Problem behaviours and Major Depressive Disorder in adults with intellectual disability and autism

PROBLEM BEHAVIOURS AND MAJOR DEPRESSIVE DISORDER IN ADULTS WITH INTELLECTUAL DISABILITY AND AUTISM

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Highlights
1) Persons with intellectual disability and autism spectrum disorder showing problem behaviours resulted to have a significantly higher prevalence of major depressive disorder than those who do not show problem behaviours.
2) The severity of depressive symptoms resulted to have a strong correlation with scores of instrumental assessment of problem behaviours.
3) Among problem behaviours, verbal aggression was found to be the most frequent equivalent of major depressive disorder.

Abstract

The high prevalence of Problem Behaviours (PB) in persons with intellectual disability (ID) and Autism Spectrum Disorder (ASD) has been associated by some researchers to a proportionate frequency of Major Depressive Disorder (MDD), which have a different presentation in persons with ID and ASD than in the general population, mostly as behavioural changes. Nevertheless, evidence on this behavioural equivalency is still scarce.

The present study aims at evaluating the rate of MDD in persons with ID and ASD presenting PB. Two groups of persons with mild-to-moderate ID and ASD, with and without PB underwent a complex clinical (Diagnostic Manual – Intellectual Disability) and instrumental (Reiss Screen for Maladaptive Behaviour; Mini Psychiatric Assessment Schedule for Adults with Developmental Disabilities).

The prevalence of MDD was found to be significantly higher in the group with PB. The severity of depressive symptoms resulted to have a strong correlation with the scores of instrumental assessment of PB.

Our findings support previous literature on a high association between PB and MDD in persons with ID and ASD. The level of the equivalency between specific MDD symptoms and different PB deserves further investigations.

1. Introduction

The high prevalence of Problem Behaviours (PB) in people with intellectual disability (ID) is well documented, although specific explanation for this link has not been provided yet. Researchers continue to tease out many different causal agents, ranging from organic conditions to co-occuring Psychiatric Disorders (PD), environmental factors or a combination of these. The pathogenic mechanism of similar PB can considerably vary case by case and the same behaviour can be interpreted very differently by different professionals, even in the same staff, with relevant implications for intervention. Also terms and definitions of PB have changed across time, according to specific pathogenic interpretation. One of the most popular alternative term to PB is 'challenging behaviour', which was coined to provide a reminder that severely problematic or socially unacceptable behaviour should be seen as a challenge to the environment rather than a manifestation of pathological processes of the acting person (Emerson, 1995).

The literature reports prevalence rates of PB in ID to range from 9.9% to 16.7% (Holden and Gitlesen, 2006; Lowe et al., 2007). In one of the largest samples ever Borthwick-Duffy (1994) found a prevalence of 14.4%. Most frequently reported kinds of PB include aggressivity towards other persons or objects, self-injurious behaviour, stereotypies and repetitive behaviour. Also combinations of these and other PB are frequent. The severity of PB, which is given by their intensity and frequency, is reported to be high in a considerable percentage of cases, ranging from 3.8-7.8 % (Emerson et al., 2001b).

Individuals with ID also have an increased risk for ASD compared to the general population (Sappok et al., 2010) although this co-occurrence of diagnoses often remains unrecognised (La Malfa et al., 2004). This can be partly explained by the symptomatic overlap between ID and ASD and the lack of standardised appropriate measures diagnosing ASD in adults with ID (Matson and Shoemaker, 2009). Importantly, the prevalence of PB is three to four times higher in people with ID and ASD, compared to their peers without this co-occurrence (McCarthy et al., 2009; Bradley et al., 2004). In this line, Smith and colleagues reported self-injurious behaviour to be present in 4.9% (Cooper et al., 2009) and aggressivity in 9.8% (Smith and Matson, 2010) of persons with ID and co-morbid ASD or epilepsy.

The high prevalence of PB in persons with ID has been associated by some researchers to a proportionate frequency of PD. In fact the prevalence rate of the full range of PD in persons with ID has been repeatedly reported to be higher than in the general population, at least when adapted diagnostic criteria have been considered (Bertelli et al., 2012; Cooper et al., 2007). The clinical presentation of PD in people with ID is often very different from the one of the general population and the diagnostic criteria of the main classification system (DSM and ICD) cannot be applied without specific adaptation, particularly in those with more severe ID and/or co-occurrence of ASD, who present the highest difficulties in conceptualising and communicating their psychic suffering (Bertelli et al., 2015). Thus, adapted criteria have been developed, such as the DC-LD (Royal College of Psychiatrists, 2001) or the DM-ID (Fletcher et al., 2007). By using these criteria the prevalence rate of most PD in persons with ID has resulted to be up to 4 times higher than in the general population (Bertelli et al., 2012; Cooper et al., 2007).

