



## DEVELOPMENT AND VALIDATION OF MULTI -DIMENSIONAL PERSONALITY INVENTORY (MPI)

**A.O Busari**

*Department of Guidance & Counselling  
University of Ibadan, Nigeria  
Mobile no; -234-8088979187  
Email; -olanikebusari@yahoo.com*

### ABSTRACT

*This study was carried out to establish the scientific processes for the development and validation of Multi-dimensional Personality Inventory (MPI). The process of development and validation occurred in three phases with five components of Agreeableness, Conscientiousness, Emotional stability, Extroversion, and intelligence. The overall norm group in the first phase of the research contained 7,560 Participants ,while the second and the third phases had ,2820 and 1000 norm samples respectively. Analyses indicates strong reliability for the items in the five components of MPI. The significant inter- factor correlation coefficients obtained attested to the construct validity of the Inventory. Its usefulness to counsellors, psychologists, researchers and other stakeholders were discussed.*

*Keywords ; - Development , Validation , Personality inventory*

### Introduction

Personality is the particular combination of emotional, attitudinal, and behavioral response patterns of an individual (Coasta & McCrea 1992) . Different personality theorists present their own definitions of the word based on their theoretical positions. Personality can be determined through a variety of tests. This may be done through the Minnesota Multiphasic Personality Inventory (MMPI-2), Rorschach Inkblot test, or the Thematic Apperception Test (TAT) (Joshani & Afshari 2009). The most popular technique is the self-report - a series of answers to a questionnaire that asks people to indicate the extent to which sets of statements or adjectives accurately describe their own behavior or mental state (Lischetzke & Eid 2006)

The study of personality started with Hippocrates' four humours and gave rise to four temperaments (Daniel, Schacter , Gilbert & Wegner 2011). The explanation was further refined by his successor Galen during the second century CE. The "Four Humours" theory held that a person's personality was based on the balance of bodily humours; yellow bile, black bile, phlegm and blood (Strobel ,Tumasian & Sporrle 2011) Choleric people were characterized as having an excess of yellow bile, making them irascible. A high level of black bile was indicative of melancholy and pessimism. Phlegmatic people were thought to have an excess of phlegm, leading to their sluggish, calm temperament. Finally, people thought to have high levels of blood were said to be sanguine and were characterized by their cheerful, passionate dispositions ((Zelenski, Santoro & Whelan 2012).

Anatomical structures located in the brain contribute to personality traits. For instance, the frontal lobes are responsible for foresight and anticipation. In addition, certain physiological functions such as hormone secretion also affect personality. For example, the hormone testosterone is necessary for sociability, affectivity, aggressiveness and sexuality( Daniel ,Schacter, Daniel, Gilbert ,Daniel & Wegner 2011]. Personality is usually broken into components called the Big Five, which are openness to experience, conscientiousness, extroversion, agreeableness, and neuroticism (or emotionality). These components are generally stable over time and appear to be attributable to a person's genetics rather than the effects of one's environment (Holder & Klassen 2010).

To a psychologist, personality is an area of study that deals with complex human behaviour, including emotions, actions, and cognitive (thought) processes. The word personality is used not only in the field of psychology, but can be applied in most of the other fields of day-to-day life. A good deal of research has been done on the topic but no final conclusions have been drawn as regards the nature of personality. Personality is not a fixed state but a



dynamic totality, which is continuously changing due to interaction with the environment (Engler, 2009). The conduct, behaviour, activities, movements and everything else concerning the individual are known as personality. It is the way of responding to the environment; the way in which an individual adjusts with the external environment is personality.

Each individual's characteristically recurring patterns of behaviour are known as personality.

– Personality is that which permits a prediction of what a person will do in a given situation (Cattell & Mead 2007). In the words of Munn, "Personality may be defined as the most characteristic integration of an individual's structure, modes of behaviour, interest, attitude, capacities, abilities, and aptitudes." Woodworth and Marquis define personality as "the total quality of an individual's behaviour as it is revealed in his characteristic habit of thought and expression, his attitudes, interests and his own philosophy of life.

