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"You're Ugly and Bad!": a path analysis of the interplay between self-criticism, alexithymia, and specific symptoms

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Abstract
Self-criticism is a transdiagnostic factor of significant clinical relevance. Research has studied its detrimental role on mental health without discriminating how this differs based on individual psychological functioning. Furthermore, little research has considered the lack of emotional awareness as an essential competence that contributes to dysfunctional self-critical processes and, consequently, to psychopathological outcomes. The objective of the study was to investigate how different forms of self-criticism are associated with specific symptoms, considering social anxiety, obsessive-compulsive, and eating disorder symptoms. Furthermore, we wanted to explore the role of alexithymia in this relationship. The sample comprised 564 subjects (M = 35.12, SD = 12.8), 389 females and 175 males. Participants completed online questionnaires to investigate levels of self-criticism, alexithymia, and specific symptoms. Hierarchical regression and path analyses showed that aspects of self-criticism have different importance in psychopathological features. Furthermore, the subscales of alexithymia differently mediate the relationship between self-criticism and symptomatological features, depending on the type of feature considered (social anxiety, eating or obsessive-compulsive). In light of the results, since self-criticism is a contributing factor to the onset and maintenance of many mental disorders, it becomes important to distinguish its specific characteristics and how they are linked to the disorders. A better understanding of these processes would help to prepare more targeted interventions.

Keywords Self-criticism · Alexithymia · Symptoms · Psychological profiles · Path analysis

Introduction

Self-criticism and symptomatology

The transdiagnostic approach to psychopathology aims to identify all those psychological processes that cut across different symptom profiles and contribute to the etiology and maintenance of different disorders (Andersen et al., 2016). One of the transdiagnostic processes with more significant clinical implications is self-criticism, a mode of thinking aimed at self-evaluation and self-analysis rooted in human experience that becomes dysfunctional when it takes the form of a pervasive hostile internal dialogue aimed at self-accusation and self-persecution (Gilbert et al., 2004). In this meaning, self-criticism reflects a global devaluation of self, driven by an irrational belief whereby the individuals define themselves as entirely negative in their totality as human beings, regardless of situation and context (Ellis, 1962). Self-criticism has shown an increasing intersection with various psychopathologies. Self-criticism predicts depression, eating, and anxiety symptomatology severity over time, and it is also associated with several other forms of psychopathology and symptoms, such as bipolar disorder, suicidal behaviors, and self-injurious behaviors (Werner et al., 2019). Self-criticism is also significantly associated with worse therapeutic outcomes (Loew et al., 2020), playing a

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considerable role in the therapeutic process. The relevance of self-criticism in various disorders is explained by the fact that negative self-evaluation intensifies emotional reactivity in the face of setbacks and failures, increasing symptomatology. Several theories have been proposed to explain self-criticism and its role in psychological vulnerability. Among the best-known is the model of Blatt and colleagues (Blatt, 2008). It distinguishes between two fundamental dimensions of personality development: *self-definition*, which refers to the development of a person's identity focused on differentiation from others (i.e., introjective personality), and *interpersonal relatedness*, which implies the individual's ability to develop deep relationships (i.e., anaclitic personality). According to Blatt (2008), self-criticism is a sub-dimension of self-definition and implies a strong emphasis on control, autonomy, and achieving personal goals and high standards. Research has shown that the self-critical personality is associated with shame, guilt, self-directed and hetero-directed anger, then expressed towards others, concern about the inability to function, and loneliness, but with not such a clear differentiation between symptom patterns in the two dimensions (Marfoli et al., 2021). Dunkley et al. (2003) introduce the concept of self-criticism in relation to the idea of perfectionism (*self-critical perfectionism*), which incorporates Blatt's (1974) construct but focuses on how responses to stressful events impact distress. According to the author, in self-critical perfectionism, there is constant and severe self-examination accompanied by concern about one's inability to handle stressful situations, which leads the individual to disengage using avoidance coping that increases self-denigration and leads to chronic dysphoria (Dunkley & Blankstein, 2000). Shahar (2015) proposes a model called the "Axis of Criticism Model" that originates from psychoanalytic and psychodynamic theory: the author defines self-criticism as a tendency to set unrealistically high standards for oneself that, when not met, lead to the adoption of a self-punishing attitude. The model postulates that self-criticism arises from the criticism expressed by the parent and the child's subsequent failure to develop adequate self-knowledge. According to Shahar (2015), distorted self-knowledge would impede the expression of one's authenticity, leading, along with criticism expressed by others, to the development of greater self-criticism (Lassri & Shahar, 2012). Also, from a developmental perspective, Thompson and Zuroff (2004) identified and operationalized two levels of self-criticism. The first level refers to *comparative self-criticism* (CSC), which focuses on the unfavorable comparison of self with others seen as superior or critical. The second level is *internalized self-criticism* (ISC), defined as a poor view of oneself about internal and personal standards that tend to be high. Several studies have found an association between these two forms of self-criticism and depression, suggesting that the tendency to self-criticism might develop through two different pathways: an interpersonal one, according to which perceived parental criticism generates a cognitive vulnerability to criticism made by others, and an internalized one, according to which children might directly learn to relate to themselves in the same way their parents related to them (Manfredi et al., 2016). The effect of self-criticism in the onset and maintenance of psychopathology has led research to study the phenomenon from a clinical perspective. Such models failed to capture the phenomenology of self-criticism, which appears to present itself heterogeneously in patients, suggesting that it could manifest itself in different subtypes and functions (Castilho et al., 2015). In this regard, Gilbert et al. (2004) hypothesized the existence of different forms of self-criticism: the *inadequate-self*, which concerns a sense of inadequacy and inferiority due to the idea of having failed and focuses on the idea of having to correct or improve certain aspects of oneself, and the *hated-self*, characterized by feelings of disgust and contempt towards oneself, focuses on the desire to attack and punish oneself (Castilho et al., 2015). Finally, they identify an alternative form of self-report - the *reassured-self* - reflecting a compassionate attitude towards oneself, allowing acceptance and understanding of failure as part of human frailty (Gilbert et al., 2004). Self-criticism becomes pathogenic when it is linked to powerful negative emotions of anger and disgust directed at oneself and the inability to activate self-relaxation systems in the face of failure or setbacks (Gilbert et al., 2004). Several studies have confirmed the distinction between these forms of self-criticism, concluding that the *hated-self* is the most harmful form as it is more persistent than the *inadequate-self*, shows stronger correlations with depressive symptoms, and is more resistant to psychotherapeutic treatment (Werner et al., 2019). Both the forms of the *inadequate-self* and the *hated-self* are associated with eating disorder symptoms (Palmeira et al., 2017), while in social anxiety, *inadequate-self* appears to predominate (Shahar et al., 2015). The multiplicity of existing theoretical models highlights how self-criticism can constitute a heterogeneous and multidimensional phenomenon with specific characteristics that can be analyzed from various points of view and according to different perspectives. In fact, these theories should not be conceived as opposing each other, but rather attempt to grasp different features of the phenomenon. Despite the clinical relevance of self-criticism and its relation to various symptom patterns, there is currently a lack of a comprehensive examination that takes into account its different aspects as they are articulated in the various psychopathological profiles (e.g., anxiety disorders, obsessive-compulsive disorder, eating disorders). Making this distinction would increase knowledge about the variables associated with the most harmful

forms of self-criticism and its specific characteristics based on the patient's symptoms, with important implications for clinical practice.

