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Intellectual disability and psychopathology: The influence of institutionalization and level of intellectual disability and the relation between psychopathological problems and social and functional abilities

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Abstract: Research has been paying increasing attention to the psychopathological problems and psychiatric disorders in intellectual disability (ID). Psychiatric problems are most often observed in individuals with mild to moderate ID and self destructive and autistic-type behaviors are more frequent in individuals with severe ID. Moreover, persons living in institutions show a greater degree of aggressiveness, as well as destructive and self-destructive behaviors. To test the psychopathological problems of individuals with different levels of ID, either institutionalized or living with their family, we asked the health and social care workers responsible for the daily care of our participants to evaluate their psychopathological problems. Secondly, to check whether the dual diagnosis was a clear indicator of psychiatric suffering, we made a comparison between the evaluations of psychopathological problems of a sub- group with dual diagnosis, the evaluations of a sub-group without dual diagnosis, and those of a group of psychiatric patients. Lastly, the daily functioning abilities and social abilities of a further subgroup were evaluated, and the predictive ability of these characteristics with regard to psychopathological problems was verified. The results suggest that emotional problems were more pronounced in mild ID, behavior problems were more evident in severe ID, and individuals living in institutions had more psychopathological problems than other subjects. Secondly, the participants with dual diagnosis suffered from psychopathological problems quite similar to those characterizing participants with psychiatric problems, without, however, a complete overlap of problem type. Lastly, both social abilities and abilities associated with managing daily life were related to psychopathological problems.

Keywords: psychopathological problems, dual diagnosis, intellectual disability, daily functioning

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INTRODUCTION

The psychopathological problems and psychiatric disorders of persons with intellectual disability (ID) have been documented by an ever growing number of studies (1-2). Since the first research conducted in the 1970s, it has become evident how psychopathological problems and psychiatric disorders are more frequent in ID than they are in the rest of the population, reaching levels that range from 10% to 40% (3-4). Inverson and Fox (5) reported a psychiatric comorbidity of 36% in a group of 165 intellectually disabled adults. In another study, Rojahn et al (6) investigated the incidence of these types of problems in intellectually disabled individuals of varying ages and observed aggressive behavior in 11% to 12% of their participants and self destructive behaviors in 8%. Similarly, Salvador Carulla et al (7) examined persons with ID and found that 32% of them suffered from such diverse problems as psychotic disorders, mood disorders, and adjustment and anxiety disorders.

An interesting outcome emerging from this body of research is that psychiatric problems like conduct disorders, depressive type mood disorders, anxiety and obsessive compulsive disorders, and attention deficits are most often observed in individuals with mild to moderate intellectual disability (8). Conversely, hyperkinesia, self-destructive behaviors, and autistic type behaviors are more frequent in individuals with severe intellectual disability (9). Jacobson (10) and Borthwick-Duffy (11) also observed that the frequency of aggressive, destructive, and self destructive behaviors is higher in individuals with severe intellectual deficit. Thus, mildly intellectually disabled persons apparently run a greater risk of psychopathological problems, whereas behavior problems can be observed much more frequently in individuals with moderate to severe intellectual disability (12). The results of these studies, however, must be treated with caution because people with poor intellectual abilities and linguistic problems

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frequently do not often receive psychiatric diagnosis, and when they do, the diagnosis is not always accurate (13-14). Deb et al (15) showed that of the 101 participants examined in their study, 14.4% had received psychiatric diagnoses according to ICD10 criteria: 4.4% were suffering from schizophrenia, 2.2% from depressive disorders, 4.4% from phobic disorders, and another 1% were experiencing other types of problems. The authors maintained that if psychiatric problems similarly afflict intellectually disabled individuals as they do the normal population, then also true is that schizophrenia and phobic disorders, in particular, are more common in the intellectually disabled. The same authors also pointed out that at least 61 of their participants (60.4%) showed rather severe or frequent behavior problems, and that this datum was related not only to the participants' medication but also to their residence in 'family homes' vs. with their own families (16).

Indeed, interesting differences can be observed between the institutionalized and non institutionalized disabled persons. Borthwick-Duffy and Eyman (17) clearly demonstrated how disabled persons living in institutions show greater degrees of aggressiveness, as well as destructive and self-destructive behaviors. Costello (18) found that whereas institutionalized persons typically resort more frequently to maladaptive behaviors, such as self-injury and self-stimulation, those living at home with their families show more problems associated with anxiety and depression.

