Complexity	0.85
	Breadth of interest	0.91
	Innovation	0.83
Emotional	Tolerance	0.76
	Empathy	0.81
	Anxiety	0.74
	Cooperativeness	0.91
Extroverted	Sociability	0.82
	Social Confidence	0.81
	Energy Level	0.75
Opportunistic	Social Astuteness	0.81
	Risk Taking	0.88
	Organization	0.92
Dependable	Traditional values	0.87
	Responsibility	0.83

Table 2 indicates that Cronbach coefficients for the JPI-R in the current sample were between 0.74 to 0.92. These levels are acceptable results and very close to coefficients reported in the manual of the test produced by Jackson (1993) as well as the coefficients reported in the Arabic version of the test.

2.3 Procedures

The sample was collected by using local universities alumni records, advertisement in the local newspapers, formal websites and social media. Fresh graduates were informed of an opportunity to have a comprehensive assessment that may increase their awareness of their abilities and increase their employment chances. The comprehensive assessment consists of a full day assessment that includes completing various personality measures, cognitive tests, attitudes scales and behavioral assessments.

All test and activities were completed in a special assessment center that contained 15 computers and a data show for instructions. Tests were applied in small groups ranging from 5-15 individuals. Three assistants were recruited to give instructions and supervise the tests. All assistants received a comprehensive training to answer all participants' questions as well as administrate all tests and assessment activities. All instructions were included in a manual which became the standardized procedures for giving instructions and delivering assessment activities.

More than 1400 fresh graduates were assessed during a period of 6 months. Individuals were also asked to complete the Jackson Personality Inventory after performing the mental ability test. The personality inventory took from 40-50 minutes to complete. Each individual participated in the assessment received 10-page report about his/her potentials as well as a compensation for transportation (\$5).

2.4 Statistical Analysis

Statistical analysis was based on average and Standard Deviation (SD) for the standardized scores of the mental ability test and personality inventory. The mental ability score were produced by the sum of points that the individual took for correct answers which range from 0-45. The total scores were transformed to a standardized percentile scores. From this pool of data, two groups were created: the first group (n = 209) is High General Mental Ability group (High GMA: individuals scored a percentile of 84 or above on the general mental ability test), and the second group (n = 136) is the Low General Mental Ability group (Low GMA: individuals scored a percentile of 16 or lower).

As for the personality inventory, total score were produced for each personality trait measured by the Jackson inventory and the scores were transformed to standardized T scores (mean = 50, SD = 10). All statistics in the current study were calculated using the standardized scores.

Statistical analysis was performed in total on 345 individuals. Descriptive statistics were produced for all variables. The first and second question were answered by generating cross tabulation statistics (mean, SD and percentage) and independent samples T test.

3. Results

The aim of the study was to explore the relationship between mental ability and personality traits for fresh graduates who were classified as intelligent individuals. The following analysis explores the main results of the study.

The first analysis was a descriptive one to show the mean and standard deviations of the sample according to their mental ability category (high or low GMA) and according to the gender. Tables 3-5 provide means and standard deviations for the 15 JPI-R dimensions. Table 3 provides statistics using the total sample while Tables 4 and 5 provide statistics for males and females separately.

Table 3. Descriptive statistics for the total sample (n = 345), male sample (n = 126) and female sample (n = 219)

Personality traits	Mental ability group	Total sample N	Total sample Mean	Total sample SD	Male sample Mean	Male sample SD	Female sample Mean	Female sample SD
Complexity	High GMA	209	48.70	8.77	49.13	9.60	48.49	8.34
	Low GMA	136	45.49	8.05	45.73	8.07	45.33	8.08
Breadth of Interest	High GMA	209	52.88	10.75	50.68	11.07	54.01	10.44
	Low GMA	136	49.88	8.82	48.20	8.06	51.02	9.18
Innovation	High GMA	209	55.03	10.42	52.51	11.65	56.33	9.51
	Low GMA	136	49.33	10.02	47.78	8.93	50.38	10.62
Tolerance	High GMA	209	49.81	9.54	49.28	10.12	50.09	9.25
	Low GMA	136	46.96	8.46	45.80	8.08	47.75	8.68
Empathy	High GMA	209	50.11	11.98	47.44	12.03	51.48	11.76
	Low GMA	136	47.71	10.45	46.78	10.07	48.33	10.72
Anxiety	High GMA	209	47.71	11.46	45.85	10.68	48.67	11.76
	Low GMA	136	48.36	9.73	47.84	9.93	48.72	9.64
Cooperation	High GMA	209	46.84	11.42	45.11	11.60	47.72	11.27
	Low GMA	136	49.42	9.21	49.45	10.53	49.40	8.26
Sociability	High GMA	209	51.63	11.52	49.24	12.27	52.86	10.95
	Low GMA	136	50.01	8.92	48.49	8.39	51.05	9.16
Social Confidence	High GMA	209	53.05	10.29	51.80	11.73	53.70	9.45
	Low GMA	136	50.20	10.64	49.07	10.96	50.96	10.42
Energy Level	High GMA	209	52.38	11.61	51.49	12.61	52.84	11.08
	Low GMA	136	49.33	10.03	48.40	10.72	49.96	9.55
Social Astuteness	High GMA	209	50.05	10.79	49.48	12.77	50.35	9.66
	Low GMA	136	49.55	10.63	48.42	9.04	50.32	11.58
Risk taking	High GMA	209	49.69	11.24	53.58	11.39	47.70	10.67
	Low GMA	136	46.90	9.36	46.35	7.73	47.27	10.35
Organization	High GMA	209	53.77	10.52	52.21	12.67	54.57	9.17
	Low GMA	136	50.84	8.92	50.38	9.509	51.15	8.55

