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Psych 234 Final Paper

Autism Spectrum Disorder as the Diathesis for Depression

Introduction

According to the National Institute of Mental Health, Major Depression Disorder (MDD) is one of the most prevalent mental health disorders in the United States, with a prevalence of about 17.3 million adults having at least one episode (NIMH, 2017). Additionally, MDD afflicts adolescent populations with an estimated count of 3.2 million, ages 12-17 who have experienced one depressive episode in the US (NIMH, 2017). Depression has such a significant stake in impairing or interrupting an individual's capability to carry out their day to day lives, which makes it even more burdensome when coupled with other comorbidities. An underrecognized comorbidity of depression is Autism Spectrum Disorder (ASD), which is a developmental disorder that impairs social functioning in the form of interpersonal relationships and communication, and exhibits repetitive and restricted behavior or interests (APA, 2013). Adolescents and adults with ASD especially have poorer outcomes in quality of life and well-being when stricken with MDD, and previous studies have confirmed that children and adolescents with ASD experience much higher rates of depression than their age-matched, and IQ matched non-ASD equivalent peers (Ghaziuddin et al., 1992).

The prevalence of depression in ASD patients could potentially be underdiagnosed in children due to deficits in socialness and communication, which may be masking the recognition of depressive symptoms (Ghaziuddin, 1995). Additionally, there is a lack of reliable rating and diagnostic scales for ASD patients with MDD, implying that ASD patients do not fulfill stereotypical symptoms of MDD in all cases, contributing to the heterogeneity of this

comorbidity (Chandrasejkar, 2015). At the moment, prevalence is a range, with estimates of comorbid depression being anywhere from 2% to 34% (Stewarts, 2006). An Australian study of 70 young ASD males, with 50 age-matched and IQ-matched non-ASD males, ages 8-18, found that depression severity, as tested by the CASI-D (Child and Adolescent Symptoms Inventory for Depression), was 47.1% for ASD participants and 3.9 % for non-ASD participants, with statistical significance (Bitsika 2015).

The cause of MDD in ASD individuals is unknown; however, previous studies have analyzed ASD symptoms in comparison to MDD symptoms, to determine which ASD characteristics were predictive of an incidence of depression. One study researched Challenging Behavior (CB) in ASD patients, which are difficulties in social communication and the inability to tolerate changes in settings and routines. CB perpetuates the onset of depression because this deviation in behavior isolates ASD individuals from their non-ASD peers, causing them stress and frustration (Bitsika 2017). The data showed that the Aberrant Behavior Checklist (ABC) Irritability subscale items, such as depressed mood, and having temper tantrums when individuals do not get their way, were significant predictors of being depressed, having anhedonia, and feeling worthlessness or guilt. Even talk about death or suicide was a predictor of depression, and implies that this is the case when ASD individuals are frustrated and experience changes in their environment (Bitsika 2017). An additional study by Bitsika et al. found that the MDD symptom of anhedonia was the most significant predictor of CASI-D score in predicting depression in ASD individuals. Fatigue, worthlessness/guilt, depressed affect, irritability, sleeping problems, suicidal ideation, and difficulty concentrating were also significant predictors. All of these MDD symptoms were found to be 50% higher in the male ASD adolescent subjects in comparison to non-ASD peers (Bitsika 2015). Another study, studying a

network analysis of behaviors in depression and autism, found that ASD groups with higher rates of depression had higher rates of insomnia and restlessness. Anhedonia, sadness, and worthlessness also had significantly higher values in ASD individuals than the non-ASD individuals, but its effect size was not as large as for restlessness and sleep problems (Montazeri, 2019). These three studies epitomize the atypical nature of depression symptoms in individuals with ASD and how there are inconsistencies that fuel its heterogeneity. A study that took a more sociological approach found that symptoms of depression were positively predicted by victimization (measured by the Bully Questionnaire) and negative friendships (measured by the Best Friend Index) in ASD subjects in comparison to non-ASD boys, and symptoms of MDD are related to a child's perceived ability to manage stressful situations (Pouw et al., 2013).

