

An Integrative Approach to the Creative Personality



Beyond the Big 5 Paradigm

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Personality has received a great amount of attention in creativity research. Along with cognitive variables, personality traits are central to virtually any description of a creative person. Indeed, personality is at the heart of many theories of creativity (e.g., Eysenck 1993, 1995; Sternberg & Lubart 1995). Although numerous traits relevant to creativity have been identified, a general theoretical framework that organizes them in a meaningful way is lacking. In their review, Barron and Harrington (1981: 454) listed the following relevant traits:

active, alert, ambitious, argumentative, artistic, assertive, capable, clear thinking, clever, complicated, confident, curious, cynical, demanding, egotistical, energetic, enthusiastic, hurried, idealistic, imaginative, impulsive, independent, individualistic, ingenious, insightful, intelligent, interests wide, inventive, original, practical, quick, rebellious, reflective, resourceful, self-confident, sensitive, sharp-witted, spontaneous, unconventional, versatile, and *not* conventional and *not* inhibited.

It has been shown that creative personality inventories based on adjective checklists have good predictive validity (Domino & Giuliani 1997; Gough 1979), but these long enumerations lack theoretical underpinning. In contrast, strong

theoretical approaches (e.g., Eysenck 1993, 1995) have promoted thorough empirical research but tend to focus on a relatively small set of variables. To our knowledge, there is no formal model that integrates most of the personality variables known to be relevant to creativity – such as those listed by Barron and Harrington (1981) and those examined in more recent reviews. There have been, however, endeavors for a synthesis based on the Big 5 framework (Batey & Furnham 2006; Feist 1998). The problem with these, we suggest, is that the Big 5 framework is too general and particularly relevant for creativity research. Each of the Big 5 factors is very broad, with many facets that are at best only vaguely relevant to creativity. In this chapter we propose a model of creativity and personality that focuses on essential features of personality related to creativity. Based on various traditions of research, we introduce a theoretical framework that formally and parsimoniously organizes these traits. This framework builds on past influential theories of personality and creativity but extends and synthesizes them.

1. General Definitions and Overall Framework

The creative personality is a complex topic situated in a network of other complex topics. Creativity and personality are already by themselves broad research topics related to other major topics of similar importance, such as cognition and affect. To begin, personality and creativity will be defined, and the general theoretical perspective adopted will be outlined.

Very often *personality* is defined as relatively robust predispositions (i.e., relatively stable traits) that facilitate or hinder the occurrence of various

behaviors, thoughts, and feelings (e.g., John, Robins, & Pervin 2008). To give just a few examples, there are personality traits that influence sociability, anxiety, optimism, impulsivity, and also some aspects of cognition (e.g., tolerance to ambiguity and attention to details). The origin of such traits can be genetic as well as learned and influenced by the environment. The field of personality research also often distinguishes between the study of *individual differences* (i.e., the relations between various personality variables at the population level) and the study of the *idiosyncratic organization* of personality traits at the individual level – which makes every person unique.

Concerning *creativity*, in line with Plucker, Beghetto, & Dow (2004), we view it as “the interplay between ability and process by which an individual or group produces an outcome or product that is both novel and useful as defined within some social context” (p. 90). Underlying this definition, it is worth noting that person-related variables enter into the act of creation, which is, in turn, influenced by environmental context and leads to a production (work, idea, outcome).

In this context, the *creative personality* would be defined as follows: a complex array of traits – tendencies toward certain behavior, thoughts, and affect – that are characteristic of individuals who produce novel, appropriate work. In this chapter we consider all key distinctions of personality (i.e., individual differences and idiosyncratic organization of traits and their behavioral, affective, and cognitive implications) in relation to all key distinctions of creativity (person, process, product, and press). Here we will focus mainly on individual differences that influence the creative process and

product. However, we think that research on individual differences should be articulated with research centered on the individual and his or her environment. Hence, although we give more relative importance to individual differences and general laws in this chapter, we propose a model that is compatible with alternative and complementary approaches.

To move toward our final synthetic, integrative, multivariate model of the creative person, we proceed as follows. First, we consider the relations between personality and creativity in the classical framework of the five-factor model of personality (FFM or Big 5). This first step allows us to have a general overview of past research and to understand the key variables at stake. In a second step, we consider some other factors of personality that are of a higher order than those of the Big 5, such as psychoticism. This allows us to move progressively toward a possible general model of creativity and personality based on the Big 5 and its extensions. At this point, limitations of this approach will be highlighted, and another perspective will be proposed. Following an integrative multilevel approach, we return progressively to important specificities, such as the influence of personality on creativity through cognition, cognitive style, affect, and motivation. Finally, the implications of idiosyncratic personality organization and intraindividual variability are considered. In the discussion, we articulate all these elements together.

2. Creativity and the Five-Factor Model of Personality

In this first section we start by discussing the general relation between creativity and personality within the FFM (openness, extraversion, neuroticism, agreeableness, and conscientiousness). We base this short review on classic papers that have already discussed the multiple relations between creativity and personality (Batey & Furnham 2006; Feist 1998). These authors distinguish often among different types of creativity (e.g., everyday creativity, artistic creativity, and scientific creativity) and generally use the FFM of personality as a rather consensual framework. Given that all these factors are very broad factors – each of them encompassing many different traits – we use a recent distinction proposed by DeYoung and colleagues (2007), which is a midlevel distinction between broad factors (or domains) and specific traits. Occasionally, we discuss as well the role of very specific traits or facets of the broader factors. Then we discuss the relations between creativity and personality in the framework of other models of personality, namely, the *Gigantic 3* (extraversion, neuroticism, and psychoticism/disinhibition) and the *Huge 2* (plasticity and stability).

Openness

Openness (O) is a factor related to imagination, fantasy, aesthetic sensitivity, attentiveness to inner feelings, preference for variety, intellectual curiosity, and unconventional values (McCrae & Costa 1997). This factor is also sometimes called *intellect* and related to other similar traits, such as artistic imagination,

introspective reflection, and intellectual knowledge (Goldberg 1992; Saucier 1994).¹ Other authors (e.g., Caprara & Perugini 1994; De Raad, Hendriks, & Hofstee 1992) also include in openness such traits as independence and nonconformity.

O is definitely the factor of the Big 5 that is the most strongly and reliably related to creativity. According to Costa and McCrae (1992), O is the fundamental dimensions related to artistic temperament. Empirically, O is positively related to divergent thinking (McCrae 1987), artistic and scientific creativity (Feist 1998), and everyday creativity (Batey & Furnham 2006). According to Batey and Furnham (2006), O consists of both an attitudinal openness to new experience and an inability to inhibit irrelevant information (a perceptual openness), which can facilitate access to original, unexpected ideas.

