

## PERSONALITY DISORDERS: THE MISSING DIAGNOSIS IN PSYCHO-ONCOLOGY?

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### Abstract

Personality can be defined as those characteristics of an individual that account for consistent patterns of thinking, feeling, and behaving. The first studies on personality in psycho-oncology focused on the role of personality traits with respect to cancer incidence and survival; in light of virtually no empirical evidence on a personality-cancer causal association, a more consistent line of research later investigated the relationship between personality and adjustment to disease and treatment. Specifically, there is evidence that certain personality traits, such as neuroticism and negative affectivity, predict poorer levels of quality of life in cancer patients, whereas extraversion and optimism dimensions are associated with better outcomes. Research has been far more limited on the topic of personality disorders in the oncological setting, despite the notable implications that personality disorder patients pose in the interaction with healthcare staff, which can in turn result in suboptimal care. Nonetheless, cooperation with mental health professionals is essential in order to manage complications that may arise in the treatment of these patients, thus promoting the implementation of appropriate treatment plans.

**Key words:** cancer, personality disorders, psycho-oncology

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### Overview of theoretical models of personality and personality psychopathology

Personality, broadly defined, refers to individual differences in distinctive patterns of thinking, feeling, and behaving in a variety of contexts across the lifespan (Kazdin 2000).

Historically, psychoanalytic clinicians were among the first to identify and systematically describe the features and dynamics characterizing individual personality, giving a significant contribution to the comprehension of both normal and abnormal manifestations. In time, significant changes have occurred in the psychodynamic approach to personality (Fonagy and Luyten 2012).

In the field of psychodynamics, Kernberg's theory represents a milestone in the conceptualization of personality functioning. His structural object-relations model aimed to integrate ego psychology and the developmental object-relations approaches, as well as the Kleinian and Bionian theorizations. Kernberg (1975; 1980 a,b; 1984; 2005) believed that the mental representation of the dyadic interaction between the self and the object, along with the affects that characterize their relation, represent the basic constitutive elements of the psychic structure (Kernberg 1984). A failure to achieve ego integration was considered a central factor in creating a vulnerability to personality disorders (Kernberg 1976). Kernberg's work has

been extremely influential in determining one of the main current psychodynamic approaches to diagnosis and classification of personality psychopathology. Indeed, he was the first to distinguish three personality organizations - neurotic, borderline, and psychotic - corresponding to different levels of functioning on the following main dimensions: identity integration, predominant defense mechanisms, and reality testing (Kernberg and Caligor 2005).

Also cognitive psychology has promoted a significant evolution in personality conceptualization, highlighting the central role played by individual cognitive processes in moderating the relationship between environmental stimuli and behavioural responses. In this perspective, one of the first contributions was given by Kelly (1955) with his Personal Construct Theory, which represents an early example of a unified model of personality structure and processes (Walker and Winter 2007). Kelly's theory emphasized the importance of personal constructs in the comprehension of personality, postulating that they represent unique cognitive schemas developed by each individual to categorize and interpret their social world and shape their behaviour (Kelly 1955). Later, the development of social-cognitive approaches, starting from Bandura's social learning theory (1971), fostered further advancement in personality and personality psychopathology theorization. According to the recent Cognitive and Affective Processing System (CAPS) proposed by Mischel and Shoda (1998, 2008),

personality is thought to be based on five cognitive and affective subsystems that process information from the social world and generate behaviour (Hampson 2012). Specifically, these structures are constituted by encoding strategies (i.e., units for categorizing events and for self-description); expectancies and beliefs about the world (e.g., self-efficacy); affects, goals and values; competencies (i.e., the abilities to generate particular cognitions and behaviours) and self-regulatory systems and plans (i.e., rules and self-reactions for performance and for the organization of complex behaviour sequences) (Mischel and Shoda 2008).

In time, an increasing need to reach a coherent, unanimous and atheoretical classification of psychopathologies led to the development of the Diagnostic and Statistical Manual of Mental Disorders (DSM) whose primary goal was to define a common nomenclature for psychological and psychiatric disorders, thus fostering diagnosis reliability. The inclusion of personality disorders in a psychiatric, descriptive, and categorical system led to the definition of specific and clear diagnostic criteria, favouring research both on a theoretical and clinical level. In the DSM system personality disorders have been classified into three categories or clusters: cluster A, which includes odd or eccentric patterns; cluster B, which constitutes dramatic, emotional, or erratic patterns, and cluster C, which encompasses anxious or fearful personality disorders (American Psychiatric Association 1994, 2000, 2013).

An important dilemma in the conceptualization of personality and personality disorders occurred with the transition from a categorical approach to a dimensional one. The latter postulates the presence of a continuum of traits, which are thought to be normally distributed, considering the extremes to be predictive of vulnerability to personality psychopathology (Andersen and Bienvenu 2011). Thus, the main assumption of a dimensional approach is that differences between normality and psychopathology are quantitative rather than qualitative, as opposed to what is postulated by the categorical DSM system. Within this perspective, a significant contribution was given by Eysenck (1947), whose pioneering work led to the development of two of the most well-validated dimensions of personality, neuroticism and extraversion, and fostered the investigation of their relationships to psychopathology (Eysenck 1947, Eysenck and Eysenck 1985). Eysenck later added the dimension of psychoticism, thus defining the “Big Three” model (Clark and Watson 1999), which still represents one of the most influential personality paradigms. The Five Factor Model (FFM, Goldberg 1990, John and Srivastava 1999, McCrae and Costa 2003) constitutes another dominant tendency in the dimensional approach to personality (Andersen and Bienvenu 2011). This model was built on the basis of the lexical hypothesis (Galton 1884, Allport 1961), which postulates that all significant aspects of personality variation are clearly expressed in natural language. Using the factor analytic technique, researchers came to the identification of five broad factors - extraversion, neuroticism, conscientiousness, agreeableness, and openness to experience - which represent the basic personality dimensions and partially overlap the “Big Three” model factors (Costa and McCrae 1985, McCrae et al. 1986).

