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Review Article

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From Jungian Attitude-Types to a Comprehensive Model of Diseases

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Abstract

This review discusses the pair of opposites named introversion and extraversion by Swiss psychiatrist Carl Gustav Jung in its biological foundation and psychosomatic implications. Jung's typology was the reference for Elida Evans' book on cancer in 1926, which would be the basis of American psycho-oncology and of a holistic approach to cancer patients. It is shown that introversion and extraversion have been widely used in psychology and psychiatry, even without any reference to Jung. Moreover, these concepts have been used for somatic illnesses. In 1990, independently of each other, George A. Bonanno and Jerome L. Singer of Yale University (USA) and Marco Balenci of Sapienza University of Rome (Italy) conceived two similar comprehensive models of diseases - both in their physical and psychic aspects - based on the psychophysical balance of opposite attitudes. Persistent dualism in Western medicine may explain the lack of development of these models. Actually, this kind of model derives from a holistic view, which was advocated by George L. Engel in the United States, giving relevance to biopsychosocial factors. Despite the increasing discoveries of psychoneuroimmunology and developmental psychobiology can provide a new scientific impetus to the individual-as-a-whole, this perspective still has greater convergence with Eastern medicine

Keywords: Diseases Classification, Holistic Medicine, Personalized Medicine, Psychodynamic Diagnosis, Extraversion, Introversion, Jungian Typology, Sasang Typology, Elida Evans, Sydney J Blatt

Introduction

The need to find characteristics apt to gather groups of individuals has been present in medicine since ancient times for its practical usefulness in the classification of diseases. The most famous and lasting typology was Galen's theory of four temperaments. It is worth noting that sanguine, phlegmatic, choleric and melancholic temperaments referred to both mind and body, with emotional states as a connection. In modern times, one of the most interesting typologies was conceived by Swiss psychiatrist Carl Gustav Jung starting from 1913, when he introduced the concepts of extraversion and introversion [1]. This paper discusses the influence of these concepts in some areas of psychology, psychiatry and medicine.

Jung's Dichotomous Typology

The concepts of extraversion and introversion came from the experimental research that Jung had done with Franz Riklin from 1904 to 1911 on word association and on psychophysical investigations with the galvanometer and pneumograph in normal and pathological individuals—mainly hysterical and schizophrenic subjects [2, 3]. From these experiments and from his psychiatric experience, Jung had discovered both complexes and a different attitude toward the external world between these two diseases: the hysteric is turned outwards more than normal people are while the schizophrenic is focused only on himself [4]. In 1913 Jung asserted: "hysteria is characterized by a centrifugal movement of libido, while in schizophrenia the movement is more centripetal" (p. 500); namely, the consciousness of hysterical people is directed towards the object while that of schizophrenics is directed towards the subject. If it is normal that people may shift from one attitude to the other as needed, it is also common that an individual shows a predominance of one or the other attitude since early childhood that becomes an aspect of his or her character. Therefore, human beings can be divided into two fundamental types—extraverts and introverts.

During that time, Jung was *Privat Dozent* in the University of Zurich and head physician of the Burghölzli psychiatric hospital. From 1907 to 1914, Jung participated in the psychoanalytic movement, becoming President of the International Psychoanalytic Association and Director of its journal. It is well-known that Jung separated from Freud due to personal and theoretical contrasts, especially with regard to their different notion of *libido*. Freud's theory of libido was exclusively sexual, while Jung used this term in a wider sense from 1911 as a form of neutral life-energy [5]. With the terms "transition" or "canalization" of libido Jung meant the possibility of energy transfer from a channel to another when there is an impediment to energetic flow: "biological, psychological, spiritual and moral channels" to be taken according to the principle of opposite direction [5-8]. Jung's conception of energy would undergo a long elaboration up to the point of approaching quantum physics [9-10]. Accordingly, it is a theory compatible with

the complexity of biological processes, although his intent was to explain the specific characteristics of psychic energy. As Leonardo Verdi-Vighetti put it: "Jung welcomes the historical need to give a scientific and autonomous status to psychology, moving at the same time the border of the psyche to the limit of physiological and instinctual processes" [11].

