



Neuropsychology as a profession in Italy

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ABSTRACT

The purpose of this study was to analyze the characteristics of individuals working in the field of neuropsychology in Italy, as part of a larger study examining the practice of neuropsychology across various countries. They were asked about their background, professional training, current work situation, types of assessment, preferred diagnostic procedures, as well as the rehabilitation techniques, their targeted populations, teaching responsibilities, and research activities. A total of 154 professionals completed an online survey from April 28, 2016 through June 30, 2016. The majority of participants were women, with a mean age of 42.6 years. Participants reported working for the National Health System, in private practice, or in private rehabilitation facilities. Overall, they reported being very satisfied with their work. Those who identified themselves as neuropsychologists primarily assessed individuals with dementia, stroke, movement disorders, and traumatic brain injury. While the majority of participants declared no problems with the instruments they used, others reported complaints, including but not limited to the financial cost of current neuropsychological tests and the lack of psychometric support. The main perceived obstacles were the lack of willingness to collaborate among professionals, the scarcity of academic training programs, and the lack of clinical training opportunities.

KEYWORDS

Clinical neuropsychology; diagnosis; Italy; rehabilitation; practice; training

Introduction

The history of the field of neuropsychology in Italy can be traced back to the 1800s and 1900s. Two key leaders of the field include a Neapolitan philosopher, Giambattista Vico, who is considered to be a pioneer in neuropsychology (Denes & Dalla Barba, 1998), and Leonardo Bianchi, a Neapolitan neurologist, who in the XIX century described the parietal syndrome and studied frontal lobe functions (Bianchi, 1895). Nevertheless, the emergence and spread of modern clinical neuropsychology originated in the 1960s, when neurologist Ennio De Renzi established the first formal courses in neuropsychology in Milan (Boller, 2015). De Renzi greatly contributed to the advancement of knowledge in clinical neuropsychology by studying cognitive behavioral problems in a group of patients with different neurological conditions and establishing experimental methodology for these types

of studies (Vallar, Boller, Grossi, & Gainotti, 2015). De Renzi was one of the founding members of the Italian Society of Neuropsychology (SINP, by its initials in Italian) and contributed to the dissemination of neuropsychology. He also founded the international journal *Cortex*, an editor of which is Sergio Della Sala, a very renowned Italian neuropsychologist.

The SINP significantly contributed to the development of the knowledge of clinical neuropsychology in Italy, given its focus on the debate of methodology and the use of different techniques to study brain-behavior relations. In the 1960s, Italian neuropsychologists were predominantly medical doctors specialized in neurology or psychiatry. However, with the establishment of the Psychology graduate degree in 1971 (four years program until 1986 then five years program) several universities offered courses in neuropsychology (Decreto del Presidente della Repubblica

n.452, dell' 11 mag-gio, 1971; Decreto del Presidente della Repubblica n 216 del 6 febbraio, 1985; Marhaba, 1981). An increasing number of psychologists became interested in neuropsychology; thus, later, it required postgraduate education in clinical neuropsychology.

A crucial step in the development of Italy's discipline was the work of Luigi Pizzamiglio, who in 1999 founded the first postgraduate specialty program in Neuropsychology (Decreto Rettoriale 29.04., 1999). The postgraduate Specialty degree in Neuropsychology (Specialization School in Neuropsychology) was a four-year program that admitted psychologists. It provided a thorough theoretical and practical formation in assessment and rehabilitation of acquired, neurodegenerative and developmental neuropsychological disorders (Decreto Rettoriale 29.04., 1999). After the ministerial reform in 2006, the program's postgraduate Specialty degree in Neuropsychology increased to five years, and students also began to receive a training in psychotherapy (Decreto del Ministero dell'Università e della Ricerca del 24.7. 2006).

The growing demand of clinical neuropsychology health services, as well as training opportunities (in particular, in neuropsychological rehabilitation), led to the creation of a conference promoted by the SINP. The results were presented in a meeting held in Siena on February 19 and 20, 2010 (Vallar, Cantagallo, Cappa, & Zoccolotti, 2012). In this meeting, an analysis of neuropsychological education was provided, showing evidence that formal courses were mainly provided in graduate degrees in psychology and in the postgraduate specialty program in neuropsychology (Vallar et al., 2012). Currently, formal training to become a neuropsychologist, as set by the University's Ministry of Research, includes the following steps: (1) earn a five-year degree in Psychology, (2) complete one year of general training in psychology [mandatory for those who wish to pass an entrance exam and join the National Psychology Board], and (3) complete the five-year postgraduate Specialty in neuropsychology (Specialization School in Neuropsychology).