Currently there are two psychosocial pathways to note that have been observed to induce onset of depression. One of them being through the lack of social connectedness, and the other being through rumination. These two pathways have been observed in non-ASD individuals, which would beg the question as to why they are of any significance to individuals with ASD. The significance stems from ASD symptomology, where the DSM-V identifies persistent deficits in social communication and social interaction, and restricted, repetitive patterns of behavior, interests or activities (DSM-5, 2013).

Social deficits include:

- Deficits in social-emotional reciprocity, reduced sharing of emotions or affect, and failure to initiate or respond to social interactions.
- Deficits in nonverbal communication, with abnormalities in eye-contact, using or understanding body language, and the lack of facial expressions
- Deficits in understanding relationships, adjusting behavior in social contexts, and difficulties with making friends

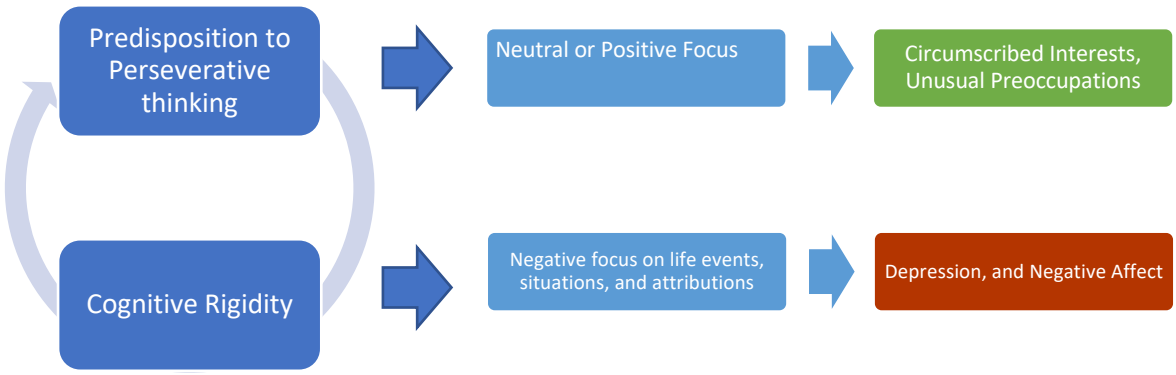
Repetitive behaviors include:

- Stereotyped or repetitive motor movements, use of objects, or speech

- Insistence on sameness, inflexible adherence to routines, ritualized patterns including distress at small changes, difficulties with transitions, rigid thinking patterns
- Highly restricted, fixated interests that are abnormal in intensity or focus such as perseverative interests
- Hyper- or hypo-reactivity to sensory input or unusual interests

Social deficit symptoms in ASD could potentially invoke the social connectedness pathway where previous research has found that individuals with low social connectedness are expected to experience discomfort in social situations, feel misunderstood or isolated (Williams and Galliher 2006). Additionally it was found that loneliness is a significant predictor of depression (Cacioppo 2006).

Repetitive behavior and thinking symptoms could invoke the rumination pathway, where perseverative thought and focus on the self could lead to rumination, and thus depression when those thoughts are negative (Nolen-Hoeksema 2008). In ASD individuals with high cognitive rigidity and perseverative thought, who also had high self-perceived impairment of their condition, results with their perseverative thought turning into rumination, and ultimately depression (Gotham, 2014).



