



## Symptoms of psychopathology in adults with intellectual disability and seizures

Mary E. Fitzgerald, Johnny L. Matson<sup>\*</sup>, Alyse Barker

Louisiana State University, United States

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### ABSTRACT

Seizures are more common in individuals with intellectual disabilities than in the general population. As a result, differences in functioning for individuals with intellectual disability with and without seizures have been evaluated. Research on differences in psychopathology for individuals with intellectual disability with and without seizures has been mixed. The purpose of this study was to examine differences in subscale scores on the *Diagnostic Assessment for the Severely Handicapped-II (DASH-II)* between individuals with intellectual disability with and without seizures. In this study, 321 individuals from two large developmental centers in the southeastern United States were administered the *DASH-II*. Researchers found that the seizure group endorsed significantly more symptoms on the mood subscale than the group without seizures. No other group differences were found to be significant. Implications of these results are discussed.

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Intellectual disability (ID) affects almost 3% of the population and is accompanied by a host of related problems such as challenging behaviors and developmental delays (Dixon, Bergstrom, Smith, & Tarbox, 2010; Eriksson, Westerlund, & Miniscalco, 2010; Matson & Shoemaker, 2009; Smith & Matson, 2010a, 2010b; Sturmey, Laud, Cooper, Matson, & Fodstad, 2010a, 2010b; Weeden, Mahoney, & Poling, 2010). Additionally, epilepsy occurs more frequently in individuals with developmental disabilities than in the general population (McDermott et al., 2005). The prevalence of epilepsy in individuals with developmental disabilities varies depending on the type of disability and the age of the individual (McDermott et al., 2005). McDermott et al. (2005) found that 25.5% of individuals with intellectual disability also had epilepsy. Similarly, in a study by McGrother et al. (2006), the prevalence of epilepsy in adults with intellectual disabilities (ID) was 25.6%.

Differences in functioning between individuals with ID and epilepsy and individuals with ID without epilepsy have been researched. For example, in adults with moderate to profound ID, epilepsy has been associated with poorer understanding, a greater risk of physical problems, and more difficulties with activities of daily living (McGrother et al., 2006). Also, a history of seizures has also been associated with a reduced lifespan for individuals with developmental disabilities (Hanson, Nord, & Weiseler, 1997).

Researchers have also investigated the relationship between epilepsy and psychopathology symptoms, as well as epilepsy and challenging behaviors, in individuals with ID. McGrother et al. (2006) found that after controlling for demographic variables including age and sex, as well as degree of understanding, individuals with ID and epilepsy displayed more problems with noncompliance, night disruptions, and attempts to get attention than individuals with ID without epilepsy. Also, mood swings were found to be more prevalent in individuals with epilepsy than those without.

<sup>\*</sup> Corresponding author at: Professor and Distinguished Research Master, Department of Psychology, Louisiana State University, Baton Rouge, LA 70803, United States.

E-mail address: johnmatson@aol.com (J.L. Matson).

Smith and Matson (2010a, 2010b) found no significant differences in psychopathology symptoms when comparing individuals with ID and epilepsy to individuals with ID alone. Psychopathology symptoms were also comparable across individuals with ID and autism spectrum disorder (ASD) and individuals with ID alone; however, individuals with ID, epilepsy, and ASD displayed more psychopathology symptoms (i.e., increased anxiety, irritability, and depression) than the other three groups, including individuals with ID alone, individuals with ID and ASD, and individuals with ID and epilepsy.

Deb and Hunter (1991a, 1991b) examined the prevalence of challenging behaviors and psychiatric disorders in individuals with ID and epilepsy compared to individuals with ID without epilepsy. They failed to find significant overall differences in challenging behaviors between individuals with and without epilepsy. The authors, however, found psychiatric disorders to be more prevalent in individuals without epilepsy. Matson, Bamburg, Mayville, and Khan (1999) found individuals with ID without a seizure disorder to have higher ratings of psychopathology and aberrant behavior scores on the *Diagnostic Assessment for the Severely Handicapped-II (DASH-II)* and the *Aberrant Behavior Checklist (ABC)*, respectively, than individuals with ID and a seizure disorder. This study, however, did not report which types of psychological symptoms were more common in individuals with ID without a seizure disorder.