At the moment, five specialty schools exist in Italy, licensing from three to eight students per year. Schools include: Rome University of "La Sapienza," Padua University, Milano University of "Bicocca," Milan University of "San Raffaele," and Trieste University (Decreto Rettoriale 29.04. 1999 Università di Roma, Decreto Rep. n. 2505 del 16.07.2017 Università degli studi di Padova, Decreto Rettoriale n. 0022586 del 21.07.2008 Università degli studi "Bicocca" di Milano, Decreto Rettoriale n.3546 del 27.10.2011 Università degli studi "Vita e Salute San

Raffaele" di Milano, www.biologia.units.it Università degli studi di Trieste).

In spite of that, to date, in Italy the law does not set any limit to practice neuropsychology; therefore, any psychologist, physician, pedagogist, and rehabilitation therapist may use some diagnostic tools (as tests) that are not classified as for psychologists' use only or offer neuropsychological rehabilitation, even if they had never attended education or training in clinical neuropsychology.

Most of these professionals achieved a PhD in neuroscience or neuropsychology¹ or completed informally defined postgraduate courses in neuropsychology.

During recent years, a number of surveys have tracked multiple aspects of neuropsychological practice; however, the majority of these surveys have been performed in the United States (e.g., Sweet & Moberg, 1990; Sweet, Moberg & Westergaard, 1996, Sweet, Peck, Abramowitz, & Etzweiler, 2002), Australia (Ponsford, 2016), and recently in Nordic Countries (Norup et al., 2017), Spain (Olabarrieta-Landa et al., 2016), the United States (Sweet et al., 2000, 2006, 2015), Latin America (Arango-Lasprilla Stevens, Morlett-Paredes, Ardila, & Rivera, 2017), and South Africa (Truter Mazabow, Morlett-Paredes, Rivera, & Arango Lasprilla, 2018). However, there is minimal to no information available regarding the profession of neuropsychology in Italy. Thus, the purpose of the present study is to evaluate the state of neuropsychology in Italy, focusing on the neuropsychologist's professional training, current working situation, assessment and diagnostic procedures, rehabilitation techniques employed, population targeted, teaching responsibilities, and research activities.

Method

Participants

Participants were self-identified psychologists or other health professionals (social worker, educator, medical doctor, speech language therapist, occupational therapist, physical therapist, nurse) who worked in the field of neuropsychology in Italy and who completed the survey. Participants' data were included for analyses if they: (1) reported having at least a Bachelor's degree; (2) considered themselves to be a neuropsychologist and/or to be performing at least some of the

¹Note that in Italy, PhD is a postgraduate education devoted to research, which does not include any clinical training, while postgraduate clinical education is provided by the Schools of Specialization. PhD and Specializations are not considered equivalent professional titles.

activities related to neuropsychology (i.e., assessment, diagnosis, treatment, teaching, or research) over the past year; (3) completed the sociodemographic questions (which were at the very beginning of the survey); and (4) reported currently living in Italy.

A total of 177 individuals completed the survey. Of these, one reported never attaining a bachelor's degree (exclusion criteria 1), four reported not considering themselves to be neuropsychologists or not performing at least some of the activities related to the field (exclusion criteria 2), 11 did not complete the demographic section of the survey (exclusion criteria 3), and seven reported living in other country (exclusion criteria 4). Thus, the final sample for analysis included 154 individuals who met all inclusion criteria. The majority of respondents in the present study were women ($n=106$, 68.8%) the average age was 42.6 years of age (ranges 24–71) and 77.3% ($n=119$) considered themselves neuropsychologists

Measures

A group of researchers from 10 countries led by Dr. Juan Carlos Arango-Lasprilla (Arango-Lasprilla et al., 2015a; Arango-Lasprilla, Stevens, Morlett-Paredes, Ardila, & Rivera, 2016; Fernandez, Ferreres, Morlett-Paredes, Rivera, & Arango-Lasprilla et al., 2017; Olabarrieta-Landa et al., 2016; Panyavin, Goldberg-Looney, Rivera, Perrin, & Arango-Lasprilla, 2015) developed the survey utilized in the present study using the following procedure. First, an exhaustive review of the literature was conducted, through which seven areas of interest were identified: (1) professional training, (2) current work situation, (3) evaluation and diagnosis, (4) rehabilitation, (5) teaching, (6) research, and (7) ethics. Questions were generated to address each of these areas in addition to demographic information. Subsequently, the survey was sent to a group of experts in neuropsychology in Italy for verification to ensure the questions were suitably adapted both culturally and linguistically.

