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Brief Report: The Influence of Autism Severity and Depression on Self-Determination Among Young Adults with Autism Spectrum Disorder

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Abstract

Self-determination (SD) is linked to autonomy and better adult outcomes. Adults with autism spectrum disorder (ASD) are often less independent than cognitively matched peers. Given the frequency with which depression co-occurs in ASD and the established association between depression and SD, we sought to evaluate the influence of both ASD severity and depression on SD among cognitively able emerging adults with ASD. Emerging adults ($n = 59$) with ASD completed measures of SD, ASD severity, and depression. Both ASD severity and depression were moderately correlated with SD ($r = -0.473$; -0.423, respectively) and with each other ($r = 0.625$). After controlling for ASD severity, depression did not significantly predict SD. Strengthening SD should be considered in programming to promote independence.

Keywords

Autism; Depression; Adulthood; Self-determination; Transition

Approximately 1 in 54 people have a diagnosis of autism spectrum disorder (ASD) based on CDC estimates (Maenner et al., 2020). Young adults are arguably the fastest growing segment of the ASD population. Indeed, it is estimated that 70,000 teens with ASD now enter adulthood every year (Shattuck et al., 2012). Unfortunately, young adults with ASD often experience lower quality of life relative to age- and ability-matched peers (Bishop-Fitzpatrick et al., 2018), and fail to achieve independent living (Steinhausen et al., 2016) or meet adult developmental milestones (Picci & Scherf, 2015).

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Author Contributions SWW conceived of the study, led analyses and writing of the manuscript. IS and AMB co-wrote the manuscript. IS and SWW were involved in data collection and cleaning. SWW led the RCT that provided data.

Conflict of interest The authors have no conflicts of interest.

Human and Animal Rights Participants All study procedures were approved by the institutional review board for human subject research.

Informed Consent All participants provided informed consent.

Self-determination (SD) theory (Ryan & Deci, 2000) posits that people have three primary needs: the ability to act in ways that are aligned with their values, competence and a sense of feeling effective, and a relatedness to other people. Autonomous, or internally motivated, SD is critical to adult development as it involves identification of one's goals and acting as a causal agent by engaging in goal-consistent behaviors (Field & Hoffman, 1994). Adolescents and young adults with ASD exhibit underdeveloped independence, lagging interpersonal skills, and impaired ability to manage stress and intense emotion, which has been theoretically associated with diminished SD (Elias & White, 2018a, 2018b; Elias et al., 2019). Although a full treatise on the reasons for diminished SD among people with ASD is beyond the scope of this report, multiple factors are likely involved including limited opportunities, systemic barriers, and lack of services in place during late childhood and adolescence to foster independence and agency (e.g., Cheak-Zamora et al., 2020).

Individuals with higher levels of SD are more likely to experience freedom and autonomy in initiating adaptive behaviors; when one feels in control and autonomous, they are more likely to achieve success in attaining identified goals (Sheldon, 2014). Indeed, autonomous motivation has been found to mediate the effect of self-critical perfectionism on depressive symptoms in neurotypical college students (Moore et al., 2020) and there is evidence that SD is positively associated with successful treatment of depression (Quitasol et al., 2018). Among adolescents, SD has been found to fully mediate the negative effect of stress on school engagement, suggesting that enhancing SD could improve general resiliency and lead to greater school engagement (Raufelder et al., 2014). In addition to its relationship to depression, research has also shown that emerging adults with ASD face challenges with transition to postsecondary education and training stemming from low levels of SD (Elias & White, 2018a, 2018b).

Diminished SD may be tethered to ASD directly, and exacerbated by co-occurring depression. Depression is highly prevalent among adults with ASD, with recent estimates indicating that adults with ASD are four times as likely as non-ASD peers to develop clinical levels of depression (Hudson et al., 2019). Lifetime prevalence of major depressive disorder among adults with ASD has been estimated at 37% (Hollocks et al., 2019). Diminished SD and heightened risk of depression could stem, in part, from a distinct cognitive processing pattern; South e al. (2014) found that youth with ASD displayed a decision-making approach that was driven by avoidance of loss, rather than a drive toward potential reward. It is possible that an avoidance-driven approach could diminish one's ability to self-advocate, in part because advocating for one's needs and wishes requires an 'approach stance' toward one's personal goals, and a willingness to take risks (South et al., 2014). It is possible that symptoms of depression could diminish one's ability to self-advocate and behave in self-determined ways, as well as engage in efficient problem-solving.