The dimensional approach has fostered the development of reliable and well-validated instruments for measuring personality and its relationship to psychopathology, thus giving a fundamental contribution in the field of research (Maffei 2008).

Over time, a broad debate arose about the potential advantages of a dimensional approach, compared with a categorical one, in the comprehension and assessment of personality psychopathology (Skodol 2012). In particular, researchers have extensively highlighted how a categorical system led to excessive rates of co-occurrence among personality disorders (Oldham et al. 1992, 1995; Clark 2005, 2007; Zimmerman et al. 2005). In addition, the polythetic approach of the DSM, in which a minimum number from a list of criteria is required to determine the presence of a personality disorder, results in a significant heterogeneity among patients receiving the same diagnosis (Livesley et al. 1994, Clark 2005). Dimensional models of personality psychopathology seem to make the comorbidities between personality disorders and their heterogeneity more understandable, since they include a full range of personality dimensions on which people can vary (Skodol 2012, Newton-Howes et al. 2015, Tyrer et al. 2015).

In light of these considerations, the section III of the last edition of the *Diagnostic and Statistical Manual of Mental Disorder* (DSM-5; American Psychiatric Association 2013) proposes an alternative hybrid dimensional-categorical approach for personality assessment and diagnosis, whose validity is still being tested. The new model of personality disorders assesses the level of functioning, on both the level of self (identity and self-direction) and of interpersonal relationships (empathy and intimacy), in conjunction with five broad, higher-order personality trait domains (negative affectivity, detachment, antagonism, disinhibition versus compulsivity, and psychoticism), each composed of lower-order, more specific trait facets (American Psychiatric Association 2013).

### The impact of personality on cancer incidence and survival: controversial evidence

The association between psychosocial factors, particularly personality traits, and the incidence and evolution of cancer represents a topic of long-running controversies. The concept of a “cancer prone” personality was introduced in the 1970s, referring to a personality profile characterized by the avoidance of conflicts, the lack of autonomy in the context of relationships, and the tendency to suppress emotions (Temoshok 1987).

Kissen and Eysenck (1962) were the first to empirically document that, compared to hospital controls, patients diagnosed with lung cancer were more likely to show high levels of extraversion and low levels of neuroticism. Eysenck (1988) further suggested that personality should be considered a stronger risk factor for the onset of lung cancer with respect to smoking habits, specifying that any association between smoking and lung cancer was spurious. Starting from this early research, a number of studies have extensively tried to confirm the central role of personality traits in predisposing individuals to cancer development (Shaffer et al. 1987, Kavan et al. 1995, Bleiker et al. 1996, Tjihuis et al. 2000, Augustine et al. 2008). The recent study by Lemogne et al. (2013) reported that the tendency to suppress emotions in the context of interpersonal relationships correlated with a decreased risk of breast cancer. They also found that rational and anti-emotional thinking predisposed to the risk of other types of cancer, confirming the results of previous studies (i.e. Tjihuis et al. 2000).

Personality has also been identified as a predictive

factor for cancer progression (Heffner et al. 2003). In this perspective, Temoshock et al. (1985) reported that “type C” personality – described as cooperative, unassertive, patient, suppressive of negative emotions, accepting/compliant – significantly correlated with tumour thickness in a sample of patients suffering from malignant melanoma. These results were interpreted in light of the fact that accumulated repression of emotion could lead to chronic perceived stress, depression, and feelings of helplessness, which in turn influence the immune and endocrine functions that are involved in carcinogenesis (Kiecolt-Glaser and Glaser 1999, Antoni et al. 2006). More recently, the longitudinal study by Cardenal et al. (2012) highlighted that a low level of conscientiousness, in conjunction with the suppression of angry feelings and the use of a passive coping style (characterized by resignation and self-blame), were associated with a higher probability of an unfavourable evolution of cancer two years later from the initial assessment.

Several studies have also investigated the relationship between personality traits and cancer survival. In particular, Hislop et al. (1987) found that extraversion was associated with longer survival in a sample of breast cancer patients, independent of clinical and other psychosocial factors. Stavrakys et al. (1988) confirmed the predictive role of personality with respect to cancer survival, showing that a reserved personality represented a significant risk factor for death from lung cancer. Moreover, this study revealed that the two extremes of one personality trait - soberness vs enthusiasm – increased the rate of cancer mortality. The longitudinal research by Ragland et al. (1992) examined the effect of type A/B behavior style, which can be viewed as a chronic, repetitive stress response, on cancer mortality at a 22-year follow-up. Authors highlighted that type A/B personality resulted to increase the mortality risk for alcohol-related cancers (cancers of the mouth, larynx, esophagus, rectum and liver); however, no significant association was found for lung cancer.

On the other hand, most recent, well-conducted studies seem to disconfirm these evidences, finding weak or no correlation between personality and cancer risk (Shapiro et al. 2001, Lilliberg et al. 2002, Nakaya et al. 2003, Hansen et al. 2005, Bleiker et al. 2008). Nakaya et al. (2010), in one of the largest prospective studies, extensively analysed the association of two specific traits – extraversion and neuroticism – with the risk of cancer, as well as with long-term survival. The results documented that these personality characteristics do not represent a direct risk factor for any type of cancer. At the same time, a significant, positive association was found between extraversion and neuroticism and the risk of lung cancer. However, authors clarified that

this relationship was highly influenced by smoking, which played a significant mediating role. Minami et al. (2015) supported these findings in a large sample of breast cancer patients. Their research revealed that none of the four subscales of the Eysenck Personality Questionnaire (extraversion, neuroticism, psychoticism and lie) significantly impacted on cancer development and progression. Several meta-analytic studies (Dalton et al. 2002, Garsen 2004, Schraub et al. 2009) seem to definitively disconfirm the role of personality as a risk factor for cancer. Jokela et al. (2014), in one of the most recent meta-analyses, found that none of the personality traits identified by the Five Factor Model (extraversion, neuroticism, agreeableness, conscientiousness, and openness to experience) was associated with the incidence of six site-specific cancers, nor with cancer mortality.