Self-criticism and alexithymia

Failures or setbacks may generate intense anger towards oneself for letting oneself down or making oneself vulnerable to others, and self-criticizing or directing hostility towards oneself rather than outwardly may be considered safer (Castilho et al., 2015). Indeed, the individual's patterns of interpreting life situations can generate dysfunctional responses and promote self-critical states, such as unforgiving standards and punitiveness (Kannan & Levitt, 2013). Some authors hypothesize that a highly self-critical thinking style may prevent individuals from allowing themselves the time necessary to reflect on their emotions (Gilbert et al., 2011), helping them to modulate these emotions quickly. Indeed, self-criticism has been studied as a cognitive regulation strategy that individuals can use to prevent or reduce their emotional distress in emotionally activating situations (Kamholz et al., 2006). Several studies have found an association between alexithymia and self-criticism (Speranza et al., 2005; Akariya et al., 2022), suggesting that individuals who have a poor ability to explore emotions lack compassion and kindness towards themselves (Gilbert et al., 2011). Indeed, individuals with better emotional awareness use complex and specific strategies to regulate their emotions, leading to a lower likelihood of developing depressive self-criticism than those who use simple and general strategies (Pascual-Leone et al., 2016). One of the best-known interventions for reducing self-criticism is the two-chair dialogue (Young et al., 2003), which allows the patient, through a simulated dialogue between the patient's critical and criticized parts, to stay with the complicated feelings and process them instead of avoiding them. Consistent with the idea that self-criticism is a mechanism used to regulate unpleasant emotions, it is possible to hypothesize that chair-work reduces self-criticism by enhancing emotional awareness, cognitive restructuring and needs satisfaction related to such emotions. These assumptions concerning cognitive and emotional processes of change in self-critical individuals lead to considering the lack of emotional awareness as an essential element that predisposes the individual to engage in maladaptive regulation strategies. Alexithymia is a multidimensional construct that refers to a set of cognitive and affective characteristics concerning the difficulty in how individuals experience and express their emotions (Sifneos, 1973). Alexithymia includes difficulty identifying and distinguishing emotions from bodily sensations, communicating emotions to others, and an outwardly oriented cognitive style (Bagby et al., 1994). The causal relationship between self-criticism and alexithymia remains uncertain. Several authors conceptualize self-criticism as a process that hinders emotional awareness because it leads the individual to avoid adverse emotional states or, on the contrary, to focus more on them in a counterproductive way, which makes it difficult to identify them (Lumley, 2000). Others, on the other hand, postulate that people with higher levels of alexithymia, such as difficulty discerning between emotions and physical states, experience feelings of inadequacy that are reinforced by self-directed criticism (Speranza et al., 2005), conceptualizing the difficulty in identifying emotions as a predictor of the self-critical trait. Indeed, by preventing individuals from understanding what they feel and why they feel it, alexithymia leads to uncertainty that can lead to low self-efficacy and consequent inadequacy. Alexithymia is also a transdiagnostic factor that co-occurs in various clinical conditions such as somatic symptom disorders (De Gucht & Heiser, 2003), anxiety disorders (Berardis et al., 2008), and eating disorders (Westwood et al., 2017). Given the relevance of emotional awareness as an essential competence that favors implementing adaptive emotional regulation strategies, it would be necessary to investigate how the difficulty in getting in touch with one's inner emotional world is linked to implementing maladaptive self-critical processes.

The current study

Although self-criticism is a construct that cuts across different clinical phenotypes (Werner et al., 2019), the different conceptualizations result in a significant gap in terms of clarity in its definition. In light of its heterogeneity and multidimensionality, self-criticism could include certain peculiarities that are differentially declined depending on the psychological functioning of individuals. For example, considering the typical functioning profiles of certain mental disorders, it is possible to hypothesize that there will be differences between the criticisms made by an individual who presents with eating disorder symptoms and by one who presents with social anxiety. In the first case, we know there is a link between high standards and perfectionism (Flett & Hewitt, 2002); in the second a fear related to the possible negative judgment of the other and an overestimation of social standards (Hofmann & Scepkowski, 2006): therefore, self-criticism concerning eating disorder symptoms may be related to an ideal objective the individual has failed to achieve. In contrast, anxiety within social relationships is related to a standard that the individual perceives in the other with whom they are confronted and compared to which they perceive themselves as inadequate or inferior. Moreover, in obsessive-compulsive symptomatology we

can imagine that self-criticism has moral characteristics in relation to the fear of guilt arising from the idea of having caused harm for which the individual feels responsible (Mancini et al., 2021). A recent meta-review highlighted several studies that emphasize the need to better understand the mechanisms of self-criticism and psychopathology by considering individual differences, but despite this, no studies have drawn conclusions on this (Zaccari et al., 2024). Indeed, research to date has only considered the role of self-criticism in promoting or maintaining specific psychopathological outcomes without discriminating between these. The present study aims to analyze the relationship between different forms of self-criticism and specific symptomatologies to make an initial differentiation between the different ways people criticize themselves. This would also make it possible to test the validity of currently existing theories in discriminating aspects of self-criticism that measure different constructs through the questionnaires derived from them. Therefore, consistent with the hypothesis that psychopathological phenomena and mechanisms occur as a spectrum of symptoms that can emerge in different patterns from the core pathology (Simonsen, 2010), this research intends to investigate the link between self-criticism and different symptom patterns within the general population, considering these characteristics as factors along a psychopathological continuum. Based on our hypothesis, we expect to take the first step towards a classification of the different forms of self-criticism according to the subject's psychological functioning: in particular, we expect to be able to distinguish how self-criticism is expressed differently according to specific symptom profiles, taking into consideration eating, obsessive-compulsive and social anxiety symptoms. We consider these profiles of psychological functioning as representative of certain peculiar characteristics that differ in terms of beliefs about oneself and others and in terms of the goals relevant to the individual. Consequently, this allows us to explore the different declinations of self-criticism regarding content and function. In individuals who present higher scores in social anxiety, we expect the subject to compare their own characteristics with those of others rather than with an ideal self and, consequently, to find *comparative self-criticism*, i.e. characterized by a feeling of inferiority with respect to the other who is considered better (Thompson & Zuroff, 2004). In addition, we should expect a greater presence of the *inadequate-self* than the *hated-self*, consistent with Clark and Wells' (1995) cognitive model of SAD, which states that in social anxiety, there are excessively high standards for social performance and persistent negative self-beliefs about one's own inadequacy regarding social evaluation. Similarly, we expect to find more *internalized self-criticism* in eating symptomatology, in which we know there is a tendency towards clinical perfectionism and high self-imposed standards (Flett & Hewitt, 2002), and feelings of *hated-self*, consistent with a more destructive relationship with the self and also associated with body image shame and weight-related self-worth (Palmeira et al., 2017). In obsessive-compulsive symptomatology, which is characterized by a propensity to fear guilt arising from irresponsibility (Mancini et al., 2021), we expect the individual to adopt a punitive attitude towards themselves due to the idea of not having met a high moral standard, for which we hypothesize high feelings of *hated-self* and self-punishment. This hypothesis also aligns with research investigating the relationship between self-criticism and hoarding, finding that a sense of responsibility potentiates the severity of obsessive symptoms (Chou et al., 2018). From their findings, the authors inferred that individuals with greater self-criticism and shame may feel a greater sense of responsibility and a greater fear of harm. In doing so, in the light of the relationship between self-criticism and alexithymia (Speranza et al., 2005; Akariya et al., 2022), we want to test the contribution of alexithymia in determining the specific self-critical modalities, considering the forms of alexithymia most associated with the symptoms assessed. Several studies indicate an association between obsessive-compulsive functioning and externally-oriented thinking, which would result in poor insight and symbolic capacity (Berardis et al., 2008), suggesting that this cognitive style characterized by the constriction of imaginative activity could be a relevant aspect in obsessive-compulsive disorder that the individual uses to cope with emotional stress. We hypothesize that externally-oriented thinking may be a contributing factor in the development of obsessive symptoms that the individual uses to avoid getting in touch with negative self-hating beliefs that lead them to self-attack. Similarly, the relationship between eating symptomatology and difficulty identifying emotions is well-established in the literature (Westwood et al., 2017), including difficulty recognizing emotions from faces (Zonnevijlle-Bendek et al., 2002). This finding also applies to individuals with sub-clinical eating disorder symptoms (Ridout et al., 2010) and provides evidence in support of the fact that difficulty in emotional introspection underlies dysfunctional eating and body-related behaviors. The difficulty in identifying internal and external emotional states could be related to using concrete and rigid criteria to define what 'is good' and to the reinforcement of eating disorder symptoms. So, we hypothesize that the inability to recognize emotions contributes substantially to defining a self-critical mode oriented by high personal standards. Lastly, several clinical studies have found positive correlations between alexithymia and social anxiety (Panayiotou et al., 2020), but it is the difficulty in identifying and communicating feelings that is predictive of anxiety and avoidance (Dalbudak et al., 2013). We, therefore, wondered