A possible distinction between openness and intellect has often been discussed, especially in recent years. According to DeYoung and colleagues (2007) and Johnson (1994), openness and intellect can be meaningfully distinguished. In this perspective, *openness* represents a heightened sensitivity to aesthetics and beauty, whereas *intellect* represents a strong interest in ideas and the quest for truth. According to Nusbaum and Silvia (2010), openness is more closely related to creativity, whereas intellect is more closely related to intelligence. DeYoung, Grazioplene, and Peterson (2012) have shown that the “ideas” facet of openness is indeed close to intelligence, whereas the “aesthetic and feeling” facet are close to positive schizotypy (a tendency to experience unusual perception experiences and magical ideation), also called *apophenia*. In short, apophenia is a tendency to see patterns and causal connections where

none actually exist. These two last traits are at the core of schizotypy, which is also known to be related to creativity (Eysenck 1993). Arguably, this kind of openness can be assimilated to the perceptual openness mentioned by Batey and Furnham (2006).

Extraversion

Extraversion (E) is generally conceptualized as a high-order factor embracing high energy, sociability, warmth, enthusiasm, excitement seeking, dominance, self-confidence, assertiveness, and positive emotion (John & Srivastava 1999; McCrae & Costa 1999). Many of these traits have been found to be positively associated with many measures of creativity. Self-confidence and dominance in particular appear to be characteristic of both scientists and artists (Feist 1998). E is also positively correlated with divergent thinking and everyday creativity (Batey & Furnham 2006). Sociability has shown mixed relationships with artistic and scientific creativity, especially for high creative achievers, who need supposedly a lot of time alone for thinking and elaborating ideas (Feist 1998). Sociability can, however, be positively related to everyday creativity (Batey & Furnham 2006) and to social network size, which can be, in turn, positively related to creativity (Kéri 2011).

According to several authors (e.g., Depue & Collins 1999; DeYoung et al. 2007), the general factor of extraversion can be split into a dimension of *agency* or *assertiveness* and a dimension of *sociability* or *enthusiasm*. It is possible that the agency dimension of extraversion is relevant for virtually any type of creativity, whereas the sociability facet differs from domain to domain (see, e.g.,

Silvia, Kaufman, & Pretz 2009). It is also very likely that extraversion has an indirect effect on creativity through positive affect. Indeed, positive affect has long been known to have a positive impact on creativity (e.g., Isen, Daubman, & Nowicki 1987; Vosburg 1998). According to DeDreu, Baas, and Nijstad (2008), a positive activating mood (happy, elated) influences creative fluency and originality because of enhanced cognitive flexibility.

Neuroticism

The neuroticism (N) factor encompasses traits such as anxiety, depression, and negative affect in general, as well as self-consciousness, impulsivity, irritability, and vulnerability (John & Srivastava 1999; McCrae & Costa 1999). For N, domain or field specificity appears to be important. According to Feist (1998), artists are more anxious, emotional, and sensitive, whereas scientists are more likely to be affectively stable. However, it is unclear whether N has just an influence on the preference for certain domains of creativity, leading neurotic people to choose an artistic field to express themselves (Eysenck 1993), or N is really a facilitator in art, leading to higher achievement through higher sensitivity to emotional stimuli and communication of emotional ideas in a work of art (Batey & Furnham 2006).

According to DeYoung and colleagues (2007) and Saucier and Goldberg (2001), the N factor can be split into two main subdomains: *withdrawal* (anxiety, negative affect, and fearfulness) and *volatility* (labile affectivity, irritability, and angry hostility). Zuckerman and colleagues (1993) have also shown that the angry hostility facet is negatively related to the agreeability factor, whereas the

impulsivity facet is negatively related to the conscientiousness factor. It is likely that volatility has a positive impact on creativity, at least if it is not too high. Some features of volatility (high impulsivity, low agreeableness) are reminiscent of psychoticism (discussed in the next section) as well as subclinical personality traits, such as cyclothymia, which seems to be positively related to creativity (Richards et al. 1988). It is also possible that N has an indirect impact on creativity through negative affect. Indeed, according to De Dreu and colleagues (2008), negative affect can induce higher creativity because of enhanced persistence. (These considerations about personality, affect, and creativity are further elaborated in Section 4.)

Conscientiousness

Conscientiousness (C) is a factor that regroups traits such as self-discipline, dutifulness, dependability, achievement striving, preference for planned, organized behavior, and deliberation (low impulsivity) (John & Srivastava 1999; McCrae & Costa 1999). Generally speaking, C appears negatively related to artistic creativity and positively related to scientific creativity, but the reality is more subtle. First, whereas scientists are higher on C than the general population or than artists, highly creative scientists, when compared to less creative scientists, are lower on C (Feist 1998). This is consistent with the fact that low C scores are characteristic of people high on psychoticism, which is often seen as an advantage for creativity (see next section for further details). However, because C is also positively related to organization, work efficiency, and need for

achievement, high C scores also might be favorable to creativity, especially to high creative achievement.

One possible way to make sense of this apparent paradox is to consider the two main subdimensions of conscientiousness suggested by [DeYoung and colleagues \(2007\)](#): *industriousness* and *orderliness*. Orderliness typically refers to traits such as perfectionism, preference for routine, and tidiness. Industriousness is more specific to achievement striving, efficiency, and self-discipline. Hence it is possible that low orderliness and high industriousness are favorable to creativity. In a study by [Fürst, Ghisletta, & Lubart \(2014\)](#), it was indeed found that the variance of the C factor can be split in two parts: one part that is positively related to high nonconformism and high impulsivity and another part that is positively related to high persistence and need for achievement.

Agreeableness

The general agreeableness (A) factor is typically defined using traits such as compliance, cooperativeness, modesty, tender-mindedness, altruism, and straightforwardness. A is most often negatively associated with creativity; creative people, especially artists, but also scientists, are more likely to be hostile, asocial, unconventional, and norm rejecting ([Feist 1998](#)). [Batey and Furnham \(2006\)](#) reviewed several studies showing that creative people have tendencies toward low A, being less deferent and team oriented, less socialized, self-controlled, tolerant, and concerned with good impressions.

Once again, the broad traits proposed by [DeYoung and colleagues \(2007\)](#) can help to clarify a bit this somewhat dramatic picture. These authors proposed a split of the A factor in the two subdomains of *compassion* (warmth, sympathy, understanding) and *politeness* (cooperation, pleasantness, modesty). It is possible that low politeness – especially low conformism and low concerns for a good impression – is more relevant for creativity than low compassion. Moreover, creative people may not necessarily mean to be impolite or aggressive; maybe it is just that they want to “do things their way,” and they are confronted with cooperation issues because their methods are unusual. However, it is also possible than creative people are cold, stubborn, and aggressive because these traits are typical of psychoticism, a factor supposedly central to creativity that we are going to consider now.

