

Taxonomy: The Necessary Art of Classification and a Valid Personality Inventory (NEO PI-R)

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*All real knowledge which we possess
depends on methods by which
we distinguish the similar from the dissimilar.*
— Carolus Linnaeus

Executive Summary

Popular sometimes-successful psychological methods may not work for all people and may actually harm some of them. To counter this, the subject of this paper is classification that can assist us in targeting programs to those people they help, while sparing those not suitable to the treatment. Personality will be the method discussed to “distinguish the similar from the dissimilar.” Targeting appropriate audiences may not be easy because popular mavens often present one-size-fits-all solutions to all problems for all people in all situations. Aggressive and convincing consultants, trainers, gurus, and other self-interested salespeople tout the program’s value. Sometimes in-house personnel are certified to apply a particular treatment and become resident advocates for its universal application. Indiscriminate application, however, may prove to be inadvisable.

Carolus Linnaeus was an eighteenth century Swedish botanist who introduced modern scientific classification, or taxonomy, to biology. Known by many as the “Father of Taxonomy,” his system, with some changes, remains in place today. He started his career by classifying the sex of plants, stamens and pistils, or males and females, and then constructed a comprehensive organizing system.

The Linnaeus classification hierarchy consists of Kingdoms, Classes, Orders, Genera (plural of genus), and Species. Humans were classified to the genus and species *Homo sapiens*. Below the species level, Linnaeus sometimes recognized varieties. Our challenge is to determine appropriate ways to sub-classify human beings because we are not only interested in biological differences. The plural for “way” is used because how we group people depends upon the situation at hand.

Varieties of *Homo sapiens*

The purpose of this article is not to discuss the taxonomy of plants. The challenge for leaders and managers is to determine if there are pertinent groupings between the total human species and individuals that need to be recognized. This may be a necessary but not necessarily an easy task.

For convenience, corporations and proponents of generalized programs prefer to limit program variations. The attractions of treating everyone within the corporation with the same programs are many. One program can use a “cookbook” approach and not require as broad a level of knowledge in the coordinator, facilitator, or leader. In most cases it may be less expensive.

Therefore, to do otherwise needs to be justified. So, herein, reasons for considering as few as two to no more than a few varieties of human beings within an organization are suggested. An excellent personality inventory is considered to accomplish differentiation when suitable and where it becomes necessary. To build the case, first the species as a whole will be considered and then reasons to consider variations. People are not all the same so variations need be considered. Or: **one-size-does-not-fit all—pragmatic considerations need to determine for whom they apply.**

Inclusiveness

The *species* level is where Industrial and Organizational Psychologists, Sociologists, and Social Psychologists usually focus their work. Their professional charge is to deal with statistical norms and not individuals, per se. Theirs is a top-down approach. As a Clinical Psychologist, my focus is on individuals and a bottom-up approach to group behavior.

In recent years, of course, academics have been giving due consideration to sex, race, ethnic, and political correctness issues. Diversity is persistently emphasized by colleges and universities.

Conglomerate work is important because pragmatic concerns require that, when working with cultures and large organizations, people need to be consolidated to economically and effectively develop overall understanding and efficient programs. Nonetheless, honest brokers realize that individuals and subgroups may be exceptions to the general rules and sometimes require special considerations. Professionals must be aware of the limitations of over-inclusiveness and accept the need to subdivide populations into sub-groups, at least in some situations.

Improper conglomeration

Treating everybody the same might not be worrisome if the treatment is benign for those who are not suitable to the approach. A process that just wastes time and money but is physically and mentally innocuous is not my concern here. The problem is some popular healing endeavors have been found to cause harm to people that are not in accord with its methods. The Hippocratic edict *primum non noceri* (first, do no harm) is reason to consider who to include and whom to exclude in a popular treatment model.

Unfortunately, there are many advocates with good intentions or political or economic interests that do not recognize the limitations of over-inclusiveness. They paint with too broad a brush and everyone is subjected to the same program *and* expected to react the same way. Deviation from the prescribed path may be considered pathological.

