

OVERVIEW OF TEMPERAMENT THEORY

Interest in temperament as an explanation for the nature of personal characteristics is long-standing, even pre-dating the formal discipline of psychology. Ancient scholars, philosophers, and historians first postulated temperament explanations for behavioral patterns they had observed across humanity. Classic Greek writings often linked their behavioral observations with intriguing and primitive speculations regarding internal functions of the human body (Galen, trans. 1916; trans. 1992). Temperament terminology included descriptions of dispositions, humors, moods, and tempers. These descriptions ascribed combinations of moral character, personality, and sometimes disparaging assumptions about individuals to physiological attributes.

During the Middle Ages, literature on temperament was less prominent. However, mental health hospital treatment for some of the pathology symptoms (e.g., depression, cycling moods) linked to original temperament theory appeared as early as the eighth century. Those treatment facilities are mentioned in medieval Islamic medical records, with one of the first mental health hospital units reportedly located in Baghdad (Syed, 2002). Physicians were trained in the early Greek temperament philosophies of Hippocrates and Galen, as well as others, and embraced humane treatment practices for mental health symptoms. Clinical training included an emphasis on identifying many of the physical characteristics that Greek literature had associated with temperaments (e.g., yellow jaundiced skin, melancholy) as well as clinical observation of behavior. Medical diagnosis and treatment for perceived emotional illnesses within hospitals later emerged in Persia during the 11th century (Syed, 2002) and in Europe during the 13th century (Shorter, 1997).

In the 1600s, with the advent of the pre-modern period, governments in Europe began systemically establishing public hospitals and often included physicians who treated mental health illnesses (Shorter, 1997). Unfortunately, many early institutions lacked effective or dignified treatment for mental health issues and engaged in a variety of ill-conceived and sometimes punitive treatments.

Medicine, including surgery, could be practiced without formal education, competency exams, or licensure by a variety of persons, including barbers (Fu, 1998). These practices resulted in poor outcomes and often patients were institutionalized for a lifetime. Interpretations of temperament and other mental health or personality qualities were left to laypersons and self-proclaimed healers. This period in European history is noted to have lacked enlightenment on understanding human behaviors related to personality or mental health and yielded few major philosophical or scientific advancements in treatment. However, the continued prominence of temperament ideas in identifying human behavior patterns for everyday life is evident through the popular culture of that era. Temperament prototypes were the inspiration for both protagonists in literature and playwrights' characters in many theatrical works. For example, several of Shakespeare's (1564/1616) manuscripts depicted Galen's four humors; Hamlet as the melancholy prince, Sir John Falstaff as the phlegmatic knight, Lady Macbeth as the choleric villainess, and Viola as the sanguine heroine (Fahey, 2008).

Reform in the 1700s encouraged physicians to seek better methods of understanding and treating mental health symptoms. The term psychiatry originated with Johann Christina Reil in 1808, and the medical specialization in mental health treatment became firmly established across Europe at that time (Marneros, 2008). The institutionalization of public service hospitals marks a critical juncture in psychology, as many were associated with university training centers. This alignment fostered renewed study of psychological concepts accompanied by rigorous training standards for practice. From the late 1800s to the 1920s the number of mental health patients in Europe grew exponentially. By the early 1900s, asylums also had emerged in the United States with thousands of patients and an expanding interest in psychological theories and effective treatments (Shorter, 1997).

Modern 19th and 20th century psychiatrists brought a resurgence of interest in the concept of temperament. New hypotheses reflected an emphasis on tendencies and dominant qualities. Temperament perspectives now included references to personal traits, behavioral concepts, self-regulatory factors, and motivational attributes. Today, definitions of temperament are multi-dimensional with sophisticated and more complex theory. A number of quantitative temperament measures also have emerged since the 1950s and validation of test constructs is now subject to the rigor of scientific methods. Research on temperament has evolved to include international and interdisciplinary studies, conducted across the fields of developmental and child psychology, psychiatry, and educational psychology (Goldsmith & Rieser-Danner, 1992).

As with many psychological premises, consensus on a definition for temperament is still evolving. There are variations in defining temperament due in part to training and dominant psychological perspectives of the individual theorists (e.g., psychoanalytic, developmental, behavioral, or biological). However, the metamorphosis of theories has led to commonly accepted agreement on several important factors. First, temperament has a biological basis and individual differences are evident early in life (Bates, Wachs, & Emde, 1994). Secondly, these predispositions are relatively stable while also influenced by environmental factors (Goldsmith & Rieser-Danner, 1986; Chess & Thomas & Chess, 1984, 1986). Thirdly, temperament is perceived as bidirectional as specific attributes can elicit particular responses from others (Chess & Thomas, 1984, 1986; Thomas & Chess, 1977, 1989). Temperament also is perceived as somewhat malleable as personal behavioral choices can be altered based on an understanding of one's own temperament qualities (Myers & Myers, 1980; Oakland, Glutting, & Horton, 1996; Tegalsi, 1998). Lastly, temperament is related to but not synonymous with personality. It may in fact, shape the early foundations for later development of personality based on one's temperament-related propensities (Costa & McCrae, 2001; McCrae et al., 2000). Kagan and Snidman (2004, p. 218–219) describe temperament as a possible biologically based reactivity sequence on an individual's quality of mood, through a series of physiological responses (e.g., circuitry between heart, blood vessels, muscles, amygdale, and prefrontal cortex). A person experiences these responses holistically creating a *feeling tone* or *quality of mood* that if mild elicits interpretation such as fatigue but if aversive provokes “an emotion, that in our culture, invites an interpretation of a personal flaw.”

In addition to the areas of agreement regarding temperament, there also are a number of divergent perspectives. Major points of disagreement include the extent to which temperament is heritable, biologically based, or malleable, which has implications for the efficacy of influencing temperament through educational or therapy approaches. The boundaries between definitions of personality and temperament also are sometimes nebulous or overlapping, which makes distinguishing components for measurement challenging. In addition, there are numerous proposals as to which specific components comprise temperament dimensions (Goldsmith et al., 1987). A review of all the proposed temperament qualities is beyond the scope of this text. In fact, Goldberg (1982) proposed over 900 elements that could be included in his conceptualization of temperament. The next section will review several predominant theories. Broad definitions of temperament as compared to personality are provided in Rapid Reference 1.1.

Rapid Reference 1.1

Comparing Definitions: Personality Versus Temperament

Personality

Personality is defined as, “enduring patterns of perceiving, relating to, and thinking about the environment and oneself that are exhibited in a wide range of social and personal contexts” (American Psychiatric Association, 2000, p. 686).

“Personality is the sum total of the physical, mental, emotional, and social characteristics of an individual. Personality is a global concept that includes all those characteristics that make every person an individual, different from every other person. Personality is not static; it is developed over the years and is always in the process of becoming” (Rice, 1992, p. 228).

Temperament

“Temperament refers to the characteristic phenomena of an individual’s emotional nature, including his susceptibility to emotional stimulation, his customary strength and speed of response, the quality of his prevailing mood, and all the peculiarities of fluctuation and intensity of mood, these phenomena being regarded as dependent upon constitutional make-up and therefore largely hereditary in origin” (Allport, 1961, p. 34).

We (Buss and Plomin) “define temperament as a set of inherited personality traits that appear early in life. Thus, there are two defining characteristics. First, the traits are genetic in origin, like other psychological dispositions that are inherited (e.g., intelligence). Second traits appear in infancy—more specifically, during the first year of life—which distinguishes temperament from other groups of personality traits, both inherited and acquired” (Goldsmith et al., 1987, p. 508).

We (Thomas and Chess) “conceptualize temperament as the stylistic component of behavior—that is, the *how* of behavior as differentiated from motivation, the *why* of behavior; and abilities, the *what* of behavior. A group of individuals—children and adults—may have the same motivation and a similar level of ability for a particular task or social activity. But they may differ markedly as to how they perform in terms of their motor activity, their intensity and quality of mood expression, their ease of adaptability, their persistence, or their degree of distractibility in the process of functioning. These later characteristics, among others, would represent components of temperament” (Goldsmith et al., 1987, p. 508).

