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The role of personality in aggressive behaviour among individuals with intellectual disabilities

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Abstract

Background Aggressive behaviour is associated with certain personality traits in both the general population and among individuals with mental health problems, but little attention has been paid to the relationship between aggressive behaviour and personality among individuals with intellectual disabilities (ID). The aim of this study was to circumscribe personality profiles associated with aggressive behaviour among individuals with ID.

Method In this cross-sectional study of 296 adults with mild or moderate ID, information on mental health, personality and aggressive behaviour was gathered through structured interviews with the ID participants and their case manager, and a review of client files.

Results The results of the Reiss Profile were submitted to hierarchical cluster analysis method. Subsequently, the distribution of aggressive behaviour, sociodemographic characteristics and clinical characteristics across personality profiles was analysed. The analyses yielded seven distinct personality profiles in relation to patterns of aggressive behaviour: Pacifists, Socials, Confidents, Altruists, Conformists, Emotionals and Asocials.

Conclusion The identification of distinct personality profiles sheds light on the risk factors for aggressive behaviour, and suggests new approaches to improving diagnostic and intervention strategies.

Keywords aggressive behaviour, intellectual disability, personality

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Introduction

Aggressive behaviours in persons with intellectual disabilities

Aggressive behaviour by individuals with an intellectual disability (ID) is a significant challenge to improving adaptive behaviour, leads to the use of restraints (Antonacci *et al.* 2008) and limits social interactions (McAtee *et al.* 2004). It has also been reported to exert undesirable effects on support staff in ID services (Jenkins *et al.* 1997). Crocker *et al.* (2006) estimated the prevalence of aggressive behaviour among 3165 men and women with ID

receiving services from Quebec rehabilitation centres for adults with ID. The 12-month prevalence indicated that half the participants (53%) exhibited at least one form of aggressive behaviour. Verbal aggression was the most frequently observed form of aggressive behaviour (37%) and sexual aggression the least (9%). Intermediate levels were observed for aggression towards objects (24%), self-mutilation (24%) and physical aggression against others (24%).

Management of aggressive clients is a significant challenge for care providers, as the phenomenon has a multifactorial aetiology that varies from individual to individual. The assessment and intervention strategies, such as Gardner's (2002) multimodal approach, based on the identification of associated factors is therefore indicated.

Factors associated with aggressive behaviour of individuals with ID

The identification of associated factors both sheds light on the aetiology of aggressive behaviour and facilitates the development of intervention strategies specific to clients who display these behaviours. However, research on the aetiology of aggressive behaviour among individuals with ID is a recent development, and has focused on the role of the nature and intensity of ID, the presence of pervasive developmental disorders and communication skills (McClintock *et al.* 2003). L'Abbé and Morrin (1999) reviewed the literature and identified 49 factors potentially associated with aggressive behaviour. These can be divided into two large categories: individual-level factors (e.g. age, sex, presence of mental health problems) and environmental-level or situational factors (e.g. changes in living environment, lack of intellectual stimulation, relationships with peers).

Personality disorders and aggressive behaviours in persons with ID

Symptoms of mental illness have been associated to the development of aggressive behaviour among individuals with ID (Tsiouris *et al.* 2011). Rates of mental illness among individuals with ID has been estimated at 40% (Cooper *et al.* 2009).There is a strong association between some personality disorders and aggressive behaviour, and this is reflected in the Diagnostic and Statistical Manual of Mental Disorder, Fourth Edition, Text Revision (DSM-IV-TR) (American Psychiatric Association 2000). Antisocial personality disorder is undoubtedly the Axis II disorder with highest association with aggressive behaviour. In fact, antisocial personality disorder has been reported to be more prevalent in individuals with ID exhibiting aggressive behaviours (Tenneij & Koot 2006; Crocker *et al.* 2007). Personality disorder symptoms are under-assessed among individuals with ID, who are therefore unlikely to receive the appropriate services (Eaton & Menolascino 1982). This phenomenon was studied by Reiss & Szyszanko (1993), in the form of diagnostic overshadowing, which is characterised by the attribution of observed problems to cognitive and adaptive deficits secondary to ID, rather than underlying personality disorders *per se*. Little research has been conducted on the personality of individuals with ID (Lindsay *et al.* 2007) and the few studies conducted have focused almost exclusively on pathological manifestations, that is, personality disorders. According to L'Abbé and Morrin (1999), all forms of personality disorder, with the exception of dependent personality disorder, may contribute to the development of aggressive behaviours in individuals with ID. Cluster B personality disorders appear to be most common (Tenneij & Koot 2006) and men are more likely than women to be diagnosed with personality disorders (Tsakanikos *et al.* 2006). Alexander & Cooray (2003) reviewed 14 studies of personality disorders among individuals with ID and reported a prevalence of 1–9% for individuals living in the community, and 22–92% for hospitalised individuals. These results appear unrealistic and the authors cite the absence of valid diagnostic tools, differences in diagnostic practices and differences in the conceptualisation of personality as possible explanations.

In summary, some studies have reported a notable association between Axis II disorders (personality disorders) as per DSM-IV-TR (American Psychiatric Association 2000) and aggressiveness among individuals with ID (Morrissey & Hollin 2011) and call for further studies of the role of personality in the development of aggressive behaviours.

The sensitivity theory of motivation as a model of personality in persons with ID

Research by Reiss & Havercamp (1996) has advanced our understanding of personality in individuals with ID. Their sensitivity theory of motivation posits that motivation is the basis of personality. Individuals with ID have, to various degrees, 11 goals: food, social contact, vengeance, attention, sexuality, order, curiosity, independence, morality, physical activity and helping others. In addition, they attempt to avoid 4 sensitivities: anxiety, pain, frustration and rejection. These 15 fundamental motivations each have their own threshold, that is, the level an individual seeks or avoids. The instrument used to evaluate these motivations is the Reiss Profile of Fundamental Goals and Motivational Sensitivities for Persons with Mental Retardation and Developmental Disabilities (Reiss Profile; Reiss & Havercamp 2001). According to Reiss (2000), this theory explains the development and maintenance of aggressive behaviour by individuals with ID, and the predisposition of these individuals to mental health problems. Research has confirmed the value of the theory and of the psychometric instrument it inspired with reference to the detection of mental health problems (Lecavalier & Tassé 2002). In fact, the scores on the Reiss Profile differ significantly between individuals with and without mental health problems. It should however be recalled that virtually no research has been conducted on the applicability of the sensitivity theory of motivation to Axis II personality disorders as per DSM-IV-TR (American Psychiatric Association 2000).

