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Understanding Generalized Anxiety Disorder: Etiology, Mechanisms and Treatment Implications

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Abstract: This paper focuses on exploring treatment implications that target better for generalized anxiety disorder (GAD) with enhanced efficacy by (1) discovering attributes that better differentiate GAD from normal high-level worries or other mental disorders with similarities in symptoms and features, (2) grasping GAD's mechanism more soundly through gaining and combining insights from extant research and four classical conceptualizing models. A literature review of past and current theories about conceptual framework and treatments of GAD has found leading roles, attributes, and risk factors sharing commonality and connection among different theories. Then, treatment implications for GAD have been illustrated and divided into two primary aspects. In the end, there are recommendations for future research, empirical evidence, and clinical consideration of both the current theoretical models and established improvement in treatments for GAD, which ends with a conclusion of promising new research and treatment direction worth clinical attention and future studies in the field.

Keywords: generalized anxiety disorder, worry, metacognition, intolerance of uncertainty, cognitive avoidance, mood, perfectionism, interference

1. Introduction

As common thoughts and emotions, anxiety and worry have always been a regular part of individuals' life until they develop and become inordinate, chronic, uncontrollable, and pathological. Generalized Anxiety Disorder (GAD), among all other disorders with anxiety as a prominent diagnostic feature, was only a recognized independent category at the end of the 20th century. Controversies concerning GAD's differentiation and validity abound from the revised DSM-III to the development of DSM-5 [1]. In addition to these critical features mentioned earlier, six symptoms, along with an excessive level of anxiety and worry, may involve: restlessness, irritability, difficulty concentrating, sleep disturbance, muscle tension, and is prone to fatigue [2]. Meanwhile, according to DSM-5, the more the worrying content varies, such as health, relationships, and finances, the greater the likelihood of a GAD diagnosis. Statistics show that GAD's lifetime morbid risk is 9.0%, while total remission rates for this persistent disorder are meager among anxiety disorders [2]. Under such circumstances, the precise core fear of GAD and contributors to the formation and perseveration of GAD are reasonably in dispute [3, 4]. The current

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study primarily focuses on a synthesis of pertinent research findings to help build a clearer picture and understanding of GAD to develop clinical interventions that are more specific and effective.

2. Methodology

The current study emphasizes worry and its risk factors, classical models of mechanisms of GAD, and treatment implications for the disorder. Research methodology is a review of pertinent literature through academic search engines, including Google Scholar, Pubmed Central, etc. Two significant sources utilized are DSM-5 and Worry, and its Psychological Disorders: Theory, Assessment, and Treatment; the latter source served as a crucial guideline to the current study by covering comprehensive aspects of the related topic written by international experts in the field.

3. Findings and Discussion

3.1. Etiology, Mechanisms, and Impacts on Individuals' Life

3.1.1. Metacognitive Analysis

An excessive amount of worry is a fundamental feature of generalized anxiety disorder, which could be triggered by individuals' automatic and intrusive "what if" questions, such as "what if I fail" with future connected to the negative conception or worst-case-scenarios in daily events and social stressors [5]. Then, based on a metacognitive model of worry in GAD, people suffering from GAD employ worry as a coping tactics, where worry is positively regarded to be a form of assistance that could prepare them for imminent challenges or stressful situations, enabling better performance with more pessimistic chances in mind [6]. Therefore "Type I worries" are activated, which was delineated in Wells' model as worries about external daily events or internal triggers without any cognitive appraisal. Following that will be "Type 2 worries", where cognitive functioning and negative appraisals take place — individuals begin to worry about their worries, namely meta-worries (e.g. 'I cannot control my worries' or 'my state of worrying itself is harmful and dangerous') [7]. Accordingly, Well's model illustrates a cycle of three aspects triggered by Type 2 worries, initiating pathological and persevering GAD worries from normal worries: emotional symptoms, behavioral responses, and thought controlling strategies.