Contrasting Definitions of Personality and Temperament

Personality refers to a wide variety of personal qualities, demeanor characteristics including social appeal and expressive energy, traits, cognitive attributions, emotional response patterns, behaviors, and temperament that together form a unique constellation recognized by others as the individual’s persona. However,

any of these factors separately also can be identified as personality variables common to many persons. It is the unique combination and degree of expression of personality traits that is specific to the individual rather than the actual traits. The temperament components of personality are considered predispositions with a stronger biological basis than personality traits, are developmentally evident earlier, and are less mediated by environmental influences. However, temperament theory does acknowledge the reciprocal nature of biological and environmental influences as well as the brain's plasticity in generating or sustaining neural connections that can shift temperament qualities over time. Temperament may be conceptualized as a foundational substrate for the subsequent development of personality through its effect on response instincts and thus the self-selection of environmental experiences (e.g., personal interactions, activities) that will further strengthen or diminish predispositions.

CLASSIC TO MODERN HISTORY OF TEMPERAMENT THEORY

A review of the development of temperament theory can provide further insights into the concepts that form the foundations for current research and assessment instruments. The earliest known writings on temperament date to the work of Hippocrates (460–370 B.C.) and Plato (427–347 B.C.). The influence of this work is again evident several years later in the orations of Plato's student, Aristotle (384–322 B.C.). As philosophers who melded their viewpoints from the science, literature, early medicine, and politics of their era, they often made broad conclusions that paired temperament with other attributes. As an example, in his writings, Aristotle paired melancholy temperament with genius, noting that men of greatness were always by nature melancholy (Akiskal & Akiskal, 2007).

Hippocrates was a physician who conceptualized the body as having four critical fluids (i.e., phlegm, blood, yellow bile, and black bile) that moderated health and wellness. The four components could result in both positive and negative effects. However, this was dependent on maintaining the appropriate balance within the human body. Hippocrates perceived an imbalance, excess or shortage of one of the four fluids would result in a variety of physical and/or behavioral symptoms (Hippocrates, trans. 1939; 1988; 1994).

Nearly 500 years later, Galen (130–200 A.D.), also a physician, further delineated Hippocrates' concept of four humors as physical and emotional characteristics of four temperaments, he called choleric, phlegmatic, melancholic, and sanguine (Galen, trans. 1992; Hergenhahn, 2001; Hippocrates, trans. 1939). Individuals were considered fools and choleric if they were irascible exhibiting irritability, quick tempered, easily angered, and readily changed moods. The phlegmatic

temperament was denoted as slow, lethargic, pale, weak, mild-mannered, and prone to fantasy as well as somatic complaints (e.g., gas, epilepsy). Extreme happiness, malaise, sadness or depression was deemed a melancholic temperament. The fourth temperament, sanguine, was described as being a gracious speaker, loving, hairy, and optimistic (Galen, trans. 1992; Hergenhahn, 2001).

Interest in temperament theory again piqued at the beginning of the 20th century with the advent of psychiatry as a profession. In 1921, three influential psychiatrists, from the psychoanalytic tradition, each published theories of temperament based on their clinical observations of patients and interpretations of behavioral patterns. These theorists included Ernst Kretschmer (1888–1964), Hermann Rorschach (1884–1922), and Carl Jung (1875–1963). Ernst Kretschmer's theory of temperament was titled *Physique and Character* (i.e., Körperbau und Charakter). His early work linked temperament with physical attributes, as Hippocrates and Galen had. Kretschmer proposed three body types; thin (i.e., asthenic), athletic (later combined with asthenic and called asthenic/leptosomic) or overweight (i.e., pyknic) and delineated associated traits as well as potential psychopathologies. He attributed friendliness and gregarious personality traits to overweight persons with a propensity toward manic-depressive illness for those who were obese. Introversion and a timid demeanor were associated with the thin or athletic body type and if pathology were present it manifested similar to the negative symptoms of schizophrenia (Kretschmer, 1936; Pedrosa-Gil, Weber, & Burgmair, 2002). Ernest's theory did not garner wide acceptance, although a variation by William Sheldon (1898–1977) appeared in the 1940s. Sheldon (1940, 1954) adapted Kretschmer's three body physique type theory, arguing for three somatotypes that he termed Endomorphy, Mesomorphy, and Ectomorphy. Each somatotype was named by its perceived relationship to one of the three embryonic cell layers that later evolve to support specific body systems (i.e., endoderm or inner skin supporting digestive functions, mesoderm or middle skin the precursor to muscle and circulatory system development, and ectoderm or outer layer contributing to nervous system development). The Endomorphic (endoderm) had a soft body with a rounded shape and underdeveloped muscles. Associated traits included a Viscerotonia temperament that loves food and comfort, is tolerant, displays even emotions, is sociable, and has a good sense of humor. The Mesomorphic (mesoderm) body was toned, muscular, and overly mature with good posture. Their temperament qualities (Somatotonia) were described as adventurous with a desire for power and dominance, courageous, and competitive. The last type, Ectomorphic (ectoderm) was described as thin, delicate, tall, and stoop-shouldered. The Ectomorph was considered to have Cerebrotonia temperament qualities including sensitivity,

introversion, self-consciousness, and emotional restraint with a propensity for artistic ability. Sheldon (1954) tried to create a systematic approach to measuring male body types that he titled the *Atlas of Men*; however, his system and theory lacked wide acceptance. Over time, interest in body types as a marker for temperament waned, whereas endorsement for psychological types in temperament flourished.

Both Rorschach (i.e., *Psychodiagnostik*) and Jung (i.e., *Psychological Typen*) published manuscripts on temperament that included the concepts of introversion and extroversion. Rorschach, although disavowing any endorsement or similarity to Jung's ideas, claimed he could provide an objective measurement of introversion and extroversion (Wehr, 1971). Prior to this assertion, temperament qualities were attributed to patients based solely on interviews, observations, and the clinical judgment of the psychiatrist. Rorschach's test was one of the first attempts at measurement of temperament. However, studies of the instrument as an assessment of introversion-extroversion were not supported (Brawer & Spiegelman, 1964).

PSYCHOLOGICAL TEMPERAMENT TYPES

Throughout the 21st century, several temperament theories and subsequent measures were developed based on a dichotomous conceptualization of temperament. These theories proposed a variety of dimensions that measured opposing qualities and resulted in ascribing typologies or categorical distinctions. Measures typically include forced choice items for two contrasting characteristics on each dimension and yield scores that vary from a mild to strong preference for one of the two qualities. The scores place individuals within a category and the overarching combination of preferred categories result in a typology that is considered as the best level of interpretation rather than the continuous score.

Carl Jung's Theory of Temperament

Carl Jung's theory of temperament evolved from his clinical practice in a Zurich psychiatric hospital and observation of patients. After a number of years of collecting notes on his patients' behaviors, he perceived reoccurring patterns of personal qualities that correlated with particular psychopathology or adjustment problems. His writings discussed how extroversion patients more frequently experienced aggressive or outwardly demonstrative behaviors (Jung, 1921/1971). In patients with hysteria, despite their emotional state, they maintained awareness of the external environment and interacted with the therapist, thus were considered

extroversion. In patients with schizophrenia, Jung thought introversion was dominant as they withdrew from the world around them (Storr, 1991). Jung (1915/1954, 1920/1926, 1930/1933, 1928/1945, 1943/1953, 1954/1967, 1921/1971) mentions the historical underpinnings of his theory as associated with the early ideas from Hippocrates, Galen, Ostwald, and others. However, he differentiated his temperament theory as a psychological typology.

The foundation of Jung's temperament concepts are based on two attitudes, introversion and extroversion and four psychological functions (see Rapid Reference 1.3). An attitude is described as "the psyche to act or react in a certain way" (Jung, 1921/1971, p. 414). Jung did not characterize patients as unidimensional or only capable of exhibiting just introversion or extroversion in their behavior. He postulated that each individual possesses the ability to both introvert and extrovert; however, the individual has acquired a propensity to exhibit one of the attitudes over the other (Jung, 1921/1971; Storr, 1991). As this attitude is preferred, it is utilized more often, and thus becomes increasingly more skilled than the other attitude. He noted, "There is no such thing as a pure extrovert or a pure introvert . . . those are only terms to designate a certain function, a certain tendency" (Evans, Leppman, & Bergene, 1968). Jung also was careful to explain these qualities without judgment, noting introversion and extroversion qualities may be expressed in positive or negative behaviors depending on the personality and disposition of the individual (Wehr, 1971). Introversion and extroversion also can be conceptualized along a continuum in addition to categorically. Individuals may vary from strongly introverted to slightly introverted or from strongly extroversion to slightly extroversion.

Introverts are interested more in their own thoughts and their inner world of feelings. Thus they may shrink away from interest in others or objects. They acquire energy from within, prefer solitude or small groups, are introspective, hesitant in new circumstances, and prone to making decisions cautiously. Extroverts are more attuned to the environment. They are outgoing, foster attachments quickly, and have concern regarding others' expectations (Jung, 1921/1971; Wehr, 1971).

