The Impact of Social Anxiety during the Covid-19 Pandemic in Adolescence

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Abstract: Social Anxiety among youth has proliferated during the pandemic. Due to the global shift in social interactions and interpersonal behaviors, the COVID-19 pandemic has increased the psychological burden on many, especially those vulnerable to anxiety. This paper explores the impact of general and social anxiety on the population at large, and then shifts focus to explore the measurement of social anxiety and the treatments currently targeted toward youths. In particular, recent developments in technology-based assessment tools and interactive treatments offer promise for combating social anxiety among youth. Among these, the novel means for both assessing and treating the symptoms of social anxiety are discussed. Finally, the paper brings attention to the new social norm as the world continues to fight against the pandemic with novel resources that need further development. Social anxiety among youth will remain a topic of concern as the pattern of social interactions, peer relationships and interpersonal distancing has changed.

1. Introduction

The overall purpose of this paper is to describe the symptomatology of anxiety disorders in order to establish the fundamental principles of the disorder to consider when planning effective intervention practices. The rationale for considering anxiety and its measurement has never been more important, given the recent global shift in social interactions due to the COVID-19 pandemic. Those who have struggled with anxiety before the pandemic began, have now been joined by myriad other individuals who are suffering from symptoms of anxiety and depression brought on by the current shifting social landscape. Of great concern is our understanding of how these factors are impacting the youth of this country who have not had a long-term period of " normalcy" to compare with current times. This is a personal issue to me, as it has had an impact on my peer group, as well as myself.

My ultimate goal in writing this paper is to identify the strengths and limitations associated with current strategies used to assess and treat social anxiety in the adolescent population, and to present evidence for optimizing the measurement of symptoms and effective interventions moving forward. Secondly, this paper will discuss why understanding social anxiety in the current context of the COVID-19 pandemic is critical at this time. Finally, a consideration of different,

novel'remote'delivery mechanisms of mental health support interventions(e. g. , video conferences, telemedicine, pro-social online gaming)will be considered, as these may be likely to offer the most meaningful support to youth presently suffering from social anxiety.

2. Defining Anxiety in the General Population

The Diagnostic and Statistical Manual(Fifth Version)is referred to as the DSM-5 and is written by the American Psychiatric Association(APA)[1]. It contains definitions of all the major psychiatric disorders. In it you will find a definition of a)Anxiety Disorders b)a list of different Anxiety Disorders and c)a specific definition of Social Anxiety Disorder. It is interesting to note here that the DSM-IV-TR, the preceding edition of the manual[2], categorizes post-traumatic stress disorder as one of several Anxiety Disorders, but was moved into the Trauma category in the DSM-5. Also panic disorder and agoraphobia have been separated as distinct disorders. Finally, Obsessive-Compulsive disorder was moved from the Anxiety Disorders section to its own category(Obsessive-Compulsive and Related Disorders). Kupfer(2015)notes that the chapter on the Anxiety Disorders now rests between chapters covering Depression and Obsessive-Compulsive and related disorders. This was done because, while these three disorders appear to be fundamentally separate, there is an obvious and important overlap. For example, depression is more difficult to treat if there is also underlying anxiety[3].

3. Broadly Defined Anxiety's Impact of on Society

Anxiety is a healthy and normal reaction to stress. An anxiety response to a particular situation will alert you that this is an important moment. It could also allow an individual to prepare survival options and lead to better memory for such events in the chance that they are encountered at some future time. In Anxiety Disorders, on the other hand, this initial healthy response becomes so excessive that it impairs an individual's healthy ability to function. According to the APA, in any given year the estimated percent of U. S. adults with various anxiety disorders are: specific phobia(8%), social anxiety disorder(7%), panic disorder(2. 5%), agoraphobia(2%), generalized anxiety disorder(2%). separation anxiety disorder(1. 5%). These numbers suggest that at any given time, more than 20%of adults are experiencing anxiety symptoms that are severe enough to require diagnosis and treatment. Those who experience a lifetime prevalence of anxiety disorders is approximately 28. 8%in the United States of America, with more than one in every 4 adults experiencing at least 1 anxiety disorder in their lifetime[4].