Firstly, negative interpretations could be accompanied by severe emotional symptoms or physiological manifestations, such as feelings on the edge of heart attacks and a completely blank mind, resulting in lacking self-efficacy that further impedes problem-solving. Secondly, studies and empirical evidence prove a significant correlation between metacognition and avoidance behaviors, as well as decisional procrastination, to temporarily evade stimuli of worries and danger [8]. Thirdly, thought control strategies could be deliberately adopted to suppress and distract individuals from the state of anxiety they fear [7]. The above endeavors from individuals with GAD would backfire. Still, the cycle and pattern are continually deepened by the incompatibility of their perceived need for worry and their metacognition of worry's danger and uncontrollability [6]. Thus, anxiety worsens and escalates, far from avoided or lightened.

3.1.2. Cognitive Model and Intolerance of Uncertainty

Superficial observations of individuals with a generalized anxiety disorder may be easily misinterpreted and confused with symptoms of other disorders, thereby causing misdiagnoses and imprecise treatments. Specifically, over-reactivity and phases of unstable mood could be exhibited by individuals with GAD due to stress-inducing stimuli, which, reflected by the results of the study, could nonetheless likely be confounded by clinicians with intense moodiness or affective instability

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respectively from people with Bipolar and Borderline Personality Disorders [9]. To unravel and differentiate GAD, Koerner and Dugas established a framework of cognitive analysis centering around the term "intolerance of uncertainty" (IU) as one of the leading components of GAD patients' pathological worries. Research and clinical studies have testified to a high correlation between IU and maintenance of excessive worries, a core feature of GAD, and notably greater intensity of IU in GAD patients compared to patients with other anxiety disorders [10]. In experiments designed by Dugas and researchers, high-IU undergraduates were considerably more predisposed to rate ambiguous written scenarios as menacing, displaying evident interpretative differences in contrast to the ratings in low-IU groups. Accordingly, this study reveals enhanced encoding and evaluative biases that tend to perceive innocuous stimuli with ambiguity as threatening in high levels of IU and then cognitively in GAD patients. The identified mechanism promotes pathological worry and frequently obstructs the performance of individuals with GAD, where some degree of ambiguity and uncertainty that even the most subtle and daily tasks involve could be overwhelming and formidable [10].

In the meantime, this IU framework of Koerner and Dugas encompasses paradoxical cognitive processes concerning worries and anxiety. After high IU labeling ambiguous situations as dangerous, positive beliefs about worries, as proved much common in GAD patients, would prompt patients to utilize worries and pessimistic future predictions to eliminate the frustrating uncertainty and prepare for tackling upcoming problems [10]. Chronically, such a pattern would be maintained through either positive reinforcement—if ending with better outcomes like figuring out a solution—or negative reinforcement— if the detrimental worry scenario never materializes [10]. However, this IU-driven process aiming at problem-solving and a resulting state of excessive vigilance in interpreting potential threats will be followed by GAD patients' negative beliefs of worries, perceiving anxiety as distressing and stress-inducing. In the end, Koerner and Dugas mentioned cognitive avoidance strategies as a part of the model and result following the paradoxical motivations listed above, which individuals with GAD adopt essentially to avert an evocation of disturbing emotional images by reducing their detectability and intrusion with suppression and procrastination, preventing the following somatic reactivity as well [10]. Nonetheless, a persistent pattern of GAD worries has been set. A combination of opposite metacognitive beliefs derived from IU and following avoidance strategies will further escalate both external problems confronted by individuals and their conflicting internal state with uncontrollable GAD worries.

3.1.3. Cognitive Avoidance Theory/Contrast Avoidance Model

Differing from the elaborated cognitive model based on intolerance of uncertainty, which entails emotional avoidance as a crucial role rather than directly laying the foundation of the conceptual framework on it, cognitive avoidance theory, or contrast avoidance model, is conceptualized where "avoidance" lies at heart. In this case, the identified core of the mechanism is evading emotional processing or a negative emotional contrast instead of emotion itself or its frequency and vividness [4]. According to experiments conducted by Borkovec and colleagues, participants fearing public speaking would respond to images of their dread scenario in lower levels of cardiovascular activity if they worry for a period preliminary to the image exposure, while subjects are formerly undergoing relaxation only generally exhibit much stronger cardiovascular response. Thus, the data substantiates how worrisome thinking could manage to circumscribe and restrain emotional processing, thereby preventing and avoiding further intensity increase of sorrowful, frustrated, or fearful emotions [11]. To interpret GAD patients' selection of prolonged states of worrying and stress when they simultaneously perceive them as adverse and distressing, Llera and Newman proposed that people diagnosed with GAD preferred to feel chronically upset over experiencing a relatively abrupt negative emotion contrast. In this case, avoiding somatic reactivity will lead to