Gordon Allport was an early pioneer in the study of traits, which he sometimes referred to as dispositions. In his approach, central traits are basic to an individual's personality, whereas secondary traits are more peripheral. Common traits are those recognized within a culture and may vary between cultures. Cardinal traits are those by which an individual may be strongly recognized. Since Allport's time, trait theorists have focused more on group statistics than on single individuals. Allport called these two emphases "nomothetic" and "idiographic," respectively. Allport who devoted most of his time for research on personality defines: "personality as the dynamic organization within the individual of those psychological systems that determine his unique adjustment to his environment." This definition is very comprehensive and includes all aspects of an individual's personality. Here, the word 'dynamic' means that personality is undergoing a constant change but is still organized. It constitutes two types of systems: mental and physical, and these two systems interact with the internal and external environments. The word 'determine' emphasizes that it is the psychophysical system, which activates the organisms for action (Grucza & Goldberg 2007).

### **Nature of Personality**

There is nearly unlimited number of potential traits that could be used to describe personality. The statistical technique of factor analysis, however, has demonstrated that particular clusters of traits reliably correlate together. Hans Eysenck has suggested that personality is reducible to three major traits (Hans Eysenck 1990, 1991). Other researchers argue that more factors are needed to adequately describe human personality including humor, wealth and beauty (Block 1995). Many psychologists currently believe that five factors are sufficient (Coasta & McCrea 1992, & Saul Kassin 2003). Personality is a whole rather than a sum of parts. The personality of a person cannot be identified on the basis of his physique or his intellectual level or his character. But the all these elements put together are made to function in harmony which makes his personality. The conduct, behaviour, activities, movements and everything else concerning the individual are known as personality. The way in which an individual adjusts with the external environment is personality. Personality is the result of both heredity and environment: Heredity involves all those physiological and psychological peculiarities, which a person inherits from his parents (Judge, Livingston & Hurst 2012). These peculiarities are transmitted to individual through genes. It is indisputable that heredity determines the difference of sex and it is on this basis that some scientists contend that heredity determines personality because it is the difference of sex, which determines the personality of men and women.

Personality is composed of traits, which are by and large learned or acquired: By the time an individual become a mature personality, the contribution of learning is so prominent that one often misinterpret personality as the equivalent of learning. It is important to note that learning plays a very important role in the making of one's personality. In order to explain the dynamics of one's personality, it is sometimes convenient to refer to the various types of learning, which a person is able to exhibit in his behavioural range (Mottus, 2012).

Personality implies an integration of various traits: All the elements, which are ultimately identified as parts of personality structure, get integrated rather than assembled together.



Thus, the integration of various traits results into a distinct whole which is known as personality of an individual. Personality represents a unique integration of traits so as to differentiate one person from another on the basis of his very quality. The unique way in which individual laugh or smile, weep or cry, talk or lecture, greet or salute becomes the watermark of his /her personality (Harris, 2006).

Personality is a dynamic process: Personality is the dynamic organization within the individual. Here, dynamic means that personality is undergoing a constant change but is still organized. Personality development is a reciprocal relationship between the ways in which a person views his experiences and his actual social and interpersonal experiences. Development of personality is a continuous growth, which occurs because of the inherent tendency toward self-growth on the one hand and our personal, environmental and social experiences on the other hand. Therefore personality can be referred to as a dynamic process (Musek Janet, 2007).

### **Characteristics of Personality**

In psychology, trait theory is an approach to the study of human personality. Trait theorists are primarily interested in the measurement of traits, which can be defined as habitual patterns of behavior, thought, and emotion (Hans Eysenck 1990). According to this perspective, traits are relatively stable over time, differ across individuals (e.g. some people are outgoing whereas others are shy), and influence behavior. Have seen how personality has been variously defined by psychologists, though there are differences in views, but even then all psychologists agree on certain common characteristics. Which includes the fact that : (i) Each individual personality is unique, (ii) Personality is one's total integrated behaviour, (iii) It is all that a person is (iv) personality is a dynamic concept (v) Personality exhibit self - consciousness, (vi) Personality is a social concept.

### **Temperament, character and personality**

Two terms 'temperament' and 'character' are often confused with personality. Some psychologists find no difference between personality and temperament. Temperament can be termed as a system of emotional disposition. This system of emotional disposition represents only the affective side of an individual's personality. Objectively considered, temperament is simply the emotional life of a person (Holder & Klassen, 2010). Moreover individual's temperament is determined by his hereditary make up. Personality is something more than this. These three aspects of mental life- knowledge, feeling and action are equally developed in it. Therefore personality must be taken as being much beyond one's temperament.