In light of this empirical evidence, it seems reasonable to put aside the idea of a direct link between personality and cancer incidence or cancer prognosis, both in terms of progression and survival (Ranchor et al. 2010, Dahl 2010). Rather, it could be more interesting to explore the role of personality traits in psychological adjustment to cancer diagnosis and treatment. From a clinical point of view, identifying which personality characteristics tend to predispose to maladjustment and distress could significantly help clinicians plan specific psychological interventions aimed at supporting more vulnerable individuals.

In recent years a more consistent line of research has investigated the influence of personality traits on health-related quality of life in different clinical (e.g., cancer, cardiovascular disorders, and neurological disorders) and non-clinical samples (Huang et al. 2017).

### Personality and quality of life in the oncological setting

Adult personality traits tend to remain stable and influence the subjective perception of situations and the consequent reactions to them; as such, they might also influence the perception of one’s own quality of life and psychosocial well-being. Providing the best possible quality of life, and not only the best possible medical therapy, is considered a standard of care in oncology; moreover, a good quality of life usually promotes compliance to treatment (Cheville et al. 2015). It is therefore important to identify patients who may be at higher risk for poor quality of life and distress, in order to recognize potential barriers to treatment adherence and develop more effective health care interventions (Huang et al. 2017).

In the oncology setting, most research on personality traits and quality of life has commonly referred to two personality measurement frameworks: Eysenck’s

**Table 1.** Studies of personality characteristics and cancer incidence, progression and survival

	Relationship found	No relationship found
<b>Personality and cancer incidence</b>	Kissen and Eysenck 1962, Eysenck 1988, Kavan et al. 1995, Bleiker et al. 1996, Tjihuis et al. 2000, Augustine et al. 2008, Lemogne et al. 2013	Shapiro et al. 2001, Dalton et al. 2002, Nakaya et al. 2003, Garsen 2004, Hansen et al. 2005, Bleiker et al. 2008, Lilliberg et al. 2002, Schraub et al. 2009, Nakaya et al. 2010, Minami et al. 2015
<b>Personality and cancer progression</b>	Temoshock et al. 1985, Heffner et al. 2003, Cardenal et al. 2012	Garsen 2004, Nakaya et al. 2010, Minami et al. 2015
<b>Personality and cancer survival</b>	Hislop et al. 1987, Stavrakys et al. 1988, Ragland et al. 1992	Garsen 2004, Jokela et al. 2014

Three-Factor Model (Eysenck 1967), and the Five Factor Model (Costa and McCrae 1985, Goldberg 1993). Cloninger's model of personality has also been used to assess temperament and character dimensions through the use of the TCI (Temperament and Character Inventory) (Cloninger et al. 1993).

Other personality traits that are usually investigated in relation to quality of life in cancer patients are type D personality traits (Shun et al. 2011; Mols et al. 2012; Husson et al. 2015; Zhang et al. 2016a, 2016b; Husson et al. 2017), and optimism (Carver et al. 1994, Allison et al. 2000, Friedman et al. 2006, Herzberg et al. 2013, Durà-Ferrandis et al. 2017); more limited evidence is present for anger and hostility (Paika et al. 2010, Hyphantis et al. 2011, Honorato et al. 2017). Coping strategies and defense mechanisms are often included in the research regarding personality and health-related quality of life in the oncological setting (Hyphantis et al. 2011, Shimizu et al. 2015, Durà-Ferrandis et al. 2017). However, these should not be considered as personality traits themselves, since they represent different cognitive levels; more specifically, it is possible that personality, to some extent, determines the style of coping (Suls et al. 1996, Connor-Smith and Flachsbart 2007, Carver and Connor-Smith 2010, Di Mattei et al. 2015).

### *Three- and five-factor model personality factors*

The most commonly used measurement tools for evaluating personality according to the three- and five-factor models include: the Eysenck Personality Questionnaire - Revised (EPQ-R) (Eysenck and Eysenck 1975), which is composed of 106 items distributed on four subscales (neuroticism, extraversion, psychoticism, and lie); the Big Five Inventory (BFI) (John et al. 2008), a 44-item measure of the five factors of personality (extraversion, agreeableness, conscientiousness, neuroticism, openness to experience); the NEO Personality Inventory-Revised (NEO-PI-R) (Costa and McCrae 1992a), which comprises 240 items and allows for the measurement of six more specific facets for each of the five factors; and the NEO-FFI (Costa and McCrae, 1992a), a shorter version of the NEO-PI-R, which is composed of 60 items (12 per domain).

Most factorial-based trait models identify neuroticism and extraversion as the broadest and most pervasive dimensions of personality, and the literature suggests that extraversion predisposes to positive affectivity, whereas neuroticism is strictly correlated to negative affectivity (Costa and McCrae 1980). As such, these traits are the most commonly investigated in research regarding the influence of personality on perceived quality of life.

### *Neuroticism*

Neuroticism is a personality dimension that is characterized by proneness to negative affectivity and emotional lability, which comprise facets that have shown to be substantially correlated (Costa and McCrae 1992b), such as irritability, anger, sadness, anxiety, guilt, worry, psychosomatic concerns, and the tendency to view oneself and the world in a negative way (Costa and McCrae 1980, Lahey 2009).

As such, for people scoring high in neuroticism, stressful events, such as cancer diagnosis and treatment, might be more difficult to manage (Costa and McCrae 1980) and may often be accompanied by high levels of

negative emotions and a perception of a lack of control, which may in turn lead to the adoption of unsuccessful coping strategies and poorer adjustment to the disease (Glavic et al. 2014). Moreover, neuroticism often manifests in self-criticism, feelings of inadequacy and sensitivity to the judgment of others (Watson et al. 1994); interactions with the environment are then complex and may expose these people to the risk of having low levels of social support, which considerably influences perceived quality of life (Glavic et al. 2014).

The literature shows a strong association between neuroticism and public health outcomes: in fact, it has proven to be a robust correlate and predictor for depression and other mental disorders and physical health problems (Lahey 2009); as a consequence, this personality trait has been extensively studied with relation to quality of life in the oncology setting.