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negative reinforcement, developing into a persevering pattern of pathological GAD-type worry. In the long run, this mechanism could also lead to physiological activation and rigidity in people with GAD, experiencing prolonged pre-worry state and high heart rate in daily events and stressors, which become patients' new baseline that shows little differentiation from worrisome states in actual stimuli [12].

3.1.4. The Mood-as-input Model

The above models either describe the emotional response of chronic anxiety and distress as the result of the already-formed cycle of GAD or partially entail an emotional state of negativity focusing on physiological responses and factors. Unlike these perspectives, the mood-as-input model identifies the cognitive role of negative moods, proved much more intense within GAD worriers than normal worriers, as a crucial input to motivational implications and evaluative processing, contributing to task and worry perseveration of GAD. This conceptual model lays its foundation on the mood-as-input hypothesis, where the key is a combination of self-perception of moods and different "stop-rules" adopted by individuals, offering better insights into perseverative psychopathologies — in this case, pathological worry [13]. In two experiments, when subjects were told to stop reading behaviors on cards when they felt confident of having grasped adequate information, subjects in negative moods showed substantially greater persistence in working compared with those in positive moods; when the such rule was no longer required, and subjects were told to cease generating birds from memory whenever they subjectively feel like stopping and no longer enjoy the task, the group in positive moods reflected a much more extended period of perseverance [14]. To wit, moods could be perceived and used as information in the contexts of different stop rules, thereby influencing decisions to either proceed or terminate the current task: with an "as many as can" stop rule, people with negative emotions continued for a significantly more extended period in the same given mission, for they inferred their goal to be unachieved from their negative state of emotions; with a "feel like continuing" stop rule, however, positive moods could be served as cues for the enjoyment of the task, so individuals in positive moods persisted considerably longer [15].

For people with GAD, the task is no longer to memorize or any assignment from someone else — it becomes worrying, which they personally select and then designate as a preparation tactic to resolve upcoming difficulties. The point is this worry would end up being maintained to a tremendous and eventually pathological degree because GAD worriers incorporate both a prominent feature of negative moods and the frequently rigorous deployment of an "as many as can" rule to cease a current task as the studies from Davey and colleagues reflected. In this mood-as-input model, several factors in promoting the application of "as many as can" as the stop rule is clarified, including metacognitive beliefs of the functionality of worries, a constant state of negative moods, and dispositional factors [5]. Among these, the personal attributes facilitating the employment of the stop rule include perfectionism and intolerance of uncertainty, where the former factor has significantly risen in contemporary society, especially among millennials, while proving to have strong associations with GAD and pathological worries [5, 16]. A study tested the increase in multidimensional perfectionism within roughly forty years among 41,641 college students who came from Canada, the United States, and the United Kingdom, where one perfectionism dimension was scored, indicating a level increase of up to 33 percent [17].

In short, there is a review of the four classical conceptual models for mechanisms of GAD given above. Firstly, the metacognitive model mainly analyzes Type 1 and Type 2 worries, forming a paradoxical state of positive beliefs and negative metacognition towards the need and danger of worry, respectively, which initiates a pattern of efforts or behavioral, emotional, and though-controlling response that further compounds and eventually maintains worriers' current anxiety

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state and issues. Interestingly, the following three theories are grounded on this same conflicting cognitive processing of worry, despite their different priorities and focuses. The second is the cognitive model revolving around intolerance of uncertainty, which refers to an inclination or a bias specifically prominent in individuals with GAD to interpret uncertainty-related stimuli, frequent and indispensable among everyday scenarios, as potentially threatening, thereby uncontrollably utilizing, fearing, and maintaining pathological worries of GAD. Thirdly, the cognitive avoidance model demonstrates the chronic status of suffering from worries as being prolonged implicitly by patients to avert further processing and contrast negative emotions. By already remaining in a physical and mental pre-worry state, individuals' somatic reactivity would be weakened in the face of natural stressors, negatively reinforcing the whole long-lasting process of GAD-type worries. Fourthly, the mood-as-input model is based on a cognitive perspective rather than the formerly mentioned physiological aspect of worry-related negative moods, the blending of which with an "as many as can" stop rule, triggered by metacognition and dispositional factors like IU and perfectionism commonly found in people with GAD, substantially sustains the utilization of worry and its later psychopathological development.

