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Stuttering and Social Anxiety Disorder: New Insights and Treatment Possibilities

Yoshikazu Kikuchi[1], Gerald A Maguire[2,3], Daisuke Murakami[1], Kazuo Adachi[4], Yumi Yamaguchi[1], Takashi Nakagawa[1], Toshiro Umezaki[4,5]

[1.] Department of Otorhinolaryngology, Graduate School of Medical Sciences, Kyushu University, Fukuoka, Japan.
[2.] Department of Psychiatry, College Medical Center, Long Beach, CA
[3.] Department of Psychiatry, American University of Health Sciences, Signal Hill, CA.
[4.] Voice and Swallowing Center, Fukuoka Sanno Hospital, Fukuoka, Japan.
[5.] International University of Health and Welfare, Fukuoka, Japan.

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ABSTRACT

Stuttering (childhood-onset fluency disorder) is characterized by disruptions in speech fluency. In the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV), the diagnosis of social anxiety disorder in people who stutter is prohibited. However, the introduction of the DSM-5 enabled the diagnosis of social anxiety disorder concurrently with stuttering, making the concerns of people who stutter more visible. Understanding the performance-only subtype of social anxiety disorder introduced in DSM-5 can prevent underestimating the concerns of people who stutter and lead to appropriate support. While cognitive-behavioral therapy is effective in treating stuttering, accumulating evidence for pharmacotherapy is also necessary.

Keywords: stuttering; social anxiety disorder; DSM-5; cognitive-behavioral therapy; pharmacotherapy

Introduction

Stuttering (childhood-onset fluency disorder) is a disruption in the fluency of speech. It affects 5%–11% of the population between the ages of two and four[1-4]; however, 74% recover naturally within four years,[5] leaving 1% with persistent stuttering.[6] Persistent stuttering can lead to academic difficulties,[7] a decreased quality of life,[8,9] lower social status,[10] reduced wages,[11] and an increased risk of suicide.[12] Therefore, stuttering has the potential to be life-threatening and necessitates not only speech-language pathologists but also physicians and clinical psychologists to be involved in its treatment.

This review discusses the developmental phases of stuttering and social anxiety disorder (SAD), the risk of suicide associated with SAD, the changes in SAD in the DSM-5, the prevalence of SAD among people who stutter, cognitive-behavioral therapy for SAD in stuttering, and the potential for pharmacotherapy for SAD in stuttering.

The developmental phases of stuttering and social anxiety disorder

The struggle of stuttering is often likened to an iceberg, suggesting that attention should be paid not only to surface-level speech behaviors but also to underlying psychological issues.[13] Bloodstein (1960)[14] investigated the case records of 418 people aged 2–16 years who stuttered from the perspective of the temporal relationships of various features of stuttering, depicting the development of stuttering as a process involving essentially four phases (Table 1).[14] Phase 1 corresponds to early childhood. The primary symptoms were repetition, mainly of syllables or single-syllable words. Stuttering is highly variable and tends to intensify when a child is excited or talking at length. Generally, the child does not react emotionally to their stuttering and speaks freely in all situations. Phase 2 occurs around the age of six or seven years, when stuttering becomes chronic. Patterns of stuttering may vary and include repetitions, tense pauses, or associated movements as primary symptoms. As in the other phases, the form of blocks seems to be the most appropriate indicator of the severity of the disorder. Conscious anticipation, fear of words or sounds, and avoidance behaviors are rarely observed, with notable exceptions in particularly severe or advanced cases. Phase 3 was observed in children aged 8 years or older who stutter. This phase is characterized by word substitutions, difficulties with certain words or sounds, and some degree of conscious anticipation. Deep feelings of fear or embarrassment are minimal, and speaking situations are generally not avoided. As Phase 3 approached its end, the emotional reactions indicative of Phase 4 gradually increased. In Phase 4, stuttering is observed in children aged 10 and older. A key feature of Phase 4 is the presence of clear emotional reactions to stuttering, as evidenced by the tendency to avoid speaking. Emotional involvement is observed in speaking situations with anticipatory anxiety or fear of performance. Specific examples include fear of reading aloud in class or avoiding speaking, even when with friends, due to stuttering. Phase 4 closely resembles the medical diagnosis of social anxiety disorders.

Table 1: Bloodstein's developmental phases of stuttering

	Age	Speech	Emotion
Phase 1	Early preschool	Repetition	Essentially no fear and embarrassment.
Phase 2	6, 7 years	Blocks	Little concern about his stuttering except in severe cases or moments of unusual difficulty.
Phase 3	As young as 8 years.	Word substitution. Fully developed stuttering without avoidance of speech.	There are few deep feelings of fear or embarrassment.
Phase 4	As young as 10 years.	Frequent word substitution and circumlocution. Avoidance of speech	Vivid anticipations of stuttering. Fear and embarrassment.