Some other studies not including specific diagnostic criteria reported incidences similar to those of the persons with normal intellectual abilities (Dekker, 2003; Došen, 2000).

Some studies demonstrated a relationship between PB and PD (Emerson et al., 2001a, 2001b; Felce et al., 2009; Hemmings et al., 2006; Kishore et al., 2005; Moss et al., 2000), particularly strong in individuals with lower level of functioning (Felce et al., 2009) and some behavioural equivalents have been identified for specific symptoms (Hurley, 2006, 2008). Charlot et al., (2008) suggests the course of the behaviour in respect to other possible symptoms of a PD as a main reference to decide whether the behaviour can be considered a symptom equivalent. Other studies found no evidence that PB were

behavioural equivalents of PD (Tsiouris et al., 2003). Some authors sustain that PB and maladaptive behaviours should be interpreted as nonspecific indicators of emotional distress rather than atypical symptoms (Rojahn and Meier, 2009).

In respect to affective disorders, Cooper and collaborators (2007) found prevalence rates of 4.6 % for depression and 1.2 % for bipolar disorder, using ICD-10 (WHO, 1992) and DSM-IV-TR criteria (APA, 2000). Similarly, Deb and collaborators (2001) found that 2.2% to 3.3% had a diagnosis of depression.

Kraijer and Plas (2002) demonstrated that classical symptoms of Major Depressive Disorder (MDD), such as depressive thoughts, nihilistic emotions and suicidal thoughts are not frequently seen in persons with ID. However, they do display reduced interest and anhedonia, deterioration of the activities of daily life, nervous and anxious behaviour (day and night), claiming behaviour and physical complaints. According to this caveats and using specific diagnostic criteria, other studies have reported high prevalence rate of depressive disorders in ID (Cooper, et al., 2007; Hermans et al., 2013), and even higher in those with ID and co-occurrent ASD (Bradley et al., 2004; Bradley and Bolton, 2006; Smith and Matson, 2010). It has been hypothesised that aggression or self-injury can also be considered as symptoms of depression (Kraijer and Plas, 2002). Similarly, Maes and Swillen (2010) pointed out that depression can be accompanied by behavioural changes such as aggression, tantrums, screaming or self-injury. This is also in line with findings by Hurley (2006, 2008) and Tsiouris and collaborators (2011) on an association between diagnosis of depression and higher rates of aggression in persons with ID. However, many other studies (Moss et al., 2000; Hemmings et al., 2006; Hurley, 2008; Myrbakk and von Tetzchner, 2008) report aggressive behaviours to be even higher in counterpolar mood alterations in people with different levels of ID. In a recent study, Cooper and collaborators found a dimensional model to have a better predictive validity than categorical diagnosis, and PBs to be included in an emotion dysregulation dimension, distinct from the depressive, anxiety, organic and psychosis ones (Melville et al., 2016).

The limited and contradictory evidence on the relationship between PBs and symptoms of psychiatric disorders experienced by adults with severe neurodevelopmental disorders leads to conflict about diagnostic criteria and confused treatment.

The present study aimed at evaluating the association between PB and MDD in persons with ID and ASD by investigating the association between PB and depressive symptomatology in persons with and without PB.

2. Methods

2.1 Ethics Statement

The study was carried out in accordance with the latest version of the Helsinki declaration and was approved by the medical ethical committees of the participating hospital (Ethical Committee of the "Brothers of Charity") and of the University of Ghent, Belgium. Informed consent was received from relatives or guardians for participants for whom the minor age had legally been extended. Persons who were legally major of age were asked for permission themselves.