Nevertheless, the reasons why the intellectually disabled persons present such a high psychopathological risk are not yet clear; various explanations concerning the interaction with intellectual disability and psychiatric dysfunction (a situation known as 'dual diagnosis') have been proposed. Most likely, intellectual deficit, in conjunction with adaptive and social problems, can make these people more vulnerable, increasing the likelihood that they will experience stress, fear, and a sensation of having little or no control over events (19). In fact, Nezu et al (3) maintained that intellectually disabled persons were more at risk for what Seligman (20) described as 'learned helplessness', which contributes to the development of psychopathological problems. Baumeister et al (21) underscored how the interaction of environmental, social, and cognitive factors can predispose these individuals to chronic emotional problems. Matson and Sevin (22) provided the most comprehensive explanation by proposing the *biopsychosocial theory* of dual diagnosis. According to this theory, psychopathology is caused by a conjunction of factors, such as limited cognitive, adaptive, social, and linguistic abilities, organic problems, neurologic and genetic anomalies, epilepsy, biochemical and sensorial damage, atypical learning patterns, such as learned helplessness, abnormal personality styles, psychosocial stressors, and social stigmatization.

Based on what we found in the literature, the aim of this work was to contribute to studying in depth the relation that may exist between the degree of disability, type of residence, and psychopathological symptoms.

First of all, we wanted to check whether people with mild to moderate intellectual disability suffered from emotional problems (isolation, irritability, and mood swings) more often than severely disabled persons and, conversely, if the severely disabled were characterized by greater behavioral and communication problems (12). We nonetheless expected to observe these various problems to a greater degree in individuals living in rehabilitative institutions.

Secondly, we investigated dual diagnosis and the actual potential of this medical process to describe individuals at greater risk. If dual diagnosis were a clear indicator of psychiatric suffering, one could expect that health care and social workers, who know their intellectually disabled patients personally, would report as many and as severe psychopathological problems as would health care and social workers for patients with exclusively psychiatric diagnosis (without intellectual disability). More precisely, we expected that individuals with intellectual disability and dual diagnosis would manifest greater psychopathological problems than those observed in intellectually disabled persons without a dual diagnosis, very similar to those of people with psychiatric problems.

Lastly, based on Matson and Sevin's (22) suggestions, we aimed at verifying the role of daily functioning abilities and social abilities in predicting psychopathological symptoms in intellectually disabled persons.

METHODS

Participants

Verifying the first hypothesis involved 430 intellectually disabled persons: 262 males (60.9%) and 168 females (39.1%). The subjects were selected in accordance with the following criteria: (a) having intellectual disability as the main diagnosis; and (b) having been with the Service for at least a year. Based on the IQ evaluation recorded in the medical papers, 88 subjects had mild intellectual disability (20.4%), 263 moderate (61.2%), and 79 severe intellectual disability (18.4%). The mean age of the

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participants was 35.15 years (SD = 12.35). One hundred and four of the participants (24.2%) were living in a rehabilitative institution, whereas 326 (the remaining 75.8%) lived with their own families and attended occupational therapy and social educational centers.

To verify the second hypothesis, we selected 103 participants (70% males, 30% females), based on reports drafted by the psychologists of the Centers and of the Relational and Behavior Services that could point to the presence of psychopathological disorders. These persons underwent psychiatric assessment. The following analyses concern 100 of the 103 subjects, as 3 subjects had moved to other services.

The psychiatric assessment of the 100 subjects revealed psychiatric problems for 47 (dual diagnosis participants). Of the 100 screened participants, 17 had mild, 45 had moderate, and 38 had severe intellectual disability; among those who had dual diagnosis, 7 were mildly intellectually disabled, 21 moderately, and 19 severely; among those without dual diagnosis, 10 had mild, 24 had moderate, and 19 had severe intellectual disability.

Continuing to verify the second hypothesis, a further group of 52 participants was involved in the study: 36 males and 16 females, all residing in psychiatric wards, with a mean age of 61.71 (SD = 11.00). Of these, 35 suffered from schizophrenia, 10 had personality disorders, and 7 had been diagnosed with psychotic disorders.

Lastly, regarding the third hypothesis, 248 (138 males, 110 females) of the 430 participants were assessed for daily functioning and social abilities: 58 had mild intellectual disability, 173 moderate, and 17 severe intellectual disability.