3.2. Prognosis/Treatment Implications

After a review of insights from extant research and classical frameworks for the GAD mechanism, the current study mainly sorts pertinent treatment implications into two aspects: 1) more accurate differentiation of generalized anxiety disorders among other mental disorders 2) more specific versions of cognitive behavioral therapy (CBT), an already proved efficacious GAD treatment, centering around individuals' thoughts, behaviors and biases — the possible attributes for their GAD-type worry perseverance. Hence, by better comprehending distinct possible mechanisms of GAD and clinically better addressing these risk factors in the development of GAD for each patient, it is becoming increasingly promising to attain higher remission rates and fewer relapses with the completed course of GAD treatments.

On the one hand, more advanced and accurate assessment tools are needed to reduce false-negative or false-positive results and misdiagnosis of GAD and other mental illnesses. As illustrated above, data reveals a possibility of mistaking GAD for some less treatable disorders in the clinical field, which is statistically high enough to raise some degrees of concern. In this case, empirical evidence has testified to the Penn State Worry Questionnaire (PSWQ) and its capability to discriminate against generalized anxiety disorder by encompassing measures that predict intolerance of uncertainty or the "as many as can" stop rule, etc., yielding diagnoses of enhanced accuracy under sensible use in different circumstances [18]. Specifically, according to findings and suggestions from Startup and Erickson, higher scores in PSWQ should be used to differentiate between a GAD diagnosis and individuals with different mental illnesses that also involve worrying as a prominent feature. Lower scores could be sufficient for differentiating normal worriers and GAD patients.

On the other hand, several improved cognitive-behavioral therapies served for GAD have been built based on developed GAD frameworks, which commence factoring in and even highlighting some of the central roles specified above in the transformation from daily worry to GAD-type worries, the maintenance of such pathological states. Examples of evidence-based revised versions of CBT for GAD include mindfulness-based cognitive therapy (MBCT), which focuses on cultivating mindfulness to prevent patients from suffering residual symptoms after treatment [19]. Another proposal is behavioral experiments for IU, particularly addressing the IU-driven cycle of pathological worry for GAD patients [20].

These studies suggest that, in terms of the direction for future clinical research and more treatment exploration for GAD, more attention and efforts could be paid to the cognitive and

behavioral aspects that are specifically strongly associated with the development and maintenance of GAD worries from a normal worry level. In this case, addressing metacognition, a basis for establishing every listed GAD framework, could be prioritized during treatment. Effective methods treating other dispositional factors in the psychopathology of GAD, including intolerance of uncertainty and perfectionism, should also be stressed in future studies, especially in light of the contemporary sociocultural impact promoting the prevalence of these risk factors for potential harm and formation of GAD and other mental health disorders. In addition, many models above encompass a process of positive or negative reinforcement as a crucial role in promoting the maintenance of pathological worries, which then have possibilities of being controlled or eliminated through therapies focusing on a behavioral aspect, similar to the treatments for panic disorders or specific phobias. Overall, many treatment perspectives for GAD still need further research and evidence. Still, there is an excellent chance of approaching full recovery among people with GAD by including more attributes discovered and developing special techniques aiming at these different risk factors causing different patients suffering.

4. Conclusion

By reviewing several hypothesized GAD mechanisms, some similarities have been explored in these classical conceptual models of GAD established, including paradoxical metacognitive beliefs or motivations about worries, cognitive avoidance, the core fear behind the chronic worrying pattern, and the involvement of positive or negative reinforcement during the transformation from a form of normal emotions to GAD-type worry. While more research could be conducted to prove further the efficacy of improved treatment for GAD for complete remission, extant findings from these studies, a framework, and factors contributing to its fundamental development and maintenance could be kept underscored.

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