2.2 Settings and Design

2.2.1 Participants

The study was conducted on a psychiatric ward specialised in diagnosis and treatment of patients with ID, PB and PD. The two study groups represented convenient sample of persons with ID (mild/moderate) and ASD, with PB (group 1 = 24; inpatients) and without PB (group 2 = 10; outpatients). All participants were consecutively recruited between January 2010 and June 2013, after

presentation of the study design and aim to the persons themselves or their legal representatives. Persons in group 1 were recruited among those attending the above mentioned psychiatric ward, while persons in group 2 were recruited among users of care and residential services within the network of the psychiatric ward. Inclusion criteria were age of 18 years or older, diagnosis of ID (clinical records), with an IQ equivalent between 34 and 70, measured by means of the Wechsler Adult Intelligence Scale-III (WAIS-III) (Wechsler, 2005) and diagnosis of ASD (clinical records), confirmed by administration of AVZ ("Autism and Related Disorders": Kraijer, 1999). Exclusion criteria were presence of organic lesions, neurological disorders or physical illnesses impacting on the central nervous system, as well as assumption of psychoactive compounds with the exception of anti-epileptics (to treat epilepsy) and low doses of lorazepam (in case of emergency).

2.2.2 Design and procedures

This is an observational descriptive study where participants were divided in two groups by presence of PB through clinical assessment supported by administration of SGZ (Disturbing Behaviour Scale for ID (Kraijer and Kema, 1994). The two groups were compared for occurrence of MDD by a trained psychiatrist (LB), in accordance to DM-ID criteria (Fletcher et al., 2007) and after administration of screening tools (PAS-ADD and RSMB). WAIS-III, SGZ, PAS-ADD and RSMB were administered by a trained psychologist (VV). For SGZ, PAS-ADD and RSMB informant were represented by family members or professional caregivers. Both the psychiatrist and the psychologist were blind to the study aim.

2.2.3. Instruments

2.2.3.1 WAIS

The Wechsler Adult Intelligence Scale was administered in the form of the Dutch translation of the third edition (2005).

2.2.3.2 AVZ

The AVZ (Autism and Related Scale; Kraijer, 1999) is a validated tool to support diagnosis of ASD in persons with ID. It includes 12 items related to the main symptomatological domains of ASD: communication, socialisation and repetitive behaviors, which can be scored by a Likert scale from 1 to 3. Diagnosis of ASD was indicated by a score ≥ 10. The scale does not allow to identify any level of severity of the ASD.

2.2.3.3 SGZ

Behavioural problems were measured by the Storend Gedragsschaal voor Zwakzinnigen (Maladaptive Behaviour Scale for the Mentally Retarded; Kraijer and Kema, 1994). The SGZ is widely used in the Netherlands and the Dutch-speaking regions of Belgium. It consists of 32 items, grouped in three sub-scales: (1) physical aggressive behaviour (SGZ-A); (2) verbal aggressive behavior (SGZ-V); and (3) mixed maladaptive behaviour (SGZ-M). The SGZ-A contains eight items on scratching, pinching, biting, pushing, hitting, kicking, spitting or pulling hair of parents, caregivers, siblings and/or other persons; the SGZ-V (5 items) refers to abusive language and nagging towards caregivers and/or other persons; the SGZ-M (19 items) addresses self-injurious behaviour, stealing food, pica, tearing clothes, throwing or destroying objects, hyperactivity, screaming, nagging, noncompliance, public masturbating, faeces smearing and stereotyped behaviours. Each item is rated on a 5-point Likert-type scale, on the basis of the frequency of occurrence. Scores are then multiplied by 2 or 3, depending on the degree that the specific item is more or less disturbing to others. In the subscale score grading of the SGZ version used for the present study, items rough scores have been turned into

standard scores, comprised in a range from 2 to 9, as from given rules. These score are inversely related to the presence and severity of PB. Significative PB were selected by a cut-off of ≤ 5. Total scores on the three sub-scales are based upon summing up the scores of the sub-scale items. Scores from the three sub-scales may be summed to attain a total SGZ score (i.e. SGZ total), which reflects the overall severity level of PB. The SGZ is validated for persons with ID, aged 3 years and over, and IQ 70 or less. The SGZ was found to satisfy the rigorous criteria used by the Dutch Psychological Association; its psychometric characteristics have been proven to be good (Evers, 2001).

2.2.3.4. RSMB

The Reiss Screen for Maladaptive Behaviour (RSMB) (Reiss, 1988, 1994) includes 38 items grouped in the following eight subscales: Aggressive, Autism, Psychosis, Paranoia, Depression-B (behavioral symptoms), Depression-P (physical symptoms), Dependent and Avoidant Personality Disorder. Each item is scored by a Likert scale, from 0 (no problem) to 3 (major problem). Scores from the two raters are averaged, and these averages are summed to obtain a raw score for each of the eight diagnostically relevant, or clinical, scales. Also, 26 of the 38 items contribute to a Total score.