Measures

The FBF Schedule Psychopathology Evaluation Scale for Adults with Mental Retardation was used to analyze psychopathological problems (23). The scale is designed to analyze psychopathological problems in mentally retarded adults, based on the most recent research on the topic and according to ICD-10 and DSM-IV classifications. The measure consists of 34 items describing maladaptive behavior and psychopathological problems. Healthcare and social workers are required to indicate to what extent the items described the disabled individual on a 7-point Likert type scale, where 1 corresponds to "not at all" and 7 to "perfectly". Exploratory and confirmatory factor analyses supported a 7-factor structure, accounting for 56.10% of the total variance (23). The first subscale measures Isolation and emotional inexpressiveness (five items; e.g., "*Has inexpressive facial expression*"; "*Prefers to stay by him/herself*", with a possible score range of 5 to 35; $\alpha = .71$). The second subscale measures Irritability, moodiness, low tolerance to frustration (10 items; e.g., "*Cannot stand failures and setbacks*"; "*Considers others hostile and aggressive towards him/her*", with a possible score range of 10 to 70; $\alpha = .79$). The third subscale measures Difficulties in verbal communication (four items; e.g., "*Expresses him/herself in language lacking logical connections*", or "*Has trouble concentrating*"; possible scores range from 4 to 28; $\alpha = .70$). The fourth subscale measures Difficulty in keeping eye contact in inter-personal relationships (3 items; e.g., "*Tends to lower his/her eyes when addressing others*"; possible scores range from 3 to 21; $\alpha = .81$). The fifth subscale measures Lack of appetite (2 items; e.g., "*Is never very hungry*", with a possible score range from 2 to 14; $\alpha = .84$). The sixth subscale measures Slovenliness (2 items; e.g., "*Gives little importance to his/her appearance*"; possible scores range from 2 to 14; $\alpha = .78$). The seventh and last subscale measures Apathy and psycho-motor decline (six items; e.g., "*Very slow in everyday activities*"; "*Often tired and without energy*", with a possible score range from 6 to 42; $\alpha = .79$). The corresponding reliability estimates for the present study were, respectively, .70, .78, .70, .81, .83, .77, and .78.

In the instrument validation procedure, albeit sharing Floyd and Widamam's (24) assertions that at least three items should be considered for each factor, we nonetheless decided to keep the two item factors of the Lack of appetite and Slovenliness subscales for the following reasons: (a) the items had saturations greater than .71, considered excellent (50% overlapping variance) (25-26); and (b) the factors allowed further reflection about the psychological difficulties experienced by the intellectually disabled; this found support in considerations made by Haynes et al (27) who had followed an analogous procedure in a validation work.

The Social Ability Evaluation Scale for Adults with Mental Retardation (VAS ARM; 28-29) was used to analyze social abilities. This scale was designed based on research by Gresham and Elliott (30) and Chadsey-Rusch (31). The measure consists of 16 items describing positive social behavior. Healthcare and social workers must indicate to what extent the items describe disabled individuals in their care on a 5-point Likert type scale, where 1 corresponds to "*does not describe him/her at all*" and 5 to "*describes him/her perfectly well*". To avoid "strained" answers, another two response alternatives are possible: "*I can't evaluate that*" and "*the performance is beyond the disabled individual's ability*".

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Specifically, the scale assesses the following: Basic social abilities (8 items; "*Says 'hello' when he/she meets a caregiver or social service providers*", "*Accepts compliments and/or approval from others*"; with a possible score range from 8 to 40; α = .88) and Abilities of interaction management (8 items, e.g., "*Expresses clearly what he/she wants*", "*If engaged in an activity, follows the advice given*"; possible scores range from 8 to 40; α = .88). A series of exploratory and confirmatory factor analyses had supported a 2 factor structure, accounting for 55.87% of the total variance (28-29). The corresponding reliability estimates for the present study were .89 and .88.

Further analyses carried out with these instruments can be found in Nota et al (32). The authors showed that, among other things, those measures correlate with the subtests of The Evaluation of Quality of Life Instrument (EQLI) (33), and because not to such a great extent they allow them to state that these instruments investigate different constructs.