The only study of adults with ID and aggressive behaviours to have used the Reiss Profile reported a significant relationship between profile score and type of aggressive behaviour (Crocker *et al.* 2007). The observed differences appear to be congruent with the theory. Specifically, participants in the 'low aggressiveness' group exhibited significantly lower scores for all motivations (except morality) than individuals in more aggressive groups (e.g. high aggressiveness). The reverse was observed for the motivation for morality, which was higher in the 'low aggressiveness' group than in the other groups. Although personality was not the primary research focus of the study, the results suggest that aggressive behaviour may reflect different personality structures and, in keeping with the sensitivity theory of motivation, the presence of aberrant motivations (as measured by the Reiss Profile).

Objectives

The importance of better understanding the role of personality and motivations in the development of aggressive behaviours in individuals with ID is clearly apparent from an examination of the extant literature. Using Reiss' (1988) theory of personality, this study addresses three questions: (1) are there distinct personality profiles within populations of individuals with ID? (2) what types of aggressive behaviour are associated with different personality profiles? (3) what are the sociodemographic and clinical characteristics of each profile?

Method

This is a cross-sectional study of adult men and women with mild or moderate ID receiving services from three large agencies in the province of Québec, Canada, offering residential, socio-vocational programmes as well individual, family and community support. In order to have access to these services, individuals must have a diagnosis of ID determined by a psychologist through a full clinical assessment of both intellectual functioning and adaptive behaviour.

Selection and exclusion criteria

This research consists of secondary analyses of data collected in a larger study on factors associated with aggressive behaviour among individuals with ID (Crocker *et al.* 2007). Participants had to be between 18 and 65 years of age, receive services from an ID rehabilitation centre, have a diagnosis of mild or moderate ID, understand French or English; consent from the person or their representative (public or private trustee, tutor). In order to obtain a large enough sample of individuals displaying aggressive behaviour, half of the participants were randomly selected from a pool of individuals, whom in a previous survey (Crocker *et al.* 2006) had displayed no aggressive behaviour in the year preceding the survey, and the other half from a pool

of individuals who had displayed at least one type of aggressive behaviour in the 12 months prior to the survey. Given the objectives of the main study were focused on outward oriented aggression, participants whose only aggressive behaviour was self-mutilation were excluded.

Recruitment

Recruitment took place over an 18-month period between 2004 and 2005. Individuals with an ID (participants) were recruited through programme management advisors (case managers) practising in ID rehabilitation centres. Initial contact with case managers ($n = 173$) consisted of a letter explaining the study, followed by a telephone call from the study's research assistant concerning 458 of their clients. Following these calls, 68 participants did not meet inclusion criteria (see selection and inclusion criteria on page 6). Of the 390 remaining, case managers accepted participation in 90% of cases ($n = 360$). Of these, 298 (82.7%) participants with ID assented or consented to participate. We obtained complete data for 296 participants. Case managers had known their clients for a mean duration of 78 months (SD = 147), and 84.8% had more than 10 years of experience in the field of ID. Participants received financial compensation. Further information on the full methodology selection procedure can be found in Crocker *et al.* (2007).

The final sample comprised 134 women (45.3%) and 162 men (54.7%) and was sociodemographically representative of individuals with mild or moderate ID receiving services from ID rehabilitation centres in Québec (Canada). Most of participants was French-speaking (82.1%). The mean age was 40.67 years (SD = 12.21); the women were older than the men (M = 43.12, SD = 1.99 vs. M = 38.67, SD = 12.06; $t(283{,}91) = 3.16$, $P < 0.01$, adjusted for unequal variances). The distribution of ID severity did not differ in the two sexes: mild ID = 125 (42.2%), moderate ID = 171 (57.8%). On average, participants with mild ID were younger (M = 38.39, SD = 12.51) than participants with moderate ID (M = 42.01, SD = 11.84, $t(293) = -2.19$, $P < 0.05$). The distribution of living environment was: 172 (58.1%) in group homes, 76 (25.7%) with family and 48 (16.2%) in supervised apartments. The distribution of the living environments of the two sexes differed significantly, with a greater proportion of women living independently (20.1% vs. 13%) and a greater proportion of men living with their families (30.9% vs. 19.4%; $n = 296$, χ^2 (2) = 6.33, $P < 0.05$). As expected, independent living was more common among participants with mild ID than among those with moderate ID (30.5% vs. 5.8%, $n = 296$, χ^2 (2) = 32.91, $P < 0.001$). The clinical and sociodemographic characteristics of the sample were comparable to the reference population used to construct the French version of the Reiss Profile (Tassé *et al.* 2002).

Data collection

Research assistants were trained in the study's instruments, research procedures, and in the structured-interview process. They analysed each participant's chart and conducted two interviews, one with the participant, the other with the case manager. The French version of tests was a choice made based upon the participant's first language. This triangulation of information was used to maximise the validity of information gathered (Monahan *et al.* 2001).

Measures

Evaluation of personality traits

The Reiss Profile (Reiss & Havercamp 2001) is composed of 100 statements grouped into 15 factors and was derived from exploratory and confirmatory factorial analyses (Reiss & Havercamp 2001) to tap into to various personality traits. In the current study, it was completed during the interview with the case manager.

Of the 15 factors, seven are particularly relevant to the current study: Rejection, Attention, Help Others, Honour, Frustration, Pain and Vengeance (Crocker *et al.* 2007; Reiss 2011). Each item is scored on a five-point Likert scale ranging from *totally agree* to *totally disagree*. The translation and Québec adaptation Tassé *et al.* (2002) has good test–retest reliability, inter-rater agreement and factorial validity.

Assessment of aggressive behaviour

Aggressive behaviour was measured using the Modified Overt Aggression Scale (MOAS; Kay *et al.*

1988), which was completed during the interview with the case manager. This instrument focuses on four types of aggressive behaviour: verbal aggression, aggression towards others, aggressive behaviour towards objects and self-harm. This instrument is available in French (L'Abbé & Morrin 1999) and exhibits very good inter-observer reliability (Kay *et al.* 1988; Steinert *et al.* 2000). A fifth form of aggressive behaviour was added: sexually inappropriate behaviour. The severity of each type of aggressive behaviour was scored on a five-point Likert scale from *absent* (0) to *most severe level* (4). The MOAS has been shown to provide a reliable assessment of aggressive and challenging behaviour among adults with ID (Oliver *et al.* 2007).

Sociodemographic correlates

Sociodemographic characteristics (age, sex, type of living environment, type of socio-vocational activities, contact with family, contact with friends and history of institutionalisation) were extracted from the participants' charts and from interviews with the case managers.