Traditional values	High GMA	209	52.15	10.37	49.80	12.48	53.36	8.90
	Low GMA	136	48.96	9.06	48.82	9.40	49.05	8.88
Responsibility	High GMA	209	54.64	9.70	52.13	12.60	55.93	7.54
	Low GMA	136	50.74	9.15	50.02	9.71	51.23	8.78

Table 3 indicates that there are observed differences in personality traits means between individuals with high or low GMA regardless of gender. The results indicate that high GMA individuals have substantially higher averages (mean differences from 2-6 degrees) in most traits (complexity, breadth of interest, innovation, tolerance, empathy, social confidence, energy level, risk taking, traditional values, social astuteness, and organization) except for sociability and anxiety where the scores show only moderate differences (mean difference less than 2). However, individuals with low mental ability scored higher averages only on the traits of cooperation and anxiety.

Additionally, Table 3 indicates that there are obvious observed differences in personality trait means according to gender. Specifically, high GMA males have clear higher averages (mean differences from 2-6) in complexity, breadth of interest, innovation, tolerance, social confidence, energy level, risk taking, and organization and moderate differences (mean difference less than 2) in empathy, sociability, social astuteness, and traditional values. However, males with low mental ability scored higher averages only on the traits of anxiety and cooperation.

As for the female sample, the results in Table 3 indicate that females with high GMA have higher averages (mean differences from 2-6) in innovation complexity, breadth of interest, tolerance, empathy, social confidence, energy level, traditional values and organization and moderate differences (mean difference less than 2) in sociability, social astuteness, and risk taking. Finally, females with low mental ability have higher scores in the traits of anxiety and cooperation.

The next analysis was aimed at answering the questions of the study. The first question which is about the distinguished traits of high GMA individuals while the second question was aiming to determine whether gender affects the personality traits of high GMA. Independent sample T tests were used to answer the first and second questions. Table 4 provides the results of the analysis for the total sample that answers the first question.

Table 4. Results of T test analysis for the total sample (N = 345)

Personality dimension	Mental ability group	N	Mean	T test	Mean difference
Complexity	High GMA	209	48.70	3.42*	3.21
	Low GMA	136	45.49		
Breadth of Interest	High GMA	209	52.88	2.71*	3
	Low GMA	136	49.88		
Innovation	High GMA	209	55.03	5.03*	5.7
	Low GMA	136	49.33		
Tolerance	High GMA	209	49.81	2.83*	2.85
	Low GMA	136	46.96		
Empathy	High GMA	209	50.11	1.09	2.4
	Low GMA	136	47.71		
Anxiety	High GMA	209	47.71	-.543	0.65
	Low GMA	136	48.36		
Cooperation	High GMA	209	46.84	-2.20*	2.58

	Low GMA	136	49.42		
Sociability	High GMA	209	51.63	1.38	1.62
	Low GMA	136	50.01		
Social Confidence	High GMA	209	53.05	2.48*	2.85
	Low GMA	136	50.20		
Energy Level	High GMA	209	52.38	2.51*	3.05
	Low GMA	136	49.33		
Social Astuteness	High GMA	209	50.05	.424	0.50
	Low GMA	136	49.55		
Risk taking	High GMA	209	49.69	2.40*	2.79
	Low GMA	136	46.90		
Organization	High GMA	209	53.77	2.67*	3.29
	Low GMA	136	50.84		
Traditional values	High GMA	209	52.15	3.93*	3.19
	Low GMA	136	48.96		
Responsibility	High GMA	209	54.64	3.72*	3.9
	Low GMA	136	50.74		

* Significant at the 0.05 level (2-tailed)