Jung's temperament theory of psychological type also identified two additional dichotomies that created four psychological functions: sensation-intuition and thinking-feeling (Jung, 1921/1971). Each of the functions may be exhibited in an extroversion or introverted manner. Within each dichotomy, one function was described as well developed and used on a conscious level while the alternate function is not well developed or used on a conscious level (Jung, 1920/1926). Therefore, only one opposing function (e.g., thinking or feeling and sensation or intuition) can be operating on a conscious level at any particular time.

In describing the two functions responsible for how one prefers to acquire or assess information, Jung labeled the dimensions “sensation” and “intuition.” He also conceptualized these as opposing styles. He wrote, “Sensation is just as antagonistic to intuition as thinking is to feeling” (Jung, 1930/1933, p. 106). The dichotomy of sensation and intuition are considered irrational decision-making styles (Jung, 1921/1971). Intuition is a quick and holistic manner of assimilating information that gleans insight from experiences and unconscious perceptions. Intuition can infer meaning from perceptions of nebulous ideas, broad theories, and patterns with lesser attention to details or facts. Jung noted, “In intuitives a context presents itself whole and complete, without our being able to explain or discover how this context came into existence” (Jung, 1921/1971, p. 453). In contrast, sensation function prefers direct experience, facts, and physical evidence. It is concerned with external stimuli (i.e., acquired through the five senses). Real-life experience is more dominant and sensation is a conscious perception.

Thinking and feeling were defined as rational functions (Jung, 1921/1971) for decision making. Persons using the thinking function carefully deliberate their decisions with a preference for utilizing facts, logic, and objective data. They most value broad principles of justice and truth when pondering judgments. Feeling is a more subjective process that makes decisions based on a personal values system (e.g., empathy, well-being of others). This value creates a sense of liking, disliking, or overall mood that may incorporate experience and leads to accepting or rejecting a choice. “Feeling is a kind of judgment, differing from intellectual judgment in that its aim is not to establish conceptual relations but to set up a subjective criterion of acceptance or rejection” (Jung, 1921/1971, p. 434). Because the laws of reason are used in establishing subjective value, Jung (1921/1971) noted that feeling is a rational quality. Depending on the pairing of combinations of temperament components, an individual could be one of eight temperament types. Jung considered four of these types to be rational and four to be irrational.

Jung’s Rational Types

Extroversion-thinking, introverted-thinking, extroversion-feeling, and introverted-feeling were considered to be rational types. In describing his ideas, Jung made comparisons to influential personalities of his era. He considered Charles Darwin, with his emphasis on scientific evidence and fact, to be an example of the extroversion-thinking type. Immanuel Kant, with his emphasis on subjective reality and rationalist philosophy, was provided as an example of

the introverted-thinking type. Both are strongly influenced by ideas, but the extroversion-thinking type is interested in objective data and will follow ideas externally. The introverted-thinking type is influenced by subjective ideas and will ponder those inwardly (Jung, 1921/1971). Jung considered the extroversion-feeling and introverted-feeling types to be found most commonly among women. Later research would confirm this hypothesis (see Chapter Two). These types are guided by a personal value system comprised of subjective feelings and place strong value on harmony.

Jung's Irrational Types

Jung's four irrational types are (a) extroversion-intuitive, (b) introverted-intuitive, (c) extroversion-sensing, and (d) introverted-sensing. His caricature of an introverted-intuitive type is that of a person who is a solitary dreamer or artist and engages in mystic ponderings. His description of the extroversion-intuitive is one of marked dependence on the external, seeking new possibilities. Each is strongly influenced by subjective factors and ideas. In contrast, the extroversion-sensing seeks external facts, concrete objects, and reality while the introverted-sensing studies or ponders such evidence.

DON'T FORGET

Carl Jung's Rational and Irrational Types

Carl Jung's rational and irrational types can be either introverted or extroversion. The distinguishing dimensions were thinking or feeling to be considered a rational type and sensation or intuition for irrational types.

Rational Types

Extroversion – Thinking
 Extroversion – Feeling
 Introverted – Thinking
 Introverted – Feeling

Jung's Irrational Types

Extroversion – Sensation
 Extroversion – Intuition
 Introverted – Sensation
 Introverted – Intuition

Jung's Falsification of Type

In conjunction with his theory of psychological types, Jung described a phenomenon he called falsification of type. He suggested that the best psychological health is promoted when persons can express and be recognized for their natural preferences and external forces do not dictate behaviors contrary to these preferences. Jung noted that persons who could utilize both qualities of a dimension when appropriate while maintaining their own personal strengths were

best adjusted. As an example, if the work demands of an individual who may be introverted are consistent with introverted tasks, he or she is more likely to be successful, especially if the individual could extrovert when required for social situations. However, if an introverted person was constantly required to function in extroversion ways at work (e.g., high demand for public speaking engagements) or other social obligations, this becomes exhausting and soon the negative effects of relentless stress ensue (Jung, 1921/1971).

Jung's ideas on temperament were only one portion of his life's work that also included analytical therapy techniques. There are several institutes that continue that work today (i.e., C.G. Jung Institute of New York, <http://www.junginstitute.org>) in the United States. His temperament theory enjoyed a significant period of acclaim following its publication in the 1920s and became the foundation for development of several current temperament and personality measures.

Myers and Briggs Theory of Temperament

At the same time that Jung had published his *Psychological Types*, Katharine C. Briggs (1875–1968) was endeavoring to identify common personality factors for highly accomplished individuals through extensive reviews of biographies. She became intrigued with Jung's work adding a fourth dimension, judging and perceiving (see Rapid Reference 1.3). Judging or perceiving were concepts to describe how individuals structure their lives as related to the outside world (Myers & Myers, 1980). Persons with a judging orientation prefer a self-regimented lifestyle, routinely engage in planning, are organized, prefer schedules, and seek closure on projects and tasks. Persons with a perceiving orientation prefer spontaneity, keeping options open, and are often highly tolerant, curious, and readily adaptive (Myers & Myers, 1980).

In the summer of 1942, Briggs and her daughter Isabel Briggs-Myers (1896–1980) began developing test items for an instrument to measure Jung's psychological types. Subsequently, the Myers-Briggs Type Indicator® (MBTI) was published in 1962 (Myers & Myers, 1980). The MBTI combines Jung's three temperament dimensions and adds Briggs's fourth dimension to yield interpretations for 16 types (see Rapid Reference 1.2). Each of the 16 types can be interpreted holistically or within a more complex and sophisticated understanding of which dimensions are dominant, auxiliary, or tertiary. Detailed guidelines for administration, scoring, and interpretation of the MBTI are available in the *Essentials of Myers-Briggs Type Indicator Assessment, Second Edition* (Quenk, 2009).

Katherine Briggs's partnership with her daughter Isabel continued throughout her lifetime, initiating decades of research on the utility of the MBTI. Unlike

Rapid Reference 1.2

Myers-Briggs Type Indicator (MBTI) Psychological Types

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

Note. I = introverted, E = extroversion, S = sensing, N = intuition, T = thinking, F = feeling, J = judging, P = perceiving

some measures of personality, they conceptualized the MBTI as primarily a method for understanding others differences rather than an instrument to measure pathology. They intended for the MBTI to help “parents, teachers, students, counselors, clinicians, clergy, and all others who are concerned with the realization of human potential” (Myers & Myers, 1980, p. xiii). The concepts of Jungian and Myers/Briggs temperament typology are now widely recognized, even appearing in a variety of secular media from George Balanchine’s ballet *The Four Temperaments*, to television series such as *Northern Exposure*, and endorsements by Dr. Niles Crane’s character in the sitcom series *Fraser*. Thus, whether through historical theatre of Shakespeare or modern technology media, our muses continue to recognize temperament qualities in everyday life and imbue those traits upon their characters.

The MBTI measure is utilized among a variety of psychologists (e.g., clinical, rehabilitation), as well as counselors, social workers, and other mental health providers. Today industrial/organizational (IO) psychologists also incorporate the measure into a variety of career assessments, employee training, and team-building programs for numerous Fortune 500 companies. In fact, the MBTI is reported by its publisher, Consulting Psychologists Press (CPP), to be the most widely administered personality assessment in the world with distribution of over two million copies annually. Sample reports are available online (<https://www.cpp.com/products/mbti/index.aspx>).

The Center for Applications of Psychological Type (CAPT) was founded by Isabel Briggs-Myers and Mary H. McCaulley in 1975. It is currently located in Gainesville, Florida, and offers online bibliography searches for over 10,000 MBTI entries, sample reports, web-based MBTI test administration, as well as subscription to the *Journal of Psychological Type* (<http://www.capt.org/about-capt/home.htm>).

