

Comparison of the Emergenetics Profile and the NEO Five-Factor Inventory (Big 5)

A blend of genetics and learned experiences
expressed as a behavior and a way of thinking.

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Introduction

Emergenetics is based a broad base of research that suggests; 1) individuals were born with traits to act and think in certain ways, and 2) they modified these traits as they interacted with their surroundings: the combination intertwines to form how we think and act.

There are seven basic sets of attributes described by Emergenetics; four ways of thinking and three ways of behaving. The four thinking attributes are analytical, structural, social and conceptual. The three behavioral attributes are expressiveness, assertiveness, and flexibility.

Development of the Emergenetics Profile

Several important factors were considered when the Emergenetics profile was developed. The underlying theory, reliability, validity, and determining survey norms are discussed in greater depth in the following section.

The Underlying Theory

For centuries, psychologists and philosophers have been trying to understand why people behave the way they do. The arguments have drifted back and forth between being completely shaped by our environment and being completely shaped by our genetic structure. During the early part of this century, most psychologists were convinced behaviors developed purely due to the surrounding environment. Pavlov, Skinner and Watson were a few of the behavioral psychologists who shared this belief. For decades, their early studies laid the groundwork for behavioral research.

In the late 50's and 60's, however, the "nature/nurture" argument began to shift back to "nature" in light of truly innovative work done with identical twins. This research was unusual because the twin subjects were separated at birth and raised by different parents. Because these twins shared identical genes but were raised in different environments, researchers could study actual effects of both nature and nurture. Today, most psychologists recognize that both genetics and environment play substantial roles in determining behaviors and thinking styles.

Because it is impossible to clearly separate internal factors from behaviors, the theory of Emergenetics combines much of the early work in psychology with the most recent findings from twin research. It proposes we have a combination of: 1) genetic tendencies to think and act in certain ways (nature), and 2) behaviors which have been modified through socialization (nurture).

Choice of Factors

The authors of the Emergenetics Profile had considerable prior experience with a wide range of training instruments. Some were introduced by well-meaning lay-people with limited training in professional survey development (e.g., HBDI, MBTI, and so forth), others were designed by people with a simplistic 4-factor view of behavior (Social Styles, DISC, FIRO-B, and so forth), and still others tried to cover the entire personality domain (e.g., CPI, 16PF, Jackson, and so forth).

The author's direct experience with these instruments showed that each of the above approaches only met part of a widespread need for adults to understand and accept each other in everyday interaction. For example:

- Many lay-developed instruments usually had poor inter-item reliability, low survey-resurvey reliability, low content and face validity, and were not scored based on standardized norms. Thus, participants were often misled about the descriptive accuracy of their profile.
- Professionally-developed factor-models were easy to understand, but tended to assume too much from single scores (e.g., all people with high analytical scores might also be classified as passive). This kind of overly simplistic view quickly also lead to misinterpretation and loss of credibility in the instrument.
- Professionally-developed "whole-person" surveys were fine for exploring broad psychological constructs, but generally too complex for lay people to use in day to day applications (e.g., the Big-5 NEO-PI survey, for example, includes 30 potential learning interactions between 30 sub-factors).

Merging the experiences gained from administering a wide variety of commonly-used surveys and identified scales with genetic/behavioral research led to developing an instrument that encompasses the practicality of lay-developed instruments, the simplicity of "factor-based" models, the prevailing theories of genetic predispositions and social learning, and the validity and reliability standards of professionally-developed psychometric instruments.

A typical Emergenetics Profile reports normative scores on common content-valid practical thinking and behavioral descriptors (Analytical, Structural, Social, Conceptual, Expressiveness, Assertiveness, Flexibility) which we believe are *primarily* determined by genetic and socialization factors. This seven-factor model includes the most robust design we could develop which could account for both internal preferences as well as external behaviors...

Survey Design

A "good" survey design has several requirements:

- Items throughout the survey must be consistent with each other; that is, items intended to evaluate "analytical" thinking should all move "up and down" together when compared to the total score for analytical thinking. This is called "inter-item reliability."
- Factors within the test that are associated with each other should correlate and ones that are independent should not. This is called convergent/discriminant validity.
- Factor content of the survey should be directly related to the content, construct or criterion it is supposed to measure. This is referred to as content, construct, or criterion-related validity.
- Items should resemble "legitimate" questions. This is "face validity".