Evaluation of clinical correlates

The clinical data were obtained from participants' charts [aetiology and level of ID, Axis I and Axis II psychiatric disorders as per DSM-IV-TR (American Psychiatric Association 2000)], from the Reiss Screen for Maladaptive Behaviour (RSMB; Reiss 1988), the Structured Clinical Interview for DSM-IV Antisocial Personality Disorder module (SCID-II; First *et al.* 1997; translated by M. Lapalme & S. Hodgins 1998, unpublished data), and the Barratt Impulsiveness Scale – 11 (BIS; Barratt 1994; Patton *et al.* 1995) completed during interviews with the case managers. The RSMB is an inventory of psychopathological symptoms and was developed for use with individuals with slight to moderate ID. This tool is different from that used to generate personality profiles (Reiss Profile). It comprises eight primary scales (psychosis, paranoia, physical depression, behavioural depression, dependence, avoidance, autism, aggressive behaviours) accounting for 36 items and 6 complementary scales for problematic behaviours (drug abuse, self-mutilation, suicidal tendencies, theft, inappropriate sexual behaviours, hyperactivity). Case managers were asked to determine whether a given behaviour was *not a problem* (0), *was a problem* (1) or *was a major problem* (2). A positive RSMB score is defined as a score on any sub-scale greater than the cut-off point for that sub-scale. More than 80% of the participants with a positive RSMB score exhibited a need for mental health care. The translation and Quebec adaptation (Lecavalier & Tassé 2001) has good internal consistency, global internal consistency and factorial validity.

Antisocial tendencies and a history of childhood conduct disorder were assessed using the French version of the SCID-II, a semi-structured diagnostic interview, comprising 22 questions scored from *absent* (1) to *threshold* (3), designed to evaluate Axis II personality disorders as per DSM-IV-TR (American Psychiatric Association 2000).

The BIS was used to assess three domains of impulsivity (ideo-motor, careful planning and a future orientated coping stability) from a 30-item Likert-type questionnaire. Each domain is measured as a continuous variable with higher scores indicating higher impulsiveness.

Ethical considerations

Consent forms describing the objectives and anticipated advantages and disadvantages of the study were completed and signed by the participants (or their legal guardians) and by the case managers who participated. The research protocol, the consent forms and the research procedure were approved by the research ethics committees of the Douglas Mental Health University Institute (Montréal, Canada) and the Université du Québec à Trois-Rivières (Trois-Rivières, Canada) where one of the study sites was affiliated as well as the Centre hospitalier de l'Université de Sherbrooke (Sherbrooke, Canada).

Statistical analyses

Cluster analysis comprises a range of methods for classifying multivariate data into subgroups (Everitt *et al.* 2011). One advantage of hierarchical approaches is that the hierarchical methods do not depend on specifying initial cluster centres in advance on each sub-scale (Hair *et al.* 1998) and assumes that each entity is a cluster and, using an

algorithm, combines clusters until all entities have been combined into one cluster. A hierarchical cluster analysis method was used to generate personality profiles from the results of the 15 Reiss Profile sub-scales from 296 participants. The results of the Reiss Profile correspond to *z* scores also no transformation was performed and statistical analyses were carried out on the basis of *z* scores. Ward's criterion was used for data aggregation, due its superior power compared with other methods (Morey *et al.* 1983) and its widespread use in psychological research. Euclidean distance was chosen as the measure of similarity for its performance when combined with Ward's method (D. Beaulieu-Prévost 2002, unpublished data) and its widespread use. This method was used to obtain a first solution and determine the optimal number of clusters to retain. However, this method is poorly suited to large samples. To address this limit, the K-Means method was used as an additional step to optimised the solution by reassigning subjects to different clusters.

To determine the number of clusters to be retained, the dendogram (aggregation tree) yielded from the hierarchical analysed was used. Then, a plot was drawn, where the elbow indicated the optimal number of clusters. Finally, the clusters were judged on their clinical interests.

Finally, inter-profile comparisons were performed. For type of aggressive behaviour, a chi-square test and Fisher's exact tests were used. For sociodemographic and clinical variables, a chi-square test was used for categorical variables and single-factor ANOVA was used for continuous variables.

Both hierarchical and univariate analyses were performed using SAS for Windows version 9.2 (SAS Institute Inc 2008). The CLUSTER procedure was used for Ward's hierarchical clustering method and FASTCLUSTER for K-Means clustering.

Results

Personality profiles

Cluster analysis yielded seven distinct personality profiles. The seven personality profiles' mean scores, standard deviations and ANOVA results for each of the 15 Reiss Profile sub-scales are presented in Table 1. The profiles identified were interpreted in light of the results (*z*-score standardised) on the various scales of the Reiss Profile, with special attention to scales sensitive to aggressive behaviour (Crocker *et al.* 2007; Reiss 2011) (Table 1).

Profile 1

This profile (19.2% of participants) is characterised by inadequate motivation on the vengeance (–1.04) and frustration (–1.01) scales, high motivation on the help others (0.91), honour (0.6) and curiosity (0.63) scales, and weak motivation on the order (–0.54), attention (–0.50), rejection (–0.56) and anxiety (–0.54) scales. This profile exhibits the strongest motivation on the honour and physical activity scales and the weakest motivation on the vengeance, food, pain and frustration scales. Participants in this profile have a strong tendency to avoid conflict and a very low sensitivity to frustration. They tend to conform to social norms and like to help others. Because of these characteristics, we termed them *Pacifists*.

Profile 2

This profile (16.5% of participants) is characterised by the absence of excessive or inadequate motivations and the presence of only one high motivation, for social contact (0.50). This profile comprises participants whose behaviour is most closely normative. Because they are characterised by a tendency to help others, members of this profile they were termed *Socials*.

Profile 3

This profile (15.2% of participants) is characterised by the absence of excessive, strong or inadequate motivations and weak motivation on the vengeance (–0.67), order (–0.78), independence (–0.82), curiosity (–0.62), attention (–0.72), honour (–0.50), physical activity (–0.65), rejection (–0.93) and frustration (–0.96) scales. It exhibits the lowest score on the independence, order, physical activity, sexual gratification, rejection and anxiety sub-scales. The members of this profile are relatively insensitive to frustration, readily accept criticism, dislike being the centre of attention, prefer to avoid confrontation and have little concern for notions of appropriate