The results in Table 4 indicate that there are significant differences in personality trait averages between individuals with high and low GMA. There were significant differences in 11 traits out of the 15 traits measured in the current study. The strongest difference was for the trait of innovation ($T = 5.03$, $\infty \leq 0.05$, mean difference = 5.7), followed by the trait of traditional values ($T = 3.93$, $\infty \leq 0.05$, mean difference = 3.19), responsibility ($T = 3.72$, $\infty \leq 0.05$, mean difference = 3.9), complexity ($T = 3.49$, $\infty \leq 0.05$, mean difference = 3.21), tolerance ($T = 2.83$, $\infty \leq 0.05$, mean difference = 2.85), breadth of interest ($T = 2.71$, $\infty \leq 0.05$, mean difference = 3), organization ($T = 2.67$, $\infty \leq 0.05$, mean difference = 3.29), energy level ($T = 2.51$, $\infty \leq 0.05$, mean difference = 3.05), social confidence ($T = 2.48$, $\infty \leq 0.05$, mean difference = 2.85), risk taking ($T = 2.40$, $\infty \leq 0.05$, mean difference = 2.79), and finally cooperation ($T = -2.20$, $\infty \leq 0.05$, mean difference = 2.58). However, the traits of empathy, sociability, social astuteness and anxiety have no significant differences.

The next analysis was to explore the distinguishing traits of males with high against low GMA. Table 5 provides the T test results for the male sample.

Table 5. Results of T tests analysis for the male sample (N = 126)

Personality dimension	Mental ability	N	Mean	T test	Mean deference
Complexity	High GMA	71	49.13	2.11*	3.4
	Low GMA	55	45.73		
Breadth of Interest	High GMA	71	50.68	1.39	2.48
	Low GMA	55	48.20		
Innovation	High GMA	71	52.51	2.49*	4.73

	Low GM	55	47.78		
Tolerance	High GMA	71	49.28	2.08*	3.48
	Low GMA	55	45.80		
Empathy	High GMA	71	47.44	0.325	0.66
	Low GMA	55	46.78		
Anxiety	High GMA	71	45.85	-1.06	1.99
	Low GMA	55	47.84		
Cooperation	High GMA	71	45.11	-2.16*	4.34
	Low GMA	55	49.45		
Sociability	High GMA	71	49.24	0.387	0.75
	Low GMA	55	48.49		
Social Confidence	High GMA	71	51.80	1.332	2.73
	Low GMA	55	49.07		
Energy Level	High GMA	71	51.49	1.456	3.09
	Low GMA	55	48.40		
Social Astuteness	High GMA	71	49.48	0.523	1.06
	Low GMA	55	48.42		
Risk taking	High GMA	71	53.58	4.04*	7.23
	Low GMA	55	46.35		
Organization	High GMA	71	52.21	0.893	1.83
	Low GMA	55	50.38		
Traditional values	High GMA	71	49.80	0.487	0.98
	Low GMA	55	48.82		
Responsibility	High GMA	71	52.13	1.02	2.11
	Low GMA	55	50.02		

* Significant at the 0.05 level (2-tailed)

The results in Table 5 indicate that there are significant differences in some personality traits between individuals with high and low GMA. There were significant differences in 5 traits out of the 15 traits measured in the current study. The strongest difference was found for the trait of risk taking ($T = 4.04$, $\infty \leq 0.05$, mean difference = 7.23), then innovation ($T = 2.53$, $\infty \leq 0.05$, mean difference = 4.73), cooperation ($T = -2.16$, $\infty \leq 0.05$, mean difference = 4.34), followed by complexity ($T = 2.11$, $\infty \leq 0.05$, mean difference = 3.4), and finally tolerance ($T = 2.83$, $\infty \leq 0.05$, mean difference = 3.48). However, the traits of traditional values, responsibility, breadth of interest, organization, energy level, social confidence, empathy, sociability, social astuteness and anxiety show no significant differences.

The final analysis was to explore the distinguishing characteristics of females who differ in their general mental ability level. Table 6 provides the T test results for the female sample.