The screening tool has a particular sensitivity for depressive disorder, which in fact is the only disorder being assessed by 2 different subscales, behavioural (B), and physical (P). The first has five items that refer to irritability, anxiety and sadness, while the second has five items that refer to problems with energy level, eating, sleeping and stress.

2.2.3.5 Mini PAS-ADD

The Mini Psychiatric Assessment Schedule for Adults with Developmental Disabilities (Mini PAS-ADD) was developed by Moss and collaborators to assess mental health problems in persons with ID (Moss et al., 1997). It supports diagnoses of depression, anxiety disorder, mania, obsessive compulsive disorder, psychotic disorder, ASD, and disorder not otherwise specified.

2.2.4. Statistics

Mean scores between groups were compared by Pearson's Chi-square for categorical variables and by use of the Student's T test for continuous variables. Correlations were evaluated through calculation of the Peasons' r coefficient.

3. Results

3.1. *Background characteristics*

A total of 34 participants with ID and ASD was included in the present study: 22 male (62.9%) and 12 female (37.1%). Of these participants, 24 had PB (group 1), whereas 10 had not (group 2).

The mean age in group 1 was 30.38 yrs ±11.11 (range = 18-58) and in group 2 31.50 (range = 19-58).

Mean IQ in group 1 was 57.60 ±7.40 (range = 49-70) and in group 2 56.60 ±9.10 (range = 48-70).

No significant groups differences were found for age and IQ impairment, but sex ratio was significantly different, with more women present in group 1 (n =11 vs n=1; chi-square = 3.97; p= 0.046).

3.2 *Associations between PB and depressive symptomatology*

The level of reliability between clinical diagnosis (psychiatrist + DM-ID) and PAS-ADD diagnosis (psychologist) was 89.5%.

In group 1, 15 out of 24 (63%) were diagnosed with MDD, while none of the participants in group 2 had a diagnosis of MDD (Pearson's Chi-square = 11.184, p= 0.001).

RSMB and Mini PAS-ADD scores yielded again significant differences between groups (see table 1). Within the RSMB, the P subscale (problems with energy level, eating, sleeping and stress) resulted to have a rank of significance much higher than the B one (0.05 vs 0.001).
In order to evaluate to what extent depressive symptomatology was predictive for PB, a binary logistic regression model was run on the combined patient sample (n=34) with RSMD and PAS-ADD scores as well as gender entering the model as covariates.
PAS-ADD (B=0.304; p=0.030) and RSMB-P (B=1.11; p=0.035) contributed significantly to the model, which was highly predictive (Nagelkerke R2=0.694). Neither gender, nor RSMD-B contributed significantly.

3.3 *Correlations between PB and depressive symptoms*
In the general sample RSMB and Mini PAS-ADD depressive symptoms significantly correlated with all the three SGZ subscores, with the highest strengths between RSMB-P and SGZ mix scores, as well as between RSMB-P and SGZ total scores. Results indicate that depressive symptoms are associated with the onset or the exaggeration of PB. Aggressive behaviour towards other persons, both physical and verbal, was found to have a weaker correlation strength than the one of the miscellaneous group, which includes self-injurious behaviour, stealing food, pica, tearing clothes, throwing or destroying objects, hyperactivity, screaming, nagging, noncompliance, public masturbating, faeces smearing and stereotyped behaviours. Behavioural depressive symptoms, as assessed by the RSMB-B, resulted to be associated with all kinds of PB, but physical aggression, as assessed by the SVG subscales. Physical depressive symptoms of the RSMB resulted to be associated with all kinds of PB, but verbal aggression. Scores at the depression subscale of Mini PAS-ADD were weakly associated only with SVG mix and SVG total scores. Results of statistical evaluation of score correlations are summarized in Table 2.