Thus, in 1913 - when Jung proposed, "to use the terms *extraversion* and *introversion* to describe these two opposite movements of libido, further qualifying them as *regressive* in pathological cases" - he was already referring to libido as a psychosomatic concept of energy [1]. According to Jung, it is just from the tension between opposites that energy is created. Jung had a holistic and monistic viewpoint [12, 13]. To him, psychic processes depend on the inherited brain structure. Hence, the basic substrate of the mind - that Jung called *collective unconscious* - is uniform even if there are countless individual consciousnesses [14]. From an ethological perspective, Anthony Stevens called this basic substrate *phylogenetic psyche*, which is close to Konrad Lorenz's concept of innate releasing scheme. Lorenz studied phylogenetically inherited behavioral mechanisms, which Stevens approached to Mayr's biological notion of open program, configuring a genome-bound information system that programs patterns of behavior based on environmental demands [15-17].

Jung recognized the importance of physiological constitution, on which German psychiatrist Ernst Kretschmer was working on in those years [18]. According to Jung, the differences between physiological and psychological typology are not of principle, but only of methodology. In fact, the first one needs scientific methods while the second needs the methods of the human sciences [14]. Therefore, Jung was convinced that his main types and those of Kretschmer might agree on the basic facts. Indeed, physiological constitution and psychological attitude overlap in the pairs schizothymic type-introversion and cyclothymic type-extraversion also for their pathological implications. The overlap between these two typologies was confirmed by an experimental research even if a specific comparison between them has never been carried out [19, 20]. In 1934-35, nevertheless, American academic William Sheldon studied with Jung in Zurich and visited Kretschmer's clinic, eventually creating a typology that establishes a bridge between Jung's psychological types and Kretschmer's physiological constitution [21, 22]. Sheldon, who had a degree in medicine and psychology, confirmed a correlation between the physical and behavioral aspects of the individual. Since there is a basic equation of introversion with ectomorphy, and of extraversion with endomorphy and mesomorphy, the possibility of developing an *integrated typology* between psychological and constitutional theories was proposed [23, 24].

Jung's holistic perspective emerges from the following sentences on typology: "The enigmatic oneness of the living organism has as its corollary the fact that bodily traits are not merely physical, nor mental traits merely psychic. […] The distinction between mind and body is an artificial dichotomy, an act of discrimination based far more on the peculiarity of intellectual cognition than on the nature of things. In fact, so intimate is the intermingling of bodily and psychic traits that not only can we draw far-reaching inferences as to the constitution of the psyche from the constitution of the body, but we can also infer from psychic peculiarities the corresponding bodily characteristics" [25].

In 1921, Jung published a complete exposition of his typology in a volume - *Psychological Types* - where he discussed the previous recognition of two distinct types by exponents of different fields of knowledge, starting from Goethe's physiological image of systole and diastole [26]. A particular interest is held by Nietzsche's pair of opposites called *Apollinian* and *Dyonisian* in 1871, and by William James' dualism *tender-minded–tough-minded* (1911). Moreover, this Jung's book "reveals extensive knowledge of Hindu and Taoist primary and secondary texts and incorporates their understanding about the interplay of opposites" [27]. It should be pointed out that, over the centuries, the Eastern culture has had an introverted orientation while the Western one has been strongly extroverted [28].

Psychological Types deepened the description of the two basic types, that Jung called "attitude-types". His theory is based on complementarity between opposites, with a particular importance of the balance between consciousness and unconscious. To Jung, the psyche and the body are self-regulating systems. Consequently, it is the dynamic balance between opposites that maintains health, while the rigidity of consciousness prevents the necessary adaptations to external or internal needs and can lead to pathology. This view of illness as a decompensation would enter medicine in 1929, with Walter Cannon's concept of homeostasis [29].