For example, many are familiar with Dr. Elizabeth Kubler-Ross's five sequential grieving stages of Denial, Anger, Bargaining, Depression, and Acceptance. They were considered *universal* survivor emotions. Her well-known example represents the *stage theory of grief* that is still being promoted in medical schools, although considerable evidence exists contradicting the paradigm.

Some writers on bereavement considered people who did not adhere to this or a similar model *abnormal*. This belief was generally accepted knowledge for the latter part of the 20th century. People who did not grieve were considered pathological or extraordinarily stoic. Allowance was not made for well-adjusted people who did not experience traditional grief reactions and for those who do not ever satisfactorily recover.¹ Recovery is an integral part of the stages model. To counter this, consideration should now be given to considering those who mourn differently as "normal" resilient² people.

Practicable classification

While large organizations cannot efficiently adopt corporate programs that treat everybody as an individual, reasonable and practicable ways of classifying and grouping persons are necessary. Like gender or sex, the classification needed is dependent upon the application.

What is appropriate for one purpose is not necessarily suitable for another situation. When and how to group people is dependent upon what is being done. It is partially art that often can and should be validated with unbiased research. Sometimes, however, it is politics that drives a decision, such as shown by the "gender wars."

A case in point, much press was given to the case of President Larry Summers of Harvard. Summers lost his job for speculating that fewer females were in the math and science fields because of cognitive differences between the sexes.. He was discussing natural inclinations within the normal distributions of females and males. His opponents were pointing out exceptional individuals and using emotional arguments.

Statistically based exclusion of persons can be unfair if it discriminates against a talented person with a cherished goal. This happened when women were felt to not have the spacial ability to pursue architecture.

Reports about extraordinary individuals are not that unusual because it is the basis of morning, evening, and nightly news analyses broadcast each day. Advocates find an exception or two or three and develop a story around him, her, or them; the more heartrending the better. But *anecdotes are not statistics and outliers are not averages.*

Understandable statistics

To counter statistical misuse, the world needs a good education in basic understanding of statistics, without getting mired in advanced and convoluted mathematics. Too often introductory courses are taught by brilliant mathematicians that are fanicated and absorbed in analytical elegance and not teaching comprehension of important concepts to neophytes. I taught an “understandable statistics” course parallel to other 101 offerings and required the essential math and several students who worked hard understood the concepts. The television show “Numb3rs” edifies the approach recommended to explain notions by using common examples to explain complex mathematical concepts. Educators call this apperception.

For over a decade I had an excellent intuitive understanding of statistics that I learned in the mid-1960s in my MBA program. In the late 1970s, I matriculated in a graduate statistics program that was heavily mathematical and abstract. It did not foster useful intuitive appreciation of statistics.

I believe we need to educate the general public, or at least leaders and manages, in the beneficial aspects of basic statistical concepts, so they do not get caught up in mass hysteria based upon distribution tails, outliers, and maverick data. Over inclusion and improper generalization is a basis of fads, fashions, and movements, not good strategic management and leadership.

Thus, we have to be aware that statistics are the conglomeration of persons that have a characteristic of interest that measure higher and lower than the averages (mean, median, or mode). The user needs to know whether individuals or group norms are appropriate for intended purposes.

Psychological movements

Transferring from the hard science of engineering to the soft science of psychology, I was unaccustomed to the intensity of passion for psychological movements that enveloped so many in the field—*at least for a time*. Since my beginning study of clinical psychology, after a quarter-century career in engineering, there have been concurrent movements that have initiated this article.

In the early 1990s the rage was recovered memories and satanic ritual abuse. The *Courage to Heal* book attributed a host of female (and male) problems to forgotten memories of parental abuse, usually sexual, mostly by males. It was the main paradigm until the False Memory Syndrome Foundation effectively countered the movement.³ While there were undoubtedly abused people, therapists were assisting in planting memories. This illustrates how a therapist’s agenda and individual unsubstantiated stories combined to form a movement.