Once the comments from the experts were incorporated into the questionnaire, the final survey was composed of 67 questions that were entered into an online survey platform (www.surveymonkey.com). First, five experts in neuropsychology completed the survey in order to ensure accuracy, validity, and proper operation of the online survey prior to distribution. The questions were translated to Italian using methodology developed by Chapman and Carter (1979). Bilingual researchers translated the items into Italian, and any discrepancies were resolved through consultation with native speakers.

Procedure

This survey is part of an international research study conducted in 30 different countries worldwide. Articles analyzing the characteristics of the profession of neuropsychology in Latin America (Arango-Lasprilla et al., 2015a; Arango-Lasprilla et al., 2016; Fernandez et al., 2017; Fonseca-Aguilar et al., 2015), Scandinavian countries (Egeland et al., 2016; Egeland et al., 2017; Norup et al., 2017), South Africa (Truter et al., 2018), and the United States (Block, Santos, Flores-Medina, Rivera, & Arango-Lasprilla, 2017) have been published elsewhere, whereas the data for countries such as France and Portugal are currently under analysis.

Following ethics approval, recruitment was conducted by sending an e-mail invitation to neuropsychology professionals who were members of two professional neuropsychology organizations in Italy (Società Italiana di Neuropsicologia and Associazione Italiana Specialisti in Neuropsicologia). The different Italian associations posted the link to the survey on their social networks and also sent the e-mail invitation to their members with the study details, the hyperlink to the online survey, and a request for their assistance in recruiting additional neuropsychology professionals as participants (i.e., snowball sampling). Data collection occurred from April 28, 2016 to June 30, 2016. Participants only completed the different sections of the survey (i.e., evaluation, diagnosis, rehabilitation, teaching, and research) if they reported being engaged in that type of activity during the last year. If engagement in such activities was not reported, a logic setting set in the online platform would skip to the following section.

Statistical analysis

The database was downloaded from the Survey Monkey server and analyses were conducted using SPSS 22.0 (IBM Corp., 2013). Descriptive statistics (i.e., frequencies, means) were reported for each question and/or response. In some cases, responses were grouped for ease of reporting. The denominator used to calculate percentages was based on the number of individuals who responded to a particular question (as opposed to the total number of participants in the survey). Because not all individuals might endorse having worked in evaluation and diagnosis, rehabilitation, teaching, and/or research in the prior year, in some cases the number of participants endorsing that specific activity determined the denominator.

Table 1. Professional training of neuropsychologists in Italy.

	Frequency	Percentage
Received training during graduate studies ($n = 154$) ^a		
Post graduate studies (Master, specialty school, doctoral)	123	79.9
As an undergraduate student	77	50.0
Through continuing education as an independent professional	66	42.9
Postdoctoral fellow	55	35.7
Other	20	13.0
Assessment of training received ($n = 153$)		
Excellent	44	28.8
Very good	81	52.9
Good	25	16.3
Fair	2	1.3
Poor	1	0.7
Clinical supervision received during training ($n = 154$)		
Excellent	43	27.9
Very good	64	41.6
Good	31	20.1
Fair	12	7.8
Poor	2	1.3
No supervision received	2	1.3
Degree required to practice as a clinical neuropsychologist		
Neuropsychology degree needed ($n = 144$)	98	68.1
Psychology degree needed ($n = 147$)	121	82.3
Psychology degree not needed ($n = 145$)	25	17.2
Barriers for the development of neuropsychology in Italy ($n = 154$) ^a		
Lack of willingness to collaborate between professionals	55	35.7
Lack of academic training programs	36	23.4
Lack of clinical training opportunities	24	15.6
Lack of access to neuropsychological instruments	16	10.4
Lack of professional leaders in the field	10	6.5
Lack of other professional resources	6	3.9
Lack of access to literature/ libraries	3	1.9
Lack of access to the internet	1	0.6

Note. ^aMultiple response options available. Responses do not add up to 100%.