Lastly, to analyze daily functional ability, we used the Ability Level Assessment Scale (29). This measure was developed to investigate the scholastic, functional, motor, personal, and communicative abilities of individuals with intellectual disability, based on work by Carey and Posavac (34) and Harvey and Jellinek (35). The scale consists of 46 items, asking healthcare and social workers to indicate the ability level of the person with intellectual disability by referring to a 5-point Likert-type scale, where 1 stands for "*He/She is not able*" to do the required action; 2 stands for "*can do it to a certain extent*, though only with assistance"; 3 stands for "*can do it on his/her own, but rarely does*"; 4 means "*can do it, but only does it sometimes*"; and 5 for "*can do the required action and does it each time required*". It is also possible to answer with "*I don't think I can evaluate*" the ability in question or to indicate that the ability "*is not required*". A 7-factor structure accounted for 74.28% of the total variance, and con-firmatory analyses yielded further confirming indices on the adequacy of this structure. The first factor, called Scholastic abilities, comprises 11 items on reading, writing, comprehension, and math abilities (with a possible range from 5 to 55); the second factor, Motor abilities, is made up of 9 items concerning the ability to move one's body and parts of it, to stand up, to squat, and to do complex movements, such as climbing stairs (possible range: 5 to 45); the third factor, Personal autonomy abilities, is made up of 8 items concerning the abilities that are required to autono-mously carry out a series of activities required in daily life, such as getting dressed, washing, etc. (possible range: 5 to 40); the fourth factor, Working abilities, comprises 6 items concerning the abilities that are required to carry out work tasks and assignments, e.g., finishing up assigned work, following instructions, etc. (possible range: 5 to 20); the fifth, Spatial orienting abilities, is made up of 4 items concerning the ability to recognize familiar place, persons and objects (possible range: 5 to 20); the sixth, Environmental tolerance abilities, is made up of 4 items concerning the ability to tolerate potentially uncomfortable environmental characteristics regarding temperature, lighting, and noise (possible range: 5 to 20); and the seventh scale, Non verbal communication abilities, comprised 4 items concerning the ability to understand and communicate messages non-verbally (possible range: 5 to 20). In a standardization study, internal coherence analyses yielded adequate internal coherence values, ranging from .82 to .96 (29); the alpha values obtained for the present work ranged from .81 to .90.

Procedure

The assessment of psychopathological problems and social and functional abilities was conducted by the healthcare and social workers who were responsible for the daily care of our participants and who had known them for at least one year. The workers had been asked to participate in this study by the health administration supervisors of participating centers and institutions for the specific purpose of updating participants' clinical records. An individualized report was prepared for each participant, based on the evaluations of the healthcare and social workers describing patients' strengths and weaknesses and making suggestions for intervention. This report was then given to the workers who had conducted the evaluations.

RESULTS

The means and standard deviations for all dependent measures are presented in table 1. To determine whether these results are amenable to parametric analyses, we made measures of skewness and kurtosis. Table 1 shows the skewness values, the standard error for skewness (SES), kurtosis values, the standard error for kurtosis, and the alpha level for each variable. Following the recommendations of Kline (36) and Heppner et al (37), skewness values of 2 or less and kurtosis values of 4 or less are considered normally distributed. As can be seen in table 1, all values fell within this range. Thus, parametric statistics is appropriate to analyze the data. Preliminary analyses yielded no significant gender difference for all the examined variables. Preliminary

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Table 1. Means and standard deviations and measures of skewness and kurtosis for psychopathological problems, social abilities, and daily functioning

Variable	M	Sd	Skewness	SES	Kurtosis	SEK
IEI	13.36	6.50	0.730	.111	.049	.222
IMLTF	29.30	11.82	0.563	.111	−.227	.222
DVC	13.02	5.59	0.352	.111	−.612	.222
DKECIR	8.45	5.26	0.625	.111	−.701	.222
LA	4.41	2.99	1.196	.111	.699	.222
SI	7.89	3.80	0.114	.111	−1.080	.222
APMD	18.34	8.71	0.450	.111	−.591	.222
BSA	30.45	15.08	−0.476	.155	−.147	.308
AIM	37.28	11.78	−0.278	.155	.542	.308
SA	25.88	11.35	0.090	.155	−1.409	.308
MA	18.87	7.71	−1.452	.155	.607	.308
PAA	17.08	4.00	−0.271	.155	−1.373	.308
WA	14.51	5.17	−0.256	.155	−.964	.308
SOA	12.17	4.77	−1.416	.155	1.081	.308
ETA	27.60	7.21	−0.510	.155	−.987	.308
NVCA	24.26	6.90	0.027	.155	−.925	.308

analyses also revealed significant correlation between psychopathological symptoms and daily functioning and social abilities (see table 2). In particular, the fewer basic social abilities the participants had, the more they seemed to suffer from isolation and emotional in expressiveness difficulties in verbal communication, slovenliness, and apathy. Concerning the relation between psychopathological problems and daily functioning abilities, the more motor and personal autonomy abilities participants had, the more these participants expressed irritability, whereas the fewer motor and personal autonomy abilities, the more participants showed apathy and psychomotor slowing. This last psychopathological symptom moreover, appeared to be related to poor working abilities and poor spatial orientation. Furthermore, the fewer their scholastic, working, orienting and non-verbal communication abilities, the more the participants experienced difficulties in verbal communication.