Table 6. Results of T tests analysis for the female sample (N = 219)

Personality dimension	Mental ability	N	Mean	T test	Mean difference
Complexity	High GMA	138	48.49	2.72*	3.16
	Low GMA	81	45.33		
Breadth of Interest	High GMA	138	54.01	2.13*	2.99
	Low GMA	81	51.02		
Innovation	High GMA	138	56.33	4.27*	5.49
	Low GMA	81	50.38		
Tolerance	High GMA	138	50.09	1.84*	2.34
	Low GMA	81	47.75		
Empathy	High GMA	138	51.48	1.97*	3.15
	Low GMA	81	48.33		
Anxiety	High GMA	138	48.67	-0.27	.05
	Low GMA	81	48.72		
Cooperation	High GMA	138	47.72	-1.16	1.68
	Low GMA	81	49.40		
Sociability	High GMA	138	52.86	1.24	1.81
	Low GMA	81	51.05		
Social Confidence	High GMA	138	53.70	1.98*	2.74
	Low GMA	81	50.96		
Energy Level	High GMA	138	52.84	1.94*	2.88
	Low GMA	81	49.96		
Social Astuteness	High GMA	138	50.35	0.18	0.03
	Low GMA	81	50.32		
Risk taking	High GMA	138	47.70	0.287	0.43
	Low GMA	81	47.27		
Organization	High GMA	138	54.57	2.70*	3.42
	Low GMA	81	51.15		
Traditional values	High GMA	138	53.36	3.46*	4.31
	Low GMA	81	49.05		
Responsibility	High GMA	138	55.93	4.18*	4.7
	Low GMA	81	51.23		

* Significant at the 0.05 level (2-tailed)

The results in Table 6 indicate that there are significant differences in some personality traits between females with high and low GMA. There were significant differences in 10 traits out of the 15 traits measured. The

strongest difference was for the trait of innovation ($T = 4.27$, $\infty \leq 0.05$, mean difference = 5.49), followed by responsibility ($T = 4.18$, $\infty \leq 0.05$, mean difference = 4.7), then traditional values ($T = 3.70$, $\infty \leq 0.05$, mean difference = 4.31), complexity ($T = 2.72$, $\infty \leq 0.05$, mean difference = 3.16), organization ($T = 2.70$, $\infty \leq 0.05$, mean difference = 3.42), breadth of interest ($T = 2.13$, $\infty \leq 0.05$, mean difference = 2.99), social confidence ($T = 1.98$, $\infty \leq 0.05$, mean difference = 2.84), energy level ($T = 1.94$, $\infty \leq 0.05$, mean difference = 2.88), tolerance ($T = 1.84$, $\infty \leq 0.05$, mean difference = 2.34), and finally empathy ($T = 1.97$, $\infty \leq 0.05$, mean difference = 3.15). However, the characteristics of cooperation, risk taking, sociability, social astuteness and anxiety have no significant differences.

4. Discussion

The aim of this study was to explore the relationship between mental ability and personality for fresh graduates and to decide whether there are differences in personality traits between individuals who were classified as having high versus low general mental ability (GMA). To achieve this goal, individuals who were classified as high GMA were compared with individuals who were classified as low GMA on 15 personality traits.

The first question of the current study was to deal with the distinguishing personality traits of high mental ability people using Jackson personality inventory. The results of the study indicated that there are observed and strong differences between high and low GMA individuals on most of the measured traits. The results in Table 6 indicate that there were significant differences in 11 traits out of the 15 traits measured in the current study. The strongest differences between the two groups were for the trait of innovation in which the individuals with high mental ability are higher than low mental ability individuals in almost 7 points. However, other traits were also having clear differences such as organization and complexity. In general, the top traits that distinguish high GMA fresh graduates are (arranged from highest to lowest): innovation, traditional values, responsibility, complexity, tolerance, breadth of interest, organization, energy level, social confidence, and risk taking. However, the characteristics of empathy, sociability, social astuteness and anxiety have no significant differences.

Its very clear from the results that fresh graduates with high mental ability are more innovative. This is logical as intelligent people are more interested in developing new solutions and look from different angles to problems they face especially if they are fresh graduates and with little experience. Such results are in line with previous research findings which indicate that openness/intellectual traits are the distinguishing traits of intelligent individuals (Furnham & Chamorro-Premuzic, 2004; Holland, Dollinger, Holland, & MacDonald, 1995; Ashton, Lee, Vernon, & Jang, 2000; Austin, Deary, & Gibson, 1997; Austin et al., 2002; Chamorro-Premuzic & Furnham, 2008). Jackson (1993) indicated that a high scorer in innovation is a creative and inventive individual, capable of originality of thought, motivated to develop novel solutions to problems, values new ideas and who likes to improvise.

Additionally, the results indicated that the second most important trait of intelligent graduates is that they hold more traditional values than low mental ability individuals. Jackson (1993) indicated that traditional individuals are more likely to watch their behaviors and care about what other people think. Additionally, a high scorer on traditional values scale values traditional customs and beliefs, his or her values may be seen by others as "old-fashioned", takes a rather conservative view regarding contemporary standards of behavior, and is opposed to change in social customs. In addition, the characteristics of complexity and breadth of interest are also a sign of intelligence which is supported by previous studies (DeYoung et al., 2009; Austin et al., 2002; Chamorro-Premuzic & Furnham, 2008).