In the late 1990s there was a partial demise of Project *D.A.R.E.*, an in-school alcohol and drug education for children. My local police chief dropped the program a decade ago because literature based upon empirical research showed the method to be ineffective. (Several Internet sources can fill in the details on findings about the program.) Regardless, recently I saw “*D.A.R.E.*” painted on a police car in an adjoining district. *Once an idea takes hold it is difficult to counter it with scientifically derived empirical evidence.*

Another movement, often mandated, for the past several years there has been a debate over the efficacy of **Critical Incident Stress Debriefing (CISD)**. Several extensive academic articles have pointed out the limitations of the method.⁴ The advocates for the program and their acolytes aggressively counter them. CISD’s founder, Jeff Mitchell, said: “Every single study author of a negative study did it wrong.”⁵ This in an audacious claim to make against several scholars who published in refereed journals. Mitchell’s opening paragraph in a rebuttal article published in the *Australian Psychologist* included: “The article is replete with inaccuracies, misinterpretations, and distortions” and concluded with the “article, unfortunately, only adds to the cacophony of misinformation about crisis intervention and the field of Critical Incident Stress Management.”⁶ Aggressive defensive marketing was used to counter empirical studies with scurrilous attacks.

If the method has training and certification programs it produces many supporters. With CISD missionary zealots abound because its organization certifies thirty to forty thousand new apostles each year who attest to and sell its value.

A positive outcome of the work questioning the CISD movement is recognition and some acceptance that there are people who are *resilient*.² Surveys after 9/11 showed that a significant portion of the population is resilient. Studies have shown that stalwart individuals handle tragedy differently from the vulnerable. For them a forced debriefing may be detrimental. Therefore, it behooves us to at least differentiate the psychologically hardy from the emotionally susceptible.

This brings us to a need for means and methods of classifying *Homo sapiens*. Personality is a useful way to differentiate groups of humans for many purposes. There are several self-report tests that are reliable. A couple of instruments will be discussed and one recommended.

Common Groupings

Two methods that are commonly used to classify people are gender or sex and horoscopes. While astrology is not considered scientific it is followed by many people. Advocates swear that “Signs” accurately describe people. Our purpose here is not to argue the validity of methods but to illustrate systematic classification of humans by apparent data.

Two Groups. Gender or sex is a common way to divide people into two groups. Some studies accept the division as making sense, such as, those involving testosterone or estrogen and prostate cancer or breast cancer. Other studies test each group separately and if there is no difference for the subject of interest all the subjects are combined.

MALES MEN ♂	FEMALES WOMEN ♀
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As with sex and gender, it is relatively straightforward to classify people into one of the 12 groups by using their birth date.

Twelve Groups. Astrology, while not embraced by scientific psychology, nicely illustrates popular categories of personality. Most people are generally familiar with horoscopes. For many, the Horoscope competes with Comics and Obituaries as the first section read in the daily newspaper. Each day papers print a brief description of how the stars and planets are going to influence the day for each sign of the zodiac. The twelve signs and selection criteria are:

AQUARIUS (Jan. 21-Feb. 19)	PISCES (Feb. 20-Mar.20)	ARIES (Mar. 21-Apr. 20)
TAURUS (Apr. 21-May 21)	GEMINI (May 22-June 21)	CANCER (June 22-July 23)
LEO (July 24-Aug. 23)	VIRGO (Aug. 24-Sept. 23)	LIBRA (Sept. 24-Oct. 23)
SCORPIO (Oct. 24-Nov. 23)	SAGITTARIUS Nov. 23-Dec. 21)	CAPRICORN (Dec. 22-Jan. 20)

Serious students of astrology complain that the newspaper accounts are simplistic. An expert astrologer needs to consider the precise position of the stars and planets at the exact time and place of a subject's birth. Today, computers do the necessary calculations relating to the positioning of heavenly bodies and plots their relationship to each other and to people born on earth.

It is important to note that, whatever one's personal beliefs about astrology, it provides a **theory** that *explains* and *predicts* human behavior. It is based on geography and time and the influence cosmic forces have on persons at the moment of his or her birth. The cosmos is considered orderly and harmonious as are the people born into this universe. Orderliness and predictability are important for a personality theory to explain and predict events.