Multiple studies showed a significant negative correlation between neuroticism and quality of life in stomach cancer patients (Yamaoka et al. 1998) and head and neck cancer patients (Aarstad et al. 2003, 2008), indicating that those who score high in this personality trait tend to report lower levels of quality of life. Other studies identified neuroticism as a predictor of lower quality of life scores through regression analyses in prostate cancer (Victorson et al. 2016), hematologic cancer (Herzberg et al. 2013), and colorectal cancer (Glavic et al. 2014). Neuroticism also seems to predict anxiety, which may itself impact on the quality of life and psychological adjustment to disease and treatment of lung cancer patients (Shimizu et al. 2015). Another study found a negative association between neuroticism and compliance to gastric cancer screening, thus suggesting that this aspect of personality might influence attendance at cancer screenings and eventually delay diagnosis (Arai et al. 2009).

Patients scoring high in neuroticism may benefit from integrated interventions which involve mental health professionals; in fact, even brief psychological interventions might help these individuals find more adaptive coping strategies, manage negative emotions, and promote better adjustment to disease and treatment.

### *Extraversion*

Extraversion represents sociability, warmth, liveliness, and the capacity for joy and satisfaction with life; extraverted people are thought to be active, talkative, sociable, and usually optimistic. People scoring low on extraversion (introverted people) are instead reserved, sober, and quiet (Costa and McCrae 1980, 1985).

Following the line of research proposed by Costa and McCrae (1980), which indicates that extraversion represents a relatively stable set of dispositions that predisposes people to positive affect ("happiness"), several studies have investigated the role of extraversion on quality of life in the oncology setting.

Even though there is more limited evidence compared to neuroticism, extraversion seems to promote better quality of life in stomach (Yamaoka et al. 1998), head and neck (Aarstad et al. 2003), colorectal (Siassi et al. 2009), and hematologic cancers (Herzberg et al. 2013). It also seems to be significantly correlated with gastric cancer screening attendance (Arai et al. 2009).

Despite not diminishing the unpleasantness of adverse circumstances (Costa and McCrae 1980), such as a cancer diagnosis and treatment, extraversion seems to contribute to better adjustment and quality of life.

### *Psychoticism, agreeableness, conscientiousness and openness to experience*

Eysenck's three-factor model of personality includes psychoticism as its third basic personality trait; this represents the tendency towards tough-mindedness, aggressiveness, coldness, and egocentricity (Eysenck and Eysenck 1975). From the perspective of the five-factor model, psychoticism is a combination of low agreeableness (sympathy, altruism, warmth, compassion vs. hostility, distrust, scepticism, criticism) and conscientiousness (competence, responsibility, achievement striving, dutifulness vs. self-indulgence, incapability of delaying gratification) (Costa and McCrae 1985, McCrae et al. 1986).

Lastly, openness to experience represents a controversial trait: it is exemplified by personalities such as those of professional artists and poets, and refers to intellectual activity, creativity, curiosity, fantasy, active pursuit of experience, need for variety, preference for complexity, tolerance to ambiguity, and emotional ambivalence. It represents a continuum where it is very difficult to draw a line between adaptive and maladaptive: very open people's thinking often resembles schizotypal thinking; similarly, being "closed to experience" may provide advantages in society (McCrae and Costa 1997, McCrae and Sutin 2009).

Evidence regarding these personality traits is very limited: only a few studies have found correlations between psychoticism and quality of life (Yamaoka et al. 1998) and between psychoticism and compliance with gastric cancer screening attendance (Arai et al. 2009), whereas there is basically no evidence available for agreeableness, conscientiousness and openness to experience. Further research is needed to determine the influence of personality traits other than neuroticism and extraversion on the quality of life of cancer patients.

### *Temperament and character*

The psychobiological model of personality proposed by Cloninger and colleagues (1993) is based on four temperament and three character dimensions.

Temperament refers to individual differences in emotional responses and perception-based habits that are considered to be biologically based and relatively stable over time; it includes: harm avoidance, which can be defined as pessimistic worrying in anticipation of problems; novelty-seeking, characterized by exploratory excitability; reward dependence, which refers to the maintenance on behaviour in response to cues of social reward; and persistence, or perseverance despite frustration and anger.

Characterological dimensions refer to individual differences in self-concepts about goals and values and are considered to be partially influenced by learning and maturity, thus also being relatively modifiable through experience. These include: self-directedness, characterized by responsibility and resourcefulness in initiating and organizing steps to achieve personal goals; cooperativeness, which comprises social tolerance, empathy, helpfulness, and moral principles; and self-transcendence, which refers in some way to individual differences in spirituality and involves feelings of participation in one's surroundings as a unitive whole (Cloninger et al. 1993; Cloninger 1994).

The revised Temperament and Character Inventory (TCI-R) (Cloninger et al. 1994, Cloninger 1999) is a 240-item self-report questionnaire for evaluating the four temperament and three character dimensions of Cloninger's model. As TCI-R may be rather long to complete, in the clinical field the TCI-140 (Cloninger 1999), a shortened version of the TCI-R, is sometimes used in its place. The TCI has shown high predictive validity compared to other multiscale personality

**Table 2.** Characteristics of studies of personality trait models and HRQOL

Author	Disease-specific population	Sample size	Personality trait	Personality measure	HRQOL measure
Yamaoka et al. (1998)	Stomach cancer	828	Extraversion, neuroticism, psychoticism	EPQ	HRQoL-20
Aarstad et al. (2003)	Head and neck squamous cell carcinoma	96	Extraversion, neuroticism, lie	EPI	EORTC QLQ-C30/H&N35
Aarstad et al. (2008)	Head and neck squamous cell carcinoma	55	Extraversion, neuroticism, lie	EPI	EORTC QLQ-C30/H&N35
Siassi et al. (2009)	Post major colorectal surgery	79	Neuroticism, extraversion, openness, agreeableness, conscientiousness	NEO-FFI	SF-36, GLQI-39
Herzberg et al. (2013)	Hematologic cancer	301	Neuroticism, extraversion, openness, agreeableness, conscientiousness	24-AM	FACT-BMT, SF-36
Glavic et al. (2014)	Colorectal cancer	56	Neuroticism, extraversion, openness, agreeableness, conscientiousness	NEO-FFI	Quality of Life Scale
Victorson et al. (2016)	Prostate cancer	802	Neuroticism	BFI Neuroticism Subscale	FACIT

assessment measures (Gruza and Goldberg 2007); despite being widely used to assess personality traits both in research and in the clinic, very few studies have investigated its relation with quality of life in cancer patients, and results are conflicting.