Rapid Reference 1.3

Jungian and Myers-Briggs Dichotomies

Energy Orientation (Attitudes)

Extroversion (E)

Renew energy from external or outer world of people and objects, outgoing, foster attachments quickly, share ideas readily

Introversion (I)

Renew energy from inner world of thoughts and introspection, prefer solitude or small groups, self-reflection

Perception or Learning Processes (Functions)

Sensing (S)

Acquire information from five senses; real-life, concrete experiences dominate; practical, realistic, pragmatic, detail oriented

Intuition (N)

Holistic assimilation of information; value insight, ideas, theories, interest in patterns with lesser attention to details

Decision-Making Process (Functions)

Thinking (T)

Deliberate decisions based on facts, logic, objective data; emphasize principles of justice and truth in decision, seek fairness

Feeling (F)

Decisions made with emphasis on subjective values such as empathy and well-being of others, seek harmony

Environment or Lifestyle Orientation (Attitudes)

Judging (J)

Prefer structure in daily interactions with outer world; like routines, organization, schedules, planning ahead; seek closure on projects

Perceiving (P)

Prefer to approach the outer world in a spontaneous and flexible manner, tolerant, adaptive, like to keep options open

Keirsey Theory of Temperament

In the 1970s, David West Keirsey (born 1921), an educational psychologist and eventually chair of the California State University, Fullerton, Counseling Department, published a text providing a short, self-scoring, temperament measure, *The Keirsey Temperament Sorter*. The instrument yielded the MBTI 16 types (Keirsey & Bates, 1978). However, he argued for a modified interpretation of the original Jung-Briggs-Myers temperament model that groups the 16 types into four clusters for interpretation. Keirsey (1998, p. 15, 18) noted this structure was suggested by Myers and better reflected what Keirsey perceives as a four-type theoretical construct based on the work of multiple theorists (i.e., Ernst Kretschmer, Eduard Spranger, Eric Adickes, and Eric Fromm). Although he acknowledges each of the four temperaments within a cluster have differences, the overarching similarities are considered more important and definitive. In fact, Keirsey and Bates proposed that, “the real usefulness of the types comes not in memorizing the sixteen portraits, but in understanding the temperamental base of the types” endorsing Hippocrates’ idea that four core types exist (Keirsey & Bates, 1978, p. 26). The styles were described figuratively as similar to the characteristics manifest by four Greek mythology entities: Dionysus, Prometheus, Epimetheus, and Apollo. The four clusters included sensing-judging, sensing-perceiving, intuition-thinking, and intuition-feeling. Over the next 20 years, Keirsey (1998) refined his temperament theory and published the revised *Keirsey Temperament Sorter*[®]-II (p. 4–11) as well as a shorter version, the *Keirsey Four-Types Sorter* (p. 348–350). His current model often is utilized in business and there is a modified self-administered short version available online (<http://www.keirsey.com>). The new model also ascribes new names to the four categories: Artisan, Guardian, Rational, and Idealist (see Rapid Reference 1.4). These are consistent with Plato’s original four temperament types and based more on individuals’ function within society. The names help facilitate understanding of the temperament profiles for laypersons that have little or no theoretical knowledge of temperament theory.

When referenced within this model (Keirsey, 1978, 1998), those with sensing-perceiving preferences are characterized as artistic, athletic, easy-going, tolerant, open-minded, adaptable, and persuasive. They enjoy exploring new experiences, discovery, and have a strong play ethic and need for freedom. The sensing-judging temperament is characterized as dutiful, responsible, conservative, stable, patient, dependable, and highly productive with a strong work ethic. They need a sense of belonging and traditions, thus are often caregivers. They thrive in well-defined roles, routine, and prefer to learn in a sequential manner. The intuition-thinking temperament is described as rational, analytical, systematic, curious, scientific, and

research-oriented. They have a strong drive for success, competency, high standards and achievement. They also can be inquisitive, perfectionistic, and at times compulsive. They tend to emphasize work before recreation and even carry over their achievement drive to hobbies or leisure activities (e.g., self-imposed golfing expertise). The intuitive-feeling temperament is friendly, sympathetic, insightful, creative, intuitive, caring, and attuned to the needs of others. Their core value is personal integrity and self-actualization. They are often quite passionate about social causes and the impact of actions on humanity. Keirsey and Bates also make reference to the effects of temperament as observed in children, marriage compatibility, and note frequency patterns of particular temperaments by career.

Rapid Reference 1.4

Keirsey Temperament Sorter Types (1978 & 1998)

Sensing-Perceiving (Dionysian–1978) Artisan–1998	Sensing-Judging (Epimethean–1978) Guardian–1998	Intuition-Thinking (Promethean–1978) Rational–1998	Intuition-Feeling (Apollonian–1978) Idealist–1998
ESTP	ESTJ	ENTJ	ENFJ
ISTP	ISTJ	INTJ	INFJ
ESFP	ESFJ	ENTP	ENFP
ISFP	ISFJ	INTP	INFP

TEMPERAMENT THEORY EMBEDDED IN BROAD PERSONALITY MEASURES

In addition to unitary measures of temperament, there are many well-established personality instruments that incorporate one or more dimensions from temperament theory. Dimensional approaches provide continuous measures that can be interpreted as the strength of a characteristic. Although personality instruments are not the core topic of this text, a brief discussion of some major instruments is provided. There are evaluations, especially if pathology is suspected, where including these measures as a supplement to traditional temperament measures can provide additional insight. These measures differ from the temperament measures discussed thus far in a number of ways. First, many are considered atheoretical as the inclusion of items and scales was first determined based on empirical

statistical methods rather than preconceived philosophical constructs. Secondly, they measure a broader spectrum of personal traits than temperament measures do. In addition, they often include characteristics noted as symptoms of pathology and are utilized in mental health diagnoses based on the Diagnostic and Statistical Manual of Mental Disorders (DSM) criteria. They may also provide support for treatment planning. The instruments typically yield continuous scores rather than categorical, and this facilitates comparisons of particular traits to clinical populations as well as evidence of improvement for treatment outcomes.

In the early 1930s, at about the same time that Freud (1856–1939) and Jung (1875–1961) were establishing their concepts of temperament within psychodynamic perspectives, others were exploring new quantitative methods for the study of personality. Two key developments of this era were the catalyst for several advances in personality theory, statistical analysis methods, and the lexical hypothesis premise. Sir Francis Galton (1809–1882), Karl Pearson (1857–1936), and Charles Spearman (1863–1945) all made significant early contributions to correlation and multivariate factor analyses techniques (Wiggins, 2003). These strategies were originally applied to the study of intelligence and then later utilized in measuring constructs of temperament and personality. A student of Spearman, Raymond Cattell (1905–1998) embarked on a lifetime career to identify a taxonomic system for the core components of personality structure. He utilized a method originally discussed by Galton, Klages, Baumgarten, Allport, and Odbert: the lexical tradition. This method proposed that the important and obvious tenets of personality characteristics would already be evident in modern language, as over the years society would have a need to label these qualities in order to have discourse regarding them. This method is deemed by some researchers to be atheoretical, as the factor analyses determine the constructs rather than a prior theoretical proposition of characteristics. However, others argue the lexical process itself inherently assumes some theoretical assumptions about language development naturally encompassing psychological constructs and a subjective selection process when clustering terms that may be influenced by individuals' theoretical underpinnings (John, Angleitner, & Ostendorf, 1988).

The lexical hypothesis procedure started in 1936 with Gordon Allport (1897–1967) and his graduate student Henry Odbert documenting every descriptive word in the dictionary related to personality (originally 550,000 words, later refined to approximately 18,000 terms). Beginning in 1943, Cattell further reduced Allport and Odbert's list to clusters, grouped the words by traits, and later applied multivariate statistical methods to confirm those trait clusters through three types of data: Life records, self-report questionnaires, and behavioral tests. The feasibility of these types of procedures were made possible through the advent of computer

technologies that had not been available to prior researchers. Cattell eventually identified 35 core variables and five global scales that later resulted in the 1949 publication of the “Sixteen Personality Factors Questionnaire” (16PF) (Cattell & Schuerger 2003; Pervin, 1990; Wiggins, 2003). The 16PF is now in its fifth edition (Cattell, Cattell, & Cattell, 1993; Cattell, Cattell, Cattell, & Kelly, 1999). The five global scales include extroversion, anxiety, tough-mindedness, independence, and self-control (see Rapid Reference 1.6). For a detailed review of administration and interpretation, see *Essentials of 16PF Assessment* (Cattell & Schuerger 2003).

