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Neuropsychoanalysis: The Epistemological Interface of Lacanian Psychoanalysis and Neuroscience on GAD & SAD

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Abstract. The interface between psychoanalysis and neuroscience is a relatively new research area, with various debated paradigms centred on reductivism and knowledge gaps. However, the interdisciplinary research on Generalised Anxiety Disorder (GAD) and Social Anxiety Disorder (SAD) has received little attention from previous studies compared to other psychiatric diseases such as schizophrenia and Obsessive-Compulsive Disorder (OCD). This paper adopts a non-reductive theoretical approach to examine how the similarity and difference between Generalised Anxiety Disorder (GAD) and Social Anxiety Disorder (SAD) parallel Lacanian anxiety with their essence. The core foundation of Lacanian anxiety, that is, the lack of lack, is philosophically aligned with the brain changes and symptoms of GAD and SAD, with their distinctive features representing different aspects of the same concept, such as the different forms of object a, linked to the lack of lack. This paper addresses the research gap in interdisciplinary studies of Lacanian psychoanalysis and neuroscience concerning anxiety and provides epistemological insights for future research.

Keywords: Lacanian Psychoanalysis, Neuroscience, Generalised Anxiety Disorder (GAD), Social Anxiety Disorder (SAD)

1. Introduction

Research at the crossroads of Lacanian psychoanalysis and neuroscience has been influential and controversial, shaping perspectives within various philosophical paradigms [1-3]. The philosophical links between these fields are valuable, as Lacanian psychoanalysis offers epistemological insights into empirical science. However, in neuropsychoanalysis, while exploring its potential, disorders such as Generalised Anxiety Disorder (GAD) and Social Anxiety Disorder (SAD), along with their symptoms, tend to receive less attention compared to conditions like schizophrenia [4], Obsessive-compulsive Disorder (OCD) [5] and are often approached in a reductionist manner. This paper aims to explore and establish logical connections between GAD and SAD and the Lacanian theory of anxiety by examining the functional brain changes, alongside the psychological and somatic symptoms associated with these disorders. It compares the two types of anxiety and suggests that, within Lacanian psychoanalysis, the fundamental philosophical core of GAD and SAD is the "absence of absence," expressed through different structural forms, which give rise to distinct

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varieties of anxiety. Although this work does not directly contribute to empirical research, it seeks to deepen philosophical understanding of GAD and SAD through Lacanian psychoanalysis.

2. Literature review

2.1. Theoretical stance

The interface between neuropathology and psychoanalysis, known as neuropsychoanalysis, has generated both debate and support within the field. Despite ongoing debates, some scholars maintain that the core of psychoanalysis aligns with the functional organisation of the human brain. Unlike bio-reductionism, these scholars appeal to Althusserian non-reductive materialism, proposing that both disciplines share an organic epistemology [6]. This Althusserian perspective rejects direct one-to-one mappings, favouring structural homology instead. For example, Lacan's ideas about the body-in-parts and the structural failure to achieve perfect unity align with the brain's fragmentary operation, which lacks the unified harmony described as Kludge by Liden [7]. Consequently, Lacan's focus on language and its epistemology is regarded by some as analogous to that of the human brain. This non-reductive approach is what this paper aims to adopt.

Some criticise it for favouring reductive naturalism, equating psychoanalytic theories with neuropathological ones and directly linking them to empirical studies of brain structure and function in disease [3]. However, complex neurorepresentations cannot be directly mapped onto specific brain activities that produce affect and thought, thereby challenging the view that biological organisms can be fully understood through science. Lacanian psychoanalysis departs from Freud's biologically grounded theory of drive, reinterpreting it through a linguistic lens [8]. Mark Solms & Turnbull [9] exemplify this approach by integrating neuroscientific methods with psychoanalytic ideas, asserting that the human mind is the "subjective part of nature" [3]. Meanwhile, organicist naturalism remains contentious, as it tends to pathologise the Lacanian brain-in-pieces concept and assumes an idealised, improved model of the brain. Johnston [3], for example, criticises Damasio's programme as ontologically organicist, claiming that eliminating "intracerebral disharmony" is desirable. These approaches are precisely what this paper seeks to distinguish itself from.

2.2. Theoretical background

According to Lacan, anxiety occurs when the structural manque, the symbolic lack of the subject, fails, manifesting in two facets of the same dilemma. On the one hand, when this protective barrier of lack breaks down, it allows the Real, which is inherently unsymbolisable, and the Other's demanding desire to become imminent for the subject. The structural dysfunction of lack causes anxiety, as it is described as "the one that does not deceive" because "the real … is what anxiety signals" [10]. On the other side, the demanding desire of the Other is both alarming, imminent, and unknown to the subject. This arises when the mediating and suspending lack between the subject and the Other's desire is disrupted. As Lacan metaphorised in Seminar X, the subject stands in front of "a praying mantis with its voracious desire" [10], and it "did not know which mask" it was wearing. Hence, as Žižek indicates, Lacanian anxiety fundamentally stems from the lack of the lack, a concept that involves multiple elements [11].