To verify our first hypothesis, we conducted a multivariate analysis, with the degree of intellectual disability (mild, moderate, severe) and residence/non residence in rehabilitative institutions as independent variables. The means and standard deviations are reported in table 3 and multivariate and univariate results are reported in table 4. Multivariate analyses highlighted an effect associated to degree of intellectual disability and type of residence.

Table 2. Correlation among psychopathological problems, social abilities, and daily functioning

Measures	BSA	AIM	SA	MA	PAA	WA	SOA	ETA	NVCA
IEI	−.28**	−.18**	.15*	.05	.15*	−.02	−.03	−.01	−.05
IMLTF	.01	−.04	.07	.21**	.20**	.02	−.003	−.08	.15*
DVC	−.19**	−.34**	−.33**	05	−.10	−.38**	−.39**	−.17**	−.16*
DKECIR	−.49**	−.37**	−.08	.02	−.04	−.10	−.15*	−.03	−.12*
LA	−.10	001	−.04	−.19**	−.17**	−.13*	−.05*	−.03	−.03
SI	−.13*	−.20**	.04	.04	−.06	−.15*	−.15*	.006	−.08
APMD	−.29**	−.26**	.02	−.32**	−.29**	−.17**	−.18**	−.13*	−.04

Legend IEI = Isolation and emotional inexpressiveness; IMLTF = Irritability, moodiness, and low tolerance to frustration; DVC = Difficulties in verbal communication; DKECIR = Difficulty in keeping eye contact in interpersonal relationships; LA= Lack of appetite; SI = Slovenliness; APMD = Apathy and psycho-motor decline; BSA = Basic social abilities; AIM = Abilities of interaction management; SA = Scholastic abilities; MA = Motor abilities; PAA = Personal autonomy abilities; WA= Working abilities; SOA = Spatial orienting abilities; ETA = Environmental tolerance abilities; NVCA = Nonverbal communication abilities. n = 248; *p<.05; **p< 01.

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Table 3. Means and standard deviations for psychopathological problems in 430 individuals with different degrees of intellectual disability and residency/non-residency in rehabilitative institutions

Group	Psychopathological problem													
	IEI		IMLTF		DVC		DKECIR		LA		SI		APMD	
	M	Sd	M	Sd	M	Sd	M	Sd	M	Sd	M	Sd	M	Sd
Mild ID														
Non resident	11.9	4.98	31.1	12.64	15.8	5.43	7.42	4.75	3.93	2.71	7.88	3.86	18.7	8.90
Resident	19.8	5.55	36.8	12.53	17.7	5.68	7.79	4.00	4.89	2.63	7.07	3.50	18.6	7.77
Moderate ID														
Non resident	11.4	5.59	29.7	11.84	13.1	5.34	8.48	5.27	4.15	2.83	7.11	3.69	18.5	9.03
Resident	14.1	5.81	29.8	10.65	13.6	5.04	9.05	5.07	4.89	3.04	8.05	3.28	18	8.34
Severe ID														
Non resident	11.9	4.98	24.3	9.45	15.8	5.43	9.43	6.34	4.08	3.32	8.67	4.06	19.2	8.29
Resident	19.8	5.55	25.1	9.61	17.7	5.68	11.11	3.33	6.16	2.73	10.16	3.39	18.8	7.38

Legend IEI = Isolation and emotional inexpressiveness; IMLTF = Irritability, moodiness, low tolerance to frustration; DVC = Difficulties in verbal communication; DKECIR = Difficulty in keeping eye contact in interpersonal relationships; LA = Lack of appetite; SI = Slovenliness;APM D = Apathy and psycho-motor decline.

Table 4. Multivariate and univariate analyses of variance for psychopathological problems in 430 individuals with different degrees of intellectual disability and residency/non-residency in rehabilitative institutions

Variable	MANOVA	ANOVA						
		IEI	IMLTF	DVC	DKECIR	LA	SI	APMD
	F (7, 418)	F (2, 424)	F (2, 424)	F (2, 424)	F (2, 424)	F (2, 424)	F (2, 424)	F (2, 424)
Degree of ID (G)	7.990**	7.608**	10.734**	18.923**	4.323*	1.155	6.013**	0.198
Residence (R)	8.456**	38.976**	2.263	5.310*	1.750	11.803**	1.338	0.100
GxR	1.481	4.526*	1.674	0.713	0.302	1.149	2.009	0.009

F ratios are Wilks's approximation of Fs. *p< 05; **p< 01.