whether the difficulty in recognizing and verbalizing one's emotions with others does not act as a factor that maintains and reinforces beliefs of inadequacy about oneself and the resulting negative self-evaluation, hypothesizing a contribution of alexithymia in fostering social anxiety. Investigating the role of alexithymia makes it possible to assess the construct of self-criticism in its function of regulating unpleasant emotions.

Methods

Sample

A non-probabilistic convenience sampling method was used for this study. The study consisted of 564 participants from the general population, 175 males and 389 females (M = 35.12, SD = 12.8). 4.1% of the sample had a middle school diploma, 39% a high school diploma, 18.3% a bachelor's degree, 24.1% a master's degree, and 14.5% a postgraduate degree. The participants fulfilled the following inclusion criteria: age 18 or older, good knowledge of the Italian language, education level of secondary school or higher, and easy access to the Internet. All subjects who met these criteria were then included, including those with a diagnosis of a psychological disorder, sub-clinical conditions, or no psychological problems at all. Only individuals with suicidal ideation or diagnosed with clinically severe disorders (e.g., schizophrenic spectrum disorders and other psychotic disorders, bipolar and related disorders, dissociative disorders) were excluded from the sample. The presence or absence of a diagnosis was based on what the participant declared in the demographic form.

Procedure

The participants, recruited from the general population, completed a survey lasting about 20 min. Recruitment took place by word of mouth and sharing information on the main social networks (e.g., Facebook, Instagram). Recruitment took place through the sharing of the study by the research managers, who were assisted by collaborators and provided with sampling guidelines to balance the age groups, gender, and socio-economic status of the subjects to be recruited. Some participants voluntarily accessed the research via the access link shared on social networks, while others received the link via WhatsApp or text message. Informed consent was obtained via electronic means prior to survey completion. Furthermore, in compliance with Legislative Decree No. 196 of 30 June 2003, the "Personal Data Protection Code" (which adapts Italian data protection legislation to the new provisions of the GDPR) guaranteed the participants' anonymity. Prior to survey completion, participants completed a demographic form requesting information regarding their gender, age, nationality, city of residence, educational qualification, occupation, marital status, presence of psychological, psychiatric, or organic diagnosis, standardized questionnaires aimed at investigating levels of self-criticism, alexithymia, and the presence of specific symptomatology.

Measures

Two instruments were used to assess the different forms of self-criticism. The Forms of Self-Criticizing/Attacking and Self-Reassuring Scale (Gilbert et al., 2004; Italian adaptation by Petrocchi & Couyoumdjian, 2016) is a 22-item instrument that consists of three subscales: self-reassurance (*reassured-self*; FSCRS-RS) which assesses the ability to be self-assured and regard oneself with kindness and compassion, and two types of self-criticism *inadequate-self* (FSCRS-IS), which assesses feelings of inadequacy and a sense of irritation and frustration with oneself, and *hated-self* (FSCRS-HS), which assesses a more extreme form of self-criticism characterized by feelings of self-repugnance and a desire to hurt oneself in response to failures and setbacks. Sample items for *inadequate-self* include "*there is a part of me that feels I am not good enough*" or "*I can't accept failures and setbacks without feeling inadequate*", while *hated-self's* subscale includes items such as "*I do not like being me*" or "*I have a sense of disgust with myself*". In the study, we only included the subscales evaluating the *inadequate-self* and the *hated-self*. These scales indeed measure the presence of a negative critical self and have the strongest associations with psychopathological factors. Cronbach's alpha ranges from 0.86 to 0.90 for the three subscales (Gilbert et al., 2004). Adequate levels of internal consistency (α between 0.76 and 0.91) and construct validity were found for all subscales in the Italian version (Petrocchi & Couyoumdjian, 2016). In our sample, Cronbach's alpha value was 0.76 for the *hated-self* subscale and 0.89 for the *inadequate-self* subscale.

Furthermore, the Levels of Self-Criticism Scale (Thompson & Zuroff, 2004; Italian adaptation by Manfredi et al., 2016) was used: it is a questionnaire consisting of 22 items that measures two different forms of negative self-evaluation, comparative self-criticism (*Comparative Self-Criticism*-CSC) and internalized self-criticism (*Internalized Self-Criticism*-ISC). The CSC refers to a negative view of oneself compared to others, focusing on the unfavorable comparison between oneself and others, seen as superior, hostile, or critical (a sample item is "*I often worry that other people will find out what I'm really like and be upset with me*"). The other level of self-criticism, ISC, on the other

hand, is characterized by a negative view of self in comparison to internalized personal standards (a sample item is *"I'm very frustrated with myself when I don't meet the standards I have for myself*"). These internal standards are high and result in chronic failure to meet them. At this level, the focus is on viewing oneself as inadequate. In the original validation study, Cronbach's alpha was 0.88 for ISC and 0.84 for CSC (Thompson & Zuroff, 2004). The Italian version of the Level of Self-Criticism Scale showed good reliability (Manfredi et al., 2016), and in our sample, Cronbach's alpha for ISC was 0.87 and 0.73 for CSC.

The presence of eating disorder symptoms was assessed using the Eating Attitudes Test (Garner et al., 1982; Italian validation by Dotti & Lazzari, 1998). EAT-26 is a questionnaire designed to capture the psychological traits and symptoms characteristic of eating disorders. The individuals are asked to indicate how often they engage in certain behaviors, e.g. "*Avoid foods with sugar in them*", or experience certain feelings, e.g. "*Feel extremely guilty after eating*", about food. The test consists of 3 subscales: dieting, bulimia and food preoccupation, and oral control. Cronbach's alpha in the Italian validation study was 0.86 for the total score, while in our sample it was 0.83.

The Obsessive-Compulsive Inventory-Revised (Foa et al., 1998; Italian validation by Sica et al., 2009) was used to quantify the main dimensions that characterize obsessive-compulsive disorder. It consists of 18 items belonging to seven subscales: Washing, Checking, Doubting, Ordering, Obsessing, Hoarding, and Mental Neutralizing. Sample items include "*I need things to be arranged in a particular way*", *"I collect things I don't need*", and "*I check things more often than necessary*". In the Italian validation, Cronbach's alpha for the OCI-R was 0.85; in our study, it was 0.88 for the total score.