Common results include the fact that higher levels of self-directedness seem to be associated to a better health-related quality of life, indicating that people who are autonomous, who show a greater appropriation of their responsibilities and who are able to drive toward a goal, usually report higher levels of quality of life (Bonacchi et al. 2012; Honorato et al. 2017). However, whereas one study confirmed these results, even after controlling for depressive symptoms (Honorato et al. 2017), another found that anxiety and depression still accounted for the majority of the explained variance (Bonacchi et al. 2012).

Results are instead conflicting with respect to the temperament trait of harm avoidance. Individuals high in harm avoidance describe themselves as fearful, shy, pessimistic, and fatigable and tend to be cautious, anxious, doubtful, and inhibited in most social situations (Cloninger et al. 1993, Cloninger 1994). Higher harm avoidance is also associated with an increased risk of anxiety and depression in various populations (Cloninger 1994, Boz et al. 2004, Celikel et al. 2009), including lung cancer patients (Aukst Margetic et al. 2013).

While the majority of studies found a significant inverse association between harm avoidance and quality of life, indicating that patients who score higher in this trait experience worse levels of quality of life (Bonacchi et al. 2012, Honorato et al. 2017), another found that quality of life improves for highly harm avoidant breast cancer patients after breast reconstruction (Bellino et al. 2011). Moreover, harm avoidance seems to predict longer time in appraisal of symptoms and seeking medical attention and is inversely associated with attendance to colorectal cancer screening, possibly delaying diagnosis (Ristvedt and Trinkaus 2005).

Since the temperamental configuration can predict most of the variability in the response to psychotropic drugs, such as antidepressants (Joyce et al. 1994), evaluating these dimensions might be important in order to plan integrated interventions with mental health professionals, both with pharmacotherapy and psychological interventions, to promote better adjustment to disease and treatment.

### *Type D personality*

In recent years, the “distressed” personality, or type D personality, arose as an important research topic in the field of health psychology (O’Dell et al. 2011). In particular, this personality profile was originally described and further developed in patients with cardiovascular diseases (Denollet et al. 1995, Denollet 1997).

Type D personality characterizes those individuals with a tendency to experience negative emotions (negative affectivity) and to inhibit the expression of these emotions in social interactions (social inhibition); these global traits are considered to be major, relatively stable domains of personality (Denollet 2000). The term “distressed” derives from the hypothesis that it is not the experience of negative emotions *per se*, but rather the inhibition of their expression in the social context, that generates psychological distress (Denollet et al. 1995).

In the early 2000s, research on the association between type D personality and health outcomes

has grown, establishing that individuals with type D personality are at increased risk for adverse health outcomes and psychological distress (Denollet 2005). This also led to the development of a self-report questionnaire to evaluate type D personality in research and in the clinical setting, the DS14 (Denollet 2005), which is a 14-item measure divided into the two subscales “negative affectivity” (NA) and “social inhibition” (SI). A cut-off score of  $\geq 10$  allows one to classify individuals into four categories (NA+/SI+, NA+/SI-, NA-/SI+, NA-/SI-), with the NA+/SI+ category indicating individuals with type D personality (Denollet 2005).

Studies in the oncology setting mostly agree in affirming that type D personality is associated with poor health-related quality of life and psychological wellbeing in colorectal (Shun et al. 2011; Mols et al. 2012; Husson et al. 2015; Zhang et al. 2016b; Husson et al. 2017), gastric (Zhang et al. 2016a), endometrial, lymphoma, and multiple myeloma cancer survivors (Mols et al. 2012). In fact, having a type D personality might represent a predictive factor for a deterioration in quality of life over time (Zhang et al. 2016b; Husson et al. 2017); it also seems to be associated with higher symptom burden and fatigue (Shun et al. 2011; Zhang et al. 2016a, 2016b) and higher levels of anxiety and depression (Shun et al. 2011, Mols et al. 2012, Zhang et al. 2016a, Husson et al. 2017). Patients with a type D personality also appear to be diagnosed after emergency admissions and a longer symptom duration, possibly because of the social inhibition component of their personality, which prevents them from referring symptoms to their practitioners (Zhang et al. 2016b).

Some studies suggest a prominent role of negative affectivity in predicting lower levels of quality of life respect to social inhibition (Husson et al. 2015; Husson et al. 2017). However, even if these dimensions do not cover all personality traits relevant to health, their combination might help identify patients at increased risk for worse quality of life and adjustment to the disease condition.

One must note that all the aforementioned studies might have investigated constructs that share, at least in part, common features: for example, neuroticism is highly correlated to both high harm avoidance and low self-directedness (Cloninger 1994); similarly, negative affectivity and neuroticism as measured by the NEO-FFI and EPQ share about 40-50% common variance, and social inhibition shares about 25-45% common variance with the extraversion scales of these questionnaires (Denollet 1998; De Fruyt and Denollet 2002).

### *Dispositional optimism and coping strategies*

Optimism characterizes individuals that tend to be favourable in their outlook and generally expect good rather than bad things to happen to them; on the contrary, pessimists tend to anticipate bad outcomes and have a negative view of how things will work out. These characteristics seem to be relatively stable across time and context, in that optimists usually show positive expectations “in general”, and vice versa; hence, the adjective “dispositional” (Scheier and Carver 1985).

Scheier and Carver (1985) were the first to investigate the predictive validity of a scale measuring dispositional optimism, the Life Orientation Test (LOT), with relation to health-relevant implications. The LOT is a 12-item self-report questionnaire for measuring dispositional optimism that has the advantage of being

brief and easy to administer in the clinical setting. In their research, Scheier and Carver found that optimistic individuals reported to be less bothered by the development of physical symptoms over time than did pessimists (Scheier and Carver 1985).