The words character and personality are often used as interchangeable expressions. But personality should not be taken as synonymous with one's character. Character is an ethical concept and it has nothing to do in psychology. It represents a moral estimate of the individual, while personality is a psychological concept. It is a more comprehensive term which includes character as one of its constituents. Thus, it could be observed that all these three temperaments, character and personality are intimately related to one another and the first two forms are integral part of the personality.

Hereditary and culture both play an important role in the development of personality. An individual is the by-product of the constant interaction of heredity and environmental influences. The factors, which influence the development of the personality of a person, can be broadly classified into two groups: Here hereditary means biological hereditary, which the child inherits from his forefathers in the form of chromosomes. Hereditary factors determine a person's temperament. This is what makes people look so much like other people. There have been different classifications of temperaments offered for thousands of years, but there is a general agreement that there are four basic temperaments - Depressed, Indifferent, Choleric, and Optimistic. Each person has a blend of two temperaments, one inherited from the father and one inherited from the mother (Carlson Neil 2010).



Genes may not directly influence personality traits, but genes do govern the development of an individual's nervous and endocrine systems. Hence, to the extent that body chemistry affects one's behaviour. It could be argued that genetics influences the personality. Example can be seen in the relationship between \*testosterone and aggression. Men, on average, are more physically aggressive than women. Boys engage in far more roughhouse play than girls. Men also commit 90 percent of all violent crimes (Widiger & Trull 2007).

Environmental factors determine a person's personality with temperament forming the baseline characteristics of that personality. The environmental factors include everything from prenatal influences, the way a person is raised and the outside influences such as location, schooling, friendships, traumas or joys, religious instructions and experiences, political events, significant relationships, etc. They also include personal choices and their consequences. This is what makes everyone unique from everyone else. So, it could be said that hereditary factors basically determine how individual is like each other and environment factors shape the hereditary foundation to make each individual unique and special in the world (Harris 2006).

Personality therefore could be summarised as those thought, feelings, desires, intention and action tendencies that contribute to important aspects of individuality. Personality in a way, comprises the psychological preferences, temperaments, and predispositions that in part, motivate and govern people's behaviour.

Personality assessment is a scientific endeavour which seeks to determine those characteristics that constitute important individual differences in personality to develop accurate measures of such attributes, and to explore fully the consequential meanings of these identified and measured characteristics (Poropat 2009). A vast assortment of personality assessment measures an equally vast collection of personality characteristics. Each assessment, because it is developed according to the author's unique theory/perspective, offers a different approach to personality measurement. Some common elements however exist across almost all approaches. Personality is a combination of internal intangible characteristics and therefore cannot be measured directly. Instead psychologists rely on self-reports of a person's thought, feelings, preference, and or behaviours to assess personality that is, they ask people questions about themselves, assign numerical values to their responses, and use those values to generate a portrait of the person taking the assessment (Norris & Larsen 2007). A variety of factors influence Child development. Heredity guides every aspects of physical, cognitive, social, emotional, and personality development. Family members, peer groups, the school environment and the community influence how child think, socialize, and become self- aware (Bagby, Marshall & Georgiades, 2005).

One of the most widely and scientifically assessment tool for personality is The Big Five Personality traits. This assessment tool consists five broad domains or dimensions of personality that are used to describe human personality. The Big Five Factors are Openness, Conscientiousness, Extraversion, Agreeableness and Neuroticism. These five factors of personality accounts for individual differences in humans (Costa, 1992). It has being able to measure different traits in personality without overlapping. The Big Five Personality traits show consistency in interviews, self- descriptions, and when observed (Daniel ,Schacter, Gilbert &Wegner 2011). Several independent sets of researchers discovered and defined the five broad factors based on empirical, data- driven research. They concluded that the five dimensions are considered to be the underlying traits that make up an individual's overall personality.

Despite the popularity and the assumed effectiveness of the Big Five as instrument of measuring personality traits in humans, observers critique its lexical assumption that the Big five maps out the lexicon of personality itself. According to them, languages are not arbitrary codes that evolve independent of culture but are instead interwoven with cultural assumptions and worldviews. The believed that it is naïve to assume that languages are objective and impartial codes that describe the world around us independent of the culture they are a part of. Another critic against the Big five was that it did not provide adequate



coverage of the normal personality trait domain .It postulates heterogeneous broad traits which are too few in number to enable highly accurate predictions. Finally, the Big Five personality assessment measure was criticized to be culturally tainted.