The Biological Foundations of Jungian Attitude-Types

It is possible to propose a physiological explanation of why a rigid consciousness is able to condition health. Our organism has neural systems to receive information from the external or internal environment: Charles Sherrington spoke of *exteroceptive* and *interoceptive* inputs. Among the latter we must include - from a neuropsychological viewpoint - not only visceral information, but also spontaneous psychic activities (like dreams and imagination) as they too come from inside. However, vision and imagery use the same neural substrate; hence, there is not a physiological distinction between perception and fantasy, outside and inside [30]. Consciousness focuses on the prevailing stimuli of the moment, but is conditioned by previous experiences—and, therefore, by explicit and implicit memory. Research has shown that centripetal inputs undergo a very high selection and only one in a million comes to be consciously perceived, due to a psychic filter consisting of attention level and emotional states [31]. Thus, what Paul MacLean called the *limbic system* is directly involved [32, 33]. The information that remains unconscious is used for many reflex adjustments of the organism and works on the psychic level, albeit unknowingly.

A characteristic of consciousness is *differential discrimination of perceived reality*: namely, what we perceive "is a distinction among several alternatives, a choice, a selection" [34]. Not at all a passive phenomenon, perception is an integrative activity of constructing reality that involves the anatomic structures of consciousness: not only the cerebral cortex, but also the thalamus, the hypothalamus, and the brain-stem nuclei [35]. The latter are better known with their old name of reticular formation. Interestingly, research has discovered that this region contains both nuclei for physiological homeostatic regulation and for waking, sleep, emotion and attention. Hence, there is a functional interconnection between organism and consciousness processes that neuroscientist Antonio Damasio has recently related to the mapping of the organism's physical structure and to primordial feelings [35, 36].

It is also interesting to highlight that, in his psychophysiological studies on perception, cognitive psychologist Herman Witkin identified two opposing perceptual styles - *field-dependent and field-independent* -, which have characteristics similar to extraversion and introversion [37, 38].

This neuropsychological discussion shows how a rigid direction of consciousness outward or inward causes a different perception of reality and psychophysical effects at an unconscious level. Referring to the mathematical theory of signal detection, a continuous "miss" of conscious registration of certain inputs is just a lack of cognition, because the organism reacts anyways to the received inputs [39, 40]. A data deficiency on a conscious level also prevents the attribution of a congruous meaning to the actual situation. Accordingly, the individual cannot prepare suitable behavioral responses. This approach is fully compatible with the thought of Jung: "Introversion or extraversion, as a typical attitude, means an essential bias which conditions the whole psychic process, establishes the habitual mode of reaction, and thus determines not only the style of behaviour but also the quality of subjective experience. Not only that, it determines the kind of compensation the unconscious will produce" [25].

Jung himself had claimed that the attitude-type antithesis has a biological foundation, because the typical attitudes to the object, biologically, "are processes of adaptation" aimed at survival [26]. Thereby, he approached introversion and extraversion to William Blake's *devouring* and *prolific* classes of people. In 1996, Stevens' evolutionary perspective saw the Jungian attitude-types as "two genetic behavioural strategies" toward a given environment, creating a psychiatric classification based on the isolation-integration social polarity [41]. Stevens called individuals with these opposing attitudes toward society *outsiders* and *insiders* [42]. Likewise, in 2006, current evolutionary social psychology has explained altruistic cooperation or selfish assertiveness as selected forms of adaptation to the environment in individuals defined *proselfs* and *prosocials* [43]. Regardless of the terminology adopted, we are in front of a dualism with biological bases.

Extraversion in Type A and Type C behavior patterns

Type A and *Type C* are behaviours with important somatic implications. It is known that Type A - discovered by cardiologists Friedman and Rosenman in 1974 - is prevalent in cardiovascular patients [44, 45]. A link between this coronary-prone behavior - aggressive, impatient, and competitive - and extraversion was suggested in 1985 [23].