Fiske, Tupes, and Christal conducted new research from Cattell’s trait variables, also confirming five factors, later coined the “Big Five” or five-factor-model (FFM) (Goldberg, 1981; Pervin, 1990). Robert McCrae and Paul Costa’s research had similar results and they labeled their factors neuroticism, extroversion, openness, agreeableness, and conscientiousness (McCrae & Costa, 1985a; 1985b; 1989). They subsequently created the Revised NEO Personality Inventory (NEO-PI-R) to measure these domains (Costa & McCrae, 1992). From the 1960s through the 1980s multiple theorists, utilizing a variety of methods and test items, also found five factors very similar to those of Cattell, thus building a preponderance of evidence in support of the five-factor model (FFM) of personality (Goldberg, 1981). It is important to note that most of these theories include a measure of an extroversion-introversion scale consistent with Jung’s interpretation of this construct. More importantly, across measures, the extroversion-introversion scale is one of two that consistently accounts for the most variance in five-factor theories. The confirmation of extroversion-introversion as a high loading factor across nearly 10 measures provides supportive evidence for the validity of this construct (for an in-depth review see Pervin 1990). Wiggins (2003) and McCrae and Costa (1989) also note considerable conceptual overlap between several of the other MBTI dimensions and Big Five personality theories to temperament (see Rapid Reference 1.6).

Hans Eysenck (1916–1997) conceptualized personality as strongly biologically based and originally proposed two factors: extroversion-introversion and neuroticism-stability (Eysenck & Eysenck 1958, 1975b). Excitability versus inhibition and arousal were considered explanatory factors for extroversion (Strelau & Eysenck, 1987). He summarized his extroversion-introversion characteristics as based on the need, or lack thereof, for external stimulation or arousal. He proposed an optimal or balanced level of arousal at which individuals function best. Extroverts who were underaroused would be prone to boredom and thus seek out external stimulation. Continual overarousal in introverted persons could result in the need to seek out quiet settings that renewed tranquility. The example is given that introverted individuals perform difficult tasks better than extroverts in circumstances with low or moderate stimulation and stress, whereas the opposite

is true for extroverts (Strelau & Eysenck, 1987). This balance or homeostasis concept is similar to Jung's original theory of extreme temperament qualities most likely resulting in maladaptive characteristics (Jung 1921/1971). A number of physiological measures now exist which permit researchers to test these proposed brain/temperament relationships utilizing brain waves and heart rate to objectively establish cortical arousal patterns.

Eysenck considered the limbic system's (visceral brain) effect on inhibition and disinhibition to be responsible for the neuroticism-stability dimension (Strelau & Zawadzki, 1997; Zuckerman, 1997). Persons with low inhibition or control of their emotions were more vulnerable to even low levels of stress and more likely to exhibit neurotic behaviors. Whereas persons with good inhibition or control of their emotions had high activation thresholds for stress and were more likely to be calmer thus exhibiting stability. Depending on the combination of traits, individuals might be stable-extroverts, unstable-extroverts, stable-introverts, or unstable-introverts, and these attributes were considered similar to Galen's earlier four temperament types (see Rapid Reference 1.5).

Rapid Reference 1.5

Eysenck Two-Factor Model

	Extroversion	Introverted
Emotionally Stable	outgoing, carefree, sociable (Sanguine)	passive, peaceful, calm, thoughtful (Phlegmatic)
Emotionally Unstable (Neurotic)	restless, excitable, impulsive (Choleric)	anxious, pessimistic, unsociable (Melancholic)

In collaboration with his wife, Sybil Eysenck, a third factor, psychoticism-socialization, was added to the theory in the 1970s. Psychoticism-socialization measured the propensity for psychotic or aggressive features and testosterone levels were considered the contributing physiological marker (see Rapid Reference 1.6). Subsequently, the Eysenck Personality Questionnaire (EPQ) was published in 1975 and revised in 1985, Eysenck Personality Questionnaire—Revised (EPQ-R) (Eysenck & Eysenck, 1975b; Eysenck, Eysenck, & Barrett, 1985). Additionally, the Eysenck Personality Profiler was published in 1995 (Eysenck, 1995).

Originally, the Eysencks conducted exploratory factor analyses on the responses from the administration of several questionnaire instruments with a variety of scales in determining their “Super Three” theory of personality. The neuroticism and extroversion factors correlate strongly with the counterparts of Big Five (i.e., Five-Factor

Model) theory (see Rapid Reference 1.6). However, psychoticism is only modestly (and negatively) correlated with agreeableness and conscientiousness (Block, 1977; Eysenck, 1986; Eysenck & Eysenck, 1985; McCrae & Costa, 1985b).

Lastly, there are a number of broad personality measures, such as the Minnesota Multiphasic Personality Inventory (MMPI-2), that also include narrow scale measures (e.g., social introversion) of some temperament qualities, especially related to social withdrawal or extreme introversion. For a detailed review of

Rapid Reference 1.6

Alignment of Major Personality Theories and Temperament Scales

Big 5 Personality Theories	1949 Cattell, 16PF	Extroversion-Introversion	Anxiety	Tough-Mindedness	Independence	Self-Control
	1961 Tupes & Christal	Surgency (talkative, assertive, energetic)	Emotional Stability	Culture	Agreeableness	Dependability
	1985 Costa & McCrae, NEO-PI-R	Extroversion	Neuroticism	Openness	Agreeableness	Conscientiousness
	1981 Goldberg	Surgency	Emotional Stability	Intellect	Agreeableness	Conscientiousness
Super 3	1985 Eysenck, Eysenck EPQ	Extroversion	Neuroticism		Psychoticism	
MBTI	1956 Myers, Briggs, MBTI	Extroversion-Introversion		Intuition – Sensing	Feeling – Thinking	Judging – Perception
EAS	1975, 1984 Buss & Plomin EASI & EAS	Activity and Sociability	Emotionality			Impulsivity (later dropped this dimension as it overlapped w/ others)

administration and interpretation of the MMPI-2, see *Essentials of MMPI-2 Assessment* (Nichols, 2001). This measure was originated by Starke Rosecrans Hathaway (1903–1984), a professor in clinical psychology, and John Charnley McKinley (1891–1950), a psychiatrist, at the University of Minnesota. Their goal was to create a measure to help assess mental health patients. They began development by compiling over 500 true/false items related mostly to mental disorder symptoms and then comparing scores from normal persons to those with specific mental health diagnoses. This factor analysis procedure, called empirical criterion keying, resulted in identifying response patterns that could distinguish psychiatric patients from control subjects. This procedure follows what some consider to be a medical model. The instrument has considerable focus on pathology rather than normative qualities. Therefore, utility is somewhat more informative for clinical clients (Tellegen, Ben-Porath, McNulty, Arbisi, Graham & Kaemmer, 2003). In general, personality measures designed for clinical populations correlate highly with other personal maladjustment and mental health syndromes. Therefore, they may not be the best measures of core temperament qualities, such as introversion or extroversion, for the general population (Nichols, 2001).

TEMPERAMENT THEORY AS APPLIED TO THE ASSESSMENT OF CHILDREN

Most early historical temperament theory was conceptualized based on the behaviors of adults, although many early theorists did acknowledge the manifestation of temperament qualities in early childhood. In his writings, Jung (1928/1945, p. 303) notes, “The differentiation of type begins often very early, so early that in certain cases one must speak of it as being innate.” He further explained that infants’ adaptation to their surrounding environment, especially how readily they interacted with objects and others, was an early indicator of extroversion. In describing introversion in children, he noted their shyness, thoughtful reflection before acting, and their fearfulness of unknown objects as key indicators (Jung, 1928/1945).

Children’s Psychological Temperament Type Theory

Most of the temperament and personality measures discussed thus far recognize the early emergence of temperament, and have published adolescent and child versions. The most widely used instrument, the MBTI, is recommended for ages 14 and over (Myers, McCaulley, Quenk, & Hammer, 1998). A parallel instrument, the Murphy-Meisgeier Type Indicator for Children (MMTIC) was

created by Elizabeth Murphy, a psychologist, and Charles Meisgeier, a chair of the Educational Psychology Department at the University of Houston (Meisgeier & Murphy, 1987). As an educator, Murphy first became interested in the applications of the MBTI for children after reading David Keirsey's book, *Please Understand Me* (Horsch, 2008; Keirsey & Bates, 1978). She later completed her dissertation at the University of Houston, investigating applications of the MBTI for children, which led to her coauthoring the MMTIC. Meisgeier's interest in type was related to his career advocating for special education services and the need to better understand children's learning abilities. The current version of the MMTIC yields temperament types based on Jungian-Briggs-Myers theory for children ages seven to 18, grades two through 12, and a number of MMTIC teacher resources are available that reflect psychological type theory (Murphy & Meisgeier, 2008). Keirsey also offers an online version of his instrument, the Keirsey Temperament Sorter® -II, Student Version.