Inter-Item Reliability

Internal integrity of a survey begins with determining the correlations between items and the factors they are supposed to measure. For example, a survey developer wanted to be sure five single items were associated with a specific survey factor, the developer would statistically examine scores between each item and the overall factor score of all items. High correlations indicate each item contributes to the overall score.

The inter-item reliabilities of the Emergenetics Profile are shown below. “Coefficient Alpha” refers to the average of all possible inter-item and split-half correlations, both good and bad. Without relying on single indicators of reliability, which may contain large amounts of error, Coefficient Alpha provides an overall measure of the internal reliability of the survey. As can be seen from the data, individual items on the Emergenetics Profile items are strongly related to the factor they are supposed to measure.

Inter-Item Reliabilities

Emergenetics Factor	Coefficient Alpha
Analytical	.83
Structural	.76
Social	.76
Conceptual	.76
Expressiveness	.83
Assertiveness	.83
Flexibility	.83

(n=380, $p \leq .001$)

Now that we know the individual Emergenetics Profile items are related (e.g., have acceptable inter-item reliability), we evaluate the convergent/discriminate correlations to evaluate factor independence.

Convergent/Discriminate Variance Accounted For

	Analytical	Structural	Social	Conceptual	Expressiveness	Assertive
Structural	3%					
Social	.2%	.2%				
Conceptual	4%	32%	7%			
Expressiveness	1%	15%	30%	20%		
Assertiveness	5%	14%	2%	18%	55%	
Flexibility	1%	1%	70%	14%	41%	10%

(n=10357, 2-tailed, all correlations significant at $p \leq .01$, highlight indicates relationships of interest)

As can be observed, some of the factors are practically independent and others are highly correlated. Correlations are not probabilities, and must be squared to explain the variance between factors (we only consider important a variance of 10% or more). This chart explains the difficulty the authors had with previous workshop instruments that presented Analytical thinkers as “quiet and unassuming”. In fact, our data actually showed that a person’s Analytical preferences had minimal relationship with the other six factors.

Another example includes Flexibility. This factor is strongly correlated with Social and Expressiveness (as expected). Does this mean Flexibility can be subsumed under the obvious social dimensions? Not when the casual observer can easily note that eliminating Flexibility from the model would lead to the loss of a great deal of information about people with Analytical or Structural preferences.

Examining the remaining Emergenetics factor inter-correlations illustrates how a thinking preference/behavioral attribute approach actually helps lay people understand fundamental social relationships.

Validity

As mentioned earlier, there are four separate types of validity associated with a survey. These are:

1. *Face Validity*... whether a survey-taker perceives the survey items to be credible. If thinking styles and behaviors were to be measured, for example, asking questions about hobbies, vocations or religious preferences would seriously impair face-validity. Participants generally tell us the items are “face-valid” for describing general thinking and behavioral preferences.
2. *Construct Validity* refers to whether the survey evaluates a deep-seated construct such as emotional sensitivity or intelligence. Emergenetics does not claim to measure any deep-seated ability or skill, just self-descriptive personal preferences for thinking and behaving.
3. *Criterion-Related Validity* is the ability of a survey to predict a specific skill such as problem solving, intelligence, planning, technical proficiency, and so forth. The Emergenetics Profile is not intended, nor was it developed, to predict skills. In fact, research shows self-reported surveys usually have low criterion-related relationships with skills, ranging from 1% to 10% of the variance.
4. *Content Validity* refers to the adequacy of the Emergenetics Profile to measure the behavior it is supposed to measure. Emergenetics items are content-valid; that is, items describe seven types of common self-descriptions: four preferred ways of thinking and three preferred ways of behaving. Questions on the Emergenetics Profile were specifically drafted to represent everyday events and behaviors. Participants routinely report that each of the seven attributes represents some aspect (i.e., content) of adult behavior.

Construct Validity Evidence

People uncomfortable with qualitative research such as Emergenetics often desire a quantitative comparison with an established survey purporting to measure the same constructs. To this end we selected a well-published instrument based on the widely accepted Big-5 personality factors (i.e., the NEO Five-Factor Inventory published by Psychological Assessment Resources, Inc., Lutz, Florida.)