Table 1 Means and SDs of Reiss sub-scales *z* scores by cluster: M (SD)†

	Clusters of participants							
	I *n* = 57	**II** *n* = 49	**III** *n* = 45	**IV** *n* = 43	**V** *n* = 47	**VI** *n* = 32	**VII** *n* = 23	**F6,289**
Helping others	0.91 (0.75)	0.12 (0.53)	−0.24 (0.55)	1.21 (0.63)	−0.21 (0.67)	0.71 (0.66)	−0.74 (0.51)	45.85***
Vengeance	−1.04 (0.51)	−0.01 (0.64)	−0.67 (0.73)	−0.48 (0.63)	−0.01 (0.64)	0.78 (0.69)	1.56 (0.75)	63.24***
Order	−0.54 (0.67)	−0.31 (0.78)	−0.78 (0.72)	−0.15 (0.77)	0.74 (0.64)	1.10 (0.62)	0.54 (0.96)	37.88***
Independence	0.22 (0.80)	0.30 (0.70)	−0.82 (0.50)	0.58 (0.79)	0.16 (0.77)	0.60 (0.80)	0.24 (1.02)	16.93***
Curiosity	0.63 (0.61)	0.47 (0.55)	−0.62 (0.59)	0.67 (0.68)	−0.50 (0.64)	0.42 (0.56)	−0.84 (0.70)	43.90***
Attention	−0.50 (0.78)	0.46 (0.63)	−0.72 (0.77)	0.29 (0.64)	−0.79 (0.57)	0.48 (0.70)	0.36 (0.70)	30.47***
Morality	0.60 (0.48)	−0.12 (0.63)	−0.50 (0.55)	0.53 (0.53)	0.02 (0.59)	0.01 (0.66)	−0.92 (0.65)	31.80***
Social contact	0.39 (0.59)	0.50 (0.71)	−0.36 (0.81)	0.79 (0.72)	−0.40 (0.73)	0.47 (0.63)	−0.55 (0.72)	22.70***
Physical activity	0.34 (0.64)	0.20 (0.87)	−0.65 (0.52)	0.20 (0.62)	−0.16 (0.76)	−0.03 (0.89)	−0.47 (0.78)	11.22***
Sexuality	−0.34 (0.59)	0.35 (0.84)	−0.36 (0.68)	0.67 (0.89)	−0.32 (0.76)	0.56 (0.81)	0.46 (1.02)	15.27***
Food	−0.42 (0.64)	0 (0.73)	−0.27 (0.78)	0.44 (0.89)	0 (0.71)	0.83 (0.76)	0.63 (0.87)	15.03***
Rejection	0.56 (0.54)	−0.07 (0.66)	−0.93 (0.65)	0.40 (0.64)	0.06 (0.73)	0.82 (0.50)	0.09 (0.57)	35.82***
Pain	−0.64 (0.68)	−0.15 (0.71)	−0.35 (0.74)	0.73 (0.90)	−0.33 (0.83)	0.61 (0.90)	−0.13 (0.84)	18.29***
Frustration	−1.01 (0.54)	0.14 (0.73)	−0.96 (0.67)	0.09 (0.61)	0.09 (0.73)	1 (0.47)	0.83 (0.56)	60.39***
Anxiety	−0.54 (0.64)	−0.40 (0.50)	−0.77 (0.60)	−0.20 (0.71)	0.21 (0.90)	0.68 (0.82)	0.06 (0.83)	19.12***

Profile I (Pacifists), Profile II (Socials), Profile III (Confidents), Profile IV (Altruists), Profile V (Conformists), Profile VI (Emotionals) and Profile VII (Asocials).

*** $P < 0.001$.

† The results of the Reiss Profile correspond to *z* scores, also no transformation was performed and statistical analyses were carried out on the basis of *z* scores.

behaviour. Because they are the least sensitive to rejection, they were termed *Confidents*.

Profile 4

This profile (14.5% of participants) is characterised by excessive motivation on the help others scale (1.21) and high motivation on the curiosity (0.67), honour (0.53), social contact (0.79), sexual gratification (0.67) and frustration (0.73) scales. It exhibits the highest scores on the help others, curiosity, social contact and sexual gratification scales. Members of this profile have a strong drive to help others, enjoy social situations, avoid aggressive situations and have some concern for notions of appropriate behaviour. Because of their interest in others, they were termed *Altruists*.

Profile 5

This profile (15.8% of participants) is characterised the absence of excessive or inadequate motivations, high motivation on the order scale (0.74) and low motivation on the attention (−0.79) and curiosity (−0.50) scales. It exhibits the lowest score on the attention scale. Members of this profile exhibit a marked predisposition to conformism, which is why they have been termed *Conformists*.

Profile 6

This profile (10.8% of participants) is characterised by excessive motivations on the order (1.10) and frustration (1) scales, and high motivation on the help others (0.71), vengeance (0.78), independence (0.60), sexual gratification (0.56), food (0.83), rejection (0.82), pain (0.61) and anxiety (0.68) scales. It exhibits the highest scores on the order, independence, attention, food, pain, frustration and anxiety scores. Members of this profile have a high tendency to avoid frustrating situations, have great difficulty coping with criticism and rejection, have difficulty managing anger/frustration and are highly irritable. They are relatively oriented towards others, as is evidenced by the need to help others.

Table 2 Aggressive behaviours by personality profiles (in %)

	Clusters of participants								
Aggressive behaviours	**Total**	**I**	**II**	**III**	**IV**	**V**	**VI**	**VII**	**Overall profile differences**
Verbal aggression (all types)	64.1	29.8	59.2	42.2	72.1	59.6	90.6	95.7	$n = 296$, χ^2 (6) = 54.39, $P < 0.0001$
Shouts	60.3	29.8	57.1	40.0	67.4	51.1	81.3	95.7	$n = 296$, χ^2 (6) = 46.08, $P < 0.0001$
Curses	40.0	15.8	36.7	17.8	51.2	42.6	78.1	87.0	$n = 296$, χ^2 (6) = 65.46, $P < 0.0001$
Impulsive threats	31.7	5.3	24.5	6.7	27.9	27.7	56.6	73.9	$n = 296$, χ^2 (6) = 63.77, $P < 0.0001$
Repeated threats	12.8	0	8.16	2.2	2.3	4.3	25.0	47.8	$n = 296$, FET: $P < 0.0001$
Aggression against property (all types)	47.0	17.5	44.9	26.7	34.9	55.3	71.9	78.3	$n = 296$, χ^2 (6) = 46.75, $P < 0.0001$
Slams door	39.8	14.0	36.7	20.0	27.9	46.8	59.4	73.9	$n = 296$, χ^2 (6) = 42.73, $P < 0.0001$
Kicks furniture	32.5	14.0	28.6	15.6	23.3	34.0	46.9	65.2	$n = 296$, χ^2 (6) = 31.21, $P < 0.0001$
Breaks objects	17.2	5.3	12.2	8.9	4.7	12.8	37.5	39.1	$n = 296$, χ^2 (6) = 34.24, $P < 0.0001$
Throws objects dangerously	8.7	0	4.1	4.4	9.3	8.5	12.5	21.7	$n = 296$, FET: $P = 0.0109$
Self-aggression (all types)	24.3	5.3	24.5	15.6	20.9	19.2	50.0	34.8	$n = 296$, χ^2 (6) = 27.95, $P < 0.0001$
Picks or scratches his skin	18	3.5	16.3	13.3	16.3	12.8	37.5	26.1	$n = 296$, χ^2 (6) = 20.09, $P = 0.0027$
Bangs head	11	1.8	10.2	4.4	7	8.5	18.8	26.1	$n = 296$, FET: $P = 0.0110$
Minor cuts	11.3	1.8	12.2	4.4	2.3	6.4	15.6	21.7	$n = 296$, FET: $P = 0.0129$
Major injury	1.8	0	0	2.3	0	0	6.3	4.4	$n = 296$, FET: $P = 0.0323$
Physical aggression (all types)	45.8	12.3	44.9	28.9	32.7	40.4	65.6	95.7	$n = 296$, χ^2 (6) = 60.55, $P < 0.0001$
Menacing gestures, grabs	38.1	10.5	36.7	20.0	20.9	34.0	53.1	91.3	$n = 296$, χ^2 (6) = 61.35, $P < 0.0001$
Strikes, kicks, pushes	28.6	5.3	28.6	17.8	32.6	25.5	46.9	43.5	$n = 296$, χ^2 (6) = 26.55, $P = 0.0002$
Mild injury	11.4	1.8	10.2	2.2	9.3	8.5	21.9	26.1	$n = 296$, FET: $P = 0.0024$
Serious injury	0	0	0	0	0	0	0	0	–
Sexual aggression (all types)	16.2	1.8	20.4	6.7	14	8.5	18.8	43.5	$n = 296$, χ^2 (6) = 29.97, $P < 0.0001$
Sexually threatening statements	8.1	1.8	6.1	0	7	4.3	15.6	21.7	$n = 296$, FET: $P = 0.0036$
Exposes genitals	7.9	3.5	8.2	6.7	9.3	2.1	12.5	13.0	$n = 296$, FET: $P = 0.3350$
Sexually touches others	7.3	0	12.2	2.2	2.3	6.4	6.3	21.7	$n = 296$, FET: $P = 0.0031$
Has coercive sexual activities	1.2	0	0	0	0	0	0	8.7	$n = 296$, FET: $P = 0.0058$