Legend IEI = Isolation and emotional inexpressiveness; IMLTF = Irritability, moodiness, low tolerance to frustration; DVC = Difficulties in verbal communication; DKECIR = Difficulty in keeping eye contact in interpersonal relationships; LA = Lack of appetite; SI = Slovenliness;APM D = Apathy and psycho-motor decline.

More in detail, univariate analyses yielded significant differences between degree of intellectual disability and isolation and emotional inexpressiveness, irritability, moodiness, low tolerance to frustration, difficulty in verbal communication, difficulty in maintaining eye contact in interpersonal relationships, and slovenliness. Participants with mild intellectual disability showed greater isolation and emotional inexpressiveness, as well as greater irritability, moodiness, and low tolerance to frustration (Tukey post hoc: $p < .05$), whereas other psychopathological symptoms were greater for severely disabled participants. The factor of type of residence yielded differences with respect to isolation and emotional inexpressiveness, difficulties in verbal communication, and lack of appetite: the individuals who were residing in institutions showed the greatest degree of psychopathological problems. Our data suggest that emotional problems are more pronounced in mildly disabled persons, whereas behavior problems are more evident in severely disabled persons. Furthermore, as expected, individuals living in institutions suffered more from psychopathological problems.

To test our second hypothesis, we conducted an ANOVA in which the independent variable was type of diagnosis (intellectual disability, intellectual disability with dual diagnosis, or psychiatric pathology). The means and standard deviations, together with F and p values, are reported in table 5.

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Table 5. Means and standard deviations for psychological problems of 152 participants with different diagnoses

	Psychopathological problems													
	IEI		IMLTF		DVC		DKECIR		LA		SI		APMD	
	M	Sd	M	Sd	M	Sd	M	Sd	M	Sd	M	Sd	M	Sd
Intellectual disability	10.53	5.41	26.58	10.82	13.30	5.43	9.36	6.57	3.49	2.14	7.23	4.09	15.19	7.88
Intellectual disability and dual diagnosis	13.85	5.96	30.23	12.15	14.09	4.97	8.43	5.61	4.72	3.69	9.68	4.32	20.17	8.73
Psychiatric pathology	18.04	7.46	28.48	12.40	10.79	6.57	7.08	5.27	4.94	3.42	9.60	3.82	16.50	9.20

Legend IEI = Isolation and emotional inexpressiveness; IMLTF = Irritability, moodiness, low tolerance to frustration; DVC = Difficulties in verbal communication; DKECIR = Difficulty in keeping eye contact in interpersonal relationships; LA = Lack of appetite; SI = Slovenliness; APMD = Apathy and psycho-motor decline.

Differences for isolation and emotional inexpressiveness were significant [$F(2, 149) = 18.479$; $p = .001$], as were difficulties in verbal communication [$F(2, 149) = 4.576$; $p = .01$], lack of appetite [$F(2, 149) = 3.261$; $p = .04$], slovenliness [$F(2, 149) = 6.047$; $p = .001$], and apathy and psychomotor decline [$F(2, 149) = 4.412$; $p = .01$]. The participants with psychiatric pathology tended to suffer more from isolation and emotional inexpressiveness than did the other two groups of participants, and the participants with dual diagnosis presented this characteristic more frequently than participants without dual diagnosis (Tukey post hoc: $p < .05$). Similarly, the participants with dual diagnosis and psychiatric problems had higher scores than did participants with intellectual disability and no dual diagnosis for slovenliness and apathy and psychomotor decline. Conversely, the participants with psychiatric problems showed greater lack of appetite, and the participants with dual diagnosis had greater verbal communication difficulties (Tukey post hoc: $p < .05$). Seemingly, then, participants with dual diagnosis suffered from psychopathological problems that were quite similar to those characterizing participants with psychiatric problems, without, however, a complete overlap of problem type.

Lastly, we conducted a multiple regression analysis to identify the predictive potential of social and daily functioning abilities, with respect to psychopathological symptoms, examined as dependent variables (see table 6). One can see that both social abilities and abilities associated with managing daily life are related to psychopathological problems. In particular, isolation and emotional inexpressiveness were predicted by poor basic social abilities, but also by the ability to solve reading, writing and math problems, as well as personal autonomy. Conversely, irritability, moodiness, and low tolerance to frustration were predicted by people's ability to move, by gesticulation ability, and by poor tolerance to adverse environmental stimuli. Difficulty in communicating intelligibly and logically was apparently facilitated by poor abilities to recognize places, people and objects, and finish assigned tasks, but also by ability to move. Difficulties in maintaining eye contact in interpersonal relationships were predicted by poor basic social abilities; lack of appetite was predicted by poor motor abilities; and slovenliness by poor interaction management. Lastly, apathy and psychomotor decline was characterized by poor basic social and movement abilities, but also by the ability to do reading, writing, and similar tasks.