The Big-5 (main and sub-factors)

The NEO was developed by Paul Costa and Robert McCrae based personality research conducted in the 1950's showing that all personality factors tend to cluster into five general factors. The B-5 model is well-respected, widely researched and extensively used for vocational counseling, mental illness and behavior, defining coping systems, and the like.

The NEO-FFI evaluates five domains, each consisting of four sub factors as follows:

1. Neuroticism (N): a compound score indicating the tendency to experience negative emotions such as fear, sadness, anger, disgust, embarrassment, and guilt.
N1 (high sub-factor score): general anxiety, phobias, tense, jittery
N2 (high sub-factor score): hostility, bitterness, anger, frustration
N3 (high sub-factor score): depression, guilt, sadness, hopelessness, loneliness
N4 (high sub-factor score): self-consciousness, sensitivity, inferiority, uncomfortable
2. Extraversion (E): a compound score indicating preferences for liking people, being around large groups, being assertive and talkative, upbeat, energetic, and active.
E1 (high sub-factor score): warmth, affectionate, friendly, close attachments
E2 (high sub-factor score): gregarious, other company
E3 (high sub-factor score): dominant, forceful, social climbing
E4 (high sub-factor score): energy, active, fast moving, thrill seeker
3. Openness (O): a compound score indicating active imagination, aesthetic sensitivity, inner feelings, variety, curiosity, and independence.
O1 (high sub-factor score): fantasy, imaginative, daydreamer, creative
O2 (high sub-factor score): aesthetic, art, beauty, music, poetry
O3 (high sub-factor score): inner feelings, emotive, emotional depth and intensity
O4 (high sub-factor score): willingness, try new things, novelty, variety
4. Agreeableness (A): a compound score indicating sympathy and eagerness to help
A1 (high sub-factor score): trust, honest, well-intentioned
A2 (high sub-factor score): straightforwardness, frank, sincere, ingenuous
A3 (high sub-factor score): altruistic, concern for others, generous, helpful
A4 (high sub-factor score): compliance, withdrawn, forgive, deference

5. Conscientiousness (C): a compound score indicating strong will, self control, planning, organizing, purposefulness, and achievement.
 C1 (high sub-factor score): competence, capable, sensible, prudent effective
 C2 (high sub-factor score): order, tidy, well organized, planful
 C3 (high sub-factor score): dutiful, ethical, conscientious, moral obligations
 C4 (high sub-factor score): achievement, aspiration, diligent, driven

A quick examination of the Big-5 factors shows they are anything but simple, and sub-factors are in fact, often highly dissimilar. We agree that empirical arguments and rational ones do not always agree; nevertheless, we will examine interactions between the EP, the five main (B-5) factors, and 20 sub-factors.

The Seven Emergenetics Factors include:

1. Analyzing (Ana): one score evaluating preferences for analysis, scientific pursuit, problem solving, rationality
2. Structured (Str): one score evaluating preferences for planning, organizing, risk avoider, steady predictable
3. Conceptual (Con): one score evaluating preference for improving, creating, innovating, inventing
4. Social (Soc): one score evaluating preferences for warm, friendly, interpersonal, concerned, altruistic
5. Expressiveness (Exp): one score evaluating preferences for social climbers, outgoing, gregarious
6. Assertiveness (Asr): one score evaluating preferences for task oriented, driven, achievement, focused, aggressive
7. Flexible (Flex): one score evaluating preferences for willingness, flexibility, accommodating

As mentioned earlier, convergent and discriminant correlation analysis with a well-established instrument purporting to measure similar constructs is often used to establish construct validity. That is, the seven EP factors and the NEO-FFI factors should have statistically significant correlations between similar personality constructs and discriminant (i.e., small, insignificant, or non-existent) correlations between dissimilar constructs. Correlations shown in Tables 1 through 6 are significant at the .05 level or better. Correlations in Tables 7 through 18 are significant as noted.