In order to bridge these gaps the current study therefore engaged in an expanded and altogether more inclusive model of dynamic personality assessment measure. It also intends to provide local and cross-cultural study of personality traits of an individual which is also multi- dimensional in nature to cater for indigenous based personality inventory.

### **Rationale for the Instrument**

There have recently been some arguments over the subject of studying personality in a different culture. Some people think that personality comes entirely from the culture and therefore there can be no meaningful study in cross-culture study. On the other hand, other people believe that some elements are shared by all cultures and an effort is being made to demonstrate the cross-cultural applicability of the five components of personality traits (Zelenski, Santon five & Whelan 2012).

The personality traits are generally stable over time and appear to be attributable to a person's genetics rather the effects of individual's environment. This therefore calls for culture-based and standardised measuring instrument. This researcher decided to develop a multi-dimensional instrument for various personality components. The instrument has been developed to become a research, counselling and clinical tool for assessment. Its development and validation would facilitate the research efforts of educational and counselling psychologists, test and measurement experts, academic clinicians, and a host of other professionals in the field of education.

### **Method**

#### **Item Development**

##### **Phase 1:**

The development of this instrument began in 2009/2010 academic session when the researcher thought of constructing and developing a comprehensive, empirical and data-driven research personality inventory. She started with the generation of items in human personality traits. A total of 765 items were generated initially which were administered on diverse populations of learners in six educational zones of Nigeria.

The item generated covered all the five components of personality traits. In a nutshell, 7560 participants were randomly sampled from secondary and tertiary institutions across the six educational zones of Nigeria. A total of 765 items were generated on the five components of personality traits at this stage.

##### **Phase 2:**

The reliability co-efficient was found to be 0.69 using Guttman Split –half reliability. The researcher then embarked upon a rigorous inter- item analysis to identify the discriminating items using Index of Discrimination Technique. This was carried out by dividing the respondents into two halves, based on their responses to each of the presented components of personality traits. The researcher in doing this was able to identify 317 discriminating items ( $D=317$ ). The remaining 448 items were re-scrutinised and submitted to test and measurement specialists and psychologists to ascertain the qualitative values against the criterion of measure (personality traits). Some of the 448 items were re-constructed, re-phrased, or removed leaving 372 items. This second administration of the items was limited to three educational zones in Nigeria.

*Table 1: Distribution of Respondents by State*

S/N	Zone	State	Number Selected
1.	South East	Enugu State	400
2.		Anambra State	250
3.	South West	Oyo	870
4.		Lagos	680
5.	North West	Kano	370
6.		Katsina	250

Table 1, reveals that 2,820 participants randomly selected were administered with the revised 372 items questionnaires on the five components of personality traits. Out of total of 2,820 copies of the questionnaires only 2,540 (90.1%) copies of the administered questionnaires were retrieved. At this phase the alpha co-efficient on the total value of the items was 0.73.

### Phase 3:

The responses obtained during the second phase of the development of the MPI, was further subjected to qualitative analysis using Item of Discrimination (ID) Technique. Therefore, the 372 items in phase 2 were reduced to 223 which were divided into five components.

These items were also given to test experts and psychologists for validation. The 223 items were further reduced to 168 items that finally made up the MPI. These items were eventually tested on 1000 students in some secondary schools in Ibadan Metropolis using split-half technique.

The five components and the number of items in each of the components are as follows:

S/N	Components	Number of Items
1.	Agreeableness	30
2.	Conscientiousness	30
3.	Emotionality	41
4.	Extroversion	35
5.	General Intelligence	32

### MPI

Multidimensional Personality Inventory (MPI) covers the three domains of operation. (affective, cognitive and psychomotor) which contains five components of Agreeableness, Conscientiousness, Emotionality, Extroversion and Intelligence. The whole inventory has 167 items graded on a 5-point Likert format.