In the early 1990s Thomas Oakland, a professor in the Educational Psychology Department at the University of Texas at Austin; Joseph Glutting, a professor at the University of Delaware; and Connie Horton, a psychologist and faculty member at the Illinois State University developed the Student Styles Questionnaire (SSQ). The SSQ is a temperament measure for children and youth

CAUTION

Myers-Briggs Type Indicator® (MBTI) Terms as Compared to SSQ Terms

The SSQ and MBTI are based on the same theoretical constructs and can be interpreted similarly; however, the names of two dimensions differ on the SSQ. The consistency in theory is an advantage for longitudinal research utilizing the SSQ for young children and the MBTI as they reach adult age. For individual psychological reports that may compare temperament over time, it will be important to provide an explanation for the parallel terms between the childhood SSQ measure and the adult scores on the MBTI.

MBTI	SSQ
Extroversion – Introverted	Extroversion – Introverted
Sensing – Intuitive	Practical – Imaginative
Thinking – Feeling	Thinking – Feeling
Judging – Perceiving	Organized – Flexible

ages eight to 17 (Oakland, Glutting, & Horton, 1996). The measure is based on Jungian-Briggs-Myers theory with a strong emphasis on minimizing harmful labeling practices and enhancing both an understanding of others and personal development. In addition, the manual provides learning styles applications for the classroom and personal as well as family relationship building strategies. Positive and potentially negative temperament characteristics are discussed as strengths and weaknesses rather than pathology. The authors indicate they relabeled the temperament terms on two dimensions to provide more declarative and accurate descriptors for the preferences that better communicate attributes and facilitate positive interpretations (Oakland, Glutting, & Horton, 1996, p. 3). On the SSQ, the Jungian terms of sensing and intuition are labeled practical and imaginative. The Myers-Briggs terms of judging and perceiving are referred to as organized and flexible. Three interpretation methods are provided including the eight basic styles (i.e., extroversion-introverted, practical-imaginative, thinking-feeling, organized-flexible), the Keirsian model (i.e., practical-organized, practical-flexible, imaginative-thinking, imaginative-feeling) and the MBTI 16-type combinations.

Temperament Theory Embedded in Broad Personality Measures for Children

A number of researchers have provided empirical support for the existence of the core five-factors in adolescents as well as children (Digman, 1989; John, 1990; John et al., 1994). Many of the five-factor model personality theory instruments also have adapted versions for children and youth that include some temperament components, particularly extroversion or social introversion measures. The 16PF Personality Questionnaire: Fifth Edition (Cattell, Cattell, & Cattell, 1993) and a short version, the 16PF Select Questionnaire (Cattell, Cattell, Cattell, & Kelly, 1999), are based on Cattell's theory and intended for ages 16 through adulthood (Cattell & Schuerger 2003). Adaptations for children and adolescents include the Early School Personality Questionnaire for ages six through eight (Coan & Cattell, 1959; Cattell & Coan, 1976), the Children's Personality Questionnaire for ages eight through 12 (Porter & Cattell, 1968), and the High School Personality Questionnaire (Cattell, Cattell, & Johns, 1984), later renamed the Adolescent Personality Questionnaire for ages 12 through 18 (Schuerger, 2001). The NEO-PI-R may be administered to adolescents, ages 17 through 18, as well as adults (Costa & McCrae, 1992). The Five Factor Personality Inventory for Children is designed for ages nine through 18 (McGhee, Ehrler, & Buckhalt, 2007). The parallel child version of the Eysenck Personality Questionnaire (EPQ), the Revised Junior Eysenck Personality Questionnaire (JEPQ-R), can be administered to ages seven

through 17 (Eysenck & Eysenck, 1975a). The Minnesota Multiphasic Personality Inventory (MMPI-2) also offers an adolescent version, the MMPI-A. For a detailed review of administration and interpretation of the MMPI-A see *Essentials of MMPI-A Assessment* (Archer & Krishnamurthy, 2001). As noted earlier, broad personality measures typically only include narrow measures of temperament dimensions and scales may correlate highly with other constructs related to pathology. Therefore, consideration of these measures as a supplement in temperament assessment is most relevant to evaluations where mental health diagnoses exist and/or maladaptive functioning is evident.

Children's Biobehavioral Temperament Measures

The interest in measuring temperament for even younger children, including infants and toddlers, established its original theory base during the 1950s through the 1980s, resulting in several new perspectives. In contrast to child self-report measures of psychological type, these theories measure different constructs. They have a greater emphasis on physiological phenomena related to observable behaviors in infants, toddlers, and young children. Changes in assessment methods included an emphasis on parent questionnaires, interviews, and observational data.

Some researchers argue that the temperament qualities exhibited by infants and toddlers may in fact be the truly innate conceptualization of temperament qualities and the core building blocks of individual personality (Costa & McCrae, 2001). The primary rationale for this premise is that during infancy and the toddler stage children are the most egocentric and have the least communication skills (both receptive and expressive), thus lesser environmental influence on the expression of their temperament qualities. As they enter early childhood and assuredly by adolescence, there are an inestimable number of interactions with others and the environment. Developmentally, this is a highly vulnerable period when individuals are most dependent on others, most malleable, and highly susceptible to the sanctions of others. The interactions exert a bidirectional effect on personality development often called dynamic interactionism (Costa & McCrae, 2001, p. 3; Magnusson, 1990).

Alexander Thomas and Stella Chess Temperament Theory

Alexander Thomas (1914–2003) and his wife, Stella Chess (1914–2007), two psychiatrists at the New York University Medical Center in 1956, began research that provided a framework for understanding children's temperament, both normal and aberrant, that was based on behavioral characteristics (see Rapid Reference 1.7) (Thomas & Chess, 1989). They began their work, the New York Longitudinal Study (NYLS), in the early 1950s by gathering data on children from infancy.

Their methods included observations, parent questionnaires, and later teacher interviews. In reviewing their data, they identified nine traits: activity level, rhythmicity, approach-withdrawal, adaptability, threshold of responsiveness, intensity of reaction, quality of mood, distractibility, and attention span/persistence (Cole & Cole 1996; Thomas & Chess 1989). Two instruments, the Parent Questionnaire and the Teacher Temperament Questionnaire (TTQ), resulted from this work (Thomas & Chess, 1977).

The activity level of children was measured by calculating a ratio between active and non-active times. Rhythmicity was determined by reviewing the regularity of several child daily activities (e.g., sleeping, feeding, and elimination). The child's approach or withdrawal traits were measured by recording initial responses to novel stimuli, such as objects or persons. Some children were inclined to seek out the new experience further whereas others became fearful. A child's propensity to approach new circumstances is considered positive; whereas, reticent or withdrawal behaviors are considered negative. Once a new stimulus is presented, the child's adaptability is judged by the ease with which the child habituates or adjusts to the stimuli. The threshold of response measured the level of stimuli needed to elicit a response. For example, some children require a significantly louder noise to wake them than others do. Intensity of reactions relates to the child's energy level of response. The quality of mood contrasts a child's propensity for pleasant responses (e.g., joy) with the number of unpleasant responses (e.g., crying, unfriendly). Distractibility and attention span/persistence measure how easily a child can be diverted from an activity and the length of time a child can maintain concentration.

Chess and Thomas also provided pioneering work in linking particular temperament trait clusters with long-term outcomes, thus providing additional evidence for the importance of understanding child temperament. As the children in the study became older, Thomas and Chess (Chess & Thomas, 1984, 1986; Thomas & Chess, 1977, 1989), identified three core temperament patterns: easy, slow-to-warm, and difficult. Forty percent of children had an easy temperament, 15 percent demonstrated a slow-to-warm pattern, 10 percent were in the difficult category, and about 35 were noted as exhibiting blended styles. Children with an easy temperament established regular routines quickly, were cheerful, and adapted easily to new circumstances. The parents described these children as very content and easygoing. The slow-to-warm children were noted as cautious with strangers, lethargic, more often negative in mood, and exhibited slow adjustment to new experiences. Children with the difficult behavioral pattern experienced irregular routines with problematic sleep cycles, were slow to adapt to new stimuli, and more often reacted negatively.