Type A presents features completely different from Type C, that is the term Morris and Greer gave to the specific pattern of behavior identified as a major risk factor for cancer in 1980 [46]. Independently of each other, Steven Greer in England and Lydia Temoshok in the United States outlined a coping style in cancer patients characterized by non-expression of anger and of negative emotions in general, by cooperation, patience and attention focused on the needs of others [47-49]. Temoshok showed that Type C is the opposite of Type A, although both can be included among the forms of pathological extraversion [50, 51]. Henry Dreher's review of thirty-one scientific studies on psychosocial factors in cancer provided supportive evidence that Type C coping "is a risk factor for disease progression or less favourable survival outcomes among cancer patients" [52].

Extraversion in Elida Evans' Cancer Theory

Psychosocial factors were not accepted by medicine in 1926, when New York Jungian analyst Elida Evans published a book titled *A Psychological Study of Cancer*. In the previous year, Evans had attended a Jung seminar in Zurich [53, 54]. Evans' book was based on Jung's typology and its review showed the climate of contrasts that agitated American medicine in that time [55]. The editors of both the *Journal of Nervous and Mental Diseases* and the *Psychoanalytic Review*, William Alanson White and Smith Ely Jelliffe, advocated the study of the "organism-as-a-whole" while two radical factions pushed in divisive directions: organicists and rabid psychoanalysts. A clinical professor at Fordham University, Jelliffe was a New York neurologist and psychoanalyst in contact with Freud and Jung. Elida Evans had written with Jelliffe two psychosomatic papers about psoriasis and tuberculosis before writing her book on cancer [56, 57].

Marco Balenci has worked with Evans' book on cancer. Herein it is enough to focus that Evans hypothesized carcinogenesis as a regressive energy process in individuals with an extravert one-sidedness, a completely turned outward attitude that prevents them from any other adaptation, including toward internal stimuli (from both the body and the inner world) [13, 58-60]. She wrote: they "have put their life energy into a business, an ambition, an ideal or an affection to such an extent they have become part of it" [53]. To Evans, they do not show negative emotions, on the contrary "gentleness and mildness, the lack of self-assertion" in order not to lose their central relationships. Being very extraverted, this kind of individual is "vitally dependent upon persons and things. […] But if there are not side lines to sustain him, no other interests to follow if the large one fails, no other person to turn to in self-preservation, […] then [... t]he patient's energy" operates destructively on an unconscious level" (pp. 84, 56). Evans' hypothesis of extraversion in cancer patients had indirect confirmation from Sheldon's finding that cancer is rare among introverts, who match the cerebrotonic component of temperament in his constitutional theory [22].

From Evans' description, it must be concluded that cancer prone people have an anaclitic behavior. She explained a pathological process in which they repress "phantasies and wishes" until "a renunciation, a giving up of hope of the dearest wish" (p. 67) and, finally, they reach a condition without conflicts in which there is "nothing further to live for" (p. 72)—an unconscious suicide consisting of a psychophysical breakdown. Afterwards also Cutler, Bahnson and Bahnson, and Booth would talk about suicide with reference to cancer [61-63]. Schmale and Iker introduced the notion of *hopelessness* for cancer prone people [64, 65].

Evans highlighted a clinical difficulty in the rigidity of character that prevents cancer patients from abandoning their reference object and accepting "a substitute", so that they do "not seem able to form other ties" (pp. 67, 116). Evans wrote that she had found "a similarity in their psychological histories, until the cancer patients took the form of a distinct type" (p. 3). She had Jung's typology in mind and was aware of having outlined a specific type for cancer prone people. Therefore, Evans' type precedes the Type C behavior pattern of more than half century and it is worthwhile pointing out that Steven Greer knew Evans' book [66].

The main elements of Evans' type have maintained their validity despite the time elapsed, as we can see about the main points of

Type C coping: no expression of negative emotions, a façade of pleasantness, unassertiveness, being cooperative and overly concerned with the need of others [51]. It is interesting to consider that, in 1981, Richard Renneker collected these features in a *Pathological Niceness Syndrome* in which the "person's self-identity is in the minds of other people, not within himself" [67].