3. Creativity and Higher-Order Factors of Personality

In this section we move up the hierarchy of personality factors and consider higher, second-order traits, namely, plasticity, stability ([DeYoung 2006](#); [Digman 1997](#)), and psychoticism ([Eysenck 1992b](#)). These *superfactors* have an important synthetic potential, and although they may sometimes appear overly general or excessively multifaceted, they provide an excellent bird’s-eye view of all the traits and lower-order factors we discussed in the preceding section.

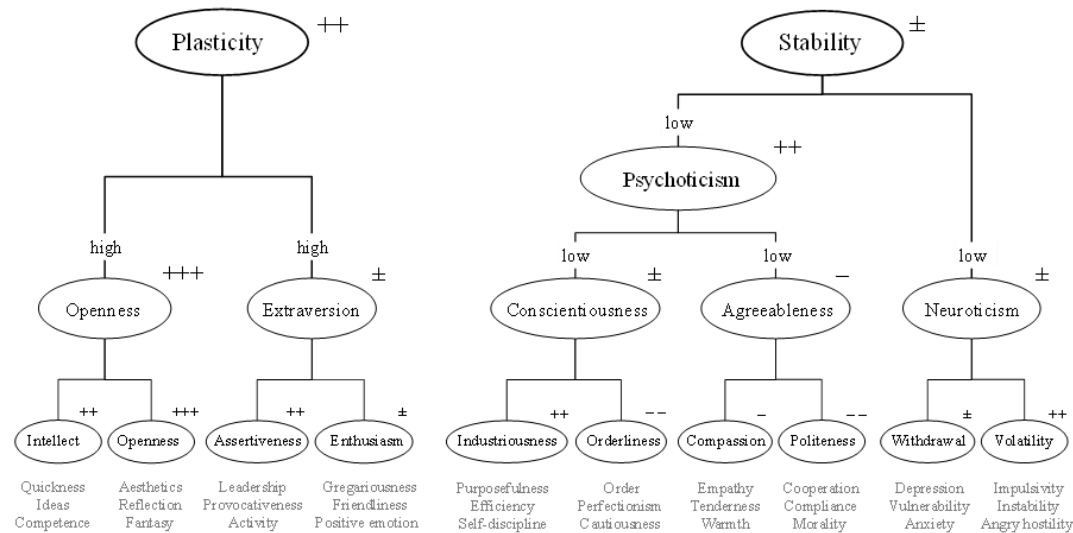
Psychoticism

Eysenck (1993) made interesting suggestions for an integrative theory of personality and creativity based on the concept of psychoticism (P). P is composed of several lower-order traits such as aggressive, cold, antisocial, and impulsive and can be more simply conceived as a combination of the inverse of the A and C factors of the Big 5 (Zuckerman et al. 1993), as shown in Figure 1. Many details about the conceptualization of P have been vigorously debated (Costa & McCrae 1992; Eysenck 1992a); however, this factor has a long-standing reputation in the personality literature. It has been found to be very close to corresponding factors in other theories based on three superfactors, in particular, from the factor of disinhibition (Clark & Watson 1999; Watson & Clark 1993), which regroups traits such as impulsivity, recklessness, risk taking, and a tendency to focus on the immediate moment rather than carefully planning or considering the long-term implications of behavior – all typical of low-c.

Eysenck (1993) has argued that P constitutes a genetic advantage for creativity, principally through its relation with low cognitive and behavioral inhibition, which consequently leads to higher ideational fluency and originality, as well as to higher independent and norm-challenging behavior. Although probably not sufficient in itself, because it does not take into account other factors such as motivation or affect, this parsimonious theory has, however, provided insightful lines of research and has led to many supporting empirical results. The P factor, or more specific traits defining it, has indeed often been found positively related to artistic and scientific creativity, as well as to divergent

thinking (originality in particular) and everyday creativity (Acar & Runco 2012; Batey & Furnham 2006).

Figure 1. Hierarchical structure of personality traits



Note. The + and – signs refers to the positive or negative impact of each factor on creativity; paradoxical effects are symbolized with a ±. The indication of *high* and *low* upon the lines connecting two factors indicate the nature of their relationship (high = positive correlation; low = negative correlation). Traits at the very bottom level are samples of representative traits of the 10 subdomain factors. See DeYoung et al. (2007) for further information about these.

These considerations pave the way to further reflection about the relation between inhibition and creativity. Cognitive inhibition and latent inhibition in particular have been the object of increasing attention in creativity research. *Latent* inhibition refers broadly to a tendency to filter or ignore past familiar stimuli (Lubow & Gewirtz 1995). People with low latent inhibition do not forget or ignore easily stimuli previously experienced as irrelevant. More generally, people with low *cognitive* inhibition have trouble filtering information from entering consciousness. Cognitive inhibition and latent inhibition have been found to be negatively related to psychosis and traits characteristic of a

proneness to psychosis, such as psychoticism and schizotypy (Lubow et al. 1992). More recently, latent inhibition has been found to be positively related to openness (Peterson & Carson 2000; Peterson, Smith, & Carson 2002) and to real-life creative achievement (Carson, Peterson, & Higgins 2003). Together these results indicate that people with low inhibition (i.e., unable to filter information) are more likely to be more prone to psychosis and have a higher probability to manifest relatively greater creativity.

Stability and Plasticity

Although the factors of the Big 5 were originally conceived as independent factors, a growing body of literature suggests that higher-order factors may meaningfully account for the correlations that are actually often observed between some of these five factors (DeYoung 2006; Digman 1997). These two higher-order factor are *plasticity*, characterized by high O and high E, and *stability*, characterized by low N, high A, and high C. More synthetically, stability can also be seen as a composite of low N and low P (see Figure 1).

From what we saw in the preceding section, plasticity appears as a powerful predictor of creativity; because E and O are overall positive predictors of different kinds of creativity, it seems reasonable to suppose that the joint contribution of these two factors will have good predictive power. Although empirical studies on plasticity and creativity are still quite rare, recent results have indeed shown that plasticity is highly and positively related to various measures of everyday creativity, with effect sizes ranging from ~ 0.30 to 0.70 (Silvia et al. 2009). Moreover, Fürst and colleagues (2014) have shown that

plasticity can be extended to incorporate the concept of inspiration. A small scale of inspiration was actually the best marker of this factor, whose predictive validity was good; correlations with a measure of idea generation in two studies ranged from ~0.34 to 0.58.