Table 1
Analytical Factor

E1	-.228	(opposite of) warmth, affectionate, friendly, close attachments
E3	.207	dominant, forceful, social climbing
C1	.233	competence, capable, sensible, prudent effective
C3	.175	dutiful, ethical, conscientious, moral obligations
C4	.274	achievement, aspiration, diligent, driven

Table 2
Structural Factor

N1	.307	general anxiety, phobias, tense, jittery
N4	.293	self-consciousness, sensitivity, inferiority, uncomfortable
E1	-.206	(opposite of) warmth, affectionate, friendly, close attachments
E2	-.243	(opposite of) gregarious, other company
E3	-.350	(opposite of) dominant, forceful, social climbing
E4	-.221	(opposite of) energy, active, fast moving, thrill seeker
O1	-.362	(opposite of) fantasy, imaginative, daydreamer, creative
O2	-.340	(opposite of) aesthetic, art, beauty, music, poetry
O3	-.303	(opposite of) inner feelings, emotive, emotional depth and intensity
O4	-.508	(opposite of) willingness, try new things, novelty, variety
A1	-.273	(opposite of) trust, honest, well-intentioned
A2	.171	straightforwardness, frank, sincere, ingenuous
C2	.543	order, tidy, well organized, planful

Table 3
Conceptual Factor

N1	-.184	(opposite of) general anxiety, phobias, tense, jittery
N4	-.199	(opposite of) self-consciousness, sensitivity, inferiority, uncomfortable
E1	.524	warmth, affectionate, friendly, close attachments
E3	.316	dominant, forceful, social climbing
E4	.264	energy, active, fast moving, thrill seeker
O1	.519	fantasy, imaginative, daydreamer, creative
O2	.348	aesthetic, art, beauty, music, poetry
O3	.342	inner feelings, emotive, emotional depth and intensity
O4	.381	willingness, try new things, novelty, variety
A1	.228	trust, honest, well-intentioned
C2	-.516	(opposite of) order, tidy, well organized, planful

Table 4
Social Factor

E1	.592	warmth, affectionate, friendly, close attachments
E2	.412	gregarious, other company
E3	.235	dominant, forceful, social climbing
E4	.264	energy, active, fast moving, thrill seeker
O1	.300	fantasy, imaginative, daydreamer, creative
O2	.364	aesthetic, art, beauty, music, poetry
O3	.553	inner feelings, emotive, emotional depth and intensity
A2	-.186	(opposite of) straightforwardness, frank, sincere, ingenuous
A3	.240	altruistic, concern for others, generous, helpful

Table 5
Expressiveness Factor

E1	.524	warmth, affectionate, friendly, close attachments
E3	.207	dominant, forceful, social climbing
C1	.233	competence, capable, sensible, prudent effective
C3	.175	dutiful, ethical, conscientious, moral obligations
C4	.274	achievement, aspiration, diligent, driven

Table 6
Assertiveness Factor

N2	.226	hostility, bitterness, anger, frustration
N4	-.235	(opposite of) self-consciousness, sensitivity, inferiority, uncomfortable
E1	.174	warmth, affectionate, friendly, close attachments
E2	.289	gregarious, other company
E3	.706	dominant, forceful, social climbing
E4	.482	energy, active, fast moving, thrill seeker
O3	.385	inner feelings, emotive, emotional depth and intensity
A2	-.316	(opposite of) straightforwardness, frank, sincere, ingenuous
A3	-.201	(opposite of) altruistic, concern for others, generous, helpful
A4	-.576	(opposite of) compliance, withdrawn, forgive, deference
C4	.363	achievement, aspiration, diligent, driven

Table 7
Flexible Factor

E1	.622	warmth, affectionate, friendly, close attachments
E2	.403	gregarious, other company
E3	.210	dominant, forceful, social climbing
E4	.179	energy, active, fast moving, thrill seeker
O1	.250	fantasy, imaginative, daydreamer, creative
O2	.429	aesthetic, art, beauty, music, poetry
O3	.443	inner feelings, emotive, emotional depth and intensity
O4	.248	willingness, try new things, novelty, variety
A1	.217	trust, honest, well-intentioned
A3	.314	altruistic, concern for others, generous, helpful
C1	.212	competence, capable, sensible, prudent effective