Profile I (Pacifists), Profile II (Socials), Profile III (Confidents), Profile IV (Altruists), Profile V (Conformists), Profile VI (Emotionals) and Profile VII (Asocials). For each type of aggressive behaviour (e.g. Verbal aggression), participants were able to present several subtypes of aggressive behaviour (e.g. Shouts, Curses . . .)
FET, Fisher's exact test.

Because of their emotional sensitivities, they have been termed *Emotionals*.

Profile 7

This profile (7.7% of participants) is characterised by excessive motivation on the vengeance (1.56) scale, high motivation on the order (0.54), food (0.63) and frustration (0.83) scales and low motivation on the help others (–0.74), curiosity (–0.74), honour (–0.92) and social contact (–0.55) scales. It exhibits the lowest scores on the help others, social contact, curiosity, honour scales and the highest scores on the vengeance scale. Members of this profile have significant difficulty coping with negative emotions (anger, frustration), have low motivation for notions of appropriate behaviour and for helping others, and are highly irritable. Because of these characteristics, they were termed *Asocials*.

Validity of profiles

The seven profiles were entered into a series of univariate analyses in order to determine any significant relationship between profile membership and aggressive behaviour, sociodemographic characteristics and clinical correlates. Tables 2–5 confirmed that the seven profiles are significantly different on the majority of these variables.

Table 3 Sociodemographic characteristics (in %)

	Clusters of participants							
	I	II	II	IV	V	VI	VII	Overall profile differences
Age								
Mean	39.3	38.1	40.4	39	45.6	41.6	42	$n = 296$, $F_{6,288} = 1.98$, $P = 0.68$
SD	11.9	12.0	13.5	12.1	11.1	12.3	12.2	
Gender								
Female	43.9	40.8	40.0	55.8	34.0	53.1	60.9	$n = 296$, χ^2 (6) = 8.32, $P < 0.216$
Male	56.1	59.2	60.0	44.2	66.0	46.9	39.1	
Residential setting								
Apartment	21	13.3	13.9	22.5	10.9	25	9.1	$n = 296$, χ^2 (18) = 35.14, $P < 0.009$
Family	36.8	26.7	32.6	25	26.1	12.5	13.6	
Group home	22.8	44.4	34.9	40	50	37.5	22.7	
Res. Interm	19.3	15.6	18.6	12.5	13	25	54.6	
Contact with family								
Yes	96.5	79.6	91.1	93	78.7	87.5	82.6	$n = 296$, χ^2 (18) = 8.04, $P < 0.235$
No	3.5	16.3	8.9	7	14.9	12.5	17.4	
Contact with friends								
Yes	80.7	57.1	48.9	76.7	44.7	59.4	47.8	$n = 296$, χ^2 (6) = 26.87, $P < 0.0001$
No	15.8	40.8	42.2	14	48.9	40.6	52.2	
Socio-vocational activities								
Yes	64.9	81.6	86.7	69.8	88.9	62.5	65.2	$n = 294$, χ^2 (6) = 16.68, $P < 0.011$
No	35.1	18.4	13.3	30.2	11.1	37.5	34.8	

Profile I (Pacifists), Profile II (Socials), Profile III (Confidents), Profile IV (Altruists), Profile V (Conformists), Profile VI (Emotionals) and Profile VII (Asocials).

Table 4 Characteristics related to intellectual disability (in %)

	Clusters of participants							
	I	II	III	IV	V	VI	VII	Overall profile differences
Level of ID								
Mild	52.6	36.7	40.0	55.8	29.8	43.8	30.4	$n = 296$, χ^2 (6) = 10.80, $P < 0.095$
Moderate	47.4	63.3	60.0	44.2	70.2	56.3	69.6	
Ever institutionalised	17.5	28.6	31.1	9.3	29.8	40.6	69.6	$n = 296$, χ^2 (6) = 32.76, $P < 0.0001$

Profile I (Pacifists), Profile II (Socials), Profile III (Confidents), Profile IV (Altruists), Profile V (Conformists), Profile VI (Emotionals) and Profile VII (Asocials).