Despite their importance, Evans' findings remained without continuation for almost thirty years, especially because her "psychosocial approach to cancer" had been very opposed by the reductionist approach of the medical world [68, 63]. Even Jungian scholars had not shown much interest in her theory. Nevertheless - after the innovation in American medicine by George Engel with his *biopsychosocial model* in the 1950s for cancer, too - in 1975 the subspecialty of psycho-oncology formally began [69-71]. However, New York clinical psychologist Lawrence LeShan had been its founder since the late 1950s [72, 73]. LeShan was the direct descendant of Evans' clinical work and referred to Jungian theory, confirming Evans' observation that cancer patients exasperate the extrovert tendency to social complacency. LeShan interpreted cancer patients' weak "will to live", even before becoming ill, as an excess of adaptation: he claimed that future patients live "other-directed" [74]. He agreed with Evans on a loss that deprives of life's meaningfulness. These are the starting points of LeShan's *crisis therapy*, not only a form of psychotherapy to increase patients' will to live, but also "to help those persons whose personality patterns and life history might make them especially vulnerable to cancer" [75]. However, LeShan was different from Evans backdating the presence of feelings of isolation and despair since patients' childhood, which has been confirmed by modern research [76]. In addition to the multi-year work of LeShan, more than one hundred oncology scholars have quoted Evans' book in seven Western languages plus Russian to date, while there were only four Jungians [77-82].

Introversion-Extraversion in Psychology and Psychiatry

As for extraversion in cancer patients, independently of Evans, its higher score was proved by some research in the 1960s [83-86]. In fact, London academic Hans Eysenck had experimentally validated "introvert-extravert dichotomy" as one of three fundamental dimensions of personality [87-89]. The three-volume-book edited by Eysenck and titled *Extraversion-Introversion* must be mentioned. Jungian attitude-types were studied by other academic psychologists like Joy P. Guilford and Raymond B. Cattell, but shortly afterwards they were also used by clinicians for applications to psychopathology [90-98]. Indeed, the tests by Rorschach and by Root, the Gray-Wheelwright Survey, and the Myers-Briggs Type Indicator are based on Jungian typology [99-103].

Jungian attitude-types officially entered the United States psychiatry with a long comment contained in an article published by Collier and Emch in the 1938 *American Journal of Psychiatry* [104]. More and more, extraversion and introversion became terms of usual practice in psychology and psychiatry, even without any reference to Jung. After forty years, in 1978, Spiegel and Spiegel were one of these cases. In fact, their book on hypnosis discusses extraversion and introversion without quoting Jung. Spiegel and Spiegel propose three clinical types - Dionysian and Apollinean, with the addiction of Odyssean – in direct reference to Nietzsche. Evidently, they did not know that there is a whole chapter on this subject in Jung's *Psychological Types* [105].

Spiegel and Spiegel's book was a fundamental reference for the work of an important researcher, Sidney J. Blatt. He was a Freudian psychoanalyst and professor at Yale University's Department of psychiatry. In 1974, Blatt proposed a subdivision of depression in adults into two distinct forms based on the psychoanalytic reworking of clinical observations—an anaclitic and an introjective depression [106]. *Anaclitic depression* is a term introduced by René Spitz in 1946 for a severe syndrome found in infants with maternal loss [107]. Blatt suggested an extension of this concept to include adult depressive states whose primary feelings "are helplessness, weakness, depletion, and being unloved." The other form - *introjective depression* - is developmentally more advanced and is characterized by entirely different feelings: "of being unworthy, unlovable rather than unloved, guilty, and having failed to live up to expectations and standards" [106].

Blatt's distinction between anaclitic and introjective depression and his two personality dimensions of interpersonal relatedness and self-definition recall the extraversion-introversion dualism, since there is the polarity outwards-inwards. Blatt extended this dualism from depression to mental diseases in general, speaking of anaclitic and introjective psychopathologies. Hysteria and anaclitic depression are among the first, with denial and repression as main defences. Among the introjective psychopathologies are paranoia, obsessive-compulsive disorders, introjective depression and narcissism, with defences of projection, isolation and intellectualization as main defences [108, 109].