Another characteristic of high mental ability individuals is that they are more responsible in comparison with low mental ability individuals. This result is highly supported by other studies which indicated that responsibility is a major sign of intelligence (DeYoung, 2011; Ackerman, 2009).

However, the results indicated that individuals with high mental ability are less cooperative. Jackson (1993) pointed out that individuals with low scores on cooperation refuses to go along with a crowd, unaffected and un-swayed by others' opinions and remain independent in thought and action. Therefore, cooperation might be an obstacle for intelligent individuals who are proud of their own abilities and opinions and love independence. However, this may be a less favorite characteristics especially in the world of business which is more focused on group work (Cook, 2009). Finally, it can be seen that high and low GMA graduates do not differ in social traits such as sociability, empathy, and social astuteness.

In general, analyzing the profile of intelligent individuals according to Jackson's personality big five factors, reveals that intelligent fresh graduates are more analytical because they scored higher scores on the trait of

complexity, innovation, breadth of interest, and tolerance. Moreover, high GMA individuals are dependable individuals because they score higher on traits of responsibility, traditional values, and organization.

The second question in the current study was about determining whether gender affects the relationship between mental ability and personality. Specifically, the aim was to explore whether males with high mental ability have different traits from females with high mental ability. The results of the study indicate that there are differences between males and females in the dominant traits. As for males, the results indicated that the strongest differences between high and low GMA were: risk taking, innovation, cooperation, complexity and tolerance. In other words, the intelligent males tend to be risk takers (i.e., willingly exposing themselves to situations with uncertain outcomes, enjoying adventures, having an element of peril, taking chances), and they are also more innovative, capable of originality of thought, motivated to develop novel solutions to problems, value new ideas, like to improvise, and they are less cooperative and prefer to work alone. Such results are in line with previous studies which concluded that males with high mental ability tend to be adventurous, have wide interest and are complex in their thoughts and attitudes (Jackson, 1993).

As for females, the biggest difference was for traits of innovation, followed by responsibility, traditional values, complexity, organization, and breadth of interests. In other words, intelligent females tend to be more dependable (methodical, predictable, systematic, conservative and mature in their attitudes) and analytical (expected to consider arguments from multiple points of view and inclined towards drawing distinctions among otherwise unrelated elements of information). Such results are supported by previous studies which pointed out that intelligent females tend to be conservative, reliable, and dependable (Jackson, 1993).

In general, it can be concluded that mental ability does not affect the characteristics of sociability or emotionality. Females and males with low or high mental ability do not differ in the traits of sociability, social astuteness, empathy, or anxiety. These results are contradicting the common but unscientific belief that intelligent people are not social creatures, lack social confidence, and are without empathy or feelings. In other words, the results indicate that someone can find intelligent person who is sociable, anxious, and empathetic and vice versa. However, the same applies for low general mental ability individuals. Such results are close to previous meta analytic findings (Ackerman & Heggestad, 1997; Wolf & Ackerman, 2005).

Furthermore, the current results indicated some practical applications for fresh graduates' selection and career counseling. The current study indicates that fresh graduates can be selected based on their personality. Graduates with high mental ability seem to have certain personality traits. Intelligent graduates have higher levels of openness and innovation, are more complex in terms of thinking, more traditional, responsible, tolerant, organized, and have a higher energy level. However, gender seems to have impact on the dominant personality traits. While the dominant traits of intelligent females are innovation and responsibility, the dominant traits of males are risk taking and innovation. Such results may help in selecting the right candidates as many studies indicated that the most predictive variables of future performance of recent college graduates are personality and mental ability (Koczwara, 2012; Sjoberg et al., 2012; Marcus et al., 2009; Cook, 2009; Schmidt, Shaffer, & OH, 2008; Rode et al., 2008; Schmidt & Hunter, 2004; Gottfredson, 1997).

In addition, the current findings might be very helpful in career guidance. Fresh graduates usually look for different kinds of jobs and they are more open to various offers. Therefore, personality profiles of intelligent graduates might help career counselors to orient intelligent graduates to jobs that suite their mental abilities and personality profile.

Finally, the current study has several limitations, including: (a) measures variance: intelligence and personality differ in their methods of measurement (intelligence was assessed using ability tests, whereas personality was assessed by questionnaire) (b) small sample size, and (c) lack of generalizability beyond our population of interest (fresh university graduates). Nevertheless, our results suggest that personality and mental ability have a common base. Given the different results reported by studies focusing on intelligence and personality, future research is needed to better understand the reasons for, as well as the implications of, our findings.