Results

Professional training

Table 1 summarizes participants' responses related to issues of professional training. Briefly, the majority ($n = 123$; 79.9%) of participants reported having received training in neuropsychology during their postgraduate studies. The postgraduate education attained varied among respondents: Participants endorsed attending five years of Specialization School, one year of a Master's program, or three years of doctoral study.² The training received was rated as "very good" by 52.9% ($n = 81$) of respondents, and the quality of clinical supervision was also considered "very good" by 41.6% ($n = 64$). Although it represents a small percentage of the sample, it is interesting to note that 1.3% ($n = 2$) out the 154 participants who considered themselves neuropsychologists reported not having received any kind of postgraduate training.

In regard to their qualifications, 32.5% ($n = 50$) reported having an official certification (i.e., a

postgraduate degree) to act as a neuropsychologist, whereas 82.3% ($n = 121$) endorsed that a graduate degree in psychology is necessary and sufficient for practicing as a clinical neuropsychologist. For Italian clinical neuropsychologists, the development of a career in neuropsychology was considered to be hindered by a series of factors (see Table 1), such as the lack of willingness to collaborate among professionals in the field ($n = 55$; 35.7%), the lack of academic training programs ($n = 36$; 23.4%), and the lack of clinical training opportunities ($n = 24$; 15.6%).

Current work situation

A total of 146 out of the 154 respondents who met inclusion criteria answered the questions regarding current work status. The mean time spent working as a neuropsychologist was 15.2 years ($SD = 10$); 142 participants reported working 26.8 hours ($SD = 13.0$) per week on average. The reported average monthly income was USD \$2,006.37 (range: \$200—\$5,000). Two questions assessed participant satisfaction with salary and work as neuropsychologist; both questions were measured using an ordinal scale from one to ten

²It should be noted that in Italy, PhD courses are aimed to train researchers and not clinicians.

(1 to 10), with one being “Extremely dissatisfied” and ten being “Extremely satisfied.” In regard to salary, 134 participants reported being neither satisfied nor dissatisfied with their salary (mean: 5.1; $SD = 2.8$). Regarding the satisfaction with their work as neuropsychologist, 145 participants reported a moderate level of satisfaction (mean: 7.3; $SD = 2.12$). As summarized in Table 2, about half of participants were employed full-time ($n = 73$; 49.3%), and more than a quarter were employed part-time ($n = 57$; 38.5%). The three most frequently endorsed work settings were the National Health System ($n = 39$; 26.9%), private practice ($n = 27$; 18.6%), and private rehabilitation facilities ($n = 24$; 16.6%).

Table 2. Current work situation of neuropsychologists in Italy.

	Frequency	Percentage
Employment status ($n = 148$)		
Full time	73	49.3
Part time	57	38.5
Unemployed	14	9.5
Retired	4	2.7
Setting of neuropsychology practice ($n = 145$)		
National Health System	39	26.9
Private practice	27	18.6
Private rehabilitation facilities	24	16.6
Public rehabilitation facilities	13	9.0
University	12	8.3
Faculty of Psychology	8	5.5
Private clinic	8	5.5
Medical School	7	4.8
Other	7	4.8

Evaluation

The majority of participants (137 out of 145, corresponding to 94.5%) performed neuropsychological assessments over the last year. Out of these, 91.9% ($n = 126$) reported having performed neuropsychological assessments with approximately 21.3 patients ($SD = 24.6$) per month. Assessment required on average 4.1 hours ($SD = 2.5$) to evaluate the patient, score the assessment, interpret the results, and write the report. As summarized in Table 3, 64.8% ($n = 81$) of participants used flexible neuropsychological batteries to perform the assessments. The top 20 most commonly used tests for neuropsychological assessment and diagnosis are reported in Table 3. These include the Stroop test ($n = 105$; 76.6%), the Mini Mental State Examination ($n = 98$; 71.5%), and the Trail Making Test A & B ($n = 98$; 71.5%).