Correlates of personality profiles

Frequency of aggressive behaviour

The MOAS results of the members of the seven profiles were compared, in order to estimate the frequency and types of aggressive behaviour over the last 12 months (Table 2). The total column lists the mean percentage obtained by the entire sample on each item on the MOAS and provides a baseline for comparison of the various profiles. Significant differences were observed for almost all the sub-scales. In our sample, the most common aggressive

Table 5 Mental health characteristics (in %)

	Clusters of participants							
	I	**II**	**III**	**IV**	**V**	**VI**	**VII**	**Overall profile differences**
Psychiatric diagnosis								
Yes	8.8	20.4	15.5	23.3	23.4	31.3	56.5	$n = 296$, χ^2 (6) = 29.32, $P < 0.0001$
No	89.5	77.6	84.4	76.7	70.2	65.6	30.4	
Axe I diagnosis								
Psychosis	3.5	4.1	4.4	7	4.3	9.4	4.5	$n = 296$, FET: $P < 0.919$
Mood disorder	3.5	10.2	4.4	9.3	10.9	9.4	27.3	$n = 296$, FET: $P < 0.086$
Anxiety disorder	1.8	10.2	8.9	14	13	15.6	27.2	$n = 296$, FET: $P < 0.035$
Trouble organique	0	2.1	0	0	0	0	0	$n = 296$, FET: $P < 0.805$
Substance abuse	1.8	0	0	0	0	0	4.5	$n = 296$, FET: $P < 0.251$
Others	1.8	8.2	2.2	0	6.5	12.5	22.7	$n = 296$, FET: $P < 0.004$
Axe II diagnosis								
Personality disorder	1.8	6.1	0	7	4.3	0	9.1	$n = 296$, FET: $P < 0.215$
SCID-II interview								
Conduct disorder	7.1	10	5	10.5	5.6	22.2	50	$n = 118$, FET: $P < 0.197$
Antisocial behaviour	1.8	12.5	6.7	9.3	2.2	3.1	26.1	$n = 293$, FET: $P < 0.0001$
Antisocial personality	0	5.3	5	5.3	0	22.2	25	$n = 292$, FET: $P < 0.044$
Reiss screen: positive score								
Aggressive	3.5	20.4	2.2	7	14.9	50	56.5	$n = 296$, χ^2 (6) = 66.27, $P = 0.0001$
Autism	0	2	0	0	0	9.4	8.7	$n = 296$, FET: $P = 0.003$
Psychosis	1.8	2	0	0	2.1	15.6	26.1	$n = 296$, FET: $P = 0.0001$
Paranoia	0	4.1	0	4.7	4.3	21.9	21.7	$n = 296$, FET: $P = 0.0001$
Depression-behavioural	0	4.1	0	9.3	4.3	18.8	21.7	$n = 296$, FET: $P = 0.0001$
Depression-physical	2.2	6.1	4.4	11.6	4.3	3.1	34.8	$n = 296$, FET: $P = 0.0001$
Dependent personality	0	2.2	0	4.7	2.1	37.5	30.4	$n = 296$, FET: $P = 0.0001$
Avoidant	0	4.1	4.4	2.3	8.5	12.5	21.7	$n = 296$, FET: $P = 0.005$
Total score	7	42.9	13.3	37.2	42.6	87.5	95.7	$n = 296$, χ^2 (6) = 99.74, $P = 0.0001$
Other maladaptive behaviours								
Complementary Reiss screen								
Drug abuse	0	2.2	0	0	0	0	8.7	$n = 296$, FET: $P = 0.020$
Overactive	0	6.1	0	0	0	3.1	4.3	$n = 296$, FET: $P = 0.047$
Self-injury	0	6.1	0	2.3	0	9.4	4.3	$n = 296$, FET: $P = 0.026$
Sexual problem	0	2	2.2	4.7	0	0	13	$n = 296$, FET: $P = 0.017$
Stealing	0	4.1	2.2	4.7	2.1	9.4	17.4	$n = 296$, FET: $P = 0.019$
Suicidal	0	0	0	0	0	0	0	–
Barratt Impulsivity Scale (total score)								
Mean	60	71.1	68.9	69.4	68.3	75.5	79.4	$n = 296$, $F_{6,289} = 13.39$, $P = 0.0001$
SD	10.5	10.5	8.9	11.4	10.3	9.9	11	

Profile I (Pacifists), Profile II (Socials), Profile III (Confidents), Profile IV (Altruists), Profile V (Conformists), Profile VI (Emotionals) and Profile VII (Asocials). When values was low FET was used rather than χ^2.

χ^2, chi-square; SD, standard deviation; FET, Fisher's exact test; SCID-II, Structured Clinical Interview for DSM-IV Antisocial Personality Disorder module.

behaviour was verbal aggression (64.1%) and the least common was inappropriate sexual behaviour (16.2%). Aggressive behaviour towards objects, physical aggression towards others and self-harm were observed in 47.1%, 45.8% and 24.3% of participants respectively. Pacifists exhibited a low prevalence of aggressive behaviour and below-average scores on all the MOAS sub-scales. Asocials exhib-

ited a very high prevalence of aggressive behaviours (69.6%) and above-average scores on all the MOAS sub-scales. One quarter of Confidents and Altruists exhibited aggressive behaviours. However, no Confident had an above-average score and only Altruists scored above average for verbal aggression (72.1%). Slightly more than one-third of Conformists and Socials exhibited aggressive behaviours. More than half of Conformists exhibited above-average scores for verbal aggression (59.6%) and aggressive behaviour towards objects (55.3%). One quarter of Socials scored above average for self-harm (24.5%) and inappropriate sexual behaviours (20.4%). Emotionals exhibited a high prevalence of aggressive behaviours, as more than half exhibiting this type of behaviour (59.4%). Emotionals also obtained above-average scores on the MOAS sub-scales and exhibited the highest prevalence of self-harming behaviour (50%).

Severity of aggressive behaviours

The severity of aggressive behaviours was analysed in terms of two qualitative indicators: MOAS sub-scale scores that were above average and scores that were greater than 3 (Bobes *et al*. 2009). In the vast majority of participants, the severity of behaviours was inversely proportional to frequency (i.e. the most severe behaviours were the least frequent). Asocials exhibited the highest prevalence of serious (Level 4) verbal (47.8%), property (21.7%) and inappropriate sexual behaviours (8.7%). Additionally, their moderate score (Level 3) for aggression towards others was the highest observed (26.1%). Although this profile did not exhibit the highest prevalence of serious self-mutilation, 4.4% of them did exhibit serious self-harm. No below-average MOAS sub-scale scores were observed. The scores of Emotionals were similar to, although lower than, those of Asocials. They exhibited serious verbal (Level 4) aggression (25%) and aggressive behaviour towards property (12.5%). They exhibited moderate (Level 3) aggressive behaviour towards others (21.9%) and inappropriate sexual behaviour (6.3%). Emotionals exhibited the highest prevalence of severe self-harm (6.25%). Altruists exhibited severe aggressive behaviour towards property (9.3%) and moderate physical aggressive behaviour towards others (32.6%). They obtained above-average scores for Level 1 (67.4%) and Level 2 (51.2%) verbal aggression. Socials obtained above-average scores for Level 3 self-mutilation (12.2%). Conformists exhibited no violent behaviour. However, they obtained above-average scores for Level 2 verbal aggression (42.6%) and Level 1 (46.8%) and Level 2 (34%) property aggression. Confidents obtained a single above-average score, for Level 4 self-mutilation; the prevalence of such behaviour was however low (2.3%). Pacifists obtained no above-average scores and fewer than 5% exhibited violent (level 3 or 4) behaviour.