The goal of this study was to determine if self-reported ASD severity and depressive symptoms independently predict SD. We hypothesized that both ASD severity and depression would negatively predict SD in a sample of older adolescents and young adults with ASD. In exploratory analyses, we examine SD and ASD severity between those participants with a co-occurring depressive disorder (Major Depressive Disorder or Persistent Depressive Disorder) and those without.

Methods

Participants

The sample for the current study consisted of 59 emerging adults ranging in age from 16 to 24 years (M = 18.88, SD = 2.01). Participants were mostly white (83%), male (80%), and of average cognitive ability as determined by the Wechsler Abbreviated Scale of Intelligence (WASI-II; Wechsler, 2011). See Table 1 for full descriptive information. All participants had clinical diagnoses of ASD and met diagnostic criteria for ASD as established by the Autism Diagnostic Observation Schedule, Second Edition (ADOS-2; Lord et al., 2012) administered by research-reliable graduate clinicians, or by an individualized education plan (IEP) with a primary designation of ASD.

Measures

Anxiety Disorders Interview Schedule (ADIS-C/P; Silverman & Albano, 1996; ADIS-5L; Brown & Barlow, 2014)

The ADIS is a semi-structured clinical diagnostic interview that assesses for a range of anxiety, mood, and externalizing disorders in youth, adolescents, and adults. Reliability and validity of the ADIS is well-established (Silverman et al., 2001). The child and parent versions (ADIS-C/P) were administered to adolescents who had not yet graduated secondary school and their caregiver(s), while the client version (ADIS-5) was administered to participants who had graduated secondary school. The child and parent interviews are often used together to inform diagnostic decision-making, while the client version is appropriate without parent complement for use with adults (Butler et al., 2020; Ollendick et al., 2016). Interviews were administered by graduate student clinicians trained to research reliability (i.e., formal training followed by establishing agreement with trainer on both independent administration and scoring) and supervised by a licensed, board-certified psychologist. The full ADIS-C/P or ADIS-5 was administered to each participant, but only mood disorder diagnoses of major depressive disorder (MDD) and persistent depressive disorder (PDD) were used in the current study.

American Institutes for Research Self Determination Scale (AIR-SD; Wolman et al., 1994)

The AIR-SD, administered to participants, is a 16-item measure with Likert response fields ranging from 1 (never) to 5 (always). The content of the AIR-SD assesses a person's knowledge, abilities, and perceptions that enable them to be self-determined (capacity scale; e.g., knowing how to meet their goals or how to use self-monitoring to gauge progress on those goals) and their chances to use this knowledge and abilities to behave in goal-directed ways (opportunity scale; e.g., applying knowledge of how to meet goals or how to use self-monitoring at school/home). The summation of the capacity and opportunity scales produce a self-determination total score, which is what was used in this study. Psychometric properties of the measure are strong (Wolman et al., 1994) and prior research on the use of the AIR-SD with transition age individuals with ASD indicates that the measure is internally consistent and that the theoretical factor structure (subscales: opportunity and capacity) is supported (Chou et al., 2017). Internal consistency for self-reported AIR-SD scores in this sample was $\alpha = 0.93$.

Beck Depression Inventory, Second Edition (BDI-II; Beck et al., 1996)

The BDI is a 21-item self-report measure evaluating depressive symptoms in adolescent and adult samples. Participants rate each item on a four-point scale. Psychometric properties of the BDI-II are well-established, with high internal consistency and test–retest reliability found across hundreds of studies (Wang & Gorenstein, 2013). Evidence also supports the validity of the BDI-II as a measure of depressive symptoms in adults with ASD (Williams et al., 2020). Internal consistency for the BDI-II in the current sample was high ($\alpha = 0.92$).