Fear or anxiety of one or more social situations in which the individual is subject to possible judgment was assessed using the Social Interaction Anxiety Scale (Mattick & Clarke, 1998; Italian validation by Sica et al., 2007), which measures discomfort in meeting and talking with other people, be they friends, members of the opposite sex, or strangers. Primary concerns include fear of being unable to express oneself, appearing dull or stupid, not knowing what to say or how to respond, and being ignored. It consists of 20 items that investigate the fear of interacting in social situations and measure the emotional aspects of anxiety. On a 5-point Likert scale, the subject rates how well he or she feels in line with each proposed item (e.g. "*I find it difficult to disagree with another's point of view*", "*I feel I'll say something embarrassing when talking*"). Cronbach's alpha in the Italian validation study was 0.86 for the total score, while in our sample, it was 0.91.

The multidimensional construct of alexithymia was assessed through the use of TAS-20 (Toronto Alexithymia Scale-20; Bagby et al., 1994; Italian validation by Bressi et al., 1996). It consists of a self-report questionnaire composed of 20 items and three subscales: difficulty identifying feelings, difficulty communicating feelings, and externally oriented thinking. The difficulty in identifying feelings is investigated through items such as "*When I am upset I don't know if I am sad*, *frightened*, *or angry*"and "*I don't know what's going on inside me*". Difficulty in communicating feelings is investigated by items such as "*It is difficult for me to find the right words for my feelings*" and "*People tell me to describe my feelings more*". Finally, externally-oriented thinking includes items such as "*I prefer talking to people about their daily activities rather than their feelings*" and "*I prefer to just let things happen rather than to understand why they turned out that way*". TAS-20 also provides a total score indicating the absence or presence of alexithymia. The three subscales of the TAS-20 had a Cronbach's alpha value of .77 for difficulty in identifying feelings, .67 for difficulty in describing feelings, and .52 for externally oriented thinking. In the current study, however, the alpha value was .84 for the first factor, .78 for the second factor, and .62 for the third factor. For our study, we used the individual subscales of the FSCRS, LOSCS, and TAS-20 questionnaires, as they were the main variables of interest for which we formulated specific hypotheses. On the contrary, we used the total scores of the SIAS, OCI-R, and EAT-26 questionnaires as we aimed to investigate the mechanisms of self-criticism and alexithymia in their relationship with these variables considering the psychological profile and not the specific symptomatological phenomenology of each disorder considered. The coefficient α, ω, skewness, and kurtosis values for the variables used in the study are shown in Table 1.

Statistical analysis

Statistical analyses were conducted using the Jamovi software version 2.3.28. All data were initially screened for missing data and outliers. The relationship among the variables was tested using Pearson's correlation analysis ($p < .05$). Three hierarchical linear regression models were estimated to analyze the relationship between the specific forms of self-criticism and the symptomatologies considered, with social anxiety, obsessive-compulsive, and eating disorder symptoms as dependent variables and the different forms of self-criticism as independent variables, respectively. The following were included as independent variables: in the first block, the dimensions of hated-self and inadequate-self (Gilbert et al., 2004); in the second block, the dimensions of internalized and comparative self-criticism (Thompson & Zuroff, 2004). We did not include the

Table 1 Descriptive statistics, coefficient omega, and skewness and kurtosis values across study variables

Variable	α	ω	M	SD	Min.	Max.	Skew	Kurtosis
LOSC-ISC	0.87	0.89	4.31	1.24	1.20	7.00	−0.09	−0.60
LOSC-CSC	0.73	0.73	3.38	0.90	1.25	6.50	0.36	−0.06
FSCRS-IS	0.89	0.89	1.90	0.87	0.00	4.00	0.23	−0.52
FSCRS-HS	0.76	0.76	0.68	0.75	0.00	4.00	1.44	2.13
TAS_DIF	0.84	0.85	14.2	5.93	7	34	0.84	0.11
TAS_DDF	0.78	0.78	12.5	4.76	5	25	0.37	−0.60
TAS_EOT	0.62	0.58	16.9	4.84	8	30	0.12	−0.75
SIAS	0.91	0.91	23.3	14.2	0	69	0.64	−0.14
OCI	0.88	0.87	11.5	9.73	0	60	1.45	2.95
EAT	0.83	0.85	5.50	6.60	0	37	2.01	4.16

LOSC-ISC Internalized Self-Criticism, *LOSC-CSC* Comparative Self-Criticism, *FSCRS-IS* Inadequate Self, *FSCRS- HS* Hated Self, *TAS_DIF* Difficulty in identifying feelings, *TAS_DDF* Difficulty in describing feelings, *TAS_EOT* Externally Oriented Thinking, *SIAS* Social Interaction Anxiety Scale, *OCI* Obsessive-Compulsive Inventory-Revised Total Score, *EAT* Eating Attitudes Test-26 Total Score

* $p < .05$, ** $p < .01$, *** $p < .001$

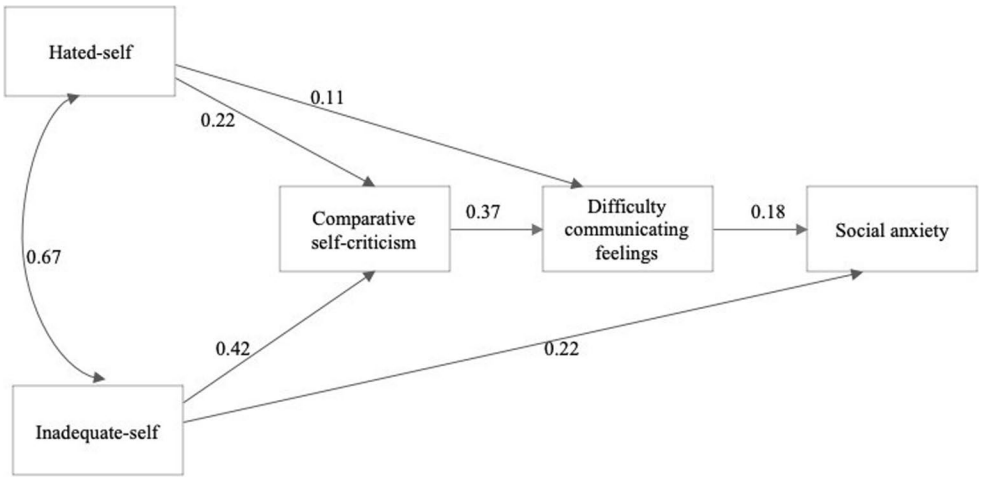

Fig. 1 Path diagram for social anxiety. *Note:* Standardized solution

form of the reassured-self because our goal was to discriminate between the negative forms of self-criticism that can take on pathological characteristics and constitute mental health risk factors. The order of the predictors was assessed based on the finding that the dimensions of the Gilbert scale are most strongly associated with symptomatology, with hated-self in particular (Werner et al., 2019) and that internalized self-beliefs are especially important in explaining the development of symptomatology (Aafjes-van Doorn et al., 2020). In contrast, the object with which the self confronts themself (e.g. "*I am usually uncomfortable in social situations where I don't know what to expect"*) is less explanatory of its psychological functioning and presupposes a mental action that we hypothesize to be subsequent a negative belief about the self (e.g. "*there is a part of me that thinks I'm not good enough").* Secondly, to determine how alexithymia was involved in determining the specific self-critical modalities, the dimensions of alexithymia most associated in the literature with the symptoms considered (DIF and DDF for social anxiety and eating symptoms, EOT for obsessive-compulsive symptomatology) were included in the third block of the linear regression model. Finally, a path analysis (PATHj module, Jamovi project) was performed to assess the effects of significant predictors of self-criticism and alexithymia on each outcome (Figs. 1, 2 and 3). To assess the model fit we used the following indices: the Chi-square (χ^2), the root mean square error of approximation (RMSEA) with 95% confidence intervals, the comparative fit index (CFI), the Tucker-Lewis index (TLI), and the standardized root mean square residual (SRMR) index. The model fit is acceptable when it results in a non-significant χ^2 value, a RMSEA value < 0.08, CFI and TLI values > 0.95, and a SRMR value < 0.05. Furthermore, the results were composed of indirect and direct effects. Indirect effects were the relationships between the independent and dependent variables operating through the intermediate variables; direct effects were the relationships between the independent (both exogenous and endogenous) and dependent variables. All effects were standardized coefficients estimated through maximum likelihood. Path analysis was performed using a sequential approach. The forms of self-criticism that contributed most to predicting symptomatology were