Sociodemographic characteristics associated with the profiles

The sociodemographic characteristics of the profiles are presented in Table 3. As can be seen, significant differences existed with regard to most of the sociodemographic variables, specifically living environment, contact with friends and socio-vocational activities.

Living environment

A high proportion of Pacifists (21%), Altruists (22.5%) and Emotionals (25%) lived in apartments; for Socials, Confidents and Conformists the proportions were 13.3%, 13.9% and 10.9% respectively. Asocials were the least likely to live in an apartment (9.1%) and the most likely to live in a group residence intermediate resource (54.6%). Pacifists (40.8%) were most likely to live with their families and Emotionals (12.5%) and Asocials (13.0%) the least likely. Conformists and Socials were the most likely to live in a group residence intermediate resource and Pacifists and Asocials the least likely.

Contact with friends

Pacifists had the most regular contact with friends (80.7%), followed by Altruists (76.7%). Less than half the Conformists (44.7%), Asocials (47.8%) and Confidents (48.9%) had regular contact. Slightly more than half the Socials (57.1%) and Emotionals (59.4%) had regular contact.

Socio-vocational activities

Conformists had the highest participation rate in socio-vocational activities (88.9%), followed closely

by Confidents (86.7%) and Socials (81.6%). More than half the Altruists (69.8%), Asocials (65.2%), Pacifists (64.9%) and Emotionals (62.5%) participated in socio-vocational activities.

Characteristics related to ID

A comparison of the clinical features of the profiles is present in Table 4. No significant differences were observed for the level of ID and protective supervision across the profiles. Significant differences were however observed for history of institutionalisation.

History of institutionalisation

A high proportion of Asocials had a history of institutionalisation; the proportion among Emotionals was only slightly lower, with almost half having been institutionalised. A significant proportion (more than one quarter) of Socials, Conformists and Confidents had been institutionalised. A low proportion of Altruists and Pacifists had been institutionalised.

Mental health characteristics

Significant inter-profile differences were only observed for two of the eight mental health variables studied (Table 5).

Prevalence of mental health problems

Less than one quarter of Pacifists (8.8%), Confidents (15.5%), Socials (20.4%), Altruists (23.3%) and Conformists (23.4%) had been diagnosed with a mental health problem. Almost half the Asocials and almost one-third the Emotionals had been diagnosed with a mental health problem.

Type of mental health problem

Significant inter-profile differences were observed for two mental health problems. Asocials exhibited the highest prevalence of 'anxiety disorder' and 'others mental health' (almost one quarter of participants with these diagnosis). Conversely, a very low proportion of Pacifists exhibited these disorders. Few of the participants in other profiles exhibited these disorders. No significant inter-profile differences were observed for personality disorders.

Reiss screen

To better characterise the mental-health factors associated with the profiles, the Reiss Screen scores were compared. Significant inter-profile differences were observed for all sub-scales (Table 5). Pacifists obtained the fewest positive total scores (7%) and Emotionals (87.5%) and Asocials (95.7%) the most. Confidents obtained 13.3% of the positive total scores, followed by Altruists (37.2%), Conformists (42.6%) and Socials (42.9%). Asocials and Emotionals obtained positive scores on all sub-scales – in fact, the highest scores among all participants – except physical depression, on which Emotionals obtained below-average scores. Socials and Confidents obtained no positive scores on the autism, paranoia, behavioural depression and dependent personality scales and the fewest positive scores overall.

Conduct disorder

In many cases, the presence of conduct disorders could not be evaluated because the respondent did not know the participant when the latter was younger than 15. A very high proportion of Asocials and almost one quarter of Emotionals had a history of childhood conduct disorders.

Antisocial personality disorder

Almost one quarter of Asocials and Emotionals exhibited diagnostic criteria for antisocial personality disorder (SCID-II). Conversely, no Pacifists and Conformists exhibited these diagnostic criteria. A low proportion of members of the other profiles exhibited such criteria.

Other behaviours

Complementary Reiss screen

The results obtained on the complementary Reiss screen are presented in Table 5. Significant inter-profile differences were observed for drug abuse, hyperactivity, self-harm, inappropriate sexual behaviour and theft. No participants had attempted suicide. Asocials exhibited the highest prevalence of drug abuse (8.7%), inappropriate sexual behaviours (13%) and theft (17.4%). Socials exhibited the most hyperactivity, followed by Asocials (4.3%) and

Emotionals (3.1%). Emotionals exhibited the highest prevalence of self-mutilation (9.4%), followed by Socials (6.1%), Asocials (4.3%) and Altruists (2.3%). Pacifists exhibited no problematic behaviours.

Impulsiveness

The results obtained on the BIS are presented in Table 5. Significant inter-profile differences were observed for the total score. Asocials obtained the highest impulsivity score, followed closely by Emotionals. Pacifists obtained the lowest scores. The other profiles obtained intermediary scores.

Discussion

The goal of this study was to shed light on the role of personality in aggressive behaviour in a sample of participants who have mild or moderate ID and who live in the community. This study appears to be the first to have taken a dimensional approach to the characterisation of personality profiles in individuals with ID.

Evaluation of personality

The first phase of the study confirmed the existence of distinct personality profiles: (1) Pacifists exhibited a significant tendency to avoid conflict and comply with social norms and very low sensitivity to frustration; (2) Confidents were quite open to criticism, avoided conflict and exhibited low sensitivity to frustration; (3) Conformists were highly conformist; (4) Socials were highly driven to help others; (5) Altruists were also highly driven to help others, but also avoided aggressive situations and were somewhat concerned by notions of appropriate behaviour; (6) Emotionals had a high tendency to avoid frustrating situations, significant difficulty coping with criticism and rejection and difficulty managing anger and frustration; and finally (7) Asocials had significant difficulty managing negative emotions (anger, frustration), were highly irritable and had low motivation for notions of appropriate behaviour and for helping others.

Pattern of aggressive behaviours by personality profiles

The second phase of the study confirmed the influence of personality traits on the development of aggressive behaviours. These findings are consistent with earlier studies in general population (Bettencourt *et al.* 2006). Thus, of the seven personality profiles exhibiting significant differences in the expression of aggressive behaviours. Pacifists, Confidents and Conformists exhibited a low tendency to aggression. The features of the Asocials profile are consistent with those reported by Smith *et al.* (1996).