Coming to the end point of Blatt's complex theoretical development, he delineated "two basic personality or character styles" for normal conditions and not only for pathological ones. Blatt called them *introjective or Apollonian personality organization* and *anaclitic or Dionysian personality organization* [110]. Namely, Blatt recognized his distinction to be the same as Spiegel and Spiegel had done following philosopher Nietzsche in 1978. Indeed, Blatt did not know Jung's 1921 treatise *Psychological Types* but only a 1928 Jung's book - *Contributions to Analytical Psychology* - which included a short lecture on typology Jung had presented to a non-specialist audience in 1923. Based on such a lecture, Blatt could state: "A similar but more limited distinction was made much earlier by Jung (1928) between extroverted and introverted personality styles" [111, 112].

Therefore, Blatt did not realize Jung's priority nor the clinical relevance of the extraversion-introversion polarity, which can instead be found in Fierz [113]. Nevertheless, Blatt has played a key role in bringing back a psychodynamic approach in American and international psychiatry [114]. Blatt hypothesized a new classification of the twelve personality disorders in Axis II of the DSM-III-R and the DSM-IV into two major clusters linked to anaclitic and introjective psychopathologies. Blatt's theory proposes - as Jung's - a continuity between normal personality development and pathological deviations.

Continuum of mental functioning is the basis of Psychodynamic Diagnostic Manual (PDM) —an answer to the only descriptive and symptomatic approach taken by DSM from its 1980 third edition onwards [115]. In 2006, Blatt was a collaborator of PDM first edition. P axis of personality patterns or syndromes of PDM and 2017 PDM-2 incorporated Blatt's subdivision of depression into anaclitic and introjective forms [116]. Furthermore, PDM

has accepted Blatt's model of two psychopathological configurations: *introjective* (introjective depression, anxious-avoidant and phobic personalities, obsessive-compulsive personalities, schizoid personalities, narcissistic personalities, paranoid personalities, psychopathic personalities, sadistic personalities) and *anaclitic* (anaclitic depression, dependent personalities, somatizing personalities, hysteric-histrionic personalities, borderline personalities). Among the latter, we find somatizing, hysteric-histrionic, and dependent personalities, which have somatization as a specific expression. It is evident that the body is used in somatizing and hysteric personalities. The somatic phenomena of hysteria have been known since ancient times and have been studied since the birth of psychoanalysis [117].

Some commentary is needed about dependent personality, an anaclitic form which Jurgen Ruesch previously called *infantile personality* in 1948, defining it "the core problem of psychosomatic medicine" [118]. Ruesch noted that infantile and hysteric types have psychological factors in common, but the specific trait of the immature personality is "an excessive degree of conformance to standards either prescribed by the culture, by the family, or by certain persons." [118]. Such a condition corresponds to what we have previously called one-sided extraversion, and involves the control and repression of hostility. It should be noted that dependency is one of the 33 characteristics which denote the concept of extraversion [28]. According to Ruesch, breakdown occurs "in dependent personalities through separation from the source of dependency, or when compensation is made impossible." Dependent Personality Disorder (DPD) was included in DSM as a separate category from its third edition in 1980 [119].