Stability also holds great potential for synthesizing many relations mentioned in the preceding section. More specifically, stability should be negatively related to artistic creativity; being “unstable,” meaning nervous, not agreeable and not conscientious, should be an advantage in the arts. However, there are several problems with such a simplistic perspective. First, the C factor is not very well explained by the higher-order stability factor; that is, in such a model, most of the variance of C remains specific to C and does not contribute much to the estimation of stability (DeYoung 2006). This could be problematic because the role of C – quite complex but apparently important – could be totally eclipsed behind this very broad stability factor. Second, the predictive validity of this factor is much lower than for plasticity: Silvia and colleagues (2009) found effect sizes in the range of 0.30 or below, and Fürst and colleagues (2014) found no effect at all.

At this point, the situation could be summarized as follows: as just discussed and represented by the “++” signs in Figure 1, plasticity seems to be unambiguously and positively related to creativity. For stability, things are more complicated; it would be a rash simplification to conclude that a low stability is preferable for creativity – hence the sign “±” placed next to it in Figure 1. Furthermore, and even for plasticity, such a very high-level synthesis does not account for many relations between creativity and personality. Although the role

of O is quite clear, the impact of the broad E factor is not without ambiguity; if we can conclude reasonably that assertiveness is generally favorable for creativity, the role of enthusiasm and its underlying traits is much more ambiguous. For stability, if we go down the hierarchy of subfactors and traits below it, things get critically complicated. The apparent positive effect of psychoticism hides all the difficulties aforementioned with the C factor, whereas the N factor also has its fair share of thorny surprises – volatility may play a positive role, just as negative affect could to a certain extent, but it would be unwise to conclude that withdrawal, anxiety, and depression are good for creativity (Silvia & Kimbrel 2010). In the end, we find paradoxes at almost every level of analysis.

4. An Integrative View of the Creative Personality

A Metaframework

To try to overcome these difficulties, we propose a slight change of perspective. Instead of a two-factor model of personality and creativity based on plasticity and stability, we would like to consider a more general two-dimension theory of creativity, putting aside for a moment the personality variables. The two general dimensions of this model are *order* and *chaos*. Such a distinction is certainly not a novel idea; rather, it has been omnipresent in an incommensurable number of past theories, as we will soon see. These two dimensions have been proposed by Rea (2003) to account for what can be called *creative intelligence*. In a few words, order corresponds to cold-ordered thinking, and chaos corresponds to

hot-chaotic thinking. The general idea of this order and chaos model is that creativity lie somewhere between these two dimensions – too much order would lead to dry and unproductive intelligence, whereas too much chaos would lead to messy thinking and nonsense.

In his original chapter, Rea discussed these two dimensions as two extremes of a nonlinear “order-edge-chaos” continuum. It is worth mentioning that this discussion took place in the wider context of complex adaptive systems, with an important place given to nonlinearity and phase transitions. However, we will not go into further detail on this in this chapter.² Rather, we will consider how past classical research on creativity could fit in this general order-and-chaos dichotomy. In all cases, the central idea remains the same: creativity is viewed as a point of equilibrium between these two extremes. We believe that this synthetic general approach holds enormous promise for an integrative theory of creativity. It is possible that it has not yet achieved popularity in the field because it is too abstract and remote from more classical theories. Hence our intention here is to place this relatively unknown approach in relation to other mainstream and influential theories of creativity.

Let us start at a very general level. As [Table 1](#) shows, the chaos dimension can be seen as analogous to the classical dimension of *divergent* thinking and the order dimension can be seen as analogous to *convergent* thinking ([Guilford 1950](#)). This dichotomy is also reminiscent of the model proposed by [Campbell \(1960\)](#). The idea of this approach is that creativity relies on two main mechanisms: *variation* and *selection*. Variation can be seen as a blind, random process that is at the origin of idea production. The selection mechanism is

responsible for the selective retention of worthy ideas. This theory has been further developed by [Simonton \(1997\)](#), in which the variation process corresponds to an *ideation rate* and the selection process to an *elaboration rate*. In both models, variation and ideation are considered as quite chaotic and unpredictable, whereas selection and elaboration are somewhat more controlled and ordered processes. In yet a different perspective, the chaotic and uncontrolled nature of variation and ideation rate is arguably analogous to the psychoanalytic notion of *primary processes* (e.g., [Suler 1980](#)), which refers to loose, automatic, and illogical ideation. Similarly, selection and elaboration are analogous to *secondary processes*, which refer to conscious elaboration of meaningful ideas or product. In this theory, as in the others mentioned earlier, creativity relies on an interplay or equilibrium between these two types of processes.

Begin Table 1

Table 1
The Two Dimension of Chaos and Order and Other Theories of Creativity

Author	Chaos	Order
Guilford (1950)	Divergent thinking	Convergent thinking
Campbell (1960)	Variation	Selection
Simonton (1997)	Ideation rate	Elaboration rate
Suler (1980)	Primary process	Secondary process

End Table 1

Personality Variables and Order and Chaos

Now that the overall metatheoretical stage is set, we can come back to our personality variables and see how they could possibly fit the scheme. Ideally, it

would have been convenient if, for instance, high plasticity corresponded to high order and low stability to high chaos. However, this angle does not really work. To a certain extent, psychoticism can be seen as quite representative of chaos, due to its underlying impulsive and nonconformist traits. By extension, low stability (i.e., high N, low C, and low A) also could be synonymous with chaos. However, high stability also could be considered as the perfect example of order. One could argue that plasticity is more representative of order, for example, because of the openness/intellect factor. All this is very fragile, and inconsistencies multiply as we look at it closer. Stability and plasticity nonetheless figure in the recapitulative [Table 2](#) for the sake of exhaustivity, but one should not pay too much attention to it, for it does not hold much promise. Also, the presence of openness in both columns of this first row may appear like an easy solution to a difficult problem – and to a certain extent it is – but this is actually motivated by several reasons. The first is to represent the overwhelming presence and importance of this factor for creativity. Beyond this, there are also other specific reasons for this double presence of O that will be clarified when we consider in more details how the underlying traits of this factor are distributed in the lower rows of the table.

Before we discuss these details, a general point has to be mentioned: not all the factors of the Big 5 are present in this table. This is not a very convincing integrative synthesis at this point! This is, however, a deliberate choice because we feel that many of the factors of the Big 5 are actually much too broad to be included in a meaningful theory of creativity and personality. This should be clear from the first part of this chapter, replete with the report of contradictory

findings about the role of N, C, or E in relation to creativity. The use of the Big 5 framework has reached a ceiling in terms of understanding the relationship between creativity and personality. The new (or renewed) approach proposed here, based on order and chaos, leads us to shift perspective and look at these personality factors from a different angle. The Big 5 literature has provided an interesting synthesis up to now, but we argue that it is time to move to a theory that is more specific and relevant for creativity research.

