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Prevalence of anxiety disorders among adults seeking speech therapy for stuttering

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ABSTRACT

The present study explored the prevalence of anxiety disorders among adults seeking speech therapy for stuttering. Employing a matched case–control design, participants included 92 adults seeking treatment for stuttering, and 920 age- and gender-matched controls from the *Australian National Survey of Mental Health and Well-being*. A conditional logistic regression model was used to estimate odds ratios for *Diagnostic and Statistical Manual of Mental Disorders*, *Fourth Edition* (*DSM-IV*) and *International Classification of Diseases* (*ICD-10*) anxiety disorders. Compared with matched controls, the stuttering group had six- to seven-fold increased odds of meeting a 12-month diagnosis of any *DSM-IV* or *ICD-10* anxiety disorder. In terms of 12-month prevalence, they also had 16- to 34-fold increased odds of meeting criteria for *DSM-IV* or *ICD-10* social phobia, four-fold increased odds of meeting criteria for *DSM-IV* generalized anxiety disorder, and six-fold increased odds of meeting criteria for *ICD-10* panic disorder. Overall, stuttering appears to be associated with a dramatically heightened risk of a range of anxiety disorders.

The capacity to use speech to communicate is fundamental to interpersonal relationships, occupational success, and quality of life. Stuttering is a universal speech disorder which affects the capacity to communicate effectively. The incidence of stuttering is estimated at approximately 4–5%, with a 1% prevalence rate (Bloodstein & Bernstein Ratner, 2008), and there is a male to female ratio of 4:1 for the disorder in adulthood. The cause of the condition is unknown, although there is clearly a genetic contribution to emergence of stuttering (Bloodstein & Bernstein Ratner, 2008). Onset typically occurs between the ages of two and five years (Yairi, Ambrose, & Cox, 1996), and whilst the majority of children who begin to stutter will recover naturally, stuttering will become an intractable, long-term problem for a small proportion of adults (Onslow, 2004). Behavioral speech therapy for chronic stuttering typically involves speech restructuring to reduce or eliminate stuttering by changing aspects of speech production. However, relapse after such treatment is common (Block, Onslow, Packman, & Dacakis, 2006).

Stuttering is frequently associated with negative consequences across the lifespan. In particular, children who stutter are often teased and bullied (Blood & Blood, 2007), and children as young as four years of age may experience negative peer reactions (Langevin, Packman, & Onslow, 2009). These problems multiply in adolescence, negatively impacting self-esteem, anxiety levels, social relationships and academic performance (Blood & Blood, 2004). Children, adolescents, and adults who stutter frequently experience negative stereotypes and listener reactions (Snyder, 2001), and many develop negative attitudes towards speaking and experience avoidance, struggle, or anxiety in speech situations (Peters & Starkweather, 1989). These experiences may lead to feelings of helplessness, shame, embarrassment, and expectancy of social harm, and may diminish occupational and educational success, and quality of life (Yaruss, 2001). Consequently, adults who stutter may be at increased risk of developing psychological, emotional, and behavioral problems (Craig, 2003).

Anxiety, in particular, has been highlighted as one of the most common psychological concomitants of stuttering (Menzies, Onslow, & Packman, 1999), and there is a growing body of evidence which suggests the presence of social anxiety or social phobia in people who stutter (Schneier, Wexler, & Liebowitz, 1997; Stein, Baird, & Walker, 1996). Social phobia is one of the most

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commonly experienced anxiety disorders (Moutier & Stein, 1999). It is characterized by significant, enduring, and excessive fear of humiliation, embarrassment, or negative evaluation in social or performance-based situations, often resulting in extreme distress (American Psychiatric Association, 2000). In most cases, social phobia develops in childhood or adolescence, and its developmental course is often associated with age-related increases in fear and avoidance of social interaction, peer group rejection and victimisation, traumatic or negative life events, and behavioral inhibition. Hence, the negative childhood experiences associated with stuttering may act as precursors to the development of social anxiety in adults who stutter (Blood & Blood, 2007).

Unlike the *International Classification of Diseases* (*ICD-10*) (World Health Organisation, 1993), the *Diagnostic and Statistical Manual of Mental Disorders*, *Fourth Edition* (*DSM-IV*) (American Psychiatric Association, 2000), currently excludes the diagnosis of social phobia in individuals whose anxiety relates only to the fear of stuttering (Moutier & Stein, 1999). Stein et al. (1996) evaluated social phobia in adults seeking treatment for stuttering, and modified the *DSM-IV* criteria to allow a diagnosis of social phobia in cases where phobic symptoms were in excess of the real demands associated with the stutter. According to these authors, 44% of their sample warranted a diagnosis of social phobia. These findings were subsequently supported by Schneier et al. (1997), who found that more than half their sample of adults who stuttered demonstrated social anxiety scores similar to those of social phobia patients from an anxiety disorder clinic.