Myers-Briggs Type Inventory

Sixteen Groups. The most popular systematic way of psychologically classifying people is the Myers-Briggs Type Indicator (MBTI). Millions of copies of this personality test have been taken in community and church groups, counseling centers and management workshops, and elsewhere. Military officers are given the MBTI in many, if not all, command schools. Many human relations (HR) directors give it to their employees and school counselors introduce it to students.

People are classified on Extroversion vs. Introversion (E vs. I), Intuition vs. Sensing (N vs. S), Thinking vs. Feeling (T vs. F), and Perceiving vs. Judging (P vs. J). Sixteen categorical groups are formed from these bipolar opposites:

ENTP	ESTP	INTP	ISTP
ENTJ	ESTJ	INTJ	ISTJ
ENFP	ESFP	INFP	ISFP
ENFJ	ESFJ	INFJ	ISFJ

(For those who want more than this brief coverage, the online encyclopedia, Wikipedia, and other Web sites nicely elaborate the MBTI.)

Sixteen “boxes” describe us and the rest of them but have limited value in selection and application programs. Originally, some advocated that it be used for employment counseling but empirical evidence did not support job placement. It was emphasized in the formal training that I received to not use the instrument in hiring and work assignment. This is a distinction that may not be appreciated by those committed to the MBTI. To efficiently classify people, we need something that has predictive capabilities. Nevertheless, it remains a popular test with human resource personnel.

The argument is specious that it is valued because people like the test and attest to its accuracy. *No matter how positive, customer satisfaction is not validation.* There is also a large following for astrology that classifies people into 12 “signs.” Personal testimonials, opinions, and anecdotes are not science.

The MBTI is an easy to understand and useful instrument that helps different personality types get along. Persons gain some insight that differences exist between her or him and others. It is a good non-threatening way to show *people are different*. Fortunately, in the last generation a usable valid test has garnered significant support.

NEO PI-R Five-Factor Model of Personality

Dimensional Profiles. Four of its factors are similar, but not identical, to the MBTI. They are Neuroticism (N), Extraversion [*sic*] (E), Openness (O), Agreeableness (A), and Conscientiousness (C). Unlike the MBTI where the types are *categorical* (E or I, N or S, T or F, and J or S), the NEO PI-R is *dimensional*. Each of the five factors is sub-divided into six facets, shown below:

PERSONALITY DOMAINS	Six Facets of Domains		
NEUROTICISM (N)	N1. Anxiety	N2. Angry Hostility	N3. Depression
	N4. Self-Consciousness	N5. Impulsivity	N6. Vulnerability
EXTRAVERSION (E)	E1. Warmth	E2. Gregariousness	E3. Assertiveness
	E4. Activity	E5. Excitement Seeking	E6. Positive Emotions
OPENNESS TO EXPERIENCE (O)	O1. Fantasy	O2. Aesthetics	O3. Feelings
	O4. Actions	O5. Ideas	O6. Values
AGREEABLENESS (A)	A1. Trust	A2. Straightforwardness	A3. Altruism
	A4. Compliance	A5. Modesty	A6. Tender-Mindedness
CONSCIENTIOUSNESS (C)	C1. Competence	C2. Order	C3. Dutifulness
	C4. Achievement Striving	C5. Self-Discipline	C6. Deliberation

The following table are the descriptions of the five factors. The facet names are reasonably self-explanatory:

Neuroticism versus emotional stability refers to a tendency to worry, feel insecure, and to be self-conscious, impulsive, and temperamental. Essentially, the trait deals with the negative effects of emotionality, not positive associations to feelings and sensitivity.

Extraversion or surgency is different from the MBTI extroversion and indicates an affectionate, fun-loving, friendly, sociable, outgoing, and talkative nature (note spelling difference).

Openness to experience people are imaginative, original, daring, and have broad interests. There low correlation with intelligence, but this scale clearly defines a factor separate from intelligence.

Agreeableness versus antagonism is better considered from its negative pole. Machiavellianism, narcissism, vindictive arrogance, skepticism, and distrust are associated with low Agreeableness.