Given this, we can now consider the second row of [Table 2](#). This second row focuses on some of the 10 *subdomains* or *broad traits* proposed by [DeYoung and colleagues \(2007\)](#). First, we can see that the general O (openness/intellect) factor is now split up and distributed in two columns. Consistent with what was discussed earlier, intellect fits in the order column because this factor is close to intelligence ([DeYoung et al. 2012](#); [Nusbaum & Silvia 2011](#)) and, by extension, convergent thinking. The openness factor is in the chaos column because it is close to schizotypy or apophenia ([DeYoung et al. 2012](#)). Similarly, the two main aspects of C are also distributed in two separate columns. Industriousness is in the order column because it represents traits such as purposefulness and efficiency, essential to performing sustained work allowing the organization and elaboration of creative ideas. The orderliness factor is in the chaos column because people with low scores on this factor tend to be messy, to dislike routine, and to accept things even if everything is not “just right.” This is reminiscent of tolerance to ambiguity and psychoticism, both related to creativity ([Eysenck 1993](#); [Zenasni, Besançon, & Lubart 2008](#)). This is probably the aspect of the general C factor that is responsible for the positive correlations

that have been reported between C and creativity. The last factors of this level of analysis are the broad traits of volatility and assertiveness. Volatility represents traits such as affective instability and a tendency to be easily annoyed, agitated, and angry. This is also close to psychoticism (low C and low A) as well as to the impulsiveness and immoderation facets of N. This is clearly a factor of chaos. However, assertiveness, which is in the order column, represents traits such as leadership and activity (e.g., take charge, influence people). These are seen as relevant for order because observable, manifest creativity needs that kind of motivation so that “things get done” and good ideas do not stay in the mind of a creator or in a drawer of a desk in an embryonic state.

Begin Table 2

Table 2
Personality Variables and Order and Chaos

	Chaos	Order
High-order factors (Gigantic 2, Huge 3, Big 5)	<i>(Low stability, high plasticity)</i> High psychoticism (P) High openness/intellect (O)	<i>(High plasticity, low stability)</i> High openness/intellect (O)
Broad traits (10 subdomains by DeYoung and colleagues)	High openness (O+) Low orderliness (C-) High volatility (N+, A-, C-)	High intellect (O+) High industriousness (C+) High assertiveness (E+)
Specific traits	Inspiration (O+, E+) Novelty seeking (E+, P+, O+) Risk taking (E+, P+) Impulsivity (E+, P+) Nonconformism (P+) Apophenia (O+, P+)	Purposefulness (C+, N-) Self-discipline (C+, N-) Efficiency (C+, E+) Achievement striving (C+, E+) Perfectionism (C+, N+) Quickness (O+, N-)

End Table 2

Finally, the last row of the [Table 2](#) lists some even more specific traits. In the order column we find many traits that underlie the industriousness and

intellect broad factors described earlier. To a certain extent, some of these traits are also positively related to extraversion and emotional stability (see [DeYoung et al. \[2007: 884\]](#) for further details). All these traits are relevant to fast, efficient, and purposeful work that allows the development of promising ideas. In the chaos column we find specific traits that underlie mostly the O, E, and P factors. Inspiration has been found to be very close to O and E, or the plasticity factor ([Fürst et al. 2014](#)). Variables from the spectrum of novelty seeking, excitement seeking, risk taking, and impulsivity are known to be midway between E and P (e.g., [Depue & Collins 1999](#); [Zuckerman & Cloninger 1996](#)). These, along with nonconformism, more specific to P, are the variables that push people to try new ways of doing things or new ways to think without worrying too much about “what could go wrong” or “what others could say.” Finally, the variable of aepheonia (or positive schizotypy) represents attempts at seeing new patterns and relations between ideas, even if there is a high risk that they would be erroneous or unfruitful. All these variables hence represent the adventurous, bold, and even sometimes dangerous explorations without which creativity would not exist in the first place.

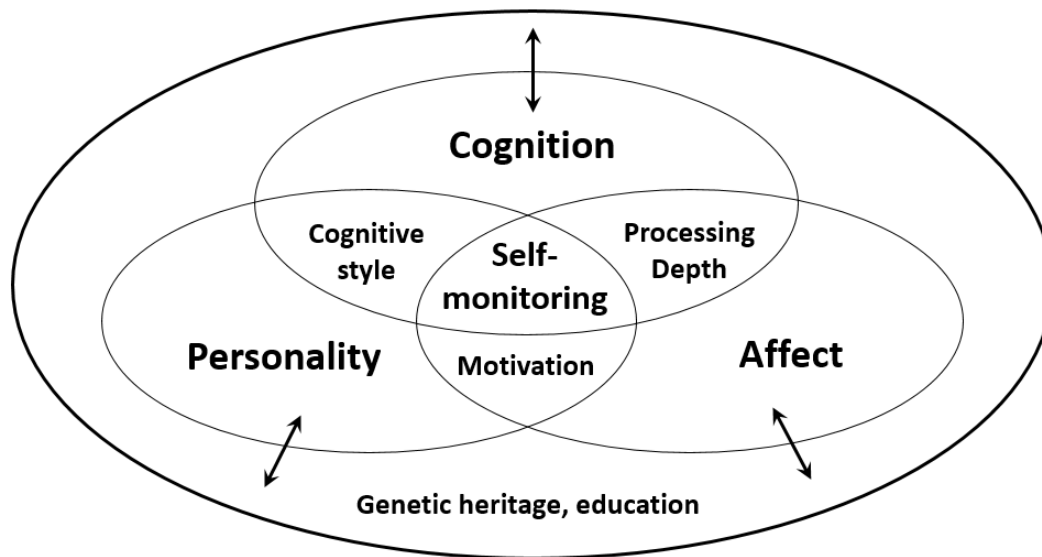
One noticeable thing at this point: along with the paradoxical role of certain factors (C in particular), other cells in [Table 2](#) imply somewhat incompatible traits or abilities. For example, people high on volatility are less likely to be high on industriousness (the two factors correlated ~ -0.50) ([DeYoung et al. 2007](#)). Hence it is likely that creativity relies on a tradeoff or some fragile equilibrium point; certain levels of volatility and psychoticism are useful to a certain extent, but they should not be too high; otherwise, they would

have a negative impact on industriousness. This will be further elaborated in the “Discussion” section. For now, we continue to develop this order and chaos approach to other aspects of the creative person.