The concept of 'lack of lack' relates to both SAD and GAD, common mental disorders that share structural similarities with Lacanian anxiety. Ontologically, but not reductively, in both cases of GAD and SAD, symbolic lack fails to suspend the Other's desire, exposing the subject to both the Other's desire and the Real—two aspects of the same structural phenomenon. However, variations

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exist in how this lack of failure is connected to different features of the disorders. Notably, the difference between the physiological and psychological symptoms of the two disorders, as explained by Lacanian psychoanalysis, lies in the position of the object a: the floating and the fixated form.

3. Philosophical parallel of GAD & SAD: structural failure of the lack

3.1. Parallel in the brain structures & function of GAD and SAD

Since the subject is shaped topologically as shown in Figure 1, disrupting any ring would cause the entire knot to collapse. However, in Seminar XXIII, Lacan introduces another ring of sinthome within the knot as the subject's idiosyncratic reinforcement [12]. This paper does not engage with Lacan's sinthome theory and therefore employs the original version of topology. Essentially, the subject exists within the structural lack of the Other through symbolic castration, due to the Symbolic's inherent limitations [13]. This lack cannot be directly perceived; instead, it manifests in the form of the Other's desire, prompting the question: what does the Other want from me [13]? Thus, through fantasy, the subject positions itself in relation to the desire of the Other by assigning it a structural place of lack. The subject must then posit a cause that explains this desire, namely object a, the residual of symbolic castration and the cause of the Other's desire [14]. As object petit a remains positioned as a cause rather than an object of desire, a structural distance is created between the subject, the Other's desire, and the Real [15]. This distancing relationship between the subject and object a, as illustrated by the formula $ Δ a, forms the crucial lack that acts as a buffer, shielding the subject from the Real—the potentially traumatic dimension—by maintaining a safe distance [10].



Figure 1. Subject structure as the Borromean knot (RSI)

The absence of 'lack' can be philosophically compared to empirical observations of patients with GAD and SAD. Both structural and functional alterations have been observed in patients with SAD and GAD. Studies examining the function of brain regions involved in the DMN indicate that, compared with controls, individuals with GAD and SAD exhibit hyperactivation of DMN regions implicated in autobiographical memory, consciousness, rumination, and related functions [16,17]. In other words, the normal or baseline activity of the DMN observed in healthy controls is absent in patients with GAD and SAD. DMN activity is positively correlated with scores on the GAD and SAD clinical assessment scales. From the perspective of structural changes in brain regions implicated in GAD and SAD, studies also suggest increased amygdala volume and cortical thickness in patients with both disorders; however, these changes are not observed in healthy controls [18-20]. Therefore, from both structural and functional perspectives, the physiological symptoms of GAD and SAD can be philosophically paralleled in Lacanian theory.

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3.2. Parallel in the somatic symptoms of GAD and SAD

The same logic is evident in Lacanian theory regarding the somatic symptoms of GAD and SAD; this section examines their similarities and differences. It is crucial to highlight the two categories of unpleasant symptoms introduced by Lacan: automaton and tuché [14]. Moreover, differentiating itself from the automaton, tuché involves only the ontological void of the Symbolic, rather than the overcompensation of signifiers and overdetermination linked to psychological symptoms. This distinction between two forms of unpleasure may aid in understanding the somatic and psychological symptoms of GAD and SAD. Nevertheless, these two concepts are facets of a single entity rather than completely separate categories. The link between these symptoms is paralleled with respect to explainability but not in ontological essence. Nonetheless, this parallel does not equate clinical observation of somatic symptoms with the Lacanian interpretation; rather, it suggests that the two concepts are homologous, emphasising the role of psychological factors.

3.2.1. Automation

Automation shares a perspective with the psychological symptoms seen in patients with both conditions. It involves the unsuccessful return of repressed signifiers as symptoms. Automation relates to the suppression of signifiers into the unconscious, marked by an inability or hesitation to recall, think about, or discuss certain events and feelings [14]. This is linked to the repeated yet unsuccessful emergence of the repressed signifier, which appears as compulsive repetition of unpleasant behavioural patterns and symptoms [14]. In patients with GAD and SAD, both groups exhibit excessive rumination and overthinking [21-23]. Using statistical scales, these studies show a positive correlation between excessive rumination and disease severity and a negative correlation with positive self-assessment. Moreover, studies also suggest a correlation between perfectionism and disease severity [24]. Perfectionism refers to the "refusal to accept any standard short of perfection" [25]. These symptoms involve the use of inner language and thoughts, categorised as symbolic in Lacanian psychoanalysis. Linking to Žižek, these are compulsory compensations for the Symbolic aim for the ultimatum, which occupies the position of lack, the fundamental void of the subject. Although the Real is traumatic to the individual, paradoxically, the overcompensatory symbolisation could itself constitute the symptom. Similar to Lacan's description of anxiety as the thing that does not deceive, Žižek metaphorically suggests that the sign of the Real dissolves the mask of trickery [11].