4. Discussion

In recent years the relationship between PB and comorbid PD has raised increasing interest in mental health research for persons with ID and other neurodevelopmental disorders (Moss et al., 2000; Holden and Gitlesen, 2003; Kishore, et al., 2005; Hemmings, et al., 2006; Myrbakk and von Tetzchner, 2008; McCarthy et al, 2009; Call et al., 2012; Dinya et al., 2012). In ID and ASD, Matson and colleagues (2012) already highlighted the difficulty to distinguish between PBs and associated PD. In children/adolescents with ASD the association between aggression and MDD is well described and it was even proposed that in children who recently had aggressive blasts and who seem irritated, the presence of MDD had to be screened for (Ghaziuddin and Greden, 1998). Study findings show that MDD was highly present (63%) in patients with ID, ASD and PB, whereas none of the patients without PB had comorbid MDD. Also the onset and the exacerbation of PB were highly associated to the severity of depressive symptoms.
Findings of our study are in line with those from prevalent literature, showing that in persons with ID MDD can be accompanied or even manifest by the onset or the exaggeration of PB (Kraijer and Plas 2002; Hurley 2006, 2008; Maes and Swillen, 2010; Tsiouris et al., 2011). In respect to other researches we focused on the relationship between MDD and specific PB, finding out a lower association with aggressive behaviour towards other persons, both physical and verbal, than with self-injurious behaviour, aggressive behaviour towards objects, stealing food, pica, tearing clothes, throwing or destroying objects, hyperactivity, screaming, nagging, public masturbating, and faeces smearing. Within MDD symptoms, irritability, anxiety and sadness resulted to be associated with all kinds of PB, but physical aggression, while physical depressive symptoms, such as problems with energy level, eating, sleeping and stress, resulted to be associated with all kinds of PB, but verbal aggression.

Most of previous literature did not investigate differences of PB as behavioural equivalents of specific diagnostic categories within the group of mood disorders, particularly between depressive and (hypo) manic states. Kishore and collaborators found aggression to be significantly more associated with affective disorders than with other psychiatric disorders, as well as rebellious behaviour, but they did not look for further differences within main figures of mood alterations (2005).
A number of other papers (Moss et al, 2000; Hemmings et al., 2006; Hurley 2008; Myrbakk and von Tetzchner, 2008) showed aggressive behaviour to have a higher association with manic episodes than with depressive ones, with some exceptions for self-directed components. Tsiouris found verbal aggression towards others, physical aggression against others, against objects, and against self to be three to four times more strongly correlated with bipolar disorder than with MDD, while verbal aggression towards self was rather similar in the two clinical entities (Tsiouris et al., 2011). Hurley reported bipolar patients to show significantly more aggression, overactivity, self-stimulation, tantrums and impulsivity, but almost the same rate of self-injurious behavior than those with MDD (2006).
Combining knowledge from the literature with findings of our study it seems to be hypothesized that in persons with ID MDD tends to present with a range of self-oriented aggressive behaviours, and that it is further differentiable by predominance of specific symptoms. In the forms with prominence of emotional symptoms (irritability, anxiety and sadness) aggression tend not to be physical (but mostly verbal), while in the forms with prominence of physical symptoms (problems with energy, eating, sleeping and stress) aggression tend not to be verbal (but mostly physical). These conclusions are summarized in Table 3.
Establishing the correct diagnosis underlying PBs in ID and ASD, may enhance proper management of the PBs. In a population of subjects with ID, 14-30% receive psycho-active drugs for the management of PBs without an underlying psychiatric diagnosis (Deb and Prasad, 1994). Similarly, 45% of adults with ASD are on psychotropic medications (Langworthy-Lam et al., 2002), although there is no evidence that pharmacological treatments have a fundamental impact on the core symptoms of ASD (Broadstock et al., 2007; Wink et al., 2010; NICE, 2016; Canitano and Scandurra, 2011; Lai et al., 2014). Instead, associated behavioural symptoms such as aggression, irritability, self-injury, hyperactivity, impulsivity and repetitive behaviours are typically the aim of these treatment strategies (West et al., 2009). Langworthy-Lam and colleagues (2002) concluded that greater age, more severe autism and ID were often associated with greater use of psychoactive agents. Antidepressants (21,7 % of the sample) and antipsychotics (16,8 %) were the most commonly prescribed agents. Aman and collaborators (2003) came to similar conclusions. In their study about prevalence and patterns of use of psychoactive medicines among individuals with autism, 51,6% were prescribed psychotropic drugs or anti-epileptic drugs. Again, the most common psychotropic drugs included antidepressants (21,6%) and antipsychotics (14,9%). Compared with their earlier work (Aman et al., 1995) the increased use was particularly notable for the antidepressants with rates of use increasing by 266%. This shift towards the use of SSRI's is in line with literature suggesting that they have a role in reducing perseverative stereotypic and aggressive behaviours (Aman and Madrid 1999; McDougle et al., 2000). This seems to be in line with our findings suggesting that these symptoms may actual be the result of an underlying depressive disorder. The effects of antidepressants on PBs may thus be moderated by their efficacy on underlying MDD.
The degree of autism and severity of ID also increased the risk for being prescribed psychotropic drugs (Aman et al., 2003). Presumably these patients were more handicapped and in the case of severe autism, presented further behavioral challenges. The authors argued that the use of SSRIs and atypical antipsychotics is safer and possibly more effective than older agents (the tricyclic antidepressants and the first generation antipsychotics) and might encourage practitioners to use them more often. As mentioned above, second generation antipsychotics have also been shown to be helpful for reducing