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References

- Ackerman, P. L. (2009). Personality and intelligence. In P. J. Corr, & G. Matthews (Eds.), *The Cambridge handbook of personality psychology* (pp. 162-174). New York: Cambridge University Press.
- Ackerman, P. L., & Heggestad, E. D. (1997). Intelligence, personality, and interests: Evidence for overlapping traits. *Psychological Bulletin*, 121, 219-245. <http://dx.doi.org/10.1037//0033-2909.121.2.219>
- Ashton, M. C., Lee, K., Vernon, P. A., & Jang, K. L. (2000). Fluid intelligence, crystallized intelligence, and the Openness/Intellect factor. *Journal of Research in Personality*, 34, 197-207. <http://dx.doi.org/10.1006/jrpe.1999.2276>
- Austin, E. J., Deary, I. J., & Gibson, G. J. (1997). Relationship between ability and personality: Three hypotheses tested. *Intelligence*, 25, 49-70. [http://dx.doi.org/10.1016/s0160-2896\(97\)90007-6](http://dx.doi.org/10.1016/s0160-2896(97)90007-6)
- Austin, A. J., Deary, I. J., Whiteman, M. C., Fowkes, F. G. R., Padersen, N. L., Rabbitt, P., ... McInnes, L. (2002). Relationships between ability and personality: Does intelligence contribute positively to personal and social adjustment? *Personality and Individual Differences*, 32, 1391-1411. [http://dx.doi.org/10.1016/s0191-8869\(01\)00129-5](http://dx.doi.org/10.1016/s0191-8869(01)00129-5)
- Al-Hourani. (2009). *The psychometric properties of Jackson personality inventory revised using Jordanian sample* (Unpublished Master thesis). Jordan University, Department of Psychology. Amman, Jordan.
- Al-Zoubi. (2015). Developing a General Mental Ability Test (GMA) To Be Used In Vocational Guidance for University Graduates. *Jordanian Journal of Social Sciences*, 8(1), 1-32.
- Bouchard, T., Segal, N., Tellegen, A., McGue, M., Keyes, M., & Krueger, R. (2003). Evidence for the construct validity and heritability of the Wilson-Patterson conservatism scale: A reared-apart twins study of social attitudes. *Personality and Individual Differences*, 34, 959-969. [http://dx.doi.org/10.1016/s0191-8869\(02\)00080-6](http://dx.doi.org/10.1016/s0191-8869(02)00080-6)
- Brand, C. (1987). The importance of general intelligence. In S. Modgil, & C. Modgil (Eds.), *Arthur Jensen: Consensus and controversy* (pp. 251-265). New York: Falmer.
- Cattell, R. B. (1950). *Personality*. New York: McGraw-Hill.
- Chamorro-Premuzic, T., & Furnham, A. (2005a). *Personality and intellectual competence*. Mahwah, New Jersey: Lawrence Erlbaum Associates.
- Chamorro-Premuzic, T., Moutafi, J., & Furnham, A. (2005). The relationship between personality traits, subjectively-assessed and fluid intelligence. *Personality and Individual Differences*, 38, 1517-1528. <http://dx.doi.org/10.1016/j.paid.2004.09.018>
- Cook, M. (2009). Personnel selection. In *Adding value through people* (5th ed.). Wiley-Blackwell, England.
- DeYoung, C. G. (2011). Intelligence and Personality. In Sternberg, R. J., & Kaufman, S. B. (Eds.), *The Cambridge handbook of intelligence* (pp. 711-737). New York: Cambridge University Press.
- DeYoung, C. G., & Gray, J. R. (2009). Personality neuroscience: Explaining individual differences in affect, behavior, and cognition. In P. J. Corr, & G. Matthews (Eds.), *The Cambridge handbook of personality psychology* (pp. 323-346). New York: Cambridge University Press.
- DeYoung, C. G., Peterson, J. B., Séguin, J. R., Pihl, R. O., & Tremblay, R. E. (2008). Externalizing behavior and the higher-order factors of the Big Five. *Journal of Abnormal Psychology*, 117, 947-953. <http://dx.doi.org/10.1037/a0013742>
- DeYoung, C. G., Shamosh, N. A., Green, A. E., Braver, T. S., & Gray, J. R. (2009). Intellect as distinct from Openness: Differences revealed by fMRI of working memory. *Journal of Personality and Social Psychology*, 97, 883-892. <http://dx.doi.org/10.1037/a0016615>
- Eysenck, H. J. (1994). Personality and intelligence: Psychometric and experimental approaches. In R. J. Sternberg, & P. Ruzgis (Eds.), *Personality and intelligence* (pp. 3-31). New York: Cambridge University Press.
- Fales, C. L., Barch, D. M., Burgess, G. C., Schaefer, A., Mennin, D. S., Braver, T. S., & Gray, J. R. (2008). Anxiety and cognitive efficiency: Differential modulation of transient and sustained neural activity during a working memory task. *Cognitive, Affective, and Behavioral Neuroscience*, 8, 239-253. <http://dx.doi.org/10.3758/cabn.8.3.239>