Social Responsiveness Scale-Second Edition-Adult: Self-Report (SRS-2-SR; Constantino, 2012)

The SRS-2-SR is a measure of social impairment and ASD symptom severity. The SRS-2 is typically completed by parents, but given the age range of our sample we opted to use the self-report version. The SRS-2-SR can be completed in 15 min and has strong reliability and validity. The SRS-2-SR is normed for people 19 years of age and older. As noted, several of our participants ($n = 36$) were under age 19. Despite its application outside of its normed age range, internal consistency for self-reported SRS-2-SR scores was excellent ($\alpha = 0.95$). We used the SRS-2-SR total score in this study.

Wechsler Abbreviated Scale of Intelligence, Second Edition (WASI-II; Wechsler, 2011)

The WASI-II provides an estimate of general cognitive ability. A clinician administered the two-subtest form in order to derive a Full Scale IQ score (FSIQ) at the pre-treatment assessment session to determine study eligibility. Four-subtest and two-subtest WASI-2 scores correlate highly for both children ages 12 to 17 and adults (Wechsler, 2011), and the two subtests have strong reliability and validity (Wechsler, 2011).

Procedure

Participants were enrolled in a randomized controlled trial evaluating the effects of a college transition program for students with ASD (White et al., 2019). The program aimed to facilitate aimed to facilitate successful transition to postsecondary education to postsecondary education. Though data were collected at several time points, the current study analyzed only pre-treatment data. The current study was approved by the university's institutional review board, and all participants provided either informed assent with caregiver consent (for participants under 18) or informed consent (participants over 18). Participants were recruited in a rural region in the mid-Atlantic United States using ASD-specific email listservs, newsletters and flyers distributed in the community, and university-affiliated clinics.

Data Analysis

Descriptive data and zero-order correlations were examined first. To examine the unique relationship of ASD severity and depression with SD, multiple linear regressions were conducted. IQ was entered in the first block, ASD severity (SRS-2-SR Total raw score) in block two, and depression (BDI-II total) in block three. Secondary analyses used

independent *t*-tests to compare SD and ASD severity across diagnostic groups based on the ADIS.

Results

All assumptions for multiple linear regression were met. There were no concerns with influential outliers, non-linearity, lack of independence, or distribution skew. SD was moderately, negatively correlated with both ASD severity (−0.472) and depression (−0.423). Moreover, depression and ASD severity were moderately positively correlated (0.625), such that people with more severe ASD symptoms also reported greater depression (Table 2). Because there was no association between IQ and any of the variables of interest, IQ was not included in the regression models as a covariate.

With respect to the central question of if ASD severity and depression predict SD, only ASD severity (SRS-2-SR) significantly predicted SD ($p = 0.001$). The model that included depression as a predictor was not significant. See Table 3 for the full regression analysis. There were 12 participants who met diagnostic criteria on the ADIS for a depressive disorder. Independent samples t-tests indicated that this subgroup had more severe ASD symptoms based on self-report ($t(52) = -2.42$, $p = 0.019$); the diagnosed group had a mean T-score of 69.91 (7.52), whereas the group without MDD/PDD had a mean score of 62.33 (9.87). The groups (with or without depressive disorder) did not differ in IQ or SD.

Discussion

The results of this study partially support our hypothesis that ASD and depression predict SD. Although SD was significantly, negatively correlated with severity of ASD and severity of depression symptoms, only ASD severity significantly explained variance in SD. This finding, along with the fact that the emerging adults who met diagnostic criteria for a secondary diagnosis of depressive disorder had more severe ASD but did not exhibit more diminished SD, suggests that SD is directly related to ASD severity.

Based on these findings, depression is positively associated with severity of ASD symptoms, but not uniquely predictive of diminished SD. This is consistent with prior research suggesting those who are more severely affected are at greater risk for depressive disorder (Hedley et al., 2017). A number of interpretations have been proposed for this association. Cognitive processes frequently associated with ASD, such as cognitive inflexibility and insistence on sameness, may contribute to ruminative thought patterns and, ultimately, more severe depressive symptoms (Gotham et al., 2014). Longstanding cognitive models for the etiology of depression may also bear particular relevance to ASD, including increased frequency of negative life events acting as possible precipitating factors for depression, or challenges associated with navigating social roles from an interpersonal therapy perspective (Smith & White, 2020).

