# The psychometric properties of the Attention–Distraction, Inhibition–Excitation Classroom Assessment Scale (ADIECAS) in a sample of children with moderate and severe intellectual disabilities

Suzanne Guerin [a,*], Sarah Buckley [b], John McEvoy [c], John Hillery [d], Philip Dodd [e]

[a] School of Psychology and Centre for Disability Studies, University College Dublin, Dublin, Ireland
[b] Child Psychiatry Department, National Children's Hospital, Tallaght and Centre of Disability Studies, School of Psychology, University College Dublin, Dublin, Ireland
[c] Midway Services, Navan, Co. Meath and Centre for Disability Studies, School of Psychology, University College Dublin, Dublin, Ireland
[d] Stewart's Hospital Services Ltd., Centre of Disability Studies, School of Psychology, University College Dublin, Dublin, Ireland
[e] St Michael's House, Ballymun, Department of Psychiatry, Trinity College, Centre of Disability Studies, School of Psychology, University College Dublin, Dublin, Ireland

A R T I C L E   I N F O

A B S T R A C T

The Attention–Distraction, Inhibition–Excitation Classroom Assessment Scale (ADIECAS) [Evans, P. L. C. (1975). Inhibition and stimulus generalization in the discrimination learning of ESN(S) and ESN(M) children. Unpublished Ph.D. thesis. Manchester, UK: University of Manchester] assesses attention-related difficulties in children with intellectual disabilities (ID). The present study explored the psychometric properties of the ADIECAS with a sample of 84 children with moderate and severe ID whose teachers completed the ADIECAS and the Conners' Teachers Rating Scale [Goyette, C. H, Conners, C. K., & Ulrich, R. F. (1978). Normative data on revised Conners' parent and teachers rating scales. Journal of Abnormal Child Psychology, 6, 221–236]. Following factor analysis the Evans and Hogg [Evans, P. L. C., & Hogg, J. (1984). A classroom rating scale for use with mentally retarded children. British Journal of Clinical Psychology, 23, 187–194] structure was the most appropriate for use with this sample. Moderate to strong positive relationships were found between the ADIECAS and the Conners', and the ADIECAS factors were significant

* Corresponding author at: UCD School of Psychology, Newman Building, University College Dublin, Belfield, Dublin 4, Ireland. Tel.: +353 1 7168490.
E-mail address: suzanne.guerin@ucd.ie (S. Guerin).

predictors of the Conners' subscales. This study provides further support for the ADIECAS as a reliable and valid measure of ADHD-related symptoms among children with moderate and severe ID.

## 1. Introduction

ADHD is the most commonly studied and frequently diagnosed psychiatric disorder of childhood (Barklay, 1990; Rowland, Abramowitz, & Lesesne, 2002) and the prevalence of ADHD is considered to be higher in children with an intellectual disability (ID) than in children with normal intelligence (Aman, Pejeau, Osborne, Rojahn, & Handen, 1996; Buckley et al., 2006; Fee, Matson, & Benavidez, 1994; Handen, McAuliffe, Janosky, Feldman, & Breaux, 1994; Pearson et al., 2004). A study by Hastings, Beck, Daley, and Hill (2005) found higher levels of ADHD-related symptoms in children with ID when compared to their typically developing siblings, even when age (chronological and mental) was controlled for. The authors concluded that ADHD may be a valid psychiatric diagnosis in this population of children. However, as many studies on ADHD have excluded children with ID (Gadow & Poling, 1988), thus limiting the extent to which the existing literature in this area provides an insight into the needs of this population.

Despite the evidence that children with ID can have ADHD-related symptoms the diagnosis is often missed. This is mainly because it can be very difficult to make the diagnosis of ADHD, in children with ID with many questions concerning the origin of inattentive symptoms (Cavanaugh, Fogas, & Tervo, 1997) and problems with attention possibly being secondary to a child's cognitive deficit rather than due to ADHD. In addition, there are practical concerns regarding suitability and sensitivity of the tools for use with this population. The Conners' Rating Scale (Goyette, Conners, & Ulrich, 1978) is the most commonly used scale for diagnosing ADHD and it has been used with the ID population. However, the Conners' Rating Scale has not been widely validated in children with ID. Given that the diagnosis of ADHD is often overlooked due to the issue of 'diagnostic overshadowing'–whereby there is a tendency by clinicians to overlook symptoms of mental health problems in this client group and attribute them to being part of having ID (Jopp & Keys, 2001) – it is essential that the tools used to examine these symptoms are suitable to the population.

A possible alternative is the Attention–Distraction, Inhibition–Excitation Classroom Assessment Scale (ADIECAS; Evans, 1975), which was developed specifically for use with this population. Initially developed as a 23-item measure, Evans and Hogg (1984) reported on the psychometric properties of a 16-item version of this scale with a sample of 138 children between the ages of 5 and 16 years and described two distinct factors. The attention–distraction (AD) factor was described as relating to attention/distractibility aspects of behaviour. The study found reliable correlation with verbal age and receptive language ability as assessed by the English Picture Vocabulary Test (Brimer & Dunn, 1962), with low EPVT scores predicting higher AD scores (Evans & Hogg, 1984). The authors described the second factor, inhibition–excitation (IE), as reflecting "generable excitability" including impulsivity of action. They report that the IE factor did not correlate significantly with verbal age or quotient. Both factors showed good internal and test–retest reliabilites.

A small number of studies have explored the use of the ADIECAS in the ID population. Strand, Sturmey, and Newton (1990) explored the properties of the scale with a sample of 80 children with severe ID (mean age = 13 years, 10 months). While they found that the two factors reported by Evans and Hogg (1984) continued to show good internal reliability, they also explored the internal structure of the scale further. Four subscales were identified, with one replicating the original AD factor. This factor showed both good internal reliability and good concurrent validity with scales from the Peabody Picture Vocabulary Test (Dunn & Dunn, 1981) and the British Ability Scales (Elliott, Murray, & Pearson, 1979). However, Strand et al. report that the IE scale was not replicated in the same way, and suggest the presence of additional factors of verbal expressiveness and responsivity to consequences. They attribute this factor structure to some extent to the older sample accessed in their study and the small number of items loaded on these scales. In another study, Turner, Sloper, and Knusen (1991)