Table 2: Internal consistency values of Agreeableness Subscales

Items	Inter-item correlations R.I (T.I)
1.	.6324
2.	.5206
3.	.3516
4.	.5438
5.	.7317
6.	.6508
7.	.4935
8.	.5760
9.	.3956
10.	.5309
11.	.5717
12.	.4915
13.	.4813
14.	.5309
15.	.2405
16.	.3627
17.	.0554
18.	.3719
19.	.5584
20.	.4150
21.	.4510
22.	.8009
23.	.6631
24.	.51771
25.	.5671
26.	.7333
27.	.6231
28.	.5693
29.	.4375
30.	.5219

Equal Length Spearman –Brown = .5357  
Unequal Length Spearman –Brown = .5357  
Guttman Split – Half = .5269  
Coefficient Alpha = .81001

*Table 3: Internal Consistency Values of Conscientiousness Subscales*

<b>Items</b>	<b>Inter-item correlations R.I (T.I)</b>
1.	.5671
2.	.6779
3.	.7743
4.	.8211
5.	.7009
6.	.7343
7.	.3237
8.	.1697
9.	.2893
10.	.4919
11.	.8332
12.	.7761
13.	.4284
14.	.5563
15.	.5739
16.	.0699
17.	.4313
18.	.6367
19.	.5119
20.	.4827
21.	.2319
22.	.4687
23.	.0831
24.	.4992
25.	.7596
26.	.5738
27.	.8142
28.	.6714
29.	.5535
30.	.6213

*Equal Length Spearman –Brown = .8549*

*Unequal Length Spearman –Brown = .8549*

*Guttman Split – Half = .8475*

*Coefficient Alpha = .7831*



Table 4: Internal Consistency Values of Emotional Stability Subscales

Items	Inter-item correlations R.I (T.I)
1.	.4873
2.	.6195
3.	.4313
4.	.7536
5.	.4089
6.	.5117
7.	.5239
8.	.4672
9.	.4713
10.	.5934
11.	.6341
12.	.4978
13.	.5363
14.	.5481
15.	.4897
16.	.6535
17.	.7179
18.	.7067
19.	.4625
20.	.5969
21.	.6535
22.	.4867
23.	.7319
24.	.7214
25.	.6315
26.	.4363
27.	.4081
28.	.5663
29.	.5175
30.	.5831
31.	.4962
32.	.4773
33.	.7832
34.	.8315
35.	.6789
36.	.5344
37.	.6247
38.	.5125
39.	.5737
40.	.4898
41.	.6323

Equal Length Spearman –Brown = .8731  
 Unequal Length Spearman –Brown = .8731  
 Guttman Split – Half = .8617  
 Coefficient Alpha = .8839



*Table 5: Internal Consistency Values of Extroversion Subscales*

<b>Items</b>	<b>Inter-item correlations R.I (T.I)</b>
1.	.4328
2.	.5321
3.	.6425
4.	.6312
5.	.7320
6.	.7453
7.	.4831
8.	.4945
9.	.5346
10.	.5432
11.	.7313
12.	.6962
13.	.6366
14.	.4032
15.	.6131
16.	.7223
17.	.3161
18.	.4319
19.	.4553
20.	.6260
21.	.2319
22.	.7617
23.	.7003
24.	.8121
25.	.4329
26.	.4930
27.	.4737
28.	.5626
29.	.5313
30.	.6212
31.	.6775
32.	.4759
33.	.3618
34.	.5769
35.	.6213

Equal Length Spearman –Brown = .7699  
Unequal Length Spearman –Brown = .7699  
Guttman Split – Half = .7531  
Coefficient Alpha = .8377



Table 6: Internal Consistency Values of General Intelligence Subscales

Items	Inter-item correlations R.I (T.I)
1.	.5323
2.	.6165
3.	.5493
4.	.5625
5.	.4239
6.	.4103
7.	.4737
8.	.7210
9.	.7111
10.	.6312
11.	.5434
12.	.5080
13.	.4006
14.	.4218
15.	.7919
16.	.3415
17.	.4632
18.	.5939
19.	.6217
20.	.5101
21.	.5728
22.	.5126
23.	.4730
24.	.4411
25.	.6329
26.	.5148
27.	.7323
28.	.7145
29.	.7601
30.	.5317
31.	.5014
32.	.4872

Equal Length Spearman –Brown = .8173  
 Unequal Length Spearman –Brown = .8173  
 Guttman Split – Half = .8005  
 Coefficient Alpha = .8532