A System View of the Creative Person

The idea of this section is now to mix the ideas of the preceding section with another classical tradition in psychology: the basic distinction between *cognition*, *personality*, and *affect*. Using a very simple perspective, we posit that *motivation* can be seen as the overlap of affect and personality, *cognitive style* as the overlap of personality and cognition, and *processing depth* as the overlap of cognition and affect. Thus the aim of this section is to review how the two dimensions of order and chaos can be found in all these components. Here we leave progressively the correlational approach to enter the territory of individual functioning. [Figure 2](#) proposes a graphical representation of the organization of these components. It is very sketchy, but this should be enough for our purposes. In this figure, the large outmost line represents the whole person. Nothing is represented outside of it only because our central focus here is on the functioning of the person, but one could certainly add other people in the social realm or more abstract systems such as a field or a domain of creativity (see [Feldman, Csikszentmihalyi, & Gardner \[1994\]](#) for an example of such diagrams and integrative system theory).

Figure 2. Schematic view of sub-systems inside the creative person.



[Table 3](#) summarizes how order and chaos can be found in each of these components. The table starts with cognition and proceeds with each component following a circular clockwise movement. The first row of this table actually is a summary of previous sections: chaos in the domain of cognition is characterized by fast, automatic ideation and the ability to combine and expand knowledge in a new (and sometimes risky) manner; order is represented by much slower processes such as controlled elaboration, evaluation, and verification. This proposition is in line with the elements synthesized in [Table 1](#), as well as with other syntheses, such as the synthesis on cognitive regularities in creativity by [Bink and Marsh \(2000\)](#), who distinguish between generation (idea production and synthesis) and selection (idea evaluation and elaboration).

The second row, "Processing depth," refers to two main types of information processing: heuristic and systematic. The former is a superficial and

relatively automatic mode of processing information; the latter corresponds to a deeper and thorough mode of thinking (e.g., [Chaiken & Ledgerwood 2012](#); [Newell & Simon 1972](#)). The real interest here comes when we consider the impact of *affect* on information processing. Specifically, positive affect induces heuristic processing that lacks logical consistency, with little attention paid to details, and fosters unusual associations; conversely, negative mood elicits an analytical mode of processing information, a high degree of logical consistency, and considerable attention to detail ([Schwarz & Bless 1991](#)). These theoretical elements are very similar to – and partially at the origin of – the model by [DeDreu and colleagues \(2008\)](#), according to which negative affect fosters persistence and positive mood enhances flexibility. In a different but related perspective, [Martindale \(1999\)](#) has argued that extreme levels of arousal (intense excitement on the one hand and sleepiness on the other) are favorable to loose and remote association, whereas moderate levels of activation are more favorable to elaboration and conscious work³.

All these considerations about affect show that mood and emotion have long and important ramifications; they are related to both processing depth and motivation variables. Indeed, the notion of motivation is quite inseparable from affect. If we look in the motivation cells of [Table 3](#), we can see a distinction between Enthusiasm (related to positive affect) and Dissatisfaction (related to negative affect). These are arguably the two main motivations that are at the origin of all creative endeavors (see also [Rea, 2003](#)).

If we now come back to personality, we can synthesize elements discussed in the section “Creativity and the Five-Factor Model of Personality”

that did not figure in [Table 2](#). First, the “Personality” row of [Table 3](#) shows that extraversion may have an impact on creativity through its correlation with positive affect, whereas neuroticism could foster persistence and perfectionism through negative affect. Moreover, volatility also may be relevant in the affect spectrum, for it is related to affect instability; given the advantage of both negative and positive affects, as well as of a variety of levels of arousal, volatility may facilitate access to the whole spectrum of these various affective states. Furthermore, personality is also connected to cognitive factors. Intellect is positively related to general intelligence (*g*), whereas openness and psychoticism are related to latent inhibition. Personality also has important motivational implications, in particular, through variables such as novelty seeking (P, E, and O) and industriousness (C).

Finally, at the crossroads between personality and cognition lie *cognitive styles*. This is again a vast literature that is impossible to review exhaustively here (for such a review, see [Kozhevnikov 2007](#)). Quite simply, here our only goal is to show that many – but obviously not all – cognitive styles can fit well in [Table 3](#). For instance, we believe that [Kirton’s \(1976\)](#) *innovators*, who prefer original thinking and norm-challenging behavior, would have their place in the “Chaos” column. Conversely, *adaptors*, who are more concerned with resolving problems and searching for improvement, would fit nicely in the “Order” column. Consistent with this idea, [Kwang and Rodriguez \(2002\)](#) have shown that adaptors are more conscientious and more extraverted. In the same vein, see also convergent and divergent thinkers as described by [Brophy \(2000\)](#) and [Cropley \(2006\)](#). In a different (historical) approach, [Galenson \(2006\)](#)

distinguished between *finders*, who innovate quickly and at a young age, and *seekers*, who progress slowly through a long trial-and-error process. We think that finders would go well in the “Chaos” column and seekers in the “Order” column, though it is a bit speculative.

More generally, [Table 3](#) is also reminiscent of the distinction between *experiential system* and *rational system* proposed by Epstein ([Epstein 1990](#); [Epstein et al. 1996](#)).⁴ According to this theory, the rational system is analytic, logical, systematic, intentional, effortful, and conscious – this system has been operationalized through need for cognition, which is very close to intellect ([DeYoung et al. 2012](#)). Complementarily, the experiential system is holistic, automatic, fast, effortless, and driven by affect. Both systems fit nicely in [Table 3](#), *experiential* in the “Chaos” column and *rational* in the “Order” column.

Begin Table 3

Table 3
Order and Chaos in the Various Subsystems of the Creative Person

	Chaos	Order
Cognitive processes and abilities	Synthesize, combine, expand Fast, automatic ideation Divergent thinking, generation, low latent inhibition (LI) See also Table 1	Analyze, evaluate, verify Slow, controlled elaboration Convergent thinking, selection, general intelligence (<i>g</i>) See also Table 1
Processing depth	Shallow, heuristic processing Quick idea association Many superficial searches	Deep, systematic processing In-depth analysis One methodic search
Affect	Extreme arousal (excitation or sleepiness) Positive affect (PA) Facilitate loose associations and flexibility	Moderate arousal (calmness, concentration) Negative affect (NA) Facilitate effortful work and persistence

Motivation	Enthusiasm Challenge, interest, pleasure	Dissatisfaction Mastery, importance, seriousness
Personality	Extraversion ↔ PA Openness, psychoticism ↔ LI Novelty seeking See also Table 2	Neuroticism ↔ NA Intellect ↔ <i>g</i> Industriousness See also Table 2
Cognitive style	Innovators, finders Preference for holism and broad conceptualization	Adaptors, seekers Preference for analysis and narrow conceptualization

Discussion

In this chapter we tried to synthesize a various number of approaches that have been of central importance for the study of the creative personality. The general model that we propose here provides a compilation and articulation of past research; it is not a completely new approach that implies any radical change of perspective. Rather, the hopes and efforts underlying the elaboration of this framework were those of unification and synthesis between different traditions. In closing, we now offer some general consideration about this model, how it can shed light on the complex nature of the creative personality, and what are its implications for practical applications and future research.