Table 8
EP and NEO-FFI
B-5 Factors

		Ana	Str	Soc	Con	Ext	Asr	Flex
N	Corr.	0.003	.218(*)	0.088	-0.118	0.006	-0.049	-0.137
	Sig	0.490	0.016	0.195	0.126	0.477	0.316	0.091
E	Corr.	-0.032	-.342(**)	.486(**)	.269(**)	.731(**)	.554(**)	.457(**)
	Sig	0.377	0.000	0.000	0.004	0.000	0.000	0.000
O	Corr.	-0.077	-.517(**)	.459(**)	.547(**)	.446(**)	.223(*)	.471(**)
	Sig	0.228	0.000	0.000	0.000	0.000	0.014	0.000
A	Corr.	-0.105	0.029	0.028	-0.027	-.195(*)	-.365(**)	.170(*)
	Sig	0.154	0.388	0.394	0.395	0.028	0.000	0.048
C	Corr.	.271(**)	.201(*)	.178(*)	-0.167	.225(*)	.203(*)	.192(*)
	Sig	0.004	0.024	0.041	0.052	0.013	0.023	0.030

As can be observed from these tables, the Emergenetics Profile shows strong convergent and discriminant correlations with both the NEO-FFI sub-factors and the main factors. This pattern provides evidence of construct validity. Additional tables are shown below.

Table 9
EP and NEO-FFI
Neuroticism Sub-Factors

		Ana	Str	Soc	Con	Exp	Asr	Flex
N1	Corr.	0.136	.307(**)	0.129	-.184(*)	0.022	-0.086	-0.085
	Sig	0.092	0.001	0.104	0.035	0.415	0.201	0.204
N2	Corr.	-0.063	0.006	0.167	0.055	.251(**)	.266(**)	-0.059
	Sig	0.270	0.476	0.051	0.295	0.007	0.004	0.283
N3	Corr.	0.004	0.091	-0.010	-0.046	-0.069	-0.101	-0.148
	Sig	0.485	0.189	0.462	0.327	0.250	0.163	0.074
N4	Corr.	-0.087	.293(**)	-0.007	-.199(*)	-.189(*)	-.235(*)	-0.153
	Sig	0.198	0.002	0.472	0.025	0.032	0.010	0.067

Table 10
EP and NEO-FFI
Extraversion Sub-Factors

		Ana	Str	Soc	Con	Exp	Asr	Flex
E1	Corr.	-.228(*)	-.206(*)	.592(**)	.202(*)	.524(**)	.174(*)	.622(**)
	Sig	0.012	0.022	0.000	0.024	0.000	0.044	0.000
E2	Corr.	-0.146	-.243(**)	.412(**)	0.116	.511(**)	.289(**)	.403(**)
	Sig	0.076	0.008	0.000	0.129	0.000	0.002	0.000
E3	Corr.	.207(*)	-.350(**)	.235(*)	.316(**)	.650(**)	.706(**)	.210(*)
	Sig	0.021	0.000	0.010	0.001	0.000	0.000	0.020
E4	Corr.	0.051	-.221(*)	.264(**)	.192(*)	.526(**)	.482(**)	.179(*)
	Sig	0.311	0.015	0.005	0.030	0.000	0.000	0.039

Table 11
EP and NEO-FFI
Openness Sub-Factors

		Ana	Str	Soc	Con	Exp	Asr	Flex
O1	Corr.	-0.118	-.362(**)	.300(**)	.519(**)	.251(**)	0.127	.250(**)
	Sig	0.126	0.000	0.001	0.000	0.007	0.108	0.007
O2	Corr.	-0.051	-.340(**)	.364(**)	.348(**)	.256(**)	0.039	.429(**)
	Sig	0.310	0.000	0.000	0.000	0.006	0.351	0.000
O3	Corr.	-0.023	-.303(**)	.553(**)	.342(**)	.637(**)	.385(**)	.443(**)
	Sig	0.411	0.001	0.000	0.000	0.000	0.000	0.000
O4	Corr.	-0.023	-.508(**)	0.132	.381(**)	.204(*)	0.148	.248(**)
	Sig	0.410	0.000	0.099	0.000	0.022	0.074	0.007