3.2.2. Tuché

Tuché's theory may relate to the somatic symptoms observed in patients with these two diseases. Conversely, Touché refers to the subject's confrontation with the Real, which exists beyond all signifiers and manifests as a horror to the individual, disrupting their idealised and illusory ego. According to the DSM-5, individuals with GAD and SAD show both somatic symptoms, such as muscle tension, restlessness, rapid heartbeat, and fatigue [26]. These symptoms are often described as occurring without physical disease but being connected to psychological struggles, which can be hard to explain through empirical physiology. The link between Tuché and somatic symptoms lies in the dissonance and direct mapping between patients' intense psychological thoughts and their bodily experiences. For instance, while the clinical diagnosis of somatic symptoms involves dominant thoughts about the symptoms, these thoughts are likely a response to the symptoms' negative effect on quality of life, rather than the primary cause. In accordance with Tuché's idea, the Lacanian body

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is fragmented by the symbolic order, especially language. When Touché occurs, the individual encounters this phenomenon. The linguistic and symbolic body thus exposes its ontological limits, producing inexplicable symptoms.

4. Philosophical parallel for GAD & SAD: object a

4.1. Parallel in the brain functions of GAD & SAD

Patients with both conditions show differences in brain function. Linking these variations to Lacanian psychoanalysis, although Lacan does not categorise specific types of anxiety, he theorises that general anxiety occurs when the subject is directly confronted with the object a. If the failure of the lack disrupts the distance between the subject and the object a, Lacan specifies two forms of object a in anxiety: the floating and the fixated form. A similar logic appears when comparing Lacanian theories with clinical observations of trigger factors for these disorders. SAD is characterised by dysfunction in brain regions primarily involved in processing social threats and social judgments [27]. Conversely, GAD involves dysfunction in general threat detection. Patients with GAD exhibit chronic hyperactivation across brain regions involved in broad threat detection, without a selective focus on specific threats. For example, visual tests of emotional face processing reveal hyperactivation in areas such as the medial prefrontal cortex (mPFC) and the superior temporal gyrus (STG), which are essential for emotion processing. These tests present participants with gaze cues from others, exposing them to emotions conveyed through facial expressions.

Under Lacanian psychoanalysis, the emotional faces may be seen by these patients as dangerous and horrifying. In Seminar XX, The Four Fundamental Concepts of Psychoanalysis, Lacan describes the gaze as the fixated object a. Essentially, under the gaze, the subject is directly confronted with the other's desire, which is unsymbolisable. This can be likened to the praying mantis metaphor in the theorisation of anxiety, where the Other's desire remains unknown to the subject. Notably, patients with GAD show persistent, diffuse hyperactivation in these regions without specific triggers. From an area-specific perspective, SAD primarily involves hyperactivation of the amygdala [28], insula, and fusiform gyrus [27]. GAD, by contrast, does not emphasise a particular brain region; instead, it focuses on the brain as a whole. In addition to hyperactivation of the DMN, GAD patients show dysfunction of the left precentral gyrus, the left inferior parietal lobule (IPL), the left cerebellum, the left angular gyrus (AG), and the left middle temporal gyrus, compared to SAD patients [16]. According to Lacanian theory, this may be compared to GAD patients' experience of the floating object a, which lacks a defined form. In contrast, SAD patients have their object a fixated on the gaze.

5. Conclusion

Through a philosophical parallel, this paper examines the similarities and differences between brain alterations and their symptoms in relation to Lacanian psychoanalysis. Ontologically, regarding the issue of anxiety, the two disciplines—psychoanalysis and neuroscience—intersect on concepts such as lack of lack and object a, highlighting both convergence and differences in GAD and SAD. The contribution of this paper lies in its insights into the epistemological interface between these fields, distinct from other research that tends toward reductionism. To maintain a conservative and rigorous approach, this paper does not directly equate symptoms of psychiatric disorders with psychoanalytic theories. Furthermore, limited research has been conducted on the psychiatric condition of anxiety, with its subtypes clearly distinguished and discussed. Thus, this indicates a premature attempt to

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address this gap. However, its limitation is a relatively shallow exploration of both disciplines at this specific interface, due to the limited scope of prior research. Consequently, this gap could serve as a focus for future studies.

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