Results are mixed at this point regarding the relationship of seizures to psychopathology in general and specific psychopathology symptoms in individuals with ID. This fact is largely due to the paucity of studies in the area and differing methodologies. This paper expands on previous research by looking more closely at specific mental health symptoms in individuals with ID with and without seizures.

## 1. Methods

### 1.1. Participants

A sample of 321 individuals was taken from two large developmental centers in the southeastern region of the United States. Participants ranged in age from 20 to 88 years ( $M = 51.3$ ,  $SD = 12.4$ ). There were 165 males and 156 females in the sample. Regarding ethnicity, 75 participants were African American, 1 individual was Hispanic, and 245 were Caucasian. Based on a review of records, 274 individuals were in the profound range of ID, and 47 were in the severe range. Participants were divided into two groups, based on the presence or absence of seizures. There were 115 individuals in the seizure group and 206 in the control group (ID but no seizures). Demographic information by group is provided in Table 1.

### 1.2. Measure

*Diagnostic Assessment for the Severely Handicapped – Second Edition (DASH-II)*. The *DASH-II* is an assessment measure used to screen for psychopathology symptoms in adults with severe or profound ID. This informant-based measure consists of 84 items and 13 subscales: Impulse, Organic, Anxiety, Mood, ASD/Autism, Schizophrenia, Stereotypies, Impulse, Self-Injurious Behavior, Elimination, Eating, Sleep, and Sexual. Caregivers who have known the individual for at least six months are asked to provide information on the frequency, duration, and severity of the behaviors within the last two weeks. For the current study, we examined the frequency data, which is rated on a scale of 0 (behavior has not been observed), 1 (frequency of 1–10 times), or 2 (occurred more than ten times). The reliability of the *DASH-II* is well established, with .86 mean interrater reliability and .84 test-retest reliability (Sevin, Matson, Williams, & Kirkpatrick-Sanchez, 1995). Most of the subscales have also been validated (Bamburg, Cherry, Matson, & Penn, 2001; Matson & Malone, 2006; Matson & Smiroldo, 1997; Sturmey et al., 2010b).

### 1.3. Procedure

A master's level clinician administered the *DASH-II* to direct care staff that had worked with the individual for at least six months. Data regarding the presence of seizures was taken from medical records for each individual. Missing data points

**Table 1**  
Demographic information by group.

	Seizures	Controls
Mean age in years (SD)	48.81 (11.53)	52.70 (12.60)
Gender		
Male	55.70%	49.00%
Female	44.30%	51.00%
Ethnicity		
Caucasian	78.30%	75.20%
African American	21.70%	24.30%
Hispanic	0.00%	0.50%
Level of ID		
Profound	94.80%	80.10%
Severe	5.20%	19.90%

were replaced with the mean item endorsement for the group. Those with more than three missing data points were removed from the participant pool.