The risk of suicide associated with social anxiety disorder

Social anxiety disorder (SAD) is a mental disorder characterized by intense fear or anxiety of being scrutinized or judged by others. Individuals with this disorder strongly fear being negatively evaluated in social or performance situations and may go to great lengths to avoid them.[15] The lifetime prevalence was 13%, and the 12-month prevalence among adults was 8%.[16] SAD typically has an early onset, with 50% of individuals developing the disorder by 11 years of age and 80% by 20 years of age.[17] SAD is associated with an increased risk of depressive disorders, substance use disorders, and cardiovascular diseases.[18,19] This condition can also negatively affect the course of other mental disorders. For example, it can lead to persistent substance use, a more severe course of depression, and an increased risk of suicide, which may adversely affect social roles such as productivity at work or school.[19] Depression co-occurs with SAD in 20% of cases.[20] While the suicide attempt rate was 1.1% for depression alone, it was higher for SAD (2.6%), and when depression co-occurred with SAD, the rate increased to 7%.[21] Notably, SAD alone carries a higher risk of suicide than depression alone, and the co-occurrence of these two disorders further increases suicide risk.

The changes in social anxiety disorder in the Diagnostic and Statistical Manual of Mental Disorders 5

In the DSM-IV-TR, stuttering was an exclusion criterion for social anxiety disorder (SAD), and a concurrent diagnosis was not permitted. Many researchers have argued that the exclusion criteria in DSM-IV lacked an empirical basis[22] and contradict the increasing evidence of clinically significant levels of social anxiety among adults who stutter.[23,24] The exclusion criterion in DSM-IV was believed to cause clinical confusion and limit treatment

opportunities for people who stutter.[23-25] In DSM-5, stuttering was removed from the exclusion criteria for the diagnosis of SAD. This change was made in light of evidence suggesting that stuttering may be associated with excessive social anxiety and related impairments. It is also based on the evidence that social anxiety related to the condition is treatable. This revision represents significant progress in improving treatment options and quality of life for individuals with stuttering who also experience social anxiety disorder.[26]

The prevalence of social anxiety disorder among people who stutter

Stein et al (1996)[24] conducted a clinical evaluation of social anxiety disorders in 16 adults undergoing treatment for stuttering. They revised the DSM-IV exclusion criteria to allow for the diagnosis of social anxiety disorder if the severity of social anxiety exceeded that of stuttering. Based on this revision, seven participants (44%) met the diagnostic criteria for social anxiety disorder with significant role impairment.[24] In the first randomized controlled trial of cognitive-behavioral therapy (CBT) for stuttering, Menzies et al (2008)[27] reported that 18 of 30 participants (60%) met the diagnostic criteria for social anxiety disorder. Similarly, Iverach et al (2011)[28] validated a scale designed to assess negative cognitions associated with stuttering and found that approximately a quarter (23.5%) of a sample of 140 adults who stutter met the diagnostic criteria for social anxiety disorder. Blumgart et al (2010)[23] investigated 50 adults with stuttering and 50 control participants to determine whether they met the DSM-IV criteria for social anxiety disorder. They found that 46% of the stuttering group met the screening criteria for social anxiety disorder, compared to only 4% of the control group.[23]

However, a few studies have examined the prevalence of social anxiety disorder in children. Iverach et al (2016)[29] compared 75 children aged 7–12 years who stuttered with 150 matched non-stuttering controls. They found that 24% of the children who stutter had social anxiety disorder, and the odds of having social anxiety disorder were six times higher in the stuttering group than in the control group.[29] A study investigating social anxiety disorder in adolescents who stutter used the Japanese version of the Liebowitz Social Anxiety Scale for Children and Adolescents (LSAS-CA).[30] The Japanese version of the LSAS-CA has a cut-off score of 46 for social anxiety disorder, with a sensitivity of 97.5% and a specificity of 93.8%.[31] Kikuchi et al[30] found that of the 40 junior high and high school students who stuttered, 20 (50%) scored above 45 on the LSAS-CA.