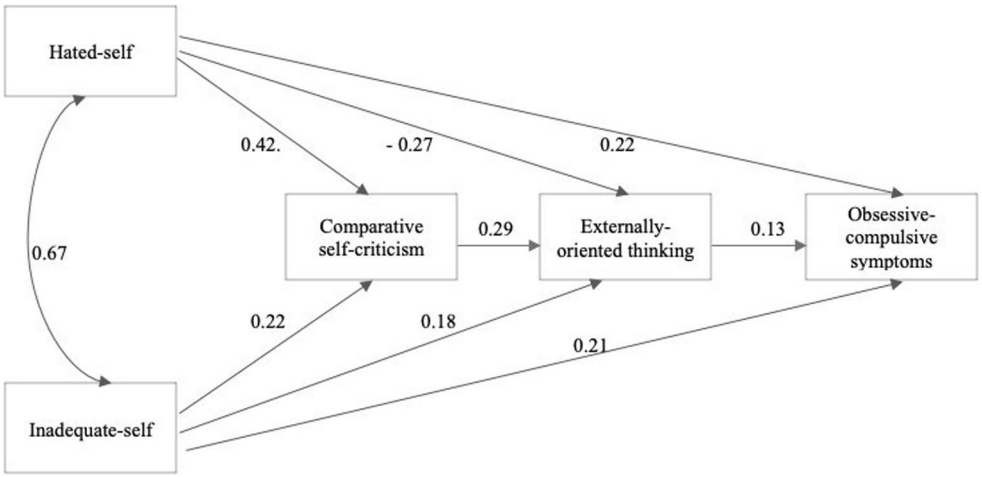

Fig. 2 Path diagram for obsessive-compulsive symptoms. *Note:* Standardized solution

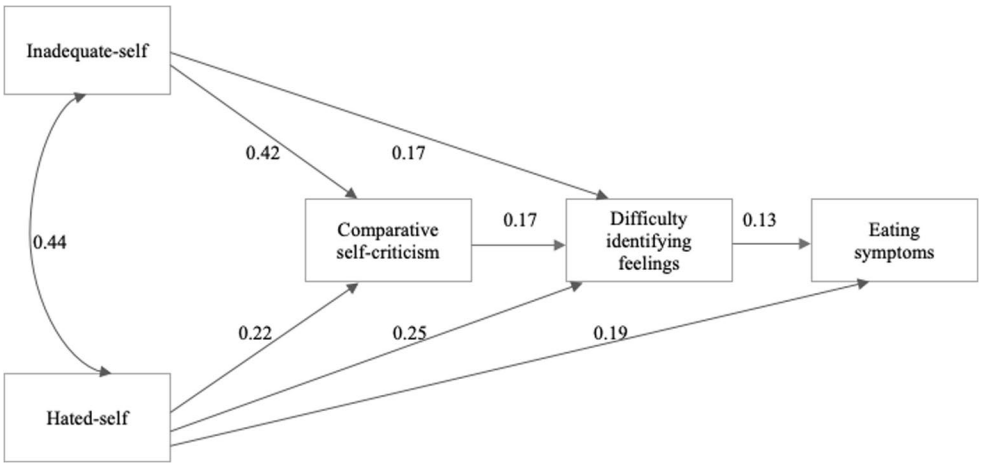

Fig. 3 Path diagram for eating symptoms. *Note:* Standardized solution

Table 2 Pearson's correlations among symptomatologies, self-criticism (both FSCRS and LOSC scales) and alexithymia ($n = 564$)

	Self-criticism				Alexithymia			
	LOSC		FSCRS		TAS			
	ISC	CSC	IS	HS	DIF	DDF	EOT	TOT
SIAS	0.40*	0.56*	0.48*	0.43*	0.36*	0.40*	0.22*	0.43*
OCI_TOT	0.30*	0.31*	0.35*	0.36*	0.45*	0.27*	0.16*	0.40*
EAT_TOT	0.21*	0.31*	0.32*	0.33*	0.28*	0.19*	0.02	0.22*
TAS_DIF	0.33*	0.40*	0.43*	0.45*	1	0.55*	0.23*	0.81*
TAS_DFF	0.27*	0.43*	0.30*	0.30*	0.55*	1	0.36*	0.82*
TAS_EOT	- 0.01	0.23*	0.02	0.15*	0.23*	0.36*	1	0.66*
TAS_TOT	0.27*	0.46*	0.34*	0.41*	0.81*	0.82*	0.66*	1

* $p < .001$

considered independent (exogenous) variables, the remaining forms of self-criticism and alexithymia were considered intermediate variables, and symptomatology was considered the dependent variable.

Results

Descriptive statistics are reported in Table 1. All variables were approximately normally distributed, except for hated-self and eating disorders (skewness and kurtosis > 1). However, according to Hair et al. (2010) and Bryne (2010) we can consider values between −2 and +2 for skewness and −7 and +7 for kurtosis in an acceptable range for normal distribution. Bivariate correlations for the main constructs under investigation are reported in Table 2. Correlation

analyses showed that all dimensions of self-criticism (both from FSCRS and LOSC) were associated with each of the symptomatologies considered. The TAS dimensions (total and subscales) are positively correlated with social anxiety, obsessive-compulsive, eating disorder symptoms, and self-criticism in general. Otherwise, the externally-oriented thinking subscale is not related to eating disorder symptoms, internalized self-criticism (LOSC) and inadequate-self (FSCRS).

The hierarchical regression analyses (Table 3) revealed that self-criticism (FSCRS alone) explain 25% of the variance of social anxiety, and the introduction of internalized and comparative forms of self-criticism (LOSC) add further 11% of explained variance for social anxiety. Finally, in the third step, a further 3% is explained, with TAS dimensions. In the last model, three variables predict social anxiety, namely inadequate-self (FSCRS), comparative self-criticism (LOSC), and difficulty in communicating feelings (TAS). Interestly, comparative self-criticism seems to partially mediate the relation between both hated and inadequate-self and social anxiety (step 2) and difficulty in communicating feelings appears to be a full mediator between hated-self and social anxiety and partially mediate between comparative self-criticism and social anxiety. As for OCI, the FSCRS subscales explain the 15% of the total OCI scores variance at the first step, and only a further 1%, increases when adding LOSC subscales. At the end, externally-oriented thinking (TAS) contributed an additional 2% of the variance. In this case, at last there are two predictors of OCI scores, that are hated-self and externally-oriented thinking. In other words, looking at the single steps, we can observe that comparative self-criticism mediates between inadequate-self and OCI scores and EOT mediates the relation between comparative self-criticism and OCI scores. Furthermore, eating symptomatology scores are explained in the first block from both hated-self and inadequate-self, explaining 13% of the variance. When LOSC self-criticism scales were included (step 2), variance explained increased by 2%, with comparative self-criticism as significant predictors. In the third step TAS subscales resulted in a further 1% of explained variance. In this last step, hated-self, comparative self-criticism, and difficulty identifying emotions result in significant predictors.