stereotypical behavior, hyperactivity, aggression, irritability (Baumeister et al., 1998; Ruedrick et al., 2008; Barnard et al., 2002; Research Units on Pediatric Psychopharmacology Autism Network, 2002; McDougle et al., 2008).

Nevertheless it should be noted that, for now, there is limited evidence to support pharmacological treatment choices for the management of specific behavioural problems in ASD (West et al., 2009). Some open-label trials have been conducted, but well-designed RCTs are scarce. In the future, an RCT evaluating the effectiveness of antidepressants on both depressive symptomatology and PBs may further elucidate this issue.

Our study had some limitations: a relatively small sample of patients with PBs, ID and ASD (n=24) was recruited from a psychiatric hospital ward for people with ID, PBs and psychiatric disorders. The control sample was even smaller (n=10) and mostly recruited from group homes and supported houses. We had the intention to recrute the same width (amplitude) in the two groups but it was difficult to make it in a convenient time because of lack of potential participants (the majority of patients attending the ward has PB), and higher difficulty to receive informed consent from those that could have been included in group 2. Nevertheless there was enough clinical significant difference in the co-occurrence of MDD between the two groups.

It would have been more appropriate to explore associations within one larger group primarily, instead of identifying two separate groups. This was done for some very practical reasons, such as the possibility to evaluate in a following phase the different effect of a therapeutic intervention, or the facilitation in guaranteeing a minimum of participants without PBs. Our findings have to be confirmed through larger and well-designed studies.

To conclude, our data support the notion that in persons with ID and ASD, PBs may be a behavioural expression of the presence of MDD, as well as a behavioural equivalent of one or more symptoms, particularly when associated to other symptoms. As far as our knowledge this is the first study to have focused on the level of behavioural equivalence of specific types of aggressiveness in respect to specific symptoms clusters. In the field of severe neurodevelopmental disorders, behavioural semeiotic references of PD represent a fundamental support for clinicians in diagnostic and therapeutic processes. Within MDD, different clusters of PBs and other symptoms may orientate the treatment choice.

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Table 1 : RSMB and PAS-ADD-d score differences in the two groups

	Group 1 (PBs)	Group 2 (without PBs)	*F*(*p*-value)
RSMB-B	4.58 (2.60)	2.45 (1.92)	6.200*
RSMB-P	4.63 (2.20)	1.82 (1.33)	15.131***
Mini PAS-ADD-d	10.08 (5.79)	2.60 (3.24)	14.637***

*$p<0.05$
**$p<0.01$
***$p<0.001$

Table 2 : Correlations between problem behaviours and depressive symptoms

Instrument area scores		SGZ-aggr	SGZ-verb	SGZ-mix	SGZ total
	Symptomatological and Behavioural correlates				
RSMB-B		-0.202	-0.452**	-0.471**	-0.468**
RSMB-P		-0.369*	-0.178	-0.588***	-0.566***
Mini PAS-ADD-d		-0.222	-0.274	-0.427*	-0.409*

*$p<0.05$
**$p<0.01$
***$p<0.001$

Table 3 – Aggressive behaviours and MDD symptoms in persons with ID

	Syndrome and MDD symptoms specificity		
Type of aggressive behaviour	BD	MDD	
	higher association with aggressive behaviour towards other persons	lower association with aggressive behaviour towards other persons (higher association with self-injurious behavior and verbal aggression towards self)	
		prominence of emotional symptoms (irritability, anxiety and sadness)	less physical aggression
		prominence of physical symptoms (problems with energy, eating, sleeping and stress)	less verbal aggression