A rather clear picture emerges, in which it seems evident that for persons with intellectual disability to show certain psychopathological problems, they must not only have certain deficits, but specific abilities as well.

DISCUSSION

The purpose of the present work was to investigate the relation between degree of intellectual disability, type of residence, and psychopathological symptoms. We also wanted to verify whether intellectually disabled persons suffering from psychiatric problems with dual diagnosis show psychopathological problems similar to those of patients with psychiatric diagnosis but no intellectual disability. A third aim was to examine the role of certain adaptive abilities in characterizing the psychopathological problems of these persons.

The results seem to confirm what is generally found in the literature but also provide some new, more detailed considerations. First, that psychopathological problems differently characterize individuals with varying degrees of intellectual disability is evident. The mildly intellectually disabled tend more to isolation,

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Table 6. Regression analysis

Steps and predictive variables	B	ESB	β	R^2	ΔR^2
Dependent variable: Isolation and emotional inexpressiveness					
Step 1				.08*	
Basic social abilities	−.24	.05	−.26*		
Step 2				.13*	.05
Basic social abilities	−.28	.05	−.34*		
Personal autonomy abilities	.12	.03	.23*		
Step 3				.14*	.01
Basic social abilities	−.30	.05	−.36*		
Personal autonomy abilities	.09	.04	.17*		
Scholastic abilities	.03	.06	.15*		
Dependent variable: Irritability, moodiness, low tolerance to frustration					
Step 1				.04*	
Motor abilities	.22	.06	.21*		
Step 2				.05*	.02
Motor abilities	.21	.06	.21*		
Nonverbal communication abilities	.35	.16	.14*		
Step 3				.07*	.01
Motor abilities	−.24	.06	.24*		
Nonverbal communication abilities	−.37	.16	.15*		
Environmental tolerance	−.34	.15	−.15*		
Dependent variable: Difficulties in verbal communication					
Step 1				.15*	
Spatial orienting abilities	−.52	.08	−.37*		
Step 2				.20*	.05
Spatial orienting abilities	−.36	.09	−.26*		
Working abilities	−.18	.05	−.25*		
Step 3				.25*	.05
Spatial orienting abilities	−.42	.09	−.31*		
Working abilities	−.21	.05	−.30*		
Motor abilities	11	.03	.24*		
Dependent variable: Difficulty in keeping eye contact in interpersonal relationships					
Step 1				.24*	
Basic social abilities	−.35	.04	−.49*		
Dependent variable: Lack of appetite					
Step 1				.03*	
Motor abilities	−.04	.01	-.19*		
Dependent variable: Slovenliness					
Step 1				.04*	
Abilities of interaction management	−.10	.03	−.20*		
Dependent variable: Apathy and psychomotor decline					
Step 1				.10*	
Motor abilities	−.23	.04	−.31*		
Step 2				.16*	.06
Motor abilities	−.20	.04	−.28*		
Basic social abilities	−.29	.07	−.24*		
Step 3				.18*	.02
Motor abilities	.23	.04	−.31*		
Basic social abilities	−.32	.07	−.27*		
Scholastic abilities	.07	.03	.14*		

Note: n = 248. * $p < .05$.

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mood swings, and poor tolerance, i.e., to suffer from problems pertaining to the emotional realm. Conversely, individuals with greater intellectual disability communicate less clearly and logically, are much less able to maintain eye contact, and tend to care less about their appearance. The data confirm results from other studies by Jacobson (10) and Rojahn (12).

The individuals who suffer most from psychopathological symptoms are those who live in institutions, whether they have mild, moderate, or severe intellectual disability. Our results confirm the observations of Costello (18) and Borthwick-Duffy and Eyman (17). Evidently, institutionalization, with its rigid and monotonous routines and lack of stimulating activities affecting disabled residents over long periods, contributes to the development of a wide range of maladaptive behaviors.

The data also shed light on how emotional problems are related to disabled individuals' greater information processing abilities and, therefore, to their greater abilities to perceive the problematic conditions they must deal with on a daily basis. Consequently, individuals with greater intellectual abilities who live in institutions are better able to perceive the difficulties that a more restricted life entails and can then suffer from greater emotional problems.