Building upon the findings from regression analyses, we tested three models through path analysis on the pattern relation among self-criticism (both FSCRS and LOSC), alexithymia and psychopathological characteristics (social anxiety, eating, obsessive compulsive).

Figure 1 shows the first path analysis model relating to social anxiety symptomatology. The overall model showed a good fit: $\chi^2(2)=3.66$, $p=.161$, RMSEA = 0.038 (95% CI [0.00, 0.10]; SRMR = 0.01; CFI = 0.99; TLI = 0.98. Figure 1 presents the standardized path coefficients. The results of the path analysis showed that hated-self has an indirect positive relationship with social anxiety symptomatology through comparative self-criticism and difficulty communicating feelings with a mediation effect (β = 0.01, z = 3.22, $p=.001$) but also an indirect effect through difficulty communicating

Table 3 Results from hierarchical multiple regression for social anxiety (SIAS scale), eating disorder (EAT scale) and obsessive-compulsive disorder (OCI scale)

		SIAS[a]		EAT[a]		OCI[b]		Collinearity[a, b]
		β	*t, p*	*β*	*t, p*	*β*	*t, p*	*VIF*
Step1	**FSCRS-HS**	0.20	4.00, < 0.001	0.22	4.14, < 0.001	0.22	4.29, < 0.001	1.82[a, b]
	FSCRS-IS	0.35	7.10, < 0.001	0.17	3.16, < 0.01	0.20	3.87, < 0.001	1.82[a, b]
	R^2adj F(2,561), p	0.25 = 95.2, < 0.001		= 0.12 = 40.7; $p < .001$		= 0.15 = 50.7; $p < .001$		
Step2	**FSCRS-HS**	0.11	2.27, 0.02	0.18	3.32,<0.001	0.20	3.78, < 0.001	1.91[a, b]
	FSCRS-IS	0.16	2.66,<0.01	0.15	2.13, 0.03	0.10	1.46, 0.14	3.22[a, b]
	LOSC-ISC	0.02	0.41, 0.68	− 0.07	-1.17, 0.24	0.07	1.20, 0.23	2.28[a, b]
	LOSC-CSC	0.41	9.52 < 0.001	0.17	3.42, < 0.001	0.11	2.32, 0.02	1.61[a, b]
	R^2adj F(4,559, p)	= 0.36 = 79.3, < 0.001		= 0.14 = 23.7; <0.001		= 0.16; = 27.6; $p < .001$		
Step 3	**FSCRS-HS**	0.08	1.78, 0.08	0.15	2.71, < 0.01	0.18	3.41, < 0.001	2.00[a], 1.95[b]
	FSCRS-IS	0.16	2.67, < 0.01	0.13	1.83, 0.07	0.12	1.77, 0.08	3.27[a], 3.26[b]
	LOSC-ISC	0.01	0.29, 0.77	− 0.07	-1.18, 0.24	0.08	1.41, 0.16	2.28[a], 2.29[b]
	LOSC-CSC	0.34	7.78, < 0.001	0.15	2.94, < 0.01	0.08	1.57, 0.12	1.77[a], 1.71[b]
	TAS_DIF	0.02	0.46, 0.64	0.12	2.50, 0.01	-	-	1.69[b]
	TAS_DDF	0.17	3.98, < 0.001	− 0.01	− 0.25, 0.80	-	-	1.58[b]
	TAS_EOT	-	-	-	-	0.11	2.78, < 0.01	1.10[b]
	R^2adj F(6,557), p	= 0.39 = 58.6, < 0.001		= 0.15 = 17.2; $p < .001$		= 0.17; F(5,558) = 23.9; $p < .001$		

The superscript letters indicate the VIF in the different hierarchical regression models: *a* SIAS and EAT models, *b* OCI model

feelings (β = 0.02, z = 2.30, $p < .001$). Similarly, the inadequate-self also shows an indirect effect of sequential mediation with social anxiety symptomatology through comparative self-criticism and difficulty communicating feelings (β = 0.02, z = 3. 87, $p < .001$) and an indirect effect through alexithymia (β = 0.15, z = 6.21, $p < .001$), but there is also a direct relationship between this form of self-criticism and the considered symptomatology (β = 0.22, z = 5.47, $p < .001$). The results of the second path analysis model, presented in Fig. 2, relating to obsessive-compulsive symptomatology, showed an acceptable fit: χ^2 (1) = 3.65, $p = .056$; RMSEA = 0.07 (95% CI [0.00, 0.15]; SMRM = 0.013; CFI = 0.993; TLI = 0.941. Hated-self showed a positive indirect effect on obsessive-compulsive symptomatology through comparative self-criticism and externally-oriented thinking (β = 0.009, z = 2.53, $p = .01$) and a positive direct effect on symptomatology (β = 0.21, z = 3.99, $p < .001$). The inadequate-self, however, was found to have a positive indirect relationship with obsessive symptomatology through comparative self-criticism and externally oriented thinking (β = 0.02, z = 2.37, $p = .018$) and a positive direct relationship with the dependent variable (β = 0.21, z = 4.19, $p < .001$). Path analysis on eating symptomatology is presented in Fig. 3. The model shows a good fit: χ^2 (1) = 2.05, $p = .152$; RMSEA = 0.04 (95% CI [0.00, 0.13], SMRM = 0.008; CFI = 0.998; TLI = 0.981. The path model showed that hated-self has a positive indirect effect on symptomatology both through comparative self-criticism (β = 0.04, z = 2.90, $p = .004$, that through the latter and the difficulty in identifying emotions (β = 0.005, z = 2.10, $p = .03$), as well as a direct effect on the dependent variable of the model (β = 0.19, z = 4.03, $p < .001$). The inadequate-self revealed three positive indirect effects on eating symptomatology but no direct effects. The first was with a sequential effect through comparative self-criticism and difficulty identifying feelings (β = 0.009, z = 2.25, $p = .02$), the second only through comparative self-criticism (β = 0.07, z = 3.35, $p < .001$), the third only through difficulty identifying feelings (β = 0.02, z = 2.16, $p = .03$), but all paths were significant.