With its two dimensions, this order-and-chaos model is obviously very general. However, as we hope to have made clear, it can possibly be specified in many various ways. Indeed, the personality traits and factors discussed here have many implications. First, most of these traits have general, direct impact on creativity (i.e., variable listed in [Table 2](#)). Second, many of these variables have indirect or more specific implications, through the various subsystems represented in [Figure 2](#) (cognition, affect, motivation, etc.). For example,

openness and intellect are closely connected to intelligence, apophenia, and latent inhibition, which all have an impact on creativity. Similarly, extraversion and neuroticism can have an important influence on creativity through their close relations with mood. Further, these mood variables can have a significant influence on cognition (processing depth in particular) that seems quite relevant to creativity. Finally, at the crossroads between personality and cognition lie various cognitive styles, many of them being known to also affect creativity.

Beyond these general considerations, this order-and-chaos framework points out one last very important issue. We have seen that things are not as simple as having one group of variables going in the order category and another group of variables, independent of the first group, going in the chaos category. On the positive side, it seems that several traits in the same category tend to be positively correlated (e.g., in the “Order” column of [Table 2](#), intellect, industriousness, and assertiveness are positively correlated, as reported by [DeYoung et al. \[2007\]](#))⁵. However, the whole picture is more complex than that. First, some traits of one category can be relatively independent (e.g., in the “Chaos” column, openness is almost uncorrelated with volatility; again, see [DeYoung et al. \[2007\]](#)). Second, some traits in different categories can be positively correlated (e.g., intellect and openness). Third, some traits in different categories are also sometimes negatively correlated (e.g., industriousness and order). Although this might appear messy, most of these “exceptions” should not be seen as anomalies in an otherwise neat taxonomy. On the contrary, we believe that all these exceptions can be seen as very meaningful.

First, the independence of traits in a given category (column) reveals the cumulative impact of different traits and is consistent with confluence approaches (e.g., [Sternberg & Lubart 1995](#)). Second, the positive correlations between traits of different columns suggest that some general factors of the Big 5 (openness in particular) have meaningfully distinguishable facets ([DeYoung et al. 2012](#)). We believe that the distinction between these facets deserves to be emphasized because some distant traits of the continuum that constitutes the openness factor are virtually uncorrelated, such as need for cognition (intellect) and apophenia (openness). Third, and this is probably the more critical issue, the negative correlation between traits present in different columns of the order-and-chaos tables reveal that creativity might partially rely on some paradoxical abilities. [Csikszentmihalyi \(1996\)](#) proposed a theory including these kinds of findings, referring to the complexity of creative personality. Typical manifestations of complexity are the fact that creative people tend to be playful and serious, humble and proud, and extraverted and introverted. Hence the dual nature of many aspects of the creative personality seems to be essential rather than anomalous. Moreover, there are other theories of creativity based on a similar idea. For example, [Rothenberg \(1996\)](#) has proposed that the janusian and homospatial processes (i.e., integration of opposites) are central to creativity. In a different but related vein, a recent article by [Gołowska and Crisp \(2014\)](#) shows how the integration of two inconsistent social identities can foster creativity.

As an ultimate synthesis, we would like to propose a last figure ([Figure 3](#)) that provides a summary of the model discussed throughout this chapter and

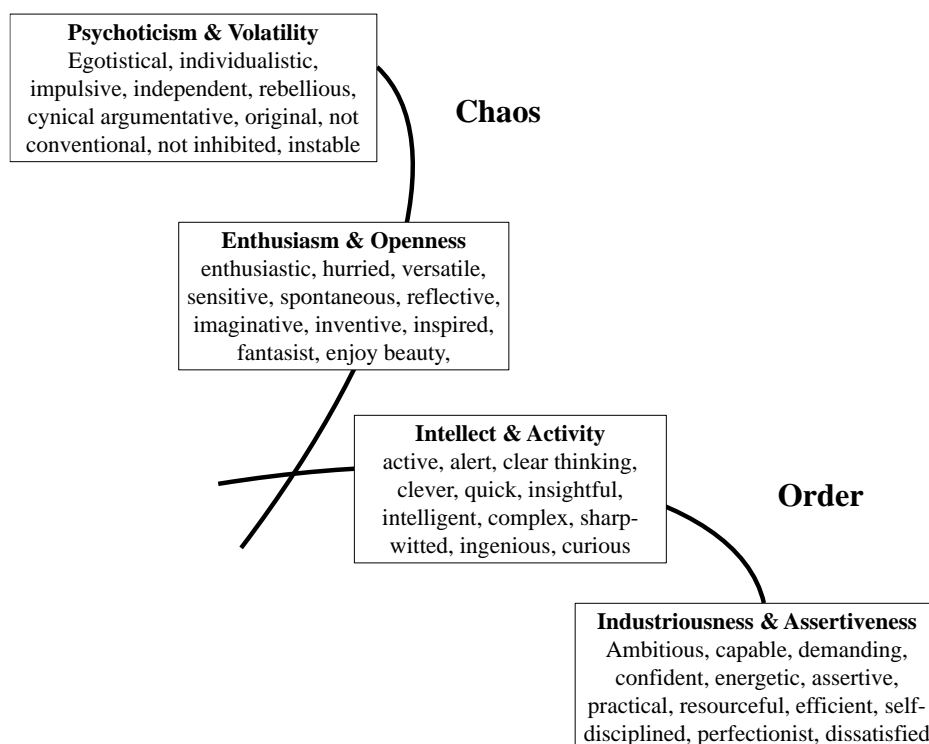
also integrates the issue of paradoxical abilities or complex personality. This figure is composed of four main boxes, each of them including various correlated traits – those listed in the preceding tables and most of the traits from [Barron and Harrington's \(1981\)](#) review listed in the opening of this chapter. These boxes are arranged in a nonlinear two-dimensional space of order and chaos. We explain the twisted axis as we describe the four boxes and their relations to each other.