- Furnham, A., & Chamorro-Premuzic, T. (2005). Personality, intelligence, and art. *Personality and Individual Differences*, 36, 705-715. [http://dx.doi.org/10.1016/s0191-8869\(03\)00128-4](http://dx.doi.org/10.1016/s0191-8869(03)00128-4)
- Furnham, A., Dissou, G., Sloan, P., & Chamorro-Premuzic, T. (2007). Personality and intelligence in business people: A study of two personality and two intelligence measures. *Journal of Business and Psychology*, 22, 99-109. <http://dx.doi.org/10.1007/s10869-007-9051-z>
- Gerald, F., Witt, L., & Hochwarter, W. (2001). Interaction of social skill and general mental ability on job performance and salary. *Journal of Applied Psychology*, 86, 1075-1186. <http://dx.doi.org/10.1037/0021-9010.86.6.1075>
- Gilbert, S. J., Spengler, S., Simons, J. S., Steele, J. D., Lawrie, S. M., Frith, C. D., & Burgess, P. W. (2006). Functional specialization within rostral prefrontal cortex (area 10): A meta-analysis. *Journal of Cognitive Neuroscience*, 18(6), 932-948. <http://dx.doi.org/10.1162/jocn.2006.18.6.932>
- Gottfredson, L. S. (1997). Why g matters: The complexity of everyday life. *Intelligence*, 24, 79-132. [http://dx.doi.org/10.1016/s0160-2896\(97\)90010-6](http://dx.doi.org/10.1016/s0160-2896(97)90010-6)
- Guilford, J. P. (1959). *Personality*. New York: McGraw-Hill.
- Higgins, D. M., Peterson, J. B., Pihl, R. O., & Lee, A. G. M. (2007). Prefrontal cognitive ability, intelligence, Big Five personality, and the prediction of advanced academic and workplace performance. *Journal of Personality and Social Psychology*, 93, 298-319. <http://dx.doi.org/10.1037/0022-3514.93.2.298>
- Holland, D. C., Dollinger, S. J., Holland, C. J., & MacDonald, D. A. (1995). The relationship between psychometric intelligence and the five-factor model of personality in a rehabilitation sample. *Journal of Clinical Psychology*, 51, 79-88. [http://dx.doi.org/10.1002/1097-4679\(199501\)51:1<79::aid-jclp2270510113>3.0.co;2-p](http://dx.doi.org/10.1002/1097-4679(199501)51:1<79::aid-jclp2270510113>3.0.co;2-p)
- Johnson, W., & Bouchard, T. J., Jr. (2007). Sex differences in mental abilities: G masks the dimensions on which they lie. *Intelligence*, 35, 23-39. <http://dx.doi.org/10.1016/j.intell.2006.03.012>
- Johnson, W., Bouchard, T. J., Jr., McGue, M., Segal, N. L., Tellegen, A., Keyes, M., & Gottesman, I. I. (2007). Genetic and environmental influences on the Verbal-Perceptual-Image Rotation (VPR) model of the structure of mental abilities in the Minnesota study of twins reared apart. *Intelligence*, 35, 542-562. <http://dx.doi.org/10.1016/j.intell.2006.10.003>
- Keightley, M. L., Seminowicz, D. A., Bagby, R. M., Costa, P. T., Fossati, P., & Mayberg, H. S. (2003). Personality influences limbic-cortical interactions during sad mood. *Neuro Image*, 20, 2031-2039. [http://dx.doi.org/10.1016/s1053-8119\(01\)91743-4](http://dx.doi.org/10.1016/s1053-8119(01)91743-4)
- Koczwara, A., Patterson, F., Kerrin, M., Irish, B., & Wilkinson, M. (2012). Evaluating cognitive ability, knowledge tests and situational judgment tests for postgraduate selection. *Medical Education*, 46, 399-408. <http://dx.doi.org/10.1111/j.1365-2923.2011.04195.x>
- Krueger, R. F., Hicks, B. M., Patrick, C. J., Carlson, S. R., Iacono, W. G., & McGue, M. (2002). Etiologic connections among substance dependence, antisocial behavior, and personality: Modeling the externalizing spectrum. *Journal of Abnormal Psychology*, 111, 411-424. <http://dx.doi.org/10.1037/0021-843x.111.3.411>
- Krueger, R. F., Markon, K. E., Patrick, C. J., Benning, S. D., & Kramer, M. D. (2007). Linking antisocial behavior, substance use, and personality: An integrative quantitative model of the adult externalizing spectrum. *Journal of Abnormal Psychology*, 116, 645-666. <http://dx.doi.org/10.1037/0021-843x.116.4.645>
- Kuntsi, J., Eley, T.C., Taylor, A., Hughes, C., Asherson, P., ... Caspi, A. (2004). Co-occurrence of ADHD and low IQ has genetic origins. *American Journal of Medical Genetics*, 124, 41-47. <http://dx.doi.org/10.1002/ajmg.b.20076>
- Lievens, F., Highhouse, S., & De Corte, W. (2005). The importance of traits and abilities in supervisors' hirability decisions as a function of method of assessment. *Journal of Occupational and Organizational Psychology*, 78, 453-470. <http://dx.doi.org/10.1348/096317905x26093>
- Lynam, D. R., Moffitt, T. E., & Stouthamer-Loeber, M. (1993). Explaining the relation between IQ and delinquency: Class, race, test motivation, school failure, or self-control? *Journal of Abnormal Psychology*, 102, 187-196. <http://dx.doi.org/10.1037/0021-843x.102.2.187>
- Marcus, B., Wagner, U., Poole, A., Powell, D., & Carswell, J. (2009). The Relationship of GMA to Counterproductive Work Behavior Revisited. *European Journal of Personality*, 23, 489-507. <http://dx.doi.org/10.1002/per.728>