Conscientiousness versus undirectedness is associated with dutiful, hardworking, ambitious, persevering, energetic people who are perhaps moralistic.

Dimensional means levels of N, E, O, A, and C are measured and converted to a T-Scale with the “average” value of 50. Values above 75 and below 25 are considered extreme. Normal is 45 to 55. It is basically a scoring of a normal distribution. These are values derived by comparing against population norms.

Deviations above and below the average are interpreted. These are compared against normalized distributions. The magnitude of differences is related to standard deviations. Cutoffs need to be determined for inclusion and exclusion in a group of interest. Usually, extreme values are worthy of special consideration.

Within each of the five factors is six facets that further define personality, as shown and defined in the in the tables above. Groupings will be based upon cutoff values that need to be determined. For example, for many situations high innate emotionality, measured by Neuroticism, differentiates between persons that are highly susceptible to adverse stress reactions.

History of the instrument

The NEO PI-R has a relatively short history, having begun in 1978 with three factors: Neuroticism (N), Extraversion (E), and Openness (O). In 1983, Agreeableness (A) and Conscientiousness (C) were added. The NEO PI was introduced in 1985. In 1990, the NEO PI-R revision had completed A and C facet scales and minor modifications to the N, E, O facet items. In 1992, Costa and McCrae published the Professional Manual for the NEO Personality Inventory–Revised.⁷ The test manual provides much reliability and validity data.

The NEO was originally conceived as an inventory of normal personality. This has helped to give it public acceptance. An earlier excellent personality inventory, the Minnesota Multiphasic Personality Inventory (MMPI), is hampered by its psychopathology foundation, besides being very

long. It was originally constructed by using mental health designations. Many who heard about the MMPI are reluctant to take the test because they think it implies mental illness. Changing names of factors from descriptors to numbers (e.g., paranoia to Scale 6 and schizophrenia to Scale 8) did not solve the public relations problem. Such negative associations do not hinder the MBTI and NEO PI-R and they are fun to take. Interesting positive descriptive reports can be computer generated and distributed to the subjects.

The NEO PI-R is a questionnaire-based instrument comprised of 240 questions, rated on a five-point Likert-type scale and takes 30 to 40 minutes to complete. There are shorter versions of the test. Qualification for administrators who give the MBTI and NEO PI-R are similar. An advanced degree is not required. During the decade of the 1990s its results were validated across many domains and it is now generally accepted as a worthwhile personality describer.

Having a useful tool, however, does not guarantee usable results. There needs to be an understanding of inherent strengths and limitations of instruments and experimental designs.

Discussion

The NEO PI-R has been used to determine correlations for police officer competence, person-to-job fit, personality disorders, psychopathology, civilian and armed forces officer ability. My dissertation evaluated the leadership performance of student cadre at a civilian military college. Considerable progress has been made toward deriving factors and facets that help selection of individuals for particular situations. The major caveat is to consider specific applications and the environment within which a person works.

The need for classification has been advocated because of harm done by blatant conglomeration. Too often, comprehensive movements are only supported by good intentions and unsubstantiated anecdotes and testimonials.

Drawing conclusions based upon erroneous use of statistics needs to be counteracted by an appreciation of distributions and outliers. Unfortunately, an attempt to counteract emotion with science is a difficult job.

The MBTI has been popular and long-provided a basis for helping those who take the test appreciate that *people are different*. Nevertheless, it does not have predictive value in practice. Fortunately, the NEO PI-R is a reliable and valid self-test instrument. Like any useful tool, it has to be used judiciously. Likewise, for some needs, biological sex may be an appropriate consideration, providing gender bias is not a factor. In the same manner, CISD after exposure to critical incidents necessitates separate of the vulnerable from the resilient. It is a worthwhile use of executive's time to determine when, where, and how to differentiate within groups.

In all cases, leaders and managers need to be receptive to new scientific evidence when it becomes available. It is their legal, ethical, and moral imperative. Unfortunately, industries develop around social science methods that are heavily advertised and profitable for indoctrinating groups.