Table 7: Summary of Reliability Analysis for the Subscales and the Scale as a Whole

S/N	Summary of the Subscales	Reliability Coefficients For Each Subscales
1.	Agreeableness	.8001
2.	Conscientiousness	.7831
3.	Emotional Stability	.8839
4.	Extroversion	.8377
5.	General Intelligence	.8532
	Multi –dimensional Personality Inventory (MPI)	.8316



Table 8: Inter Factor Correlation

FACTOR	1	2	3	4	5
1.	1.00				
2.	.43526	1.00			
3.	.5241	.2611	1.00		
4.	.2735	.39251	.3217	1.00	
5.	.3719	.4161	.4413	.6230	1.00

P < 0.05 for inter – correlation

### Discussion

The results obtained indicate that the Multidimensional Diagnostic Personality Inventory (MPI) is a multi-famous measure of personality traits with reliable subscales (see tables 1-7). A cursory examination of tables 1-8 shows that each of the items on the subscales correlates significantly with the criterion (personality traits).

The information depicted on Table 8 demonstrates that each of the subscales correlates significantly with the whole Inventory. These are evidences that there is high internal consistency among the items and subscales. On the basis of this, it is suffice to conclude that the inventory has construct validity and that it measures what it is purported to measure.(I.e. personality traits)

The co-efficient reliability values, which were obtained from the analysis, attest to the scientific developmental processes to which (MPI) was subjected. During the first phase, not less than 750 items were generated with a strong theoretical and conceptual background. The reliability of the five subscales of (MPI) was further amplified using Guttman Split-Half Reliability Coefficient Statistical Tool. The results reveal that all subscales with the exception of conscientiousness had above .80 reliability co-efficient.

Finally, MPI needs to be used on diverse situations such as in academic, company, placement in schools and factories. Again the norms established in this study could be widened with constant use.

### Conclusion

The Multi-dimensional Personality Inventory (MPI) can be administered by employers to job applicants. It is believed that the MPI traits are predictive of future performance outcomes. Job outcome measures include: job and training proficiency and personnel data Mount and Barrick (1998). There have also been studies that link national innovation to openness to experience and conscientiousness. Those who express these traits have showed leadership and beneficial ideas towards the country of origin Fairweather (2012)

### References

- Block, J. (1995). A contrarian view of the five-factor approach to personality description. *Psychological Bulletin*, 117, 187– 215.
- Block, J. (2010). "The five-factor framing of personality and beyond: Some ruminations". *Psychological Inquiry*, 21 (1): 2–25.
- Bagby, R. M.; Marshall, M. B.; Georgiades, S. (2005). "Dimensional personality traits and the prediction of DSM-IV personality disorder symptom counts in a nonclinical sample". *Journal of Personal Disorders* 19 (1): 53–67.  
*doi:10.1521/pedi.19.1.53.62180. PMID 15899720.*
- Carlson, Neil, (2010). *Psychology the Science of Behaviour*, p.438. Pearson Canada, United States of America. ISBN 978-0- 205-64524-4
- Cattell, H.E.P, and Mead, A.D. (2007). The 16 Personality Factor Questionnaire (16PF). In G.J. Boyle, G. Matthews, and D.H. Saklofske (Eds.), *Handbook*