Let's start with the central-most boxes. The "Enthusiasm & Openness" box regroups traits such as sociability, positive emotion, and attitudinal and perceptual openness. According to the position of this box in the diagram, these traits are representative of a moderate level of chaos and relatively neutral level of order; they favor idea production and novelty seeking but do not preclude a high level of order (e.g., high industriousness). The second central box, "Intellect & Activity," represents high intellectual curiosity and high level of energy. This box is considered representative of moderate levels of order and a neutral level of chaos; together these traits are favorable to deep processing and elaboration of ideas, but they do not preclude high level of chaos (e.g., high psychoticism). One thing worth noting at this point: as the axes suggest in this region of the graph, traits of these two boxes are likely to correlate positively – indeed, all of them could be subsumed under the plasticity factor.

The two other boxes are related in a different way. The "Psychoticism & Volatility" box represent typical traits of chaos – impulsivity, instability, recklessness, anticonformism, and so on. These traits can bring very innovative ideas and/or quite aggressive ways of defending them. However, unlike traits in

the “Enthusiasm & Openness” box, high scores on these traits tend to imply low scores on the typical order traits. For example, psychoticism is just plain antonymic of “disciplined” or “perfectionist.” Hence very high levels of chaos tends to imply a low level of order. And, of course, the reverse is true. Traits typical of very high order, listed in the right-most box, tend to be negatively correlated with typical traits of chaos. For example, volatility is negatively correlated with industriousness (~ -0.40) (see [DeYoung et al. 2007](#)).

Figure 3. Summary of the order-and-chaos integrative model.



Finally, to conclude concerning this diagram in relation to the complex nature of the creative personality, we could say that creative people are able to manage quite high levels on all these factors; they can accommodate high levels

of chaos without compromising order. If we exaggerate the idea underlying the twisted axis of this diagram, very creative people would be able to “straighten” the order-and-chaos axis or to “orthogonalize” them (i.e., having high scores of *both* chaos and order), whereas on the other extreme, very uncreative people would be characterized by a flat, one-dimensional axis (i.e., a high level of chaos implying systematically a low level of order).

This perspective of the creative personality has direct relevance for the study of individual functioning. The notion of complexity just mentioned and other specificities of the model – especially those developed in the second half of this chapter – allow a more person-centered approach. For example, [Figure 2](#) and [Table 3](#) allow the framing of research questions that deal with the individual functioning of a creative person, asking, for instance, specific questions such as “What are the cognitive factors source of chaos in the person?”, “What is the nature of his or her motivation?”, “How are order and chaos balanced?”, “How are affect, personality, and cognition variables articulated?”, and so on. By extension, this could have implications for real-life applications such as creativity training. According to this model, successful creativity training should take into consideration the notions of complexity and equilibrium between order and chaos. If a person has already strong divergent thinking abilities, successful training should emphasize convergent thinking. Conversely, for people who have high scores on variables from the order spectrum, successful training would be based on practices that favor chaos (e.g., brainstorming).

Before closing this discussion, it is important to note that the approach developed here remains trait based and provides a general proposal for creative

personality. It is likely, as work from the situationist and interactionist perspectives on personality have shown since the 1960s, that there is a situation component that should not be neglected. Hence certain traits may be active or show enhanced impact when they are expressed in a class of relevant situations. This is one approach that can integrate domain specificity in the personality model. Indeed, some traits may be best conceived in domain-specific ways, such as risk taking per domain, rather than a general factor.

A second key caveat is the need to integrate the possibility of idiosyncratic personality structure underlying creativity. Indeed, as creative people demonstrate and benefit from their uniqueness, it would be unlikely that they all show the same personality structure in terms of a consistent two-factor model. This fits well with the recent literature on ergodicity (or nonergodicity) of personality trait models. As Molenaar and colleagues ([Molenaar 2004](#); [Molenaar & Campbell 2009](#)) have demonstrated, a general personality model (e.g., the two-trait model proposed here) may not represent well all individuals and their personal personality structure. We therefore present a general model that describes creative personality at the population level and accounts for individual variability at the population level. This model is based on correlations and factor analyses calculated at the collective sample level. This model does not preclude that case studies can show that some individuals will be best described by other idiosyncratic structures of personality. This idiosyncratic level of analysis (or case-study level) is worthwhile but complementary to the general, population level that the model proposed here has adopted.

Conclusion

The model developed in this chapter pays allegiance to many approaches and can serve as a consensual framework for future research. To conclude, we feel that researchers in creativity should not have to make the (impossible) choice between two extreme theoretical options to account for the relations between personality and creativity, namely, a very general model, with a wide scope but limited application, and some more specific models, more precise but also more limited in scope. Rather, we hope that an intermediate solution has been offered in this chapter that can accommodate both extremes. In the same vein, we believe that the study of individual differences through covariance structure and the study of individual functioning should also be complementary (rather than mutually exclusive) and, ultimately, integrated. Maybe the model proposed here can be seen as a first step in this direction. Finally, we hope that this framework will allow a flexible articulation between the Big 5 and other approaches concerned with more specific personality traits. On the one hand, the Big 5 should not obliterate such more specific approaches, but on the other, creativity research should not be detached from this tradition or other classical personality research (e.g., Eysenck and Zuckerman). Hence, in the end, we like to see all these issues as matter of equilibrium or, as Aristotle would have put it, of the golden mean – between order and chaos, generality and specificity, interindividual differences and intraindividual functioning, and between the Big 5 framework and other theoretical approaches.

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¹ Throughout this chapter, when we use the abbreviation “O” for openness, it actually refers to the broad openness/intellect factor.

² For an introduction to these themes, see the book *Creative Intelligence* by [Ambrose, Cohen, and Tannenbaum \(2003\)](#), with the aforementioned chapter by Rea entitled, “Chaos Theory and Creativity” ([Schuldberg 2010](#)).

³ Interestingly, both these approaches are reminiscent of some models of artificial intelligence, in particular, the ones based on the terraced scan function ([Hofstadter 1995](#)). The idea of this function is to perform superficial exploration of many possible solutions to a problem and to devote more and more resources as a path is identified as promising. Without entering into technical details, one of the key features of this function is the temperature. When temperature is high, this means that no good solutions are in view and that, consequently, the algorithm performs a wide and nonspecific search (almost blind), distributing resources to various options. This is reminiscent of hot-cognition and heuristic strategies induced by positive mood and high arousal. When temperature is low, this means that the program has been zeroing in on a potentially good solution. Then it devotes a lot of resources to the specific testing and elaboration of this promising resource. This is similar to the cold cognition and analytical processing induced by negative mood and more moderate levels of arousal, much more adequate for calm elaboration of an idea. Although the analogy is not perfect – the concept of temperature is not completely comparable to affect in general or arousal in particular – it is interesting to see how such different approaches converge on similar key findings.

⁴ See also [Kahneman \(2011\)](#).

⁵ On a related note, see also [Mussel \(2013\)](#) and his two-dimensional model of intellectual achievement based on two processes (seek and conquer) and three operations (think, learn, and create).