Cognitive-behavioral therapy for social anxiety disorder in stuttering

Owing to the high comorbidity of social anxiety disorder (SAD) among adults who stutter, cognitive-behavioral therapy (CBT) has been identified as an effective treatment.[27,32] Specifically, Menzies et al[32] introduced treatments designed by speech-language pathologists for adults who stutter, including exposure, behavioral experiments, cognitive restructuring, and attentional training, designed for speech-language pathologists. For exposure, each fear situation or stage of the exposure program was repeated until the individual was able to complete it relatively easily. Typically, an exposure program consists of 10–15 situations, such as using the telephone, talking to respected or authoritative figures, meeting new people, seeing friends or acquaintances after a long time, and group presentations. For behavioral experiments, the primary fears reported in CBT exposure tasks by individuals who stutter are, first, the fear of stuttering and, second, the fear that stuttering will lead to negative evaluation by others. Behavioral experiments are crucial in reducing the estimated probability of this second fear that the person will be negatively judged because of their stuttering. In these experiments, the participants were often asked to stutter voluntarily in social situations. Similar to exposure, these behavioral experiments should be presented hierarchically, from relatively less fearful to more fearful situations. For cognitive restructuring, the program identifies and systematically corrects any irrational thoughts related to negative beliefs and trains individuals to use these "reframing" techniques in everyday situations. This process involved utilizing a specialized questionnaire, the UTBAS, tailored for stuttering. Attentional training involves enhancing the ability to focus on alternative cognitive targets, thereby reducing the frequency of threat-related intrusive thoughts. By improving the ability to control where attention is directed, reducing bias towards the negative aspects of the social environment became possible.

Strong evidence supporting the use of CBT in adults who stutter comes from a randomized trial by Menzies et al.[27] In this study, 32 adults were randomly assigned to different treatment groups. Before treatment, 60% of patients were diagnosed with SAD. Speech restructuring therapy did not affect the SAD diagnosis at the 12-month follow-up. In contrast, participants who received CBT no longer exhibited SAD at follow-up and displayed greater improvements in various measures of anxiety and mood than the control participants.[27]

Additionally, a fully automated Internet-based CBT program, iGlebe, was developed that does not require contact with a clinician.[33-36] Helgadóttir et al (2014)[33] reported that of the seven individuals diagnosed with SAD before treatment, five who completed all treatments recovered from SAD. The total login time required to complete up to Step 7 was seven hours.[33] Menzies et al (2019)[35] randomly assigned participants to receive either clinic-based treatment by clinical psychologists or five months of access to the automated online e-therapy program iGlebe. iGlebe was found to be non-inferior to clinical treatments, with a moderate effect size. However, the completion rate in the clinic group was 81.5%, while that in the iGlebe group was 39.2%.[35] Although iGlebe is a useful treatment method, its low completion rate remains a challenge.

The potential for pharmacotherapy for social anxiety disorder in stuttering

Social anxiety disorder (SAD) can be treated with cognitive-behavioral therapy (CBT) or medication, or a combination of both.[17,37,38] There are no Food and Drug Administration-approved (FDA-approved) medications

for stuttering.[39] However, for SAD, the FDA-approved medications are sertraline, paroxetine, and venlafaxine. Neurobiological studies on SAD suggest the dysfunction of distributed circuits involving the amygdala, insula, hippocampus, and orbitofrontal regions.[40]

The effectiveness of treatments for SAD is often evaluated using the Clinical Global Impression Improvement (CGI-I) scale or the Liebowitz Social Anxiety Scale (LSAS).[41] A randomized controlled trial using a pagoclone for stuttering, which included LSAS as a measure, was conducted in 2010.[42] The pagoclone was a GABAA agonist or partial agonist. In this study, no significant difference existed in stuttering severity at baseline between the pagoclone and placebo groups. However, a significant difference was found in the LSAS total scores at baseline, which was problematic. After eight weeks, the pagoclone group displayed a greater reduction, but the p-value was 0.066, making the results difficult to interpret. While SSRIs that are effective for SAD can sometimes induce medication-induced stuttering,[43-45] future evidence will clarify their impact in cases of stuttering comorbid with SAD.

In DSM-5, a new subtype, called performance-only, was introduced for SAD. Performance-only anxiety refers to the fear of performing in front of an audience (e.g., public speaking, musical performances, presentations in class, or meetings).[40,46,47] Individuals with performance-only anxiety exhibit strong psychophysiological reactions to speaking situations and respond to beta-blockers (e.g., propranolol), unlike patients with generalized or other types of SAD.[40,48] Therefore, the use of beta-blockers may provide temporary assistance for people who stutter with performance-only SAD.

Conclusion

When counseling people who stutter, it is beneficial to pay attention not only to surface-level speech behaviors but also to the co-occurrence of SAD. Understanding the performance-only subtype of SAD in DSM-5 could expand the scope to include more people who stutter. While CBT is effective for therapy among those who stutter, accumulating evidence for pharmacotherapy will also be necessary.

Conflicts of Interest Statement

The authors declare that this study was conducted in the absence of any commercial or financial relationships that could be construed as conflicts of interest. Dr. Maguire received a research grant and consulting fees from Noema, which were not utilized in this research study.

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