- of personality theory and testing: Vol. 2: Personality measurement and assessment.
- Costa, P.T., Jr. & McCrae, R.R. (1992). Revised NEO Personality Inventory (NEO-PI-R) and NEO Five-Factor Inventory (NEO-FFI) manual.
- Costa, P. T., & McCrae, R. R. (1992). Four ways five factors are basic. *Personality and Individual Differences*, 13, 653–665.
- Daniel L. Schacter, Daniel T. Gilbert, Daniel M. Wegner.(2011). *Psychology* second edition. New York: Worth Publishers
- De Feyter, Tim; Ralf Caers, Claudia Vigna, Dries Berings (2012). Unraveling the impact of the Big Five personality traits on academic performance: The moderating and mediating effects of self-efficacy and academic motivation *Learning and Individual Differences*, 22: 439–448.
- De Fruyt, F.; De Clercq, B. J.; de Wiele, L.; Van Heeringen, K. (2006). The validity of Cloninger's psychobiological model versus the five-factor model to predict DSM-IV personality disorders in a heterogeneous psychiatric sample: domain facet and residualized facet descriptions". *Journal of Personality*, 74 (2): 479–510. [doi:10.1111/j.1467-6494.2006.00382.x](https://doi.org/10.1111/j.1467-6494.2006.00382.x). [PMID 16529584](https://pubmed.ncbi.nlm.nih.gov/16529584/).
- Engler, B. (2009). *Personality Theories: Eighth Edition*. Belmont, CA: Wadsworth, Cengage Learning.
- Fairweather, J. (2012). Personality, nations, and innovation: Relationships between personality traits and national innovation scores. *Cross-Cultural Research. The Journal of Comparative Social Science*, 46, 3–30.
- Grucza, R.A.; Goldberg, L.R. (2007). "The comparative validity of 11 modern personality inventories: Predictions of behavioral acts, informant reports, and clinical indicators". *Journal of Personality Assessment*, 89 (2): 167–187. [doi:10.1080/00223890701468568](https://doi.org/10.1080/00223890701468568). [PMID 17764394](https://pubmed.ncbi.nlm.nih.gov/17764394/)
- Hans Eysenck, (1967). *The biological basis of personality*. Springfield, IL: Thomas.
- Hans Eysenck, (1991). Dimensions of personality: 16: 5 or 3? Criteria for a taxonomic paradigm. *Personality and Individual Differences*, 12, 773–790.
- Harms, P. (2012). "An evaluation of the consequences of using short measures of the Big Five personality traits". *Journal of Personality and Social Psychology*, 102, : 874–888.
- Harris, J. R. (2006). *No two alike: Human nature and human individuality*. WW Norton & Company.
- Holder, M. D., & Klassen, A. (2010). Temperament and happiness in children. *Journal of Happiness Studies*, 11, 419-439. [DOI 10.1007/s10902-009-9149-2](https://doi.org/10.1007/s10902-009-9149-2)
- Joshanloo, M., & Afshari, S. (2009). Big five personality traits and self-esteem as predictors of life satisfaction in Iranian muslim university students. *Journal of Happiness Studies*, 12, 105-113. [DOI 10.1007/s10902-009-9177-y](https://doi.org/10.1007/s10902-009-9177-y)
- Judge, T.; Livingston, BA; Hurst, C (2012). "Do nice guys—and gals—really finish last? The joint effects of sex and agreeableness on income". *Journal of Personality and Social Psychology*, 102 (2): 90–407. [doi:10.1037/a0026021](https://doi.org/10.1037/a0026021). [PMID 22121889](https://pubmed.ncbi.nlm.nih.gov/22121889/).
- Klimstra, T. (2012). "Personality traits and educational identity formation in late adolescents: Longitudinal associations and academic progress". *Journal of Youth and Adolescence*, 41: 341– 356.
- Klimstra, Theo; KoenLuyckx, VeerleGermeijs, WimMeeus, Luc Goossens (2007). School of Psychology and Child and Adolescent Development.
- Komarraju, Meera (2011). The Big Five personality traits, *Learning styles, and Academic Achievement*. 51. 472–477.
- Komarraju, M.; Karau, S. J.; Schmeck, R. R.; Avdic, A. (2011). The big five personality traits, learning styles, and academic achievement. *Personality*