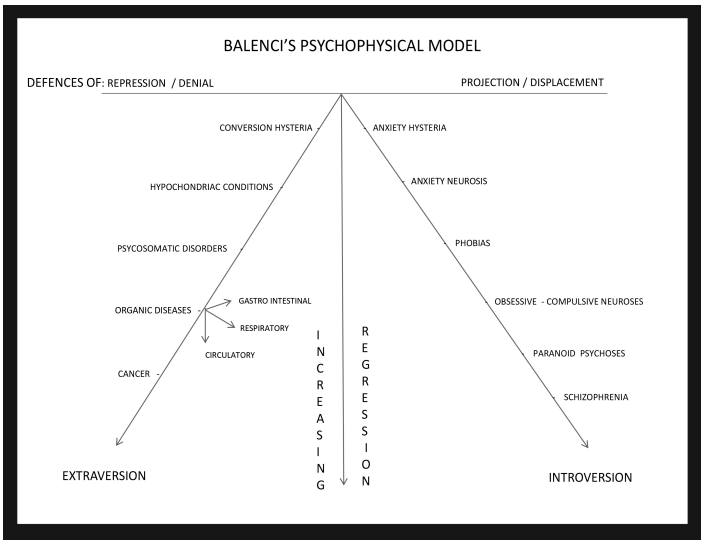
Models for Physical and Psychic Diseases

In 1988, Greenberg and Bornstein showed that dependent personalities have an increased vulnerability to physical disorders [120]. Robert Bornstein claimed that "dependency is a generalized risk factor for a wide variety of physical illnesses"—ulcers, colitis, diabetes, asthma, epilepsy, arthritis, tuberculosis, cancer, heart disease, and chronic pain conditions [121]. In 2000, Bornstein wrote that dependency is able to predict illness "better than any other personality trait" [122]. Thus, in the dependency-disease link there is a direct influence of personality on risk for illness. Bornstein hypothesized that the physiological mechanisms involved are probably due to a diminished immune response.

Actually, psychoneuroimmunology has proved the total integration of organism systems and developmental psychobiology has provided evidence that attachment relationships regulate physiological homeostasis even in adulthood [123-125]. Hence, the theories that have been done since the 1960s for overcoming dualism and reductionism have become scientifically even more sound [126].

In 1963, Claus and Marjorie Bahnson presented a "global psychobiological approach" to diseases in which physiological and psychological phenomena are complementary representations of the same process [62]. They started from the Freudian theory, but their *model of psychophysiological complementarity* was monistic and holistic. It considers two possible ways of discharging conflicting emotions. The choice between somatic and behavioral regression is determined by different ego defences: repression and denial for the somatic solution; projection and displacement for the psychic solution. This model involves two axes - somatic and psychic - along which pathological forms are found in a continuum of increasing gravity based on the intensity of regression. The somatic axis is formed by conversion hysteria, hypochondriac conditions, psychosomatic disorders, organic diseases (gastro-intestinal – respiratory – circulatory), and cancer. On the psychic axis, there are anxiety hysteria, anxiety neurosis, phobias, obsessive-compulsive neuroses, paranoid psychoses, schizophrenia.

In two articles of 1990, Balenci realized that the Bahnsons are close to Jung in their synchronous and complementary view of mind-body processes, and that their concept of interpersonal and intrapersonal functions is akin to extraversion and introversion [58, 127]. Therefore, Balenci linked the Bahnsons' model to Jungian attitude-types creating an *integrated model* of diseases, that connects one-sided extraversion to the Bahnsons' somatic axis and one-sided introversion to their psychic axis. In this integrated model the direction and extent of pathological deviation from the psychophysical equilibrium is related to which of the two attitude-types is concerned and to the intensity of its defences [59].



Figure

Independently - in the same year 1990 - George Bonanno and Jerome Singer of Yale University published an article proposing a similar model of diseases, which is also based on psychophysical balance. In Balenci's case, Jungian attitude-types are linked to the Bahnsons' system, while Bonanno and Singer connect extraversion and introversion to Blatt's theory [128]. Therefore, in Balenci's model there are two separate channels for somatic or psychic solution. Bonanno and Singer, conversely, followed Blatt in placing some physical and mental illnesses in each of their two sectors—*interpersonal relatedness-extraversion* and *self-esteem-introversion*. Bonanno and Singer connected this fundamental polarity to "the classic personality dimension of thinking introversion-extraversion" according to Jung, Guilford, and Eysenck [128]. Moreover, they recognized this polarity in the cognitive theory of field-independence and field-dependence [38]. Thereby, Bonanno and Singer presented psycho-physical health as a function of the balance of opposing attitudes and used consistent concepts, even if coming from different disciplines. In fact, they wrote: "psychological and physiological maladaptive behavior emerges as one moves too far toward one extreme at the sacrifice