The LOT was then used to assess whether optimism represents a valid predictor for health-related quality of life in different cancer populations, including breast (Carver et al. 1994, Friedman et al. 2006, Durà-Ferrandis et al. 2017), head and neck (Allison et al. 2000), and hematologic cancer (Herzberg et al. 2013). These studies agree in determining that optimism represents a predictor of subjective well-being both in the short and long term (Carver et al. 1994, Allison et al. 2000) and that pessimism predicts a deterioration in emotional quality of life and role functioning from three months up to seven years after diagnosis (Allison et al. 2000, Durà-Ferrandis et al. 2017). Optimism also seems to be associated with higher satisfaction with one's sex life after breast cancer (Carver et al. 1994), less symptom burden (Herzberg et al. 2013), and less mood disturbance (Friedman et al. 2006), whereas pessimism is associated with impairment in physical functioning (Herzberg et al. 2013).

Optimists and pessimists also differ in the way they tend to cope with challenges in their lives (Carver et al. 1989): optimists are inclined to use more problem-focused coping strategies than pessimists do, and when these are not functional anymore, they adopt more adaptive emotion-focused strategies. Contrastingly, pessimists usually turn to maladaptive coping strategies, such as denial or disengagement from the goal (Scheier et al. 1994).

Coping strategies can be assessed by use of the COPE (Coping Orientation to Problems Experienced), which is a 60-item self-report questionnaire subdivided into different subscales: five of these are related to problem-focused coping, five measure aspects of emotion-focused coping, and three scales evaluate coping responses that might be considered less useful (i.e., mental disengagement) (Carver et al. 1989). Ego defense mechanisms, which contrary to coping strategies are mostly automatic and unconscious, can be measured via the 97-item self-report questionnaire Life Style Index (LSI), which assesses denial, regression, repression, compensation, projection, displacement, intellectualization, and reaction formation (Conte and Apter 1995).

In oncology, there is evidence that coping strategies, like disengagement and self-distraction, predict a trajectory of "accelerated decline" (low baseline levels and steep decline) in emotional quality of life (Durà-Ferrandis et al. 2017). Further, the coping strategies of helplessness and hopelessness seem to be associated with higher levels of anxiety in lung cancer patients, while fatalistic coping is correlated with lower levels of anxiety, even after controlling for clinical and socio-demographic variables (Shimizu et al. 2015). As for ego defense mechanisms, repression is negatively associated with physical health-related quality of life (Paika et al. 2010) and represents an independent predictor of a deterioration in this construct over the year following diagnosis (Hyphantis et al. 2011). Denial is instead positively correlated to health-related quality of life in colorectal cancer patients (Paika et al. 2010); however, it does not predict better quality of life over time (Hyphantis et al. 2011), possibly suggesting that this mechanism might promote adjustment to cancer diagnosis in the first period but may not be useful in the long term.

## *Anger and hostility*

Trait anger and hostility are also relatively stable personality dimensions that may have implications for health-related quality of life. Trait-anger can be evaluated with the State-Trait Anger Expression Inventory-2 (STAXI-2) (Spielberger 1999). This self-report instrument consists in six subscales, which measure a personality trait domain of chronic anger, an anger state domain and four subscales on the direction of anger. Hostility is assessed through the Hostility and Direction of Hostility Questionnaire (Caine et al. 1967), a self-report measure that considers hostility as an attitudinal personality trait and shows an individual's reaction to frustrating occurrences.

In past research, anger has been associated with the progression of cancer after diagnosis (Thomas et al. 2000); however, research on the relationship between this dimension and quality of life in cancer patients is limited and controversial, possibly because studies focused not only on anger as a trait, but also on state-anger, which might be higher after a cancer diagnosis. One study found evidence that anger is associated with impairment in quality of life related to the environment (i.e., how the subject deals with their physical safety, home environment, and financial resources) (Honorato et al. 2017). On the other hand, anger expression and control might reveal positive to improve quality of life, whereas anger inhibition decreases it (Julkunen et al. 2009).

The construct of hostility seems instead to be negatively correlated with physical quality of life (Paika et al. 2010) and to independently predict psychological distress symptoms in colorectal cancer patients (Hyphantis et al. 2011). However, extensive research is needed to further investigate the role of anger and hostility as personality traits that might influence quality of life in cancer patients.

## *What about personality disorders?*

The distinguishing component of personality disorders is a pervasive pattern of maladaptive traits and behaviours beginning in early adult life that deviates from the expectations of the culture and leads to substantial distress or social dysfunction (American Psychiatric Association 2013).

One of the core features of personality disorders is the inability to form and maintain functional social relationships; as such, in the clinical setting these patients might be regarded as "difficult", since interactions with health professionals can be truly challenging (Wynn 2015). Personality disorders are also a strong predictor of treatment outcome and a cause of premature mortality; they should therefore always be taken into consideration in psychiatric assessment (Tyrer et al. 2015).

Despite the notable clinical implications of personality disorders, it is important to acknowledge that their classification represents a complex issue. In fact, personality disorders cannot always be clearly distinguished by normal variations in personality, cultural differences or other mental disorders; moreover, they do not represent completely heterogeneous entities. As a consequence, personality disorder assessment is usually left to the expertise of mental health professionals. Furthermore, the lack of quick and reliable instruments complicates this issue and precludes research on this topic (Tyrer et al. 2015); therefore, only rarely are these tools used in the clinical

setting, and even less so in the oncological setting, where personality disturbance does not represent the primary focus of care.

Another difficulty concerns the high comorbidity between personality and other mental disorders, such as general anxiety disorder and major depressive disorder (Newton-Howes et al. 2010); these are sometimes more evident than the personality disturbance, which is then forgotten as a target of treatment. As for cancer, the diagnosis and the beginning of therapy can exacerbate symptoms of anxiety and depression, possibly leading patients to require relief from these symptoms rather than the treatment of their personality difficulties (Tyrer et al. 2003).