Table 12
EP and NEO-FFI
Agreeableness Sub-Factors

		Ana	Str	Soc	Con	Exp	Asr	Flex
A1	Corr	-0.128	-.273(**)	0.148	.228(*)	.178(*)	0.036	.217(*)
	Sig.	0.106	0.003	0.074	0.012	0.041	0.362	0.016
A2	Corr	0.062	.171(*)	-.186(*)	-0.148	-.322(**)	-.316(**)	-0.022
	Sig.	0.274	0.047	0.034	0.075	0.001	0.001	0.414
A3	Corr	-0.082	0.077	.240(**)	-0.009	-0.013	-.201(*)	.314(**)
	Sig.	0.213	0.228	0.009	0.466	0.451	0.024	0.001
A4	Corr	-0.158	0.132	-0.047	-0.148	-.376(**)	-.576(**)	0.063
	Sig.	0.060	0.099	0.323	0.073	0.000	0.000	0.271

Table 13
EP and NEO-FFI
Conscientiousness Sub Factors

		Ana	Str	Soc	Con	Exp	Asr	Flex
C1	Corr.	.233(*)	0.015	.188(*)	0.060	.169(*)	0.155	.212(*)
	Sig	0.011	0.441	0.033	0.280	0.049	0.065	0.019
C2	Corr.	0.116	.543(**)	0.045	-.516(**)	0.027	-0.043	0.049
	Sig	0.130	0.000	0.332	0.000	0.396	0.337	0.318
C3	Corr.	.175(*)	0.017	0.051	-0.003	0.072	0.153	0.166
	Sig	0.043	0.435	0.310	0.487	0.243	0.067	0.052
C4	Corr.	.274(**)	-0.137	.246(**)	0.128	.397(**)	.363(**)	0.158
	Sig	0.003	0.090	0.008	0.105	0.000	0.000	0.061

Table 14
NEO-FFI Main Factors and Neuroticism Sub-factors

		N	E	O	A	C	N1	N2	N3	N4
N	Corr	1	-.199(*)	-0.036	-.348(**)	-.213(*)	.896(**)	.699(**)	.855(**)	.773(**)
	Sig		0.025	0.364	0.000	0.018	0.000	0.000	0.000	0.000
E	Corr	-.199(*)	1	.415(**)	0.079	.302(**)	-.172(*)	0.054	-.217(*)	-.311(**)
	Sig	0.025		0.000	0.220	0.001	0.046	0.299	0.017	0.001
O	Corr	-0.036	.415(**)	1	.216(*)	-0.029	-0.077	0.001	0.036	-0.072
	Sig	0.364	0.000		0.017	0.387	0.226	0.498	0.363	0.241
A	Corr	-.348(**)	0.079	.216(*)	1	0.134	-.233(*)	-.617(**)	-.217(*)	-0.061
	Sig	0.000	0.220	0.017		0.095	0.011	0.000	0.016	0.276

C	Corr	-.213(*)	.302(**)	-0.029	0.134	1	-0.024	-0.084	-.391(**)	-.201(*)
	Sig	0.018	0.001	0.387	0.095		0.409	0.206	0.000	0.024
N1	Corr	.896(**)	-.172(*)	-0.077	-.233(*)	-0.024	1	.538(**)	.669(**)	.658(**)
	Sig	0.000	0.046	0.226	0.011	0.409		0.000	0.000	0.000
N2	Corr	.699(**)	0.054	0.001	-.617(**)	-0.084	.538(**)	1	.481(**)	.243(**)
	Sig	0.000	0.299	0.498	0.000	0.206	0.000		0.000	0.008
N3	Corr	.855(**)	-.217(*)	0.036	-.217(*)	-.391(**)	.669(**)	.481(**)	1	.607(**)
	Sig	0.000	0.017	0.363	0.016	0.000	0.000	0.000		0.000
N4	Corr	.773(**)	-.311(**)	-0.072	-0.061	-.201(*)	.658(**)	.243(**)	.607(**)	1
	Sig	0.000	0.001	0.241	0.276	0.024	0.000	0.008	0.000	