Study Proposal

Due to the wide range of prevalence of ASD individuals with comorbid depression, and the difficulty of discerning what symptoms are attributed to ASD and which are attributed to depression, it is vital that a longitudinal approach be taken to follow a cohort of high-functioning, verbal ASD children prior to the manifestation of depressive symptoms. By following these children through their development into adolescents and into adulthood, they will encounter critical life events socially that could potentially induce stress or frustration, thus contributing to depression onset. This study will be analyzing ASD through a stress-diathesis model, where symptoms of ASD that were described above serve as the diathesis for depression onset, and the stressors that will be tested are life events that are significant to ASD populations. It is still not known specifically if there are certain life events that are more important to ASD individuals in depression onset, in comparison to non-ASD individuals. Additional research needs to be done determine if there are specific subtypes of autistic patients that are more vulnerable to depression than others (Ghaziuddin 1995). With this in mind, ASD symptoms that have been attributed to the onset of depression will be monitored to determine if life events cause a change in the child's behavior that are atypical and would suggest depression onset. The purpose of this study is to identify and analyze the nature and characteristics of life events experienced by ASD individuals that were critical in causing the stress that made them become depressed. If these life events are distinguishable from non-ASD individuals, then that will provide researchers with insight at how to target and prevent onset of depression for ASD populations. In addition, this study will seek to determine which symptoms of autism were more

prevalent in influencing comorbid depression, and how those ASD symptoms manifested into depressive symptoms.

Hypothesis

It is hypothesized that ASD individuals will be afflicted with stress and changes in behavior (frustration, tantrums, agitation, and anhedonia) when life events disrupt sameness in their routines, or cause a major change in what they are accustomed to. It is predicted that ASD children and adolescents will be affected by independent events more so than non-ASD individuals because independent events are not influenced by the ASD individual's behavior. Changes to their routine or thinking are caused by events that are independent of them, yet their symptomology causes them discomfort with those situations that are not as common in non-ASD populations.

Methods

Data will be collected from high functioning ASD children (8-12 years) who have not yet had a depressive episode and have been confirmed to be diagnosed with ASD by a licensed physician or psychiatrist. Each child will be screened to determine their ASD diagnosis, compared to DSM-5 criteria, and their symptoms will be noted for later analysis. The *Child and Adolescent Symptom Inventory* (CASI-5) is a diagnostic measure used specifically for children and adolescents to assess DSM symptoms, and can identify MDD (Gadow and Sprafkin, 2013). It has been used on ASD individuals in previous studies, and for this study, the depression portion will only be used. Children with depression initially will be excluded from the study, so that onset of depression can be tracked over time. The control group will be age-matched and IQ matched non-ASD children.

ASD and non-ASD children will return to the lab every 12 months to be given the CASI-5 to determine incidence of depression. Additionally, ASD individuals will be given the *Autism Comorbidity Interview-Present and Lifetime Version* (ACI-PL), which accounts for different manifestations of depression specific to autism, taking into account symptoms like agitation, self-injury, or temper outbursts (Leyfer 2006). The ACI-PL will determine onset of depression in the ASD group; however, non-ASD group will be determined by the CASI-5. For the ASD group, it would be interesting to compare CASI-5 scores to ACI-PL scores to see if they both predict depression or how different their outcomes are for these individuals based on present symptoms.

For individuals who have an incidence of depression based on these measurements, an interview must take place to identify and analyze the life events that were experienced for that individual previous to the onset. Since there are no diagnostic measurements that exist that could account for the specific life events that affect ASD individuals, the following diagnostics could be utilized, but may need modifications to account for the narratives of the ASD group. Stressful life events can be measured with *Life Events and Difficulties Schedule* (LEDS), which is the best known narrative-rating method to determine life events within the past year or less. It is useful because it takes into account variability of objective scoring of checklist categories (Dohrenwend 2006). The *Structured Events Probe and Narrative Rating Method* (SEPRATE) is another narrative rating system that is performed by a trained rater, and takes record of the event described by the subject (Dohrenwend 2006). One last diagnostic measure that is useful for distinguishing the difference between independent and dependent life events is the *Life Events Scale* (LES) and *Stress Interview* (SI) which screens the individual for 134 major and minor episodic or chronic life events. The SI is the most important part of this diagnostic measure

because a trained interviewer is used to identify interpersonally-related negative life events which would be defined by social approval or social support. The interviewer then proceeds to rate the negative events on a scale from 0 to 3 (0=totally independent, 1=possibly dependent, 2=probably dependent, and 3=definitely dependent) (Safford 2007). Once the whole cohort of subjects reach the age of 18, the study will end, and time of onset, and cause of onset will be compared between the test group and the control, as well as within the test group, depending on varying symptoms and life events recorded.