All these problematic issues translate into an absence (or very limited presence) of research on the relationship between personality disorders and quality of life in oncology.

## Personality disorders in cancer patients

### *The impact of personality disorders on psychological adjustment to cancer*

Severe medical diseases, particularly cancer, could exacerbate fears of neglect and abandonment, as well as feelings of shame and guilt, and may lead to behavioural regression, contributing to the manifestation of personality vulnerabilities (Meyer & Block 2011). Indeed, personality disorders are reported to be significantly more frequent in medical outpatients and inpatients than in the general population (Casey et al. 1984, 1985; Reich et al. 1989; Hueston et al. 1999; Moran et al. 2000).

The rigidity which distinguishes personality disorders, along with the dysfunctions concerning the individual self and the interpersonal relationships, usually impairs the capacity to think in varied and new ways and to adopt flexible behaviours, thus interfering with the psychological adjustment to challenging situations (Wynn 2015). Clinicians often underestimate the impact that a cancer diagnosis could have on personality disorder patients. While resilient individuals may experience only transient dysfunction, since they are able to accommodate to adverse life events and to restore a state of balance, patients with personality vulnerabilities often use maladaptive strategies to face emotional distress and pain (Wynn 2015). Indeed, they are prone to adopt primitive defences such as splitting, denial, and projective identification, aimed at avoiding feelings of anguish. Faced with a threatening situation, such as a cancer diagnosis, their defensive attempts to preserve a state of psychological equilibrium could become increasingly rigid and counterproductive. The persistent and inflexible use of maladaptive coping strategies and defence mechanisms could compromise both the individual psychological adjustment to the disease and the interpersonal relationships with the family and the medical staff (Dahl 2010). The sense of confusion, anger, frustration, anxiety, and helplessness frequently experienced by clinicians could lead them to feel overwhelmed by the emotional burden associated with the care of these patients, thus resulting in dysfunctional behaviours and even suboptimal care.

It is important to consider that personality disorders may represent the milieu in which mood and other mental disorders could take place. Indeed, it has long been acknowledged that psychopathological symptoms arise in the context of an individual existence and premorbid personality (personality and psychopathology)

(Hetteema et al. 2006, Bienvenu et al. 2007, Kotov et al. 2010, Kendler et al. 2011). In particular, the review by Andersen and Bienvenu (2011) identified four main models that try to explain the interaction between personality and psychopathology. The “vulnerability or risk hypothesis” sustains that specific personality traits may predispose individuals to develop psychiatric conditions; simultaneously, certain traits are considered to protect against the onset of psychopathological symptoms. On the other hand, the “scar hypothesis” proposes an inverse relationship between personality and psychiatric disorders, highlighting that the latter, causing significant alterations on a neural level, could also lead to personality changes. The “common cause” or “spectrum hypothesis” postulates that personality and psychiatric disorders are not qualitatively distinct entities, assuming that they are associated through shared environmental or genetic causes. A different formulation of this hypothesis states that psychiatric syndromes could represent the extreme expression of dimensional personality traits or temperament. Finally, the “pathoplasty hypothesis” does not postulate a causal relationship between personality and psychopathology but describes the impact that the individual personality could have on the expression of the clinical features of a psychiatric disorder over time (Andersen and Bienvenu 2011).

Although the existence of a closer relationship between personality vulnerabilities and psychopathological symptoms has been largely documented (Newton-Howes et al. 2015), personality disorders do not usually represent a central focus in the psychological assessment of oncological patients. In this field, clinicians tend to direct their efforts to the evaluation of emotional distress, anxiety, and depressive symptoms, often failing to recognize the possible presence of personality disorders (Tyrer et al. 2015).

However, some empirical studies conducted on cancer patients show that personality psychopathology represents a significant risk factor for the onset of anxiety and depressive symptoms, as well as for the impairment of quality of life. In this perspective, the longitudinal study by Champagne et al. (2016) revealed that the presence of a personality disorder, but not tumour characteristics or treatment type, was significantly associated with a higher risk for the onset of generalized anxiety disorder and major depressive disorder seven months after the initial diagnosis. Moreover, the research by Champagne et al. (2016) showed that personality disorders also predict lower emotional quality of life three months after diagnosis.

In light of this evidence, it seems important to include a systematic evaluation of personality in the psychological assessment of cancer patients. Indeed, identifying patients with personality problems or disorders could help properly address troubled behaviours and distorted cognitions, thus fostering the psychological adjustment to the cancer trajectory. Moreover, awareness about patient vulnerabilities could help clinicians offer adequate and individualized assistance.

### *Personality disorder patients: typical interactions with medical staff*

Starting from the basic clinical features of personality disorders, as defined by the DSM-5 (American Psychiatric Association 2013), several authors have tried to analyse the typical patterns of behaviours and thoughts which characterize oncological patients



suffering from personality dysfunctions, as well as their impact on their relationships with medical staff.

Patients diagnosed with a cluster A personality disorder (paranoid, schizoid, or schizotypal) show oddity and eccentricity as central features (American Psychiatric Association 2013). They tend to experience social discomfort and to perceive interpersonal intimacy as unpleasant or of no interest, thus leading to avoidant or odd behaviours and unusual beliefs (Shedler and Westen 2004). Medical procedures and interactions with healthcare professionals could exacerbate feelings of being offended or threatened, thus requiring particular caution on behalf of the medical staff. It could be important to help patients maintain a sense of control on the situation, reassuring them about medical procedures and, if possible, involve friends or family members to support and encourage them. Moreover, avoiding humour, irony, and excessive intimacy in the social interactions could prevent patients from feeling overwhelmed by unpleasant emotions (Wynn 2015).