Sociodemographic and clinical characteristics

The third phase of the study identified sociodemographic and clinical characteristics associated with the personality profiles. It should be noted that in most cases, the distribution of the variables mirrored the distribution of aggressive behaviours. Thus, Pacifists, Emotionals and Asocials were clearly different from the other profiles in terms of both sociodemographic and clinical variables. Pacifists exhibited the least problematic sociodemographic and clinical profiles. Emotionals and Asocials exhibited slight differences with regard to autonomy, social life and problematic behaviours other than aggressive behaviour.

These two clusters, were the most problematic profiles and merit special attention. In addition to the personality traits described above (e.g. high sensitivity to situations of rejection, significant difficulty managing emotions), Emotionals exhibit many similarities – such as self-mutilation, impulsivity and emotional lability – with individuals with both ID and borderline personality disorder (Mavromatis 2000). Whereas, Asocials exhibit personality traits (e.g. low morality, low helps others, high vengeance) and many similarities – such impulsivity, high aggressiveness – consistent with antisocial personality disorder as described in the DSM-IV-TR (American Psychiatric Association 2000).

Their personality profiles and correlates analysis related to categorical models of personality as DSM-IV-TR (American Psychiatric Association 2000) may be helpful indicators by professionals involved in the diagnosis of personality disorders in persons with ID. Thus, the emotionals' profile and correlates are congruent with seven of the nine criteria of borderline personality disorder (DSM-IV-TR): Criterion 1 – high sensibility to rejection as measured by rejection sub-scale/Reiss Profile; Crite-

rion 4 – high impulsivity as measured by BIS, eating sub-scale/Reiss Profile, drug abuse sub-scale/Reiss Screen and sexually inappropriate behaviour sub-scale/MOAS; Criterion 5 – self-mutilation as measured by self-mutilation and suicidal tendencies sub-scales/Reiss Screen and self-mutilation sub-scale/MOAS; Criterion 6 – affective instability due to marked reactivity of mood as measured by avoidant and depression sub-scales/Reiss Screen; Criterion 8 – aggressiveness and frustration as measured by aggressive behaviours sub-scale/Reiss Screen, frustration sub-scale/Reiss Profile; and Criterion 9 – paranoid ideation and dissociative symptoms as measured by paranoia and psychosis sub-scales/Reiss Screen. Asocials' profile and correlates are congruent with six of the seven criteria of antisocial personality disorder (DSM-IV-TR): Criterion 1 – present low interest for morality as measured by honour sub-scale/Reiss Profile, drug abuse and theft sub-scales/Reiss screen; Criterion 2 – deceitfulness as measured by morality sub-scale/Reiss Profile; Criterion 3 – high level of impulsivity as measured by BIS; Criterion 4 – high level of aggressivity as measured by MOAS; Criterion 5 – disregard for other as measured by help others sub-scale Reiss Profile; Criterion 7 – low remorse and high vengeance motives as measured by vengeance and help others sub-scales Reiss Profile. Similar findings were also noted by Soenen *et al.* (2009) using a cluster analysis to define subgroups among individuals with ID. Likewise, they identified participants with Borderline and Antisocial personality characteristics. Their associated aggressive behaviour characteristics are consistent with Naik *et al.* (2002). Their results indicated that personality disorders in individuals with ID are associated with chronic and persistent behavioural problems such as impulsivity, self-mutilation, aggression, sensitivity to rejection, a tendency to unrepentant violence, lying and other irresponsible behaviours. Moreover, it was reported (Tsiouris *et al.* 2011) that personality disorders in individuals with ID are associated with specific aggressive behaviours, similar to that was observed in this study. At last, these results confirm that Cluster B personality disorders are most common (Tenneij & Koot 2006). Their associated sociodemographic and clinical characteristics are partially congruent with the literature. Both exhibit low residential autonomy, with most living in group homes, which is consistent with the literature on the undesirable effects of personality disorders on residential (Reid & Ballinger 1987) and supervisory style (Hurley & Sovner 1995; Mavromatis 2000; Wilson 2001). It is recognised that psychiatric referral rates are higher in individuals with both ID and a personality disorder (Khan *et al.* 1997) and that the presence of a personality disorder is a predictor of future psychiatric problems (Goldberg *et al.* 1995) or comorbid psychiatric disorders (Naik *et al.* 2002; Lidher *et al.* 2005). Similar results were observed in this study, as Emotionals and Asocials, exhibit the highest prevalence of mental health problems. In contrast to the findings of Tsakanikos *et al.* (2006) in ID population and Samuels *et al.* (2002), in general population, the difference in men and women with personality disorders was not significant. Findings relating to ID level cannot be compared with the work of Tsiouris *et al.* (2011), indeed no significant difference was found.

Limitations

A certain number of caveats must be taken into account when interpreting and extrapolating the results of this study. First, although this study demonstrated the influence of a number of personality traits on aggressive behaviour in individuals with ID, it should be borne in mind that the participants all were receiving psychosocial rehabilitation services and individuals who displayed only self-aggression were excluded from the sample pool. The results are thus not representative of all individuals with ID. Second, respondents were only questioned about aggressive behaviours over the last year, which may have resulted in recall bias. Third, aggressive behaviours and impulsivity has been shown to be common in people with ID (Hurley & Sovner 1995; Mavromatis 2000). These are not specifics to personality disorders and have been shown related to mental health (e.g. bipolar disorder, Tsiouris *et al.* 2011) or environment (Matson *et al.* 2011). Fourth, Lecavalier and Havercamp (2004) have shown some variability in the inter-rater reliability of the 15 sub-scales of the Reiss Profile. In our study, only one case manager filled out the Reiss Profile with the interviewer. Fifth, pharmacological and behavioural interventions are common in individuals with intellectual ID and aggressive

behaviour. These can represent confounding factors that were not taken into account in these analyses.

Strengths

Notwithstanding these limitations, this the first study of its kind using a large sample size representative of adults with mild or moderate ID receiving rehabilitation services. In addition to shedding new light on the personality of individuals with ID, it used an innovative approach to studying the personality–aggression relation by adapting a dimensional model of personality to the study of individuals with ID. Furthermore, the pattern of association reported should be helpful indicators by professionals involved in the diagnosis of personality disorders in individuals with ID.

Conclusion

This study makes a contribution to the understanding of aggressive behaviours in individuals with ID. The results corroborate those obtained in the general population and among individuals with a severe mental illness on the role of personality in the development of aggressive behaviours. From a clinical perspective, it highlights the importance of evaluating personality in individuals with ID who exhibit aggressive behaviours and the relevance to develop the links between categorical and dimensional models of personality.

Future research

Future studies should be carried out in order to improve knowledge and use of Reiss Profile among ID population with specific personality disorder as described by DSM-IV-TR (American Psychiatric Association 2000). Replication studies should be conducted to verify how robust and generalisable these profiles and their correlates are.

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