Expected Results

It is expected that ASD individuals will have higher rates of depression onset than the non-ASD cohort as ASD individuals have a predisposition or diathesis for impairments in social functioning. Deficits in social functioning would be identified as dependent events because the life events that would be a result of interacting with others would be influenced by ASD's atypical social behavior. The difference between dependent events of ASD vs non-ASD would need to be analyzed, and it is predicted that ASD dependent negative life events that would count and cause stress in this group would not be as stressful or impactful for the non-ASD group. For example, an ASD individual may be stressed if they are not included in a social activity; whereas, the non-ASD group still has social skills, and may be more affected by dependent behavior like breaking up a relationship. As hypothesized previously, ASD individuals would be expected to have higher rates of independent negative life events, especially for events that disrupted their proclivity towards sameness and routine. Symptoms of rumination would be expected if depression persists in ASD individuals, as well as non-ASD individuals; however, ASD individuals would have a diathesis for it due to their perseverative thinking.

Discussion/Implications

This research is essential in making progress towards understanding the comorbidity of ASD and MDD. This population is misunderstood socially, and their emotional needs are not prioritized clinically due to the lack of diagnostic measures to accurately observe their feelings. ASD individuals have difficulties interpreting their own emotions or conveying what they feel in their inner worlds, which makes it difficult to observe if their functioning has changed. High functioning ASD patients are more vulnerable to depression because they are put into society, and are expected to take regular classes and integrate into activities, which then leads to decreased self-esteem and pushes them away from others as they isolate themselves. At this point in time, it cannot be determined if MDD in ASD patients is caused socially, psychologically, or biologically; however, it is suspected that there is overlap of these causes.

This research has the goal of pinpointing negative life events that are specific to inducing depression in an ASD individual, and by compiling possible sources of these events and understanding their impact, that creates an initiative to start implementing treatment plans and therapies that could either prevent or help treat the MDD. Treatment plans that would be useful could include strategies that assist the ASD child to learn recognizable ways of communicating the aspects of the changeable environment that are causing their distress and leading to their challenging behaviors. As of right now, there are no clear protocols or interventions for this comorbidity, and no randomized placebo controlled trials have been put into place to determine which is the best course of action for clinicians to handle ASD MDD comorbid patients (Defilippis 2018).

Limitations to Consider When Pursuing this Research

The proposed study is limiting research to high functioning ASD individuals because it is easier to study people and diagnose them with depression if they can speak about their experiences and moods. The results would not be generalizable to more severe cases of ASD, so future research will be necessary to determine methods to analyze and diagnose depression in non-verbal variations of autism, if possible. Diagnostic tools and measurement are the limiting factor for the proposed study because diagnostics measuring life events have only been developed for non-ASD individuals. There is no guarantee that it will be the best fit to assess these individuals, so modification may be necessary, and efforts will need to be made to make sure that interviewers and raters are trained to understand and deal with ASD individuals. Multiple raters should be utilized to account for bias in rating from one rater.

High levels of parental stress and psychopathology predict increased ASD symptom severity, and high levels of expressed emotion or criticism in families worsen core features of ASD (Chandrasekhar, 2015). Given that this is true, it is important to identify which individuals would be at even higher risk of experiencing depression if there family has it as well. Random assortment of ASD individuals who are at high risk because of family history of psychopathology or high stress should be balanced with ASD individuals who do not have those risk factors. If this is not accounted for, it will not be known if the diathesis is actually ASD as the study proposed, or if the diathesis was actually family history of psychopathology that confounded the results. If ASD individuals from families that do not have a history of depression still develop depression, that would support the idea that ASD individuals have a higher susceptibility for depression because of the symptomology of ASD serving as the diathesis.

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