Table 15
NEO-FFI Main Factors and Extraversion Sub-factors

		N	E	O	A	C	E1	E2	E3	E4
N	Corr	1	-.199(*)	-0.036	-.348(**)	-.213(*)	-.259(**)	-0.157	-0.116	-0.086
	Sig		0.025	0.364	0.000	0.018	0.005	0.062	0.129	0.201
E	Corr	-.199(*)	1	.415(**)	0.079	.302(**)	.733(**)	.840(**)	.714(**)	.722(**)
	Sig	0.025		0.000	0.220	0.001	0.000	0.000	0.000	0.000
O	Corr	-0.036	.415(**)	1	.216(*)	-0.029	.515(**)	.322(**)	.245(**)	.206(*)
	Sig	0.364	0.000		0.017	0.387	0.000	0.001	0.008	0.021
A	Corr	-.348(**)	0.079	.216(*)	1	0.134	.409(**)	.206(*)	-.223(*)	-0.119
	Sig	0.000	0.220	0.017		0.095	0.000	0.022	0.014	0.123
C	Corr	-.213(*)	.302(**)	-0.029	0.134	1	.195(*)	0.080	.313(**)	.365(**)
	Sig	0.018	0.001	0.387	0.095		0.027	0.218	0.001	0.000
E1	Corr	-.259(**)	.733(**)	.515(**)	.409(**)	.195(*)	1	.730(**)	.224(*)	.308(**)
	Sig	0.005	0.000	0.000	0.000	0.027		0.000	0.014	0.001
E2	Corr	-0.157	.840(**)	.322(**)	.206(*)	0.080	.730(**)	1	.354(**)	.391(**)
	Sig	0.062	0.000	0.001	0.022	0.218	0.000		0.000	0.000
E3	Corr	-0.116	.714(**)	.245(**)	-.223(*)	.313(**)	.224(*)	.354(**)	1	.536(**)
	Sig	0.129	0.000	0.008	0.014	0.001	0.014	0.000		0.000
E4	Corr	-0.086	.722(**)	.206(*)	-0.119	.365(**)	.308(**)	.391(**)	.536(**)	1
	Sig	0.201	0.000	0.021	0.123	0.000	0.001	0.000	0.000	

Table 16
NEO-FFI Main Factors and Openness Sub-factors

		N	E	O	A	C	O1	O2	O3	O4
N	Corr	1	-.199(*)	-0.036	-.348(**)	-.213(*)	-0.002	-0.050	.191(*)	-.226(*)
	Sig		0.025	0.364	0.000	0.018	0.492	0.314	0.030	0.013
E	Corr	-.199(*)	1	.415(**)	0.079	.302(**)	.246(**)	0.166	.550(**)	.307(**)
	Sig	0.025		0.000	0.220	0.001	0.007	0.052	0.000	0.001
O	Corr	-0.036	.415(**)	1	.216(*)	-0.029	.731(**)	.774(**)	.712(**)	.688(**)
	Sig	0.364	0.000		0.017	0.387	0.000	0.000	0.000	0.000
A	Corr	-.348(**)	0.079	.216(*)	1	0.134	0.141	.297(**)	-0.023	.172(*)
	Sig	0.000	0.220	0.017		0.095	0.084	0.002	0.413	0.046
C	Corr	-.213(*)	.302(**)	-0.029	0.134	1	-.262(**)	0.117	0.139	-0.076
	Sig	0.018	0.001	0.387	0.095		0.005	0.127	0.087	0.231
O1	Corr	-0.002	.246(**)	.731(**)	0.141	-.262(**)	1	.322(**)	.476(**)	.325(**)
	Sig	0.492	0.007	0.000	0.084	0.005		0.001	0.000	0.001
O2	Corr	-0.050	0.166	.774(**)	.297(**)	0.117	.322(**)	1	.405(**)	.442(**)
	Sig	0.314	0.052	0.000	0.002	0.127	0.001		0.000	0.000
O3	Corr	.191(*)	.550(**)	.712(**)	-0.023	0.139	.476(**)	.405(**)	1	.261(**)
	Sig	0.030	0.000	0.000	0.413	0.087	0.000	0.000		0.005
O4	Corr	-.226(*)	.307(**)	.688(**)	.172(*)	-0.076	.325(**)	.442(**)	.261(**)	1
	Sig	0.013	0.001	0.000	0.046	0.231	0.001	0.000	0.005	