Most respondents ($n = 122$; 89.1%) reported using Italian normative data to score neuropsychological tests. The majority acquired all or most of the neuropsychological instruments by purchasing them from the publisher ($n = 100$; 73.0%), whereas 48.2% ($n = 66$) reported to have copied or reproduced them, and 39.4% ($n = 54$) reported to have obtained tests from the authors. It is important to note that not all neuropsychological tests used in Italy are sold by a

Table 3. Type of assessment battery, and instruments used by neuropsychologists in Italy.^a

	Frequency	Percentage
Type of battery used ($n = 125$)		
Flexible batteries	81	64.8
Personalized batteries	36	28.8
Standardized batteries	8	6.4
20 most used instruments ($n = 137$) ^b		
Stroop Interference Test	105	76.6
MMSE (Mini-Mental State Examination)	98	71.5
TMT A&B (Trail Making Test A&B)	98	71.5
Token (Token test)	94	68.6
WCST (Wisconsin Card Sorting Test)	88	64.2
Clock Drawing Test	86	62.8
NPI (Neuropsychiatric Inventory)	74	54.0
ROCFT (Rey-Osterrieth Complex Figure Task)	69	50.4
RAVLT (Rey Auditory Verbal Learning Test)	57	41.6
SDMT (Symbol Digit Modalities Test)	57	41.6
WAIS (Wechsler Adult Intelligence Scale)	54	39.4
PASAT (Paced Auditory Serial Addition Task)	48	35.0
BADS (Behavioral Assessment of the Dysexecutive Syndrome)	45	32.8
BNT (Boston Naming test)	45	32.8
RBMT (Rivermead Behavioral Memory Test)	44	32.1
WISC (Wechsler Intelligence Scale for Children)	35	25.5
JLO (Benton Judgment of Line Orientation Test)	31	22.6
WAIS-R NPI (WAIS-R Neuropsychological Instrument)	22	16.1
WMS (Wechsler Memory Scale)	22	16.1
VMI (Developmental Test of Visual-Motor Integration)	21	15.3

Note. ^aOnly 137 of 145 participants endorsed conducting neuropsychological evaluations within the past year.

^bMultiple response options available. Responses do not add up to 100%. Percentages are calculated out of total $n = 137$.

Table 4. Scoring procedures used, method of obtaining instruments, and problems with instruments identified by neuropsychologists in Italy.

	Frequency	Percentage
Scoring procedures utilized ^a		
Use of normative data from own country	122	89.1
Use of normative data from another country	14	10.2
Custom procedures through clinical practice	7	5.1
Other	3	2.2
Use of raw scores without normative group comparison	1	0.7
Method of obtaining neuropsychological instruments ^a		
Purchasing from publisher	100	73.0
Making photocopies or reproducing instruments	66	48.2
Requesting from author	54	39.2
Downloading from the internet	51	37.2
Borrowing from colleagues	38	27.7
Borrowing from libraries or laboratories	26	19.0
Other	13	9.5
Main problems with neuropsychological instruments ^a		
There are no problems with the instruments that I use	61	44.5
Too costly/ expensive	44	32.1
Do not have good psychometric properties	25	18.2
Lack normative data for my country	19	13.9
Take a long time to administer	14	10.2
Not adapted to my culture	6	4.4
Aimed at individuals with high levels of education	6	4.4
Not translated to my language	5	3.6
Are often not applicable because my patients cannot read/write	4	2.9

Note. ^aMultiple response options available. Responses do not add up to 100%. Percentages are calculated out of total $n = 173$.

publishing company and many tests, specifically the newest ones, are not commercialized and/or only available by means of a direct request to the authors. About half of participants reported the absence of problems with the instruments they use ($n = 61$; 44.5%). However, some of the most common problems identified with neuropsychological instruments include high cost to purchase ($n = 44$; 32.1%) and lack of adequate psychometric support for some tests ($n = 25$; 18.2%). Please see Table 4 for more detailed information.

Participants reported that the majority of their work consists of assessing individuals with dementia (71.7%; $n = 86$) or individuals affected by stroke/vascular diseases (66.9%; $n = 81$) or movement disorders (42.9%; $n = 48$). Individuals with TBI, depression, and Central Nervous System (CNS) tumors were also among the patient population most frequently assessed (please see Table 5 for the full list of the patients' populations and the neuropsychological domains assessed). Participants in this study reported using different sources of information to assess and diagnose with additional sources of information. These include behavioral assessments (77.2%; $n = 119$), previous neuropsychological testing data (72.9%; $n = 119$), interviews with significant others (72.7%; $n = 112$), functional assessments (64.9%; $n = 100$), medical/psychiatric history (75.3%; $n = 116$), mood and affective measures (69.4%; $n = 107$), current

neuropsychological test data (58.4%; $n = 90$), current social support (53.8%; $n = 83$), mental status exams (46.7%; $n = 72$), environmental demand characteristics (43.5%; $n = 67$), developmental history (35.0%; $n = 54$), work records (27.9%; $n = 43$), personality tests (26.6%; $n = 41$), school records (12.9%; $n = 20$), and other sources (2.5%; $n = 4$). Table 6 lists all the referral sources, with neurology ($n = 102$; 74.5%), geriatrics ($n = 66$; 48.2%), and neurosurgery ($n = 50$; 36.5%) being the most frequently endorsed.