According to SD theory, the ability to select goals and effectively work toward them is critical to adult functioning. Given that prior research has found that SD is associated with poorer transition to adulthood (Elias & White, 2018a, 2018b) and employment (Zalewska et al., 2016), and our finding that SD is associated with ASD severity, the importance of

helping young people with ASD to identify goals, self-advocate, and develop competence and confidence in their ability to achieve their goals cannot be overstated. Ideally, such programming should start as early as possible.

The primary limitations of this study relate to the reliance on self-report data for all key variables. However, this was an intentional decision driven largely by evidence that internalizing symptoms, such as depression, are best assessed by self-report (Comer & Kendall, 2004; De Reyes & Kazdin, 2005; Lewis et al., 2014) and a large body of research showing fairly poor agreement between parents and youth with ASD across constructs examined in this study (Spain et al., 2018). Furthermore, there is evidence that older adolescents and adults with ASD can accurately report on their internal states and cognitions (Gotham et al., 2015; Keith et al., 2019; Ozsivadjian et al., 2014), which corroborates the validity of utilizing self-report data in the current study. Future research should integrate composite measures of depression and SD. Additionally, although the sample is of a reasonable size, it is quite homogenous with respect to race and level of cognitive ability. Given that only 12 participants had a diagnosis of depressive disorder, power was limited to detect differences in other processes, such as SD. Future research should consider these constructs in larger, more diverse samples.

In conclusion, depression does seem to be associated positively with ASD severity among cognitively more able emerging adults. We can only speculate as to why this is. Perhaps those who are more impaired face greater social isolation, challenges related to independence, or heightened difficulties related to flexible cognitive processing. Our key finding is that severity of ASD predicts lower SD, which highlights the clinical importance of considering how care providers, educators, and family members can promote SD among adolescents and emerging adults who have ASD.

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Table 1

Sample demographics, $n = 59$

	***n* (%)**	**M (SD)**
Gender (male)	47 (79.70)	
Race (white)		
White	49 (83.10)	
Black or African American	2 (3.40)	
Asian	3 (5.10)	
Ethnicity (Hispanic, Latino)	3 (5.10)	
Depression diagnosis	12 (20.30)	
Social anxiety diagnosis	33 (55.90)	
Generalized anxiety diagnosis	25 (42.40)	
Specific phobia diagnosis	9 (15.30)	
Obsessive compulsive diagnosis	5 (8.50)	
Illness anxiety diagnosis	1 (1.70)	
ADHD diagnosis	5 (8.50)	
PTSD diagnosis	3 (5.10)	
Age		18.88 (2.01)
IQ		105.02 (13.18)
SRS-2-SR		63.54 (10.04)
BDI-II		13.38 (11.52)
AIR-SD capacity		41.10 (8.50)
AIR-SD opportunity		43.61 (8.90)
AIR-SD total		84.71 (15.75)

Depression, social anxiety, generalized anxiety, specific phobia, obsessive compulsive, illness anxiety, attention-deficit/hyperactivity disorder (ADHD), and post-traumatic stress disorder (PTSD) diagnoses: based on ADIS

$^{*}p < 0.05$

$^{**}p < 0.01$

Table 2

Bivariate correlations

	1	2	3	4
1. IQ	0.128			
2. SRS-2-SR	0.249	0.031		
3. BDI-II	0.084	−0.125	0.625**	
4. AIR-SD	−0.162	−0.048	−0.472**	−0.423**

*$p < 0.05$

**$p < 0.01$

Table 3

Regression coefficients

	Standardized coefficients					
	Beta	***t***	**Sig**	**Adjusted R^2**	**Model sig**	**R^2 change**
1. (constant)	–	18.25	0.000**	0.20	0.001**	0.21
SRS-2-SR	−0.46	−3.69	0.001**			
2. (constant)	–	17.56	0.000*	0.21	0.177	0.03
SRS-2-SR	−0.32	−0.2.05	0.046*			
BDI-II	−0.22	−1.37	0.177			