Eventually, critical information eventually seeps into the popular press, even if challenged. Fortunately, access to academic literature is becoming easier. Full-text downloadable sources are readily available in libraries. Search engines and full-text databases greatly simplify the process of unearthing scholarly research. Writing style in the social science field is becoming more readable by the uninitiated. I found and downloaded the CISD publications cited⁴ at a college computer. Thus, opportunities now exist for management and HR professionals to keep abreast of the latest status on popular methods they mandate for employees. This availability has humane and legal implications.

Endnotes

¹ A good starting point is a recent letter to the *Journal of the American Medical Association (JAMA)*, of June 27, 2007, by Roxanne Silver and Camille Wortman, two long-established academics studying bereavement. Theirs and other letters, the article critique, and other references cited by authors are useful to begin study of this area.

² The subject has been studied for many years but the present primary writer on the subject is George A. Bonanno. One of his articles, "Resilience in the Face of Potential Trauma," in *Current Directions in Psychological Science*, 14, no. 3 (2005): 135-138, is a good start.

³ The recovered memory era ran from publication of the first edition of Ellen Bass and Laura Davis' book, *The Courage to Heal*, in 1988, and ended about the time of their third edition, in 1994. Parents of accusers effectively challenged the movement by organizing the False Memory Syndrome Foundation (see <http://www.fmsfonline.org>).

⁴ Several academicians have critiqued CISD and the following publications are significant, extensive, and credible studies:

(a) B. E. Bledsoe, "Critical Incident Stress Management (CISM): Benefit or Risk for Emergency Services?" *Prehospital Emergency Care* 7 (2003): 272-279;

(b) G. J. Devilly and P. Cotton, "Psychological Debriefing and the Workplace: Defining a Concept, Controversies and Guidelines for Intervention," *Australian Psychologist* 38: (2003): 144-150;

(c) G. J. Devilly, R. Gist, and P. Cotton. "Ready! Fire! Aim! The Status of Psychological Debriefing and Therapeutic Interventions: In the Work Place and After Disasters," *Review of General Psychology* 10 (2006): 318-345;

(d) C. S. Fullerton, R. J. Ursano, K. Vance, and L. Wang. "Debriefing Following Trauma," *Psychiatric Quarterly* 71 (2000): 259-276;

(e) B. T. Litz, M. J. Gray, R. A. Bryant, and A. B. Adler, "Early Intervention for Trauma: Current Status and Future Directions," *Clinical Psychology: Science and Practice* 9, no. 2 (2002): 112-134;

(f) R. J. McNally, R. A. Bryant, and A. Ehlers, "Does Early Psychological Intervention Promote Recovery from Posttraumatic Stress?" *Psychological Science in the Public Interest* 4, no. 2 (2003): 45-79;

(g) S. Rose, R. S. Bion, R. Churchill, and S. Wessely, "Psychological Debriefing for Preventing Post Traumatic Stress Disorder (PTSD)," *Cochrane Database of Systematic Reviews* 2 (2002) [Art. No. CD000560. DOI: 10.1002/14654858.CD000560];

(h) A. P. van Emmerik, A. Kamphuis, J. Hulsbosch, and P. Emmelkamp, "Single Session Debriefing After Psychological Trauma: A Meta-Analysis." *Lancet* 360, no. 9335 (2002): 766-771.

⁵ Quotation from Matthew Robb, "Mastering Disaster: Continuing Education in Crisis Response," *Social Work Today*, 4 (2004): 34; retrieved January 2, 2008, from http://www.socialworktoday.com/archive/swt_0704p34.htm

⁶ J. T. Mitchell, "A response to the Devilly and Cotton article, 'Psychological Debriefing and the Workplace ...,'" *Australian Psychologist* 39 (2004), 24-28.

⁷ P. T. Costa, Jr., and R. R. McCrae's manual is *Revised NEO Personality Inventory (NEO-PI-R) and NEO Five-Factor Inventory: Professional manual*, (1992). Odessa, FL: Psychological Assessment Resources.