## 2. Results

Preliminary analyses were conducted to determine if groups differed in regards to level of ID, gender, ethnicity, and age. Chi square analyses were used for categorical variables (i.e., level of ID, gender, and ethnicity). A significant difference in ID level was found between those with seizures and those without,  $\chi^2(1) = 12.74, p < .001$ . The control group had significantly more individuals with severe ID than the seizure group. No significant differences were found for gender  $\chi^2(1) = 1.30, p = .26$ , or ethnicity  $\chi^2(2) = .85, p = .65$ . An independent samples *t*-test was used to determine if groups differed in terms of age. This test was found to be significant,  $t(319) = -2.73, p = .007$ , with the group with seizures being significantly younger than the control group. In order to examine group differences in psychopathology, as measured by *DASH-II* subscale scores, a multivariate analysis of covariance (MANCOVA) was conducted with group (i.e., seizures vs. control) as the independent variable and subscale scores of the *DASH-II* as the dependent variables. Level of ID and age were entered as covariates in order to control for differences in these variables between groups. Results of the MANCOVA were significant, Wilks'  $\Lambda = .926, F(12, 304) = 2.02, p = .022$ . Due to a significant MANCOVA, follow-up ANCOVA's were conducted for each of the *DASH-II* subscales. In order to protect against inflation of Type-2 errors, Bonferroni corrections were applied to the follow-up ANCOVA's (Field, 2005); therefore,  $\alpha = .004$  was used for follow-up analyses. All subscales yielded non-significant results, with the exception of the mood subscale,  $F(1, 315) = 8.67, p = .003$ . More specifically, the seizure group ( $M = 2.91, SD = 3.00$ ) had significantly higher ratings on the mood subscale than the control group ( $M = 1.87, SD = 3.01$ ). Implications of these results are discussed below.

## 3. Discussion

A variety of psychological disorders are found to be comorbid with ID, including ASD, depression, and anxiety (Elison, Stinton, & Howlin, 2010; Hermans & Evenhuis, 2010; Iacono, Torr, & Wong, 2010; LoVullo & Matson, 2009; Matson & Boisjoli, 2009a, 2009b; Matson & Dempsey, 2009; Matson, Mahan, & LoVullo, 2009; Matson, Rivet, Fodstad, Dempsey, & Boisjoli, 2009; Peter-Scheffer, Didden, Mulders, & Korzilius, 2010; Petry, Kuppens, Vos, & Maes, 2010; Singh et al., 2009). Epilepsy is more common in individuals with ID than those without ID (Matson et al., 1996; McDermott et al., 2005). Some research has been conducted to examine differences in functioning between individuals with ID and epilepsy and those with ID without the disorder. For example, researchers have suggested that individuals with ID and seizure disorder have greater deficits in social and daily living skills, in comparison to individuals with ID without seizure disorder (Matson, Bamburg, Mayville, & Khan, 1999; McGrother et al., 2006). Research conducted to examine the relationship between psychopathology and seizure disorder in adults with ID has been minimal to date with mixed results (McGrother et al., 2006; Matson et al., 1999). In the current study, researchers compared individuals with ID with and without seizures in terms of endorsement of psychopathology symptoms on the subscales of the *DASH-II*. Only the *DASH-II* mood subscale was found to have significant group differences, with the seizure group displaying more symptoms than the controls. Although these results are seemingly inconsistent with previous research using the *DASH-II* conducted by Matson et al. (1999), other researchers have found higher rates of mood symptoms for individuals with seizure disorder (McGrother et al., 2006). The previous study using the *DASH-II* looked at overall psychopathology scores, whereas the current study looked at individual subscale scores. Matson et al. (1999) also included individuals with mild and moderate ID in their study. These factors may help to explain why the overall results for the two studies differed. Future studies should be conducted to clarify the relationship between seizures and psychopathology in individuals with ID. Investigating whether the relationship is influenced by the level of the ID is one avenue that needs to be studied. Future researchers should also look at other factors that may be related to seizure disorder and psychopathology in this population, such as age and gender. The severity of seizure activity may also play a role in the presence of psychopathology and should be further investigated by researchers.

Overall these results add to the body of literature by suggesting that individuals with severe/profound ID and epilepsy may be at greater risk for symptoms of mood disorders (McGrother et al., 2006; Ring et al., 2007). This information is useful to clinicians who work with adults with severe/profound ID and seizure disorder because it provides a better understanding of the symptoms of psychopathology that are likely to occur to in this population. This is also important for guiding treatment. Diagnostic clarification is crucial for the treatment of individuals with ID, especially those with seizures, as psychotropic medications are often part of a treatment package and can have dangerous side effects when not monitored effectively. Overall, research in this area still remains scarce, and further study on this topic is warranted.

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