Cluster B personality disorders (antisocial, borderline, histrionic, and narcissistic) encompass a heterogeneous group of patterns, characterized by impulsive, overly dramatic, highly emotional and erratic behaviours (American Psychiatric Association 2013). These patients could be particularly vulnerable in the medical setting, especially in situations which require high levels of stress tolerance (Wynn 2015). Specifically, patients with borderline personality disorder tend to be particularly challenging in the medical setting (Hay and Passik 2000). They present marked dysfunctions on both the identity and the relational level. In particular, the new personality model of the DSM-5 highlights that impairments in self functioning are distinguished by poorly developed or unstable self-image, often associated with excessive self-criticism; chronic feelings of emptiness; dissociated states under stress, as well as instability in goals, aspiration, values, and career plans. With respect to the relational level, these patients usually show severe impairments in understanding the feelings and needs of others, often associated with interpersonal hypersensitivity and a distorted perception of others. Close relationships tend to be characterized by unstable and contradictory feelings, marked by mistrust, neediness, and anxious preoccupation in relation to real or imagined abandonment. In the context of social interactions, borderline patients tend to shift from idealization to devaluation and from involvement to withdrawal (American Psychiatric Association 2013). This characteristic instability both in the self-image and in relationships reflects the use of primitive defense mechanisms, such as splitting, denial, projection, and projective identification, which tend to distort reality perception (Maffei 2008).

The feelings of anxiety, uncertainty and discomfort associated with severe medical illness could exacerbate borderline patients' vulnerability, contributing to significant difficulties in the treatment setting. Indeed, the rigid use of splitting mechanisms tend to produce a sharp separation in the perceptions of medical caregivers, resulting in the approval and cooperation with the "good" ones and rejection and disdain toward the "bad" ones (Hay and Passik 2000). As a result, borderline patients may direct hostility at only certain doctors and nurses, generating different perceptions and feelings within the medical staff. These distortions could give rise to severe conflicts among healthcare professionals, even resulting in inconsistent care. Moreover, the lack of a basic sense of safety, which characterizes borderline personality disorder (Gunderson and Singer 1975), along with the threat of a potential fatal disease,

could intensify fears of neglect and abandonment, leading patients to become clingy and demanding, withdrawn or rejecting, or manipulative. Through these alterations in the regulation of social distance (Groves 1987), patients try to maintain self-control and prevent a potential threat of abandonment.

In light of these considerations, healthcare professionals should help patients to develop a realistic perception of their condition and of the medical staff and clarify dysfunctional help-seeking strategies. It is important to avoid excessive identification with the patient's distorted perceptions and be alert toward manipulative manoeuvres. The staff should also discuss their own emotional responses and work together in order to integrate their different perceptions in a global representation of the patient, thus creating a shared plan of care (Hay and Passik 2000).

Regarding cluster C personality disorders (avoidant, dependent, and obsessive-compulsive), anxiety and fear emerge as central features. Specifically, avoidant patients tend to experience an intense sense of social inhibition, which may extend to all interpersonal relationships, along with hypersensitivity to negative evaluation (American Psychiatric Association 2013). As a consequence, medical staff may feel rejected by the patient and fear being excessively intrusive. However, avoidant patients seem to be tolerated quite easily in the medical setting, since they are prone to autonomously manage their difficulties, without overwhelming medical staff with impellent requests (Meyer and Block 2011).

On the other hand, dependent patients tend to exhibit a submissive, clinging and helpless behaviour, which results from an exaggerated need to be protected and fears of abandonment (Shedler and Westen 2004). Healthcare professionals may feel an excessive desire to protect them or, conversely, experience a sense of rejection and repulsion in front of their demand for care and attention. In the management of these patients, the medical *équipe* should carefully discuss their dependency needs, trying to address them to the extent that they do not compromise staff or disrupt patient care (Wynn 2015).

In order to enhance adherence to treatment in all patients with difficult personality traits and disorders, healthcare professionals could consider following some general suggestions (Wynn 2015):

- Take extra time to define, explain and clarify problems and procedures
- Clarify staff and patient roles and responsibilities, providing the patient with options and involving him/her in the decision-making process
- Encourage simple and straightforward interactions, that may reassure the patient while disengaging him/her from unrealistic expectations
- Engage family members and friends to provide the patient with a wide supportive social network
- Promote staff discussion and cooperation in order to integrate multiple perspectives on the patient's care and to share difficulties and problems arising from the interaction with him/her.

## Conclusions

Although it is widely acknowledged that personality disorders pose significant challenges in patient care, the oncological setting has not dedicated enough research and time to their evaluation and treatment. Indeed, a clear diagnosis of personality disorders requires a careful evaluation of individual functioning in a wide

range of life domains, along with the confirmation of the temporal stability of maladaptive traits, and the evidence that they are distinct from symptoms elicited by transitional stressors. In the oncological setting, it may be difficult to gain such a deep comprehension of individual characteristics (Hay and Passik 2000). Moreover, it is important to consider that the psychological treatment of personality disorders usually implies intensive, structured, and prolonged therapies (Gabbard 2000, Bateman et al. 2015), aimed at fostering awareness, and ideally, the modification of an individual's mental functioning. These objectives do not represent the primary goal of psycho-oncological interventions, and are difficult to implement in institutional settings.

Nonetheless, it is essential that mental health professionals gain the best possible comprehension of patients' personality characteristics - by integrating clinical interviews with the administration of standardized questionnaires - in order to inform medical staff about potential vulnerabilities and to help them predict patients' reactions to each stage of treatment. In doing so, the psycho-oncologist should adopt a biopsychosocial perspective, which considers the interaction between biological aspects (e.g. medications, malnutrition, sleep deprivation), psychological difficulties (e.g. depression, feelings of hopelessness, emotional lability, psychosis), social issues (e.g. unsupportive families and poor social network) and spiritual needs (e.g. despair, loss of faith) in threatening one's life balance during the course of cancer care (Wynn 2015). In this perspective, psychological interventions should be offered to patients alongside standard care. These interventions should mainly address specific issues and encourage patients' psychosocial resources, mature defenses and productive coping strategies, thus improving compliance.

This approach may also support healthcare professionals in adequately interpreting disruptive feelings, maladaptive behaviours, and difficult doctor-patient interactions, which frequently lead to suboptimal care. The comprehension of basic personality traits could help them contain the negative emotional reactions elicited by personality disorder patients and tailor the interactions to their specific characteristics, consequently promoting the preservation of consistent treatment plans (Hay and Passik 2000, Meyer and Block 2011).

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