Table 17
Correlations NEO-FFI Main Factors and Agreeableness Sub-factors

		N	E	O	A	C	A1	A2	A3	A4
N	Corr	1	-.199(*)	-0.036	-.348(**)	-.213(*)	-.519(**)	-0.088	-.198(*)	-.212(*)
	Sig		0.025	0.364	0.000	0.018	0.000	0.195	0.026	0.019
E	Corr	-.199(*)	1	.415(**)	0.079	.302(**)	.372(**)	-0.073	.200(*)	-.206(*)
	Sig	0.025		0.000	0.220	0.001	0.000	0.238	0.025	0.021
O	Corr	-0.036	.415(**)	1	.216(*)	-0.029	.311(**)	0.026	.275(**)	0.074
	Sig	0.364	0.000		0.017	0.387	0.001	0.401	0.003	0.235
A	Corr	-.348(**)	0.079	.216(*)	1	0.134	.708(**)	.731(**)	.731(**)	.817(**)
	Sig	0.000	0.220	0.017		0.095	0.000	0.000	0.000	0.000
C	Corr	-.213(*)	.302(**)	-0.029	0.134	1	0.132	0.153	.230(*)	-0.061
	Sig	0.018	0.001	0.387	0.095		0.098	0.067	0.012	0.278
A1	Corr	-.519(**)	.372(**)	.311(**)	.708(**)	0.132	1	.251(**)	.461(**)	.382(**)
	Sig	0.000	0.000	0.001	0.000	0.098		0.007	0.000	0.000
A2	Corr	-0.088	-0.073	0.026	.731(**)	0.153	.251(**)	1	.388(**)	.512(**)
	Sig	0.195	0.238	0.401	0.000	0.067	0.007		0.000	0.000
A3	Corr	-.198(*)	.200(*)	.275(**)	.731(**)	.230(*)	.461(**)	.388(**)	1	.492(**)
	Sig	0.026	0.025	0.003	0.000	0.012	0.000	0.000		0.000
A4	Corr	-.212(*)	-.206(*)	0.074	.817(**)	-0.061	.382(**)	.512(**)	.492(**)	1
	Sig	0.019	0.021	0.235	0.000	0.278	0.000	0.000	0.000	

Table 18
Correlations NEO-FFI Main Factors and Conscientiousness Sub-factors

		N	E	O	A	C	C1	C2	C3	C4
N	Corr	1	-.199(*)	-0.036	-.348(**)	-.213(*)	-.377(**)	0.086	-.347(**)	-0.091
	Sig		0.025	0.364	0.000	0.018	0.000	0.201	0.000	0.187
E	Corr	-.199(*)	1	.415(**)	0.079	.302(**)	.364(**)	-0.025	.182(*)	.423(**)
	Sig	0.025		0.000	0.220	0.001	0.000	0.402	0.037	0.000
O	Corr	-0.036	.415(**)	1	.216(*)	-0.029	0.020	-.219(*)	-0.056	.223(*)
	Sig	0.364	0.000		0.017	0.387	0.424	0.016	0.292	0.014
A	Corr	-.348(**)	0.079	.216(*)	1	0.134	.297(**)	0.012	.224(*)	-0.077
	Sig	0.000	0.220	0.017		0.095	0.002	0.455	0.014	0.228
C	Corr	-.213(*)	.302(**)	-0.029	0.134	1	.722(**)	.675(**)	.755(**)	.712(**)
	Sig	0.018	0.001	0.387	0.095		0.000	0.000	0.000	0.000
C1	Corr	-.377(**)	.364(**)	0.020	.297(**)	.722(**)	1	0.167	.568(**)	.504(**)
	Sig	0.000	0.000	0.424	0.002	0.000		0.051	0.000	0.000
C2	Corr	0.086	-0.025	-.219(*)	0.012	.675(**)	0.167	1	.333(**)	.220(*)
	Sig	0.201	0.402	0.016	0.455	0.000	0.051		0.000	0.015
C3	Corr	-.347(**)	.182(*)	-0.056	.224(*)	.755(**)	.568(**)	.333(**)	1	.354(**)
	Sig	0.000	0.037	0.292	0.014	0.000	0.000	0.000		0.000
C4	Corr	-0.091	.423(**)	.223(*)	-0.077	.712(**)	.504(**)	.220(*)	.354(**)	1
	Sig	0.187	0.000	0.014	0.228	0.000	0.000	0.015	0.000	