In reviewing long-term outcomes, easy children had the best prognosis. Nearly half of the slow-to-warm children experienced psychological adjustment

Rapid Reference 1.7

Thomas & Chess Nine Behavioral Dimensions

Activity Level	Typical level of movement, calculate ratio of active to nonactive time
Rhythmicity	Predictability and regularity of daily biological activities (e.g., sleeping, feeding, and elimination), is a routine or schedule naturally established
Approach/ Withdrawal	Infant's initial responses to new stimuli (e.g., meeting a new person, new object, jack-in-box toy), are responses fearful or exploratory
Adaptability	How easily a baby's first response to a stimulus is modified, how quickly does infant adjust or habituate (e.g., first experience with solid food)
Threshold of Responsiveness	Intensity required to elicit a response (e.g., level of noise required for a response, does mildly wet diaper prompt response)
Intensity of Reaction	Energy level evident in the response (e.g., does child have a mild frown or cry vigorously if displeased, grin or robustly smile if pleased)
Quality of Mood	Comparison of the ratio of positive responses (e.g., smiles, laughter) to negative responses (e.g., unhappy, unfriendly)
Distractibility	How easily child is distracted or redirected (e.g., how quickly can the introduction of a toy or pacifier change her/his focus)
Attention Span/ Persistence	Once activity is started, how long is attention maintained (e.g., stare at a new toy, lose interest in toy mobile)

problems during their lifespan. Nearly 70 percent of children identified as having a difficult temperament experienced negative effects as they matured (Chess & Thomas, 1984; Thomas & Chess, 1977; Thomas, Chess, & Birch, 1968). The longitudinal design of their research made important contributions to understanding the value of early child temperament assessment and risk factors for intervention. The authors also acknowledged that early temperament qualities do not have a perfect correlation with long-term outcomes. Some children with no indicators of unfavorable temperament qualities did later exhibit poor outcomes and some with early risk factors did not develop behavioral difficulties.

In addition to their identification of early temperament patterns and long-term outcomes, Chess and Thomas also made another valuable contribution to the understanding of child-parent interactions as related to temperament through

their concepts of “goodness of fit” and “poorness of fit” (Thomas, Chess, & Burch, 1968). When the parents and child have similar temperaments, a good match exists and the child more naturally and effortlessly meets the expectations of the parents. With goodness of fit, children have greater freedom to be at ease in their environment and direct their energy toward further developing their own preferences. By sharing common temperament drives, the parents more intuitively understand the child, are more likely to naturally embrace and foster the child’s strengths, and these factors create a harmonious setting for the child’s formative years.

Although conflicts are more likely to exist if the parent’s and child’s temperaments do not match, this is not always the case. Having differences in temperament would not automatically infer conflict if the parents were able to acknowledge and appreciate the child’s differences, allowing her or him to express those needs. Circumstances that presented incompatibility between the child’s temperament pattern and the parents’ expectations or the environment demands were noted to have a “poorness of fit.” This point is illustrated by comparing the two samples of children in New York who were utilized in the Thomas and Chess (1977) studies. The original NYLS included children from primarily middle-income homes and Euro-American descent and the second sample was comprised of children from working-class and Puerto Rican descent. As an example of the implications for goodness of fit, it was noted that children who had irregular sleep patterns and were arrhythmic were not problematic for parents of Puerto Rican descent as they were more accommodating than parents of Euro-American descent in regards to the child complying with their schedules. Therefore, at age five, arrhythmicity was only predictive of adjustment difficulties for the children of Euro-American descent (Thomas & Chess, 1977; Thomas, Chess, Sillen, & Mendez, 1974).

The risk factors associated with poorness of fit are directly related to the relentless stress that can be created when parents and children have competing temperament needs on a daily basis. When a parent places high conformity demands for behaving in ways at odds with the child’s style, the child loses opportunities to develop their own inherent strengths and increases risk for maladaptive temperament expressions (e.g., irritability, externalized aggressiveness). As noted by Chess and Thomas (1986, p. 9), “a psychologically determined behavior disorder in a child or adult develops out of a substantial incompatibility between the individual’s capacities and coping abilities and the expectations and demands of the environment.” As noted before, many years earlier, Jung termed this distortion “falsification of type,” noting the exhaustion it caused within an individual and the risk for poor psychosocial adjustment (Jung, 1921/1971). Later Myers and Myers (1980) described the phenomenon of conflict between child-parent

temperaments as resulting from the assumption by parents that the child's differences reflect an inferiority. As noted recently, Kagan and Snidman (2004, p. 218–219) suggest society may interpret these differences as personal flaws.

William Carey Measurement of NYSL Dimensions

Carey, a pediatrician, reviewed the Thomas and Chess interviews research and operationalized interview data to form parent questionnaires, based on the nine behavioral qualities and three temperament patterns (i.e., easy, slow-to-warm, difficult, pattern). The measures included the Revised Infant Temperament Questionnaire (RITQ) for ages 4 to 8 months, the Toddler Temperament Scale for ages 1 to 3, The Behavioral Style Questionnaire for ages 3 to 7, and the Middle Childhood Temperament Questionnaire for ages 8 to 12 (Hegvik, McDevitt, & Carey, 1982; McClowry, Hegvik, & Teglasi, 1993; McDevitt & Carey, 1978). Sanson and his colleagues later created a short form of the Revised Infant Temperament Questionnaire (SITQ) based on their factor analyses of results from a large study using the RITQ (Sanson et al., 1987). Their factor analyses supported five dimensions rather than the original nine (i.e., approach, cooperation/manageability, rhythmicity, activity/reactivity, threshold). The Toddler Temperament Scale was created by Fullard, McDevitt, and Carey (1984) to measure NYLS dimensions for ages 1 to 3 years. Another comprehensive review of the NYLS data also resulted in support for five factors and creation of the Dimensions of Temperament Scales (DOTS). The DOTS was later revised (DOTS-R) and it provides parallel questionnaire forms for infants, children, and adults through several scales (activity level-general, activity level-sleep, approach-withdrawal, flexibility-rigidity, attention span-distractibility) (Lerner et al., 1982). Carey's instruments were an important contribution to temperament research as they provided a quantitative methodology for other clinicians to assess the nine temperament components (Carey, 1982, 2000).

Arnold Buss and Robert Plomin Temperament Theory

In the early 1970s Buss (1989) and Plomin (Buss & Plomin, 1975) also created a theory of temperament based on analysis of the NYLS research. They first paraphrased the NYLS interview protocols creating items with a five-point rating scale and then conducted factor analyses to determine if there was empirical support for nine independent factors. They found only attention span/persistence emerged as an obvious factor; however, some items across the constructs did appear to load forming a cluster for what they termed sociability and emotionality. Buss and Plomin were strongly convinced that evidence of temperament must first meet five criteria: heritability, stability, retention to maturity, adaptive value, and be present as a trait in animals (thus substantiating an evolutionary adaptive

function). From their continued extensive studies, they identified four qualities: activity, emotionality, sociability, and impulsivity that appeared to be supported both by their five criteria and the factor analyses. They subsequently published the EASI Temperament Survey (EASI). Emotionality encompassed autonomic nervous system functions including arousal, tempers, fearful responses, and mood swings. Sociability was defined as one's affiliations or desire to interact with others. Activity measured level of energy and impulsivity involved inhibition, motivation, and impulse drives. A later analysis of EASI data resulted in publication of the Colorado Childhood Temperament Inventory (CCTI) (Rowe & Plomin, 1977). Their theory was again revised to include a sixth primary temperament criteria, presence of the trait early in life, and subsequently impulsivity was dropped from their scale. They renamed the questionnaires, the EAS Temperament Survey for Children and the EAS Temperament Survey for Adults (Buss & Plomin, 1984).

Other Biobehavioral Temperament Theorists

The refinement of temperament perspectives continues to evolve as evidenced by national and international forums that have brought leading researchers together over the years to debate these issues (Goldsmith et al., 1987; Strelau & Angleitner, 1991). Since Thomas and Chess's seminal work with infants, other scholars continue to investigate biobehavioral constructs in early childhood. Rothbart has proposed reframing temperament through concepts of reactivity and self-regulation in infants (Rothbart & Derryberry, 1981; Strelau, 1983). She developed the *Infant Behavior Questionnaire* (Rothbart, 1981) as a measure of these constructs. Goldsmith and Campos (1986) defined temperament in lieu of primary emotions (e.g., fear, anger, sadness, pleasure). They published the Toddler Behavior Assessment Questionnaire (TBAQ) and also designed the Laboratory Temperament Assessment Battery (LAB-TAB) which provides standardization procedures for infant and toddler assessment within a laboratory setting (Goldsmith, 1996).