Furthermore, our analyses indicate that persons with intellectual disability and dual diagnosis seem to manifest, similar to participants with psychiatric problems, a lesser tendency to take care of their external appearance and a greater apathy to environmental stimuli. People with psychiatric problems tend to isolate themselves more and have more problems in expressing their emotions than disabled individuals with dual diagnosis, who, in turn, show this characteristic considerably more so than individuals without dual diagnosis. The data suggest that dual diagnosis is indeed a more severe condition than that affecting people without this diagnosis. At the same time, however, the same individuals do not show the degree of psychopathological problems observed in psychiatric patients. Thus, although intellectual disability can generally render a person more vulnerable than a person without intellectual disability (19), this state can also serve as a sort of "defense" against developing more severe and full blown psychiatric problems.

Broadly speaking, psychopathological symptoms do seem to be associated with poor adaptive abilities, but, more specifically, they seem to be characterized by the presence of specific abilities and by the absence or limited presence of others. Isolation and emotional inexpressiveness require the cognitive abilities of managing easy scholastic tasks, as well as poor social abilities in approaching other people and initiating positive interpersonal relationships (which would allow the adequate expression of ones' own difficulties). Irritability, mood swings, and poor tolerance to frustration derive not only from problems in tolerating environmental stimuli that might be disturbing (such as variations in temperature, noise, etc...) but also from the motor and gesticulation abilities manifestations. Communicative problems are associated not only with motor abilities, which allow disabled persons to move in their environment, but also with problems in orienting, finishing assigned tasks, or following instructions. All these observations suggest a situation in which intellectually disabled people spend their time in inactivity, such that the likelihood that their problems will worsen increases (18-38). Furthermore, poor social abilities seem to influence slovenliness, suggesting how the difficulty of paying attention to an interlocutor and a lesser tendency to make a good impression can be associated with greater slovenliness. Lack of appetite seems particularly related to poor motor abilities, which can impede the movements required for eating one's meals. The same relation can be observed for apathy, which, however, also appears to be related to poor basic social and scholastic abilities. The picture emerging here is that a person who has problems in initiating social interaction with others and in moving adequately, but who is nonetheless able to handle cognitive tasks (albeit simple ones), is more likely to be perceived as not very keen, apathetic, and slow.

Obviously, this study has a series of limitations, which must be kept in mind. First, our data consist of health and social workers' evaluations. Although these assistants may be familiar with the behavioral and relational styles of the person they evaluate, they nonetheless provide their own viewpoints and the results may thus be influenced by their biases and preconceptions. Future research should therefore provide for gathering data on the actual behavior of persons with intellectual disability in different life contexts. Secondly, one must bear in mind that although our "non resident" participants sleep at home with their families, the participants actually spend most of their day in occupational therapy centers, which often rely on the same activities that are used in rehabilitation institutions. Therefore, persons who are actually included in community and working contexts should be examined to obtain a more in depth analysis of the incidence of this variable.

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Lastly, we must note that social and daily functioning abilities did not have great predictive power (R^2 range from .03 to .25). We must therefore presume the intervention of other factors, which have not been examined here, as suggested by Matson and Sevin (22) in their biopsychosocial theory of dual diagnosis.

Procedure suggestions for the health and social services

The results of this study confirm the need to set up in depth diagnostic activity for the intellectually disabled persons. Diagnoses should not only assess degree of intellectual disability but also neuropsychological problems, degree of adaptation, social abilities, and psychopathological problems (29). Such a comprehensive procedure would enable specialists to delineate more-specific and detailed profiles of the strong and weak points of the disabled in their care and to tailor intervention to each person's individual needs. Untreated psychopathological problems make the lives of such person more difficult and unhappy and can also increase the discomfort and difficulties experienced by their care providers (39).

Clearly, the psychopathological problems of disabled individuals must be assessed with specific diagnostic means because these types of problems afflict a considerably large portion of them (15-16); moreover, although certain symptoms may not be conspicuous, they can nonetheless affect the intellectually disabled due to their different adaptive abilities. Better knowledge of these processes would enable us to develop specific treatment programs directed not only at strengthening persons' abilities (e.g., social abilities that help initiate and maintain positive relationships with significant others) but also at modifying key characteristics of their environments. The most helpful programs are those that aim at creating stimulating, normalizing environments and require disabled persons to perform useful, functional activities, adaptively stimulating and maintaining the abilities already in their repertoire (40-42).

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