- and Individual Differences, 51 (4): 472–477. doi:10.1016/j.paid.2011.04.019.
- Lischetzke, T., & Eid, M. (2006). Why extraverts are happier than introverts: The role of mood regulation. *Journal of Personality*, 74, 1127-1162.  
DOI: 10.1111/j.1467-6494.2006.00405.x
- Lucas, Richard E. & Donnellan, M. Brent (2009). If the person-situation debate is really over, why does it still generate so much negative affect?". *Journal of Research in Personality*, 43 (3): 146–149.
- McGhee, R.M., Ehrlert, D.J., & Buckhalt, J. (2007). *Five Factor Personality Inventory – Children (FFPI-C)*. Austin, TX: Pro-Ed.
- Mehta, Penkak (2012). "Personality as a predictor of burnout among managers of manufacturing industries..". *Journal of the Indian Academy of Applied Psychology* 32: 321–328.
- Mottus, R. (2012). Correlates of personality trait levels and their changes in very old age: The lothian birth cohort 1921. *Journal of Research in Personality*
- Musek, Janet (2007). "A general factor of personality: Evidence for the Big One in the five-factor model". *Journal of Research in Personality*, 41: 1213–1233. doi:10.1016/j.jrp.2007.02.003.
- Norris, CJ; Larsen, JT; Cacioppo, JT (2007). "Neuroticism is associated with larger and more prolonged electrodermal responses to emotionally evocative pictures". *Psychophysiology*, 4 (5): 823–826.  
doi:10.1111/j.1469-8986.2007.00551.x.PMID 17596178
- Poropat, A. E. (2009). "A meta-analysis of the five-factor model of personality and academic performance". *Psychological Bulletin*, 135(2): 322–338.  
doi:10.1037/a0014996.
- Quercia, D. (2012). *The personality of popular facebook users*. ACM CSCW  
<http://www.cl.cam.ac.uk/~dq209/publications/quercia12personality.pdf>.
- Quercia, D. (2012). *Our Twitter Profiles, Our Selves: Predicting Personality with Twitter*. IEEE SocialCom2011  
<http://www.cl.cam.ac.uk/~dq209/publications/quercia11twitter.pdf>.
- Roberts, B. W.; Mroczek, D. (2008). "Personality Trait Change in Adulthood". *Current Directions in Psychological Science* 17 (1): 1–35.  
doi:10.1111/j.1467-8721.2008.00543.x.PMC 2743415.PMID 19756219.
- Schmitt, D. P.; Realo, A.; Voracek, M.; Allik, J. (2008). "Why can't a man be more like a woman? Sex differences in Big Five personality traits across 55 cultures". *Journal of Personality and Social Psychology*, 94 (1): 168–182.  
doi:10.1037/0022-3514.94.1.168. PMID 18179326.
- Singh, A. K. (2012). "Does trait predict psychological well-being among students of professional courses?". *Journal of the Indian Academy of Applied Psychology*, 38 (2), 234–241.
- Soto, C. J.; Gosling, Potter (Feb 2011). "Age differences in personality traits from 10 to 65: Big Five domains and facets in a large cross-sectional sample". *Journal of Personality and Social Psychology* 100 (2): 300–348.  
doi:10.1037/a0021717. PMID 21171787. Retrieved 23 February 2012.
- Strobel, M., Tumasjan, A., & Sporre, M. (2011). Be yourself, believe in yourself, and be happy: Self-efficacy as a mediator between personality factors and subjective well-being. *Scandinavian Journal of Psychology*, 52, 43-48.  
DOI: 10.1111/j.1467- 9450.2010.00826.x
- Thompson, E.R. (2008). "Development and validation of an international English big-five mini-markers". *Personality and Individual Differences* 45 (6): 542–548. doi:10.1016/j.paid.2008.06.013.
- Weiss, A; King, JE; Hopkins, WD (2007). "A Cross-Setting Study of Chimpanzee (Pan troglodytes) Personality Structure and Development: Zoological Parks and Yerkes National Primate Research Center". *American journal of primatology* 69 (11): 1264–77.



[doi:10.1002/ajp.20428](https://doi.org/10.1002/ajp.20428).[PMC 2654334](https://pubmed.ncbi.nlm.nih.gov/2654334/).[PMID 17397036](https://pubmed.ncbi.nlm.nih.gov/17397036/).

Widiger, T.A. & Trull, T.J. (2007). "Plate tectonics in the classification of personality disorder: Shifting to a dimensional model". *American Psychologist*, **62** (2): 71 – 83. [doi:10.1037/0003-066X.62.2.71](https://doi.org/10.1037/0003-066X.62.2.71).  
[PMID 17324033](https://pubmed.ncbi.nlm.nih.gov/17324033/).

Zelenski, J.M., Santoro, M.S., & Whelan, D.C. (2012). Would introverts be better off if they acted more like extraverts: Exploring the emotional and cognitive consequences of counter-dispositional behavior. *Emotion*, **12**, 290-303.  
[DOI: 10.1037/a0025169](https://doi.org/10.1037/a0025169)

Zhang, Li-fang (2006). "Measuring thinking styles in addition to measuring personality traits?". *Personality and Individual Differences*, **33**: 445–458.