Rehabilitation

The questions regarding working in neuropsychological rehabilitation/psychotherapy in the past year were responded to by 136 (88.3%) of the 154 participants who meet inclusion criteria. The majority of respondents ($n = 98$; 72.1%) provided neuropsychological rehabilitation to a median of 10.0 (range = 1 to 80) patients per month, with an average of 12.1 hours ($SD = 9.51$) per week dedicated to therapy. Table 7 provides details about different types of etiological classification of patients and neuropsychological treatments. Most of the rehabilitation was provided to individuals with stroke/vascular disease ($n = 61$; 62.2%) and TBI and/or dementia (each endorsed by 49.0% of respondents). The three most frequently treated areas of functioning were attention/

Table 5. Groups of patients and cognitive domains frequently or always assessed by Italian neuropsychologists.

	Count of those responding Frequently or Always	Percentage of those responding Frequently or Always
Groups of patients assessed (<i>n</i> = total number of respondents)		
Dementia (<i>n</i> = 120)	86	71.7
Stroke/vascular (<i>n</i> = 121)	81	66.9
Movement disorders (<i>n</i> = 112)	48	42.9
Traumatic brain injury (<i>n</i> = 120)	41	34.2
Depression (<i>n</i> = 110)	37	33.6
CNS tumor (<i>n</i> = 112)	33	29.2
Multiple sclerosis (<i>n</i> = 115)	33	28.7
Learning disabilities (<i>n</i> = 112)	28	25.0
Seizure disorders (<i>n</i> = 110)	26	23.6
Mental retardation (<i>n</i> = 114)	26	22.8
Other (<i>n</i> = 38)	7	18.4
Anxiety disorders (<i>n</i> = 109)	19	17.4
ADHD (<i>n</i> = 109)	18	16.5
Pain (<i>n</i> = 107)	11	10.3
Pervasive Developmental Disorder (<i>n</i> = 108)	10	9.3
Toxic/metabolic (<i>n</i> = 107)	7	6.5
Bipolar disorders (<i>n</i> = 109)	7	6.4
Personality disorders (<i>n</i> = 106)	5	4.7
Schizophrenia (<i>n</i> = 109)	5	4.6
AIDS (<i>n</i> = 106)	4	3.8
Substance abuse (<i>n</i> = 110)	4	3.6
Cognitive domains assessed (<i>n</i> = total number of respondents)		
Verbal memory (<i>n</i> = 124)	123	99.2
Attention (<i>n</i> = 125)	121	96.8
Visuospatial skills (<i>n</i> = 125)	117	93.6
Executive functions (<i>n</i> = 124)	116	93.5
Language (<i>n</i> = 123)	111	90.2
Nonverbal memory (<i>n</i> = 1123)	111	90.2
Construction (<i>n</i> = 112)	109	89.3
Achievement (<i>n</i> = 122)	103	84.4
Intelligence (<i>n</i> = 122)	89	73.0
Motor skills (<i>n</i> = 119)	52	43.7
Auditory perception (<i>n</i> = 118)	21	17.8
Tactile perception (<i>n</i> = 118)	16	13.6

Table 6. Referral sources of patients attending neuropsychology services and sources.

	Frequency	Percentage
Referral sources (<i>n</i> = 137) ^a		
Neurology	102	74.5
Geriatrics	66	48.2
Neurosurgery	50	36.5
Self-referral	49	35.8
Family (general medicine)	43	31.4
Rehabilitation (rehab. nurse, counselor, or other rehab)	43	31.4
Physiatrist (rehabilitation medicine)	38	27.7
Psychiatry	37	27.0
Law (attorney)	24	17.5
Psychology	24	17.5
Internal medicine	22	16.1
School system	20	14.6
Friends	13	9.5
Pediatrics	10	7.3
Cardiology	9	6.6
Other	7	5.1
Occupational Medicine	5	3.6
Alcohol/ drug facilities	4	2.9
Insurance company	4	2.9
Orthopedics	4	2.