Anxiety Disorders have a significant economic impact on the US healthcare system. The reported annual cost of anxiety disorders has been estimated to be between$42. 3 billion and$46. 6 billion. Of that cost range, more than 75%is likely attributed to morbidity, mortality, lost productivity, and other indirect costs[5]. With the prolonged isolation fostered by COVID and changing social norms, it is likely that the incidence of negative impacts on societal costs will proliferate and impact our financial and mental well-being for the foreseeable future. Social anxiety may be especially affected, given the nature of the disorder and ways in which it manifests.

4. Social Anxiety in the General Population

Social anxiety disorder negatively impacts approximately 15 million American adults. It remains the second most commonly diagnosed anxiety disorder following specific phobia. Despite the

availability of effective treatments, fewer than 5% of people affected with the disorder seek treatment in the year following initial onset and more than a third of people report symptoms for 10 or more years before seeking help. A survey from people participating in a study done at a Health Maintenance Organization(HMO)found that 8. 2% of participants had reported having social anxiety and that 21% of these individuals had attempted suicide[6].

5. Interpersonal Consequences of Social Anxiety Disorder

There are also interpersonal consequences of social anxiety in how others perceive individuals who suffer from the disorder. For example, one study observed socially anxious individuals interacting with non-socially anxious individuals. During the study, socially anxious individuals showed high levels of fidgeting, poor reciprocity of smiling behavior, more self-talk, and more frequent reassurance seeking and giving. This need for reassurance, or reassurance seeking by socially anxious subjects was negatively correlated with their partners'positive affect. In other words, the greater reassurance seeking by socially anxious individuals led to lower positive affect ratings by the partner[6].

6. The Little-Known Impact of Social Anxiety Disorder on Managed Care Costs

Social Anxiety's costs on managed care has historically been little documented. In the late 1990's, a mail and telephone survey was conducted on healthcare workers in large outpatient clinics that assessed their perceptions of the disorder's impact on direct costs, indirect costs, health-related quality of life, and clinical severity associated with social anxiety disorder[7]. The study's conclusion was that social anxiety disorder was rarely diagnosed or treated despite being highly prevalent and associated with significant direct and indirect costs, comorbid depression, and impairment. In fact, in the year prior to the study being conducted, the health care professionals who responded reported that only 0. 5% of subjects with social anxiety disorder had been accurately diagnosed.

7. Social Anxiety in Adolescence

The Centers for Disease Control and Prevention says that nearly half of people between 18 and 29 report feeling symptoms of anxiety or depression. Adolescents are inherently more at risk for social anxiety, and at least one study suggests that this is neurobiological[8]. This functional brain imaging study in adolescents at risk for social anxiety showed brain activity changes in the amygdala(a brain area implicated in avoidance and anxiety)and the striatum(a brain area implicated in approach and reward). These brain areas are associated with adolescent social anxiety disorder[9, 10].

It has been shown that college-aged youth experience social impairment and decreased peer support[11]as a result of social anxiety. A recent study assessing DSM-5 social anxiety symptoms in 717 and university students, showed that 28. 6% scored high for social anxiety and 10% scored medium. Interestingly, males who scored medium, were more likely to have dealt with social anxiety as an adolescent or child. Males with high scores were more likely to have behavioral inhibition(e. g. , shyness, avoiding social situations)[12].

Children often show their anxiety in different ways than adults. For example, children affected with social anxiety tend to shrink from interactions and may be more likely to cry or have strong tantrums. Due to their lack of cognitive development, children are less likely to understand that their fears are irrational when they are no longer in a social situation. Socially anxious children and youth will

typically have difficulty in educational social settings, and lack the ability to participate in classroom activities, ask for assistance when needed, and shy away from peer related activities, such as performances, clubs or sporting activities.

8. Social Anxiety Outcomes in Youth during the Current Covid-19 Pandemic

A recent study provides strong evidence that social isolation and loneliness are risk factors for depression and anxiety[13]. As we face the COVID-19 pandemic, it is important to implement preventive measures and early intervention to reduce the pandemic's negative impact on mental health. What remains unclear is how the pandemic has affected the anxiety of individuals who already had issues of social anxiety compared to those who did not previously deal with social anxiety but now do in response to the social isolation caused by the pandemic. Within the broad spectrum of anxiety-related disorders, social anxiety is particularly common. Given the infectious nature of COVID-19, the pandemic has increased the physical distance among people.