If a large proportion of adults who stutter experience significant social anxiety, this would suggest the need for the routine involvement of psychiatrists and clinical psychologists in the assessment and treatment of this population. To date, there are no placebo controlled trials of serotonergic agents in adults who stutter. Although there have been a number of studies investigating the use of cognitive behavioral therapy (CBT) to treat anxiety in adults who stutter (Neilson, 1999; Stein et al., 1996), there has only been one randomized controlled trial of such treatment (Menzies et al., 2008). In this trial, Menzies et al. (2008) found that the addition of a CBT treatment package for social anxiety in adults who stutter was associated with significant improvements in global functioning and significant reductions in anxiety and avoidance, even though rates of fluency were no better than that achieved by speech pathology treatment alone. Of note, at 12-month follow-up no participant who had received CBT was given a diagnosis of social phobia in blinded psychiatric interviews. In comparison, 50% of the participants who had received speech therapy alone were diagnosed with social phobia at the same assessment point. Menzies et al. (2008) suggest that involvement of psychiatric services in the treatment of adults who stutter is urgently needed and that such services may significantly enhance long-term outcomes for these patients.

To our knowledge, no previous studies have comprehensively assessed presence of anxiety disorders in a large sample of adults who stutter according to the diagnostic criteria employed by the *DSM-IV* and the *ICD-10*. Hence, the present study sought to investigate the relationship between anxiety and stuttering in a large sample of adults who stutter, with the following aims: (1) determine the rate of social phobia, and other anxiety disorders, among adults seeking speech therapy for stuttering using the Composite International Diagnostic Interview (CIDI-Auto-2.1) (World Health Organization, 1997); (2) compare the rate of anxiety disorders in this sample with age- and gender-matched controls from the *Australian National Survey of Mental Health and Well-being (ANSMHWB)* of 10,641 Australian household residents (Andrews, Henderson, & Hall, 2001); (3) assess anxiety via a number of self-report measures including the State-Trait Anxiety Inventory – Trait (STAI-T) (Spielberger, 1983) and the Endler Multidimensional Anxiety Scales – Trait (EMAS-T) (Endler, Edwards, & Vitelli, 1991); and (4) evaluate the extent of fear of negative evaluation among those who stutter. Given previous research findings, it was hypothesized that adults seeking speech therapy for stuttering would (1) exhibit a significantly higher rate of anxiety disorders than the Australian general community and (2) demonstrate heightened levels of self-reported anxiety and fear of negative evaluation when compared with normative data.

1. Method

1.1. Participants

1.1.1. Adults seeking speech therapy for stuttering

Adults who stutter were drawn from treatment waiting lists across seven university-affiliated stuttering treatment clinics in four cities across Australia and New Zealand (Australian Stuttering Research Centre, The University of Sydney; School of Human Communication Sciences, La Trobe University, Melbourne; Discipline of Speech Pathology, The University of Sydney; Department of Linguistics, Macquarie University, Sydney; School of Humanities and Social Science, University of Newcastle, Australia; Royal Prince Alfred Hospital, Sydney; Stuttering Treatment and Research Trust, Auckland, New Zealand).

Eligibility criteria for inclusion in the study included: (1) age 18 years and above, (2) developmental stuttering present before 12 years of age, (3) seeking speech therapy for stuttering, (4) no previous speech therapy in the six months prior to commencement in the present study, and (5) presence of stuttering confirmed by participant and speech pathologist during assessment. Speech therapy at all sites included behavioral and speech restructuring techniques designed to control stuttering. The study was approved by the University of Sydney Human Research Ethics Committee and the Human Research Ethics Committees overseeing each site. Written informed consent was obtained from all participants.

1.1.2. Age- and gender-matched controls

Controls were selected from the 1997 *ANSMHWB* (Australian Bureau of Statistics, 2000). The *ANSMHWB* was conducted by the *Australian Bureau of Statistics* (*ABS*) to comprehensively assess the prevalence of mental health disorders in Australia. Overall, 10,641 Australian household residents, aged 18 years and above, participated in the survey. The sample was weighted to match the distribution of age and gender in the Australian census, and included residents living in private dwellings across Australia, excluding remote and special dwellings such as hospitals and institutions. Interviewers administered a computerized psychiatric interview (CIDI-Auto-2.1) to all respondents using a laptop computer.

1.2. Measures

Adults seeking treatment for stuttering completed the following measures during their initial assessment for treatment.

1.2.1. Computerized version of the CIDI-Auto-2.1 (World Health Organization, 1997)

The CIDI-Auto-2.1 is a standardized computer interview designed to comprehensively assess and diagnose mental health disorders according to the diagnostic criteria employed by the *DSM-IV* and the *ICD-10*. The interview is self-administered by the respondent via a laptop computer. It takes approximately 70 min to complete, and does not necessitate the use of medical records or outside informants. The CIDI-Auto-2.1 has demonstrated adequate reliability and validity for research purposes (World Health Organization, 1997). As the interview is computer-scored and all diagnoses are programmed, the interview requires no clinical