Discussion and conclusions

The study aimed to discriminate between different forms of self-criticism depending on the specific symptomatology, considering obsessive-compulsive, eating, and social anxiety symptoms. In this case, our hypothesis was confirmed since the results show that for each outcome, only specific predictors of self-criticism are significant. Furthermore, a further objective was to evaluate how the dimensions of alexithymia most associated with the symptoms contributed to discriminating the forms of self-criticism, hypothesizing that it would be possible to outline specific paths between these factors in determining the outcomes. This also makes it possible to assess whether self-criticism can be regarded as a strategy for regulating emotions about a poor ability to understand and be in touch with them. Correlation analyses confirm the significant association of symptomatology with self-criticism and a relative inability to generate feelings of warmth, acceptance, and self-consolation towards oneself. The association between alexithymia and different psychopathological functioning is also consistent with research data suggesting that alexithymia is associated with greater vulnerability to mental illness (Leweke et al., 2011). However, our data also support the multidimensionality of the construct of alexithymia, indicating differences in the association of externally-oriented thinking with some forms of self-criticism (i.e., internalized self-criticism and inadequate-self) and with some outcomes (i.e., eating symptomatology). This result may also be due to the fact that the EOT scale tends to have poor internal consistency (ω = 0.58), with some items having low factor loadings (Kooiman et al., 2002). This finding is, moreover, in line with a recent systematic review on alexithymia in eating disorders, which found that in several studies, there was no significant difference in the EOT scale between the control group and the clinical group (Westwood et al., 2017), while the lack of association between some internalized forms of self-criticism and externally-oriented thinking seems consistent with conceptualizations of the constructs where on the one hand there is attention to one's internal view of self as lacking (Thompson & Zuroff, 2004), on the other hand, a lack of introspection (Kooiman et al., 2002). Our results indicate that there are direct and indirect effects of specific forms of self-criticism and alexithymia that help to explain specific symptomatic outcomes. The forms of self-criticism of the hated-self and the inadequate-self (Gilbert et al., 2004) appear to be significant in the first block of the multiple linear regression models for all examined symptoms, not initially allowing for the discrimination of specific forms of self-criticism by outcomes, probably also because the participants did not suffer from established psychological disorders. The first discrimination begins when internalized and comparative forms of self-criticism are included in the second block (Thompson & Zuroff, 2004), confirming that the various questionnaires assess different dimensions of the complex construct of self-criticism (Werner et al., 2019). Considering each symptomatology individually, it is observed that for social anxiety symptomatology, the associated forms of self-criticism are the *inadequate-self*, the *hated-self* (Gilbert et al., 2004), and *comparative self-criticism* (Thompson & Zuroff, 2004). However, when difficulty identifying and describing feelings are included in the model (Bagby et al., 1994), just *inadequate-self* and

comparative self-criticism remain significant predictors. This result is in line with the initial hypotheses and consistent with the typical characteristics of individuals who experience anxiety in social situations. These individuals fear being criticized, ridiculed, and, consequently, excluded because of their inadequacy and incapacity (Gragnani et al., 2021). Individuals representing themselves as socially inept or strange may attempt to compensate for this belief about themselves through the imposition of very high standards to avoid failures that would lead them to be evaluated negatively by others (Frost et al., 2010). This is also consistent with the path analysis results, from which a direct effect of the inadequate-self emerges, indicative of feelings of shame, inferiority, and a sense of defect, on social anxiety. About alexithymia, it has been shown that alexithymic individuals experience feelings of inadequacy and distrust at the interpersonal level (Courty et al., 2015). In our research, it was found that the dimension relating to difficulty in verbalizing and describing feelings can predict the symptoms of social anxiety significantly. Furthermore, this represents a mediator between self-criticism and anxious symptoms. A study by Suslow et al. (2000) showed that the TAS-20 factor related to difficulties in describing feelings does not primarily measure a deficit in symbolization but shame anxiety, and shyness. Furthermore, this scale was associated with several measures of shame, consistent with these individuals' reluctance to make contact with others for fear of being humiliated. This shows that underlying this factor is not a difficulty in emotional expression per se but rather a readiness to experience social shame (Suslow et al., 2000), an emotion that is very much present in social anxiety.It is possible, therefore, that starting from criticism directly addressed to the self regarding their sense of inferiority and inadequacy, the individual begins to compare themselves with another who is perceived as more adequate and that this increases the sense of shame and the consequent difficulty to communicate with others, fueling the symptoms of social anxiety. On the contrary, it is possible that the difficulty in expressing oneself acts as a confirmation of one's inability and leads the person to increase self-criticism, predisposing one more to the development of anxiety symptoms. Indeed, even in post-event processing in social anxiety, one can see a bias in the processes of retrospective reenactment in which the individuals re-evaluate their social performance by feeling inferior to others. Thus, self-criticism in social anxiety seems to take on peculiar characteristics by regulating the unprocessed, scornful emotions arising from a sense of inadequacy and defectiveness about others.

Obsessive-compulsive symptomatology showed in the second block of the regression analysis a significant association with hated-self and comparative self-criticism. However, when externally-oriented thinking was included in the model, in line with our hypothesis, this symptomatology was significantly associated with hated-self, in contrast to other forms of self-criticism, except for the inadequate-self, which was marginally significant. Obsessive persons aim to prevent or neutralize guilt (Stewart & Shapiro, 2011), and the main feared threat consists of moral debasement of the self and the consequent deservedly contemptuous attitudes of others (Mancini et al., 2021). Self-hatred represents an enduring, dysfunctional, destructive self-evaluation characterized by attributions of undesirable qualities and failure to meet perceived standards and values (Turnell et al., 2019). It is plausible to think that this feeling is present in people who have fear of transgressing an introjected moral standard: in fact, deontological guilt sensitivity tends to reduce the perception of one's moral worth (Mancini et al., 2021), leading the individual to feel 'dirty' or 'disgusting.' Catastrophic appraisal of the possibility of feeling morally unworthy combined with early experiences of unpredictable punishments based on severing the relationship with the parent (Mariaskin, 2009) may lead these individuals to feel they deserve the self-persecution typical of feelings of unworthiness. Concrete thinking, characterized by low imaginative activity and a notable absence of imagination, may be relevant in persons with obsessive-compulsive functioning and may be oriented towards avoiding intrusive and unwanted images that cause distress. In fact, the EOT subscale, which is most connected to this symptomatology according to the literature (Berardis et al., 2008) and also shows stability over time (Rufer et al., 2006), seems to evaluate a tendency towards cognitive avoidance. In support of this, utilitarian thinking is positively associated with emotional detachment (Lander et al., 2012), indicating that this cognitive strategy could function in avoiding experiencing certain types of unpleasant emotions. In the path analysis, both hated-self and the inadequate-self had direct effects on obsessive-compulsive symptoms. This finding is consistent with the idea that a belief in oneself as defective or morally disgusting, added to a personal expectation of performing inadequately in subjectively perceived important outcomes, can lead to increased control over one's behavior (Mancini et al., 2004). From what emerges in the second step of the hierarchical regression and the significance of *hated-self* and *externally-oriented thinking* in predicting obsessive-compulsive symptomatology, it could be that the tendency to prefer situations or activities that do not contain emotionally charged content could be a coping used by these subjects to defend themselves against the threat of perceiving themselves as disgusting and unworthy. Interestingly, the *inadequate-self*, not the *hated-self*, positively predicts externally-oriented thinking. If the latter is conceived as a strategy for regulating unwanted emotional states, such negative feelings towards the self of the *hated-self* prevent

individuals from enacting the cognitive-emotional avoidance that would help them function better, leading to the preferred strategy of self-attack. This finding could further prove to explain the persistence of the *hated-self* (Werner et al., 2019). An unexpected result concerns the association of comparative self-criticism and its mediating effect with this symptomatology. A possible explanation is the conceptualization of comparative self-criticism, defined as a sense of inferiority in relational terms (Thompson & Zuroff, 2004). Considering that this construct is also compared to socially prescribed perfectionism (Flett & Hewitt, 2002), it may represent a mechanism in obsessive symptomatology guided by the vision of others as people who impose severe and unreasonable demands on themselves. Therefore, in obsessive functioning, self-criticism seems to take the peculiar form of self-persecution that the individual enacts to regulate unpleasant emotions exacerbated by the attempt to avoid and detach from them.