During the pandemic, psychological distancing has heightened social anxiety. However, lockdown measures can be a significant moderator and work as a buffer to the relationship between distancing and social anxiety. In fact, physical distancing and quarantine can make it easier for youths with social anxiety to avoid social interactions that may have been otherwise mandatory. But the practicing of avoidance may yield longer term negative consequences to those afflicted. Because of reduced social contact, it is harder for youth to engage in cognitive behavioral therapy practices, such as identifying and challenging negative beliefs about socializing, and the act of socializing in physical proximity to others, such as in a school setting[14-16]. In addition, COVID decreases opportunities for social contacts and changes the ways people communicate. For example, mask-wearing blocks facial expression cues affects and videoconferencing blocks body language.

9. Assessment of Social Anxiety in the Youth Population

There are several scales that are used to assess social anxiety in children. The most common evaluation measures used to assess symptoms of social anxiety in the younger population include the Multidimensional Anxiety Scale for Children (MASC)[17], The Revised Screen for Child Anxiety Related Emotional Disorders(SCARED)[18]and the Spence Children's Anxiety Scale(SCAS)[19]. The MASC assesses four related factors of physical symptoms, social anxiety, separation anxiety, and harm avoidance. The SCAS assesses the 5 factors of somatic, general anxiety, social anxiety, social phobias, and school phobias. The SCARED survey instrument assesses 6 factors associated with social anxiety in this group: Panic/agoraphobia, Separation anxiety, Social phobia, Physical injury fears, Obsessive-compulsive and Generalized anxiety. Examples of some items presented to youths on these scales are" I am nervous" and" I worry about going to school. " What remains in question is whether these scales will remain meaningful and maintain the ability to adequately address social anxiety in this new pandemic-stricken era. It may well be the case that survey assessments will be proven insufficient in assessing and addressing the social anxiety in this changed world.

10. Current Applications for Diagnosing and Treating Mental Health Issues using Remote Technologies During the Pandemic

10. 1 Assessment Tools

In these unprecedented times, it is difficult to impossible for many afflicted with social anxiety to receive in-person treatment from a mental health clinician. Novel solutions have been tested in health care research, and with commonly used technologies such as smart phones, measuring social anxiety outside of a clinical setting is becoming possible and practical. Some research has indicated that there exist digital biomarkers of Social Anxiety severity[20]. For example, through use of smartphones as a data capture tool, both self-reported assessments and a downloadable app, passive smartphone sensors such as accelerometer data, social contacts(e. g. frequency of incoming and outgoing texts)and digital biomarkers were collected from the participants. Integrating these data streams into machine learning algorithms allowed researchers to accurately predict participants'social anxiety symptoms well above chance.

Another recent commercial solution, developed by the former Chief of Psychiatry at Massachusetts General Hospital is known as CompanionMX (Boston, MA). This firm reports that 1 in 5 individuals suffer from a mental health issue and recognizes that mental health care improves when clinicians and patients recognize symptoms early. Understanding that it is difficult for physicians to know how patients are doing between clinic visits, CompanionMX also tracks indicators of mental health by passive monitoring of behaviors, biomarkers and voice indicators of certain mood states that are linked to mental health issues.

10. 2 Therapy-Focused Applications

Some have recognized the unmet need for more remote solutions to assist in therapeutic sessions. One example of this type of solution comes from a company called Joy, whose purpose is to make digital therapy enjoyable and effective. They targeted employees of private sector firms and presented small" bite-sized" 5-minute therapy sessions focused on the desensitization of social interaction of employees. A second app that was created to specifically, but temporarily, help to reduce the symptoms of social anxiety is a chat-bot based solution referred to as Woebot. Woebot was developed at Stanford University. It blends expertise from emotion research and artificial intelligence to ask relevant questions in order to understand and evaluate a user's emotional state, and safely delivers the right interventions to the right person in the right context. Since its inception, Woebot has conducted clinical trials with academic and government partners using established psychometrically validated efficacy measures. A final unique mobile therapy solution known as TalkSpace. Talkspace's Psychiatry, works to personalize treatment from a prescriber trained in mental health care and prescription management. These clinicians are matched to TalkSpace subscribers within the subscriber's state, and live video sessions are conducted from the initial evaluation to ongoing prescription management.