Others argued for conceptualizing children in respect to their impulsivity and flexibility as overcontrollers, undercontrollers, or resilient (Block & Block, 1980; Caspi 1998). Overcontrollers are described as having strong ego-control resulting in rigidity and the ability to suppress emotional impulses. In contrast, undercontrollers typically act on their impulses. Resilient have a balanced ability to quickly adapt and modulate impulse control based on what the immediate circumstances mandate. Research utilizing Big Five model personality measures indicates overcontrollers are lower on extroversion and emotional stability qualities as well as psychological well-being factors. They report high conscientiousness corresponding with high academic achievement and lower delinquency and bullying participation among teens. Agreeableness and openness are modest as

are social skills. Undercontrollers indicate elevated extroversion and lower scores for agreeableness and conscientiousness. As might be anticipated, this group also demonstrates lower academic achievement, peer-acceptance, and higher behavioral problems and delinquency among teens. The third category, resilient, have mean Big Five scores that are higher on all five scales: extroversion, emotional stability, conscientiousness, agreeableness, and openness. Likewise, intelligence, academic performance, social skills, general psychological adjustment, and self-esteem are higher. Delinquency and bullying indicators were lower (Scholte, van Lieshout, de Wit, & van Aken, 2005).

Neisworth, Bagnato, Salvia, and Hunt (1999) created the Temperament and Atypical Behavior Scale (TABs), an instrument that measures attachment, reactivity, and self-regulation characteristics. The measure yields four scales (Detached, Hyper-sensitive/active, Underactive, and Dysregulated) and is interpreted in lieu of early childhood indicators of developmental dysfunction for ages 11 to 71 months. Kagan (1994, 2009) proposed a strong reciprocal relationship between biology and environment influences that yields inhibited and uninhibited temperaments. Inhibited children (approximately 20 percent of children) are considered vulnerable to anxiety-related difficulties. They exhibit a quiet watchfulness, shyness, and stay at the perimeter of social interactions. Uninhibited children (approximately 35 to 30 percent of children) are spontaneous in social interactions, smiling and laughing readily with others. Over time, he noted most (approximately 75 percent) of children remained above the mean on these attributes if they were inhibited and below the mean if they were uninhibited, suggesting these traits were somewhat stable. Throughout the last several decades, he has conducted a number of electroencephalogram (EEG) and functional magnetic resonance imaging (fMRI) studies to identify hypothesized underlying psychophysiological correlates, particularly related to the amygdale. His work continues today as he encourages a broader scope of research with collaboration between biology, psychology, and humanities in understanding the shaping influences in human development (Kagan, 2009).

In Summary

The earliest speculations about temperament date to the time of Hippocrates and four clusters of behaviors and attitudes comprised the categories: choleric, phlegmatic, melancholic, and sanguine. These rudimentary concepts became the catalyst for several more sophisticated psychological type theories of temperament with some minor variation in interpretations. Based on modern sampling techniques, factor analysis of constructs, as well as reliability and validity standards, several well-recognized assessment instruments for adults and children have emerged

Rapid Reference 1.8

Temperament Theories & Instruments Timeline

350 B.C.E.	Hippocrates, Four Humors
150 A.D.	Galen, Four Temperaments (Choleric, Phlegmatic, Melancholic, Sanguine)
1921	Ernest Kretschmer, <i>Physique and Character</i> (Asthenic, Leptosomic, Pyknic)
	Rorschach, <i>Psychodiagnostik</i> (Extroversion/Introversion measure)
	Carl Jung, <i>Psychological Type</i> (Extroversion/Introversion, Sensing/Intuition, Thinking/Feeling)
1940	William Sheldon, <i>Atlas of Men</i> (Endomorphy, Mesomorphy, Ectomorphy)
1940s	Katherine Briggs (adds Judging/Perceiving to Jung's theory)
1942–1944	Isabel Briggs-Myers develops MBTI test items
1949	Raymond Cattell, <i>16PF Questionnaire</i>
1956–1975	MBTI published as research instrument first, then available to public
1950s–1970s	Alexander Thomas and Stella Chess, NYLS (activity, rhythmicity, approach-withdrawal, adaptability, threshold of responsiveness, intensity of reaction, quality of mood, distractibility, attention span/persistence)
1978, 1998	David Keirsey & Marilyn Bates, <i>Keirsey Temperament Sorter and Keirsey Temperament Sorter[®]-II</i> (Artisan, Guardian, Rational, Idealist)
1978, 1982	William Carey devised measurement instruments for NYLS dimensions
1975, 1984	Arnold Buss & Robert Plomin, <i>EAS Temperament Survey</i>
1996	Thomas Oakland, Joseph Glutting, & Connie Horton, <i>Student Styles Questionnaire</i> (SSQ)

(e.g., MBTI, Keirsey Temperament Sorter[®]-II, MMTIC, and SSQ). There are numerous personality measures that also include temperament constructs such as extroversion and introversion. Research has indicated strong support for this construct, particularly among five-factor models (e.g., 16PF, NEO-PI-R) and the super-three model (i.e., EPQ). Additionally, there are some personality measures

(e.g., MMPI-2) designed to differentiate pathology that have subscales related to social withdrawal or introversion and may be useful supplemental measures in a temperament battery, especially if maladjustment is a concern.

A complimentary line of temperament inquiry for early childhood was established by Thomas and Chess. They delineated nine biobehavioral dimensions in infants with three patterns—easy, slow-to-warm, and difficult—that are predictive of long-term adjustment outcomes. The goodness-of-fit paradigm was another important contribution from their work as it investigates the reciprocal implications between parental reactions and child temperament. In efforts to apply factor analyses methods to confirm the nine NYLS dimensions, others validated only some of the components: activity, emotionality, sociability, and impulsivity. Recent theorists have proposed redefining innate temperament constructs based on core physiological attributes that determine behavioral responses. Proposed paradigms include measures of reactivity and self-regulation; impulsivity and flexibility as overcontrollers, undercontrollers, or resilient; or inhibited and uninhibited temperaments. With the advent of modern research methods, there is a call for cross-discipline research that further investigates heritability factors, biological evidence, stability of traits, as well as crosscultural evidence for temperament constructs.



TEST YOURSELF



1. Which temperament dimension was added to the original Jung theory by Myers and Briggs?

- (a) Thinking-Feeling
- (b) Extroversion-Introversion
- (c) Judging-Perceiving
- (d) Sensing-Intuition

2. The Keirsey Temperament Sorter®-II yields which four descriptive types?

- (a) Artisan, Guardian, Provider, Realist
- (b) Artisan, Guardian, Rational, Idealist
- (c) Administrative, Quizzical, Rational, Industrious
- (d) Administrative, Guardian, Provider, Realist

3. Galton, Pearson, and Spearman all contributed to the eventual development of personality assessments through which of the following?

- (a) Lexical hypothesis guidelines
- (b) Super Three theory framework

(continued)

- (c) Publishing temperament measures
 - (d) Development of advanced statistical methods
- 4. Which of the following instruments are both consistent with Five-Factor Model?**
- (a) I6PF and MMPI-2
 - (b) NEO-PI-R and I6PF
 - (c) EPQ and EAS
 - (d) EAS and SSQ
- 5. Which of the following instruments are designed to measure temperament in children?**
- (a) MMTIC, MCTQ, CCTI, SSQ
 - (b) SSQ, MMPI-2, MMTIC, RITQ
 - (c) RISK, TTS, RITQ, MBTI
 - (d) MBTI, MMPI-2, MMTIC, SSQ
- 6. What major contributions did Thomas and Chess make to temperament theory?**
- (a) Falsification of type, goodness of fit, poorness of fit
 - (b) Super three, five-factor model, falsification of type
 - (c) Three body types, inhibited and uninhibited, reactive type
 - (d) Goodness of fit, nine temperament dimensions, three temperament patterns
- 7. Which of the following is not a modern area of investigation for temperament theory?**
- (a) Reactivity and self-regulation
 - (b) Inhibited and uninhibited
 - (c) Endomorphy, mesomorphy, and ectomorphy
 - (d) Overcontrollers, undercontrollers, resilient
- 8. Which of the following constructs frequently emerges across temperament and personality measures?**
- (a) Sanguine
 - (b) Psychoticism
 - (c) Impulsivity
 - (d) Extroversion-introversion

Answers: 1. c; 2. b; 3. d; 4. b; 5. a; 6. d; 7. c; 8. d