of the other needs. When the field-dependent extravert uses these stylistic trends to focus on mechanisms of repression and denial, on resolving issues of intimacy or dependency at the cost of self-esteem and individuality, the balance may be tipped toward psychopathology or physical illness" (p. 463). In these sentences, we can recognize a theoretical approach that expresses a substantial continuity with Elida Evans' observations in 1926.

Bonanno and Singer's model and Balenci's model propose the complete range of diseases - physical and psychic - in a single conceptual scheme based on the deviation from equilibrium along two opposite polarities. This kind of model focuses on the subject and not the disease. The person is considered holistically, as a body-mind who reacts to external and internal stimuli with an individual way of coping that depends on his or her physical constitution, personality traits, and life experiences.

Conclusion

There has been no particular development of this kind of holistic model that would be useful in diagnostic classification and in the field of prevention. The continuing prevalence of dualism in Western thinking may explain this trend, despite the aforementioned discoveries of psychoneuroimmunology and developmental psychobiology should provide a new scientific impetus to the individual-as-a-whole in medicine.

These holistic models help to identify a better level of individual balance that can be useful to promote more suitable behaviors and a healthier lifestyle. Recently, the notion of *quality of life* has been added for a consciousness-based holistic medicine [129]. The latter is based on Søren Ventegodt's "life mission theory", assuming that each individual has a personal mission, which is the meaning of his or her life [130]. Ventegodt's theory is close to the informational explanation given above for the onset of disease and to Jung's individuation process. The new trend represented by *personalized or individualized medicine* also seems to be going in a similar direction, but in reality, it is marked by reductionism. Since the mapping of the human genome in 2003, this orientation of medicine has its reference point in a patient's genetic characteristics for his or her disease predisposition, prognosis, and treatment [131].

The concept of individualized medicine would require a holistic approach, but medicine is not yet ready for this paradigm shift [132]. Since the patient's biography also has a clinical relevance for the meaning and course of a disease [133], the data to be considered are not only an individual's genetic and molecular characteristics: "Diagnostics need to integrate individual genetic and physiological information and, at the same time, consider cognitive, psychological and social resources of the patient" [132]. Such a holistic investigation does not belong to current Western medicine but can be found in recent approaches to Eastern medical traditions. Actually, the latter have classification systems, which take into consideration the individual as a whole. They are constitutional medicine in China, *Sasang* typology in Korea, Ayurveda in India, and *Ikkando* medicine in Japan.

Bing Yuan has integrated modern medicine with traditional Chinese medicine, which is based on *yin-yang* Taoist opposites [134]. The result is a medicine in which there are holism-based body models and state descriptions. This state-description system is based on functional models instead of anatomical organs, and on an investigation into the inputs and outputs of the system. The organism is guided by the principles of self-regulation and self-adaptation, which push towards a *steady-state balance*. From this standpoint, therapeutic interventions have the effect of finding a new balance with the help of the above natural principles.

Eastern medical traditions shift the focus from the organs to the individual as a whole: "The balance and integration of biopsychosocial functions is considered to be essential to prevent disease and to restore health" [135]. The psychologic and anthropometric characteristics of Korean *Sasang* medical typology have been examined from the biopsychologic perspective of Kretschmer's and Sheldon's theories, and with the Myers-Briggs Type Indicator—the personality test based on Jung's typology [18, 21, 103, 136]. *Sasang* typology has four types: the yang types are extraverted and the yin types are introverted. The resulting model is very interesting because there is a polarity between extraverted and introverted types. This model provides individualized clinical indications for each type; in diagnosis, prognosis, and treatment. There is a remarkable similarity between these Eastern approaches and the aforementioned 1990 holistic models, but further study is needed for a specific comparison.

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