10. 3 Gamifying Treatment

Academics and clinicians have developed a series of cognitive and behavioral approaches using digital health solutions. Some examples include a relaxation/mindfulness activity, an activity planner, a gratitude journal, a problem solving skill, and communication skills training. Gamifying such modules would likely increase the utility and effectiveness of such Cognitive Behavioral Therapeutic approaches, especially in the youth population. In fact, several lines of research show the effectiveness of gamifying the treatment of mental disorders[21, 22]. Gamifying cognitive behavioral therapies involves selecting suitable interventions, and then adapting them to a digital format while applying gamification principles. Novel therapy-based solutions are also becoming available to treat youth afflicted with

social anxiety. One such app is referred to as" The Challenger" which is a mobile solution that was designed to help users overcome social anxiety by completing increasingly challenging interactions with their environment[23]. By allowing for anonymous social interaction, a high degree of personalization and use of gamification techniques, this app appears to be a promising solution for treating social anxiety in youth. The Challenger and other solutions are certainly effective in assisting with some forms of treatment, but this approach could serve as a more powerful tool for treatment if integrated with other solutions.

11. Future Directions of Assessment and Therapy

Now that some of the more popular and relevant mobile/online assessment products that treat social anxiety have been discussed, the next step is to determine where space exists to potentially integrate service offerings. The purpose of this paper is to specifically address the younger cohort now impacted by the circumstances of the pandemic by considering novel apps to assist with their mental well-being. Youth are now experiencing an increased and protracted physical distancing and are becoming out of practice with social interactions, coupled with the uncertainty of the duration of this new social dynamic. Social anxiety that typically impacts youth comes in the form of anticipating or experiencing physical interactions. In this new COVID era, we may likely experience a shift of symptoms as a result of equivalent online social interactions, such as from required videoconferencing during coursework. As such, it is increasingly clear that each of the remote assessment and treatment solutions that have thus far been commercially developed will need to be adapted to include assessment of these 'remote' social interactions.

Considering the mobile app solutions presented above together with existing effective therapeutic solutions, we can imagine what a future app for social anxiety might look like. First, it would take advantage of quantifying data from passive smartphone sensors(accelerometer data, texting, conversation quantity, sleep data)to get a sense for the subject's daily movement, sleep health and social interactions. Then it would include measurements of bodily signals such as heart rate and the amount of sweat on the skin(called skin conductance)to better understand their reactions when they get anxious. Like Woebot, the app would periodically check in with the subject asking them a series of questions about their mental health and current level of anxiety. Like Companion MX and Talkspace, the app would allow for communication with their personal mental health provider so they could be encouraged to check in with this person if their answers to the surveys suggested they were in distress. They could also give permission for the therapist to contact them if the therapist is concerned by their survey responses. Finally, the app would gamify aspects of cognitive behavioral therapy that have proven useful for subjects with social anxiety, including modules that offer relaxation/mindfulness, problem solving, and communication activities. Such an app would pull together the best aspects of all these tools, to offer a holistic therapy choice for adolescents dealing with social anxiety during this pandemic.

12. Conclusion

Social Anxiety among youth is rampant in the United States. Now, our nation is experiencing an unprecedented number of youths who have been negatively affected during this pandemic. As such, it has never been as important as the present to address social anxiety in this demographic in a way that is remote, relevant and meaningful. This paper establishes a framework in which social anxiety in the

youth population is meaningfully different from that of adults, or of generalized anxiety disorder. Further, current assessment, counseling and treatment options are discussed in order to recognize the potential areas to build a better tool to combat social anxiety in the younger population of our society. With the knowledge put forth in this paper, clinicians and mobile app programmers can now work together in this COVID era by integrating solutions from a number of current commercial products. This would act to address young people's symptoms more holistically and in a remote fashion during this pandemic and beyond.

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