Our hypotheses about eating disorder symptoms were only partially confirmed. This functioning is more associated with hated-self, inadequate-self, and comparative self-criticism but not with internalized self-criticism. In line with Gilbert's (Gilbert et al., 2004) theoretical model, according to which the self-critical person is based on dominant-submissive relational models, control and mastery in eating disorders may result in a feeling of less obligation to take into account the expectations of others as if it were a declaration of autonomy. Indeed, hated-self may result from an overinvestment in the goal of not being fat, which in the mind of the person suffering from an eating disorder coincides with vulgarity, contempt, and immorality (Basile et al., 2021). To be fat is to be unworthy, disgusting, and deserving of blame. The rigidity of thought typical of psychological functioning in eating disorders is based on a system of self-evaluation founded on incredibly wasteful control strategies (Dalle Grave, 2012) but functional for maintaining a sense of worth. The perceived contrast between the ideal self and the authentic self would suggest the presence of internalized self-criticism. In contrast, the results reveal that comparative self-criticism significantly predicts eating disorder symptoms. This result can be explained because, in recent years, especially in the Western countries where the study occurred, increased exposure to social media directly influences body image (Meier & Gray, 2014). Indeed, such use leads to an increase in unfavorable social comparison, in which individuals attribute high characteristics to others against which they do not measure up and experience dissatisfaction (Marks et al., 2020). The use of social media, in short, leads individuals to self-evaluate themselves through comparison with others and determines the appearance and maintenance of food-related behaviors. Therefore, social comparison is more the criterion by which the individual evaluates themselves in eating disorder symptoms than the comparison with an internalized ideal self. Interestingly, the results of the model change when the variables related to the difficulty in identifying and verbalizing emotions are included: in fact, hated-self loses predictive power, remaining only a marginally significant effect, and only the difficulty in identifying feelings seems to show a strong association with eating disorder symptoms. Although in the literature, both dimensions of alexithymia are known to be associated with eating disorder symptoms (Westwood et al., 2017), in our study, which included the investigation of self-criticism, only the first dimension showed a strong association with such psychological functioning. The family environment of people presenting with eating disorder symptoms is usually characterized by viewing emotions as unacceptable and as something that should not be experienced or expressed, leading to a decrease in coping skills and engagement in eating control or body-centered behaviors designed to manage emotions (Corstorphine, 2006). The path analysis shows the direct effects of negative self-beliefs related to hated-self and inadequate-self on the difficulty in identifying emotions. However, only hated-self directly affected eating disorder symptoms, confirming the hypothesis that overestimation of weight and body shape is associated with a critical relationship with oneself with the strategy of attacking or punishing oneself for one's shortcomings. It is possible to explain the path that emerged as if, starting from such a defective and disgusting idea of themselves, the person compares themselves critically with others using an external criterion of an aesthetic type. This leads them never to acquire an internal criterion that allows them to recognize their emotional states or physical sensations (such as hunger or tiredness), fueling the symptoms of food control. On the contrary, the lack of emotional awareness could favor control strategies that are never considered up to the standards imposed, favoring self-criticism, as if the two processes influenced and reinforced each other, resulting in increased symptoms and worse mental health. In summary, in eating symptomatology, self-criticism takes on the characteristics of self-persecution and disadvantageous comparison with others in light of the difficulty in identifying one's internal states.

The study's results identified how different forms of self-criticism are associated with specific symptomatologies. In fact, according to the psychological characteristics present in social anxiety, obsessive-compulsive, and eating disorders, self-criticism seems to take on peculiar characteristics depending on the beliefs about oneself and the function it has to fulfill. Furthermore, the findings support the relationship between a lack of emotional awareness and dysfunctional emotional regulation strategies, leading one to consider self-criticism as a mode individuals use to manage

unpleasant emotions. Such evidence raises an essential question regarding the approach to studying self-criticism and its relationship with psychopathology. The results also suggest that the forms of self-criticism identified by Gilbert et al. (2004) have the power to explain the attitude individuals have toward themselves as a factor that predisposes and maintains symptomatology in various types of functioning. Thompson & Zuroff's (2004) theory, although it does not capture the relevant aspect concerning the individual function that self-criticism assumes, allows us to add a piece in its light of the disadvantageous comparison with others that seems to act as maintenance for various symptomatologies. In contrast, the internalized self-criticism did not show predictive power on any of the symptomatologies considered, raising a question about the scale's ability to capture the construct it intends to measure. In conclusion, as self-criticism is a heterogeneous and multidimensional construct for which a clear and unambiguous definition is lacking (Zaccari et al., 2024), it is of paramount importance to be able to distinguish its specificity in light of its relation to different psychopathological conditions (Werner et al., 2019). Furthermore, in light of moving beyond a categorical approach to the study of mental health, it becomes increasingly important to conduct pathway analyses that consider the specific dimensions of cross-cutting constructs in psychopathology, such as alexithymia. It is increasingly important to take into consideration the different processes that intervene in predisposing to psychopathology and how these influence each other. This would allow us to broaden the magnifying glass on the pervasive dysfunctional processes that generate psychological suffering, allowing for more excellent knowledge of the relationships between the mechanisms underlying the development of symptoms. Such a result would have relevant clinical implications as it would allow the structuring of increasingly complete and advanced prevention and intervention protocols, counteracting the progression of clinical and sub-clinical conditions of mental suffering.

Limits and future directions

The main limitation of the research is that it is a cross-sectional study, which makes it impossible to make inferences on the directionality of the relationships in causal terms between the variables examined. The results obtained, while outlining a contribution of specific forms of self-criticism and alexithymia in favoring the symptomatology, do not allow us to clarify whether there is a causal direction between the two, or a reciprocal influence impacting the outcome. Indeed, the order of the predictors to be included in the Path Analysis models was selected on the basis of theoretical assumptions concerning the definition of the different forms of self-criticism and not strictly based on statistically relevant results. A further limitation is that the study was conducted on the general population. In addition, the presence of diagnoses that fell within the exclusion criteria was based on the mere declaration of the participants that they might be misrepresenting themselves or not be aware that they met the diagnostic criteria for a mental disorder. Therefore, it is not possible to conclude the actual association of specific forms of self-criticism and alexithymia with various mental disorders, but only with symptoms that reflect particular psychological functioning. Furthermore, other constructs that could explain the relationship between self-criticism, alexithymia, and the symptoms considered, for example, metacognitive skills, were not measured. In summary, our results should, therefore, be interpreted with caution. Future research should consider patients with different diagnoses to check whether the specificity of self-criticism can also be generalized to clinical samples. In addition, these should take a qualitative approach, assessing the specific content of self-criticism and other peculiar features, e.g., the characteristics of the critical voice or the function it assumes for the individual. Such an approach would also allow us to distinguish those cases in which self-criticism can have adaptive and motivational effects aimed at self-improvement from those that constitute a highly detrimental factor for mental health outcomes.

Author contributions Conceptualization: Carolina Papa, Alessandro Couyoumdjian, Micaela Di Consiglio, Francesco Mancini; Methodology: Carolina Papa, Alessandro Couyoumdjian; Literature searches: Vittoria Zaccari, Micaela Di Consiglio; Formal analysis and investigation: Francesca D'Olimpio, Carolina Papa; Writing - original draft preparation: Carolina Papa; Writing - review and editing: Carolina Papa, Francesca D'Olimpio, Alessandro Couyoumdjian; summary of previous research studies: Micaela Di Consiglio, Vittoria Zaccari; Supervision: Alessandro Couyoumdjian, Francesco Mancini.

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Data availability The data supporting this study's findings are available from the corresponding author, Alessandro Couyoumdjian, upon reasonable request. The data are not publicly available due to privacy or ethical restrictions.

Declarations

Ethics approval Approval was obtained from the ethics committee of Sapienza University of Rome. The procedures used in this study adhere to the tenets of the Declaration of Helsinki.

Consent to partecipate Informed consent was obtained from all individual partecipants included in the study.

Competing interests The authors declare that the research was conducted in the absence of any commercial or financial relationships thatcould be construed as a potential conflict of interest.

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