- McAdams, D. P., & Pals, J. L. (2006). A new Big Five: Fundamental principles for an integrative science of personality. *American Psychologist*, 61, 204-217. <http://dx.doi.org/10.1037/0003-066x.61.3.204>
- Mount, M. K. (1999). The joint relationship of conscientiousness and ability with performance: Test of the interaction hypothesis. *Journal of Management*, 25, 707-721. <http://dx.doi.org/10.1177/014920639902500505>
- Nettle, D. (2006). The evolution of personality variation in humans and other animals. *American Psychologist*, 61, 622-631. <http://dx.doi.org/10.1037/0003-066x.61.6.622>
- Pytlik Zillig, L. M., Hemenover, S. H., & Dienstbier, R. A. (2002). What do we assess when we assess a Big 5 trait? A content analysis of the affective, behavioral and cognitive processes represented in the Big 5 personality inventories. *Personality & Social Psychology Bulletin*, 28, 847-858. <http://dx.doi.org/10.1177/0146167202289013>
- Rode, C., Arthur-D-Day, M., Mooney, C., Near, J., & Baldwin, T. (2008). Ability and personality predictors of salary, personality, job success, and perceived career success in the initial career stage. *International Journal of Selection and Assessment*, 16(3), 292-299. <http://dx.doi.org/10.1111/j.1468-2389.2008.00435.x>
- Salgado, J., Anderson, N., Moscoso, S., Bertua, C., De Fruyt, F., & Rolland, J. (2003). A meta analytic study of general mental ability for different occupations in the European community. *Journal of Applied Psychology*, 88, 1068-1081. <http://dx.doi.org/10.1037/0021-9010.88.6.1068>
- Saucier, G. (1992). Openness versus intellect: Much ado about nothing? *European Journal of Personality*, 6, 381-386. <http://dx.doi.org/10.1002/per.2410060506>
- Schmidt, F., & Hunter, J. (2004). General mental ability in the world of work: Occupational attainment and job performance. *Journal of personality and social psychology*, 86, 162-173. <http://dx.doi.org/10.1037/0022-3514.86.1.162>
- Schmidt, F., Shaffer, J., & OH, I. (2008). Increased accuracy for range restriction corrections: Implications for the role of personality and general mental ability in job and training performance. *Personnel Psychology*, 61, 827-867. <http://dx.doi.org/10.1111/j.1744-6570.2008.00132.x>
- Sjoberg, S., Sjoberg, A., Naswall, K., & Sverke, M. (2012). Using individual differences to predict job performance: Correcting for direct and indirect restriction of range. *Scandinavian Journal of Psychology*, 53, 368-373. <http://dx.doi.org/10.1111/j.1467-9450.2012.00956.x>
- Vigil-Colet, A., & Morales-Vives, F. (2005). How impulsivity is related to intelligence and academic achievement. *The Spanish Journal of Psychology*, 8, 199-204. <http://dx.doi.org/10.1017/s1138741600005072>
- Wilt, J., & Revelle, W. (2009). Extraversion. In M. Leary, & R. Hoyle (Eds.), *Handbook of individual differences in social behavior* (pp. 27-45). New York: Guilford.
- Wolf, M. B., & Ackerman, P. L. (2005). Extraversion and intelligence: A meta-analytic investigation. *Personality and Individual Differences*, 39, 531-542. <http://dx.doi.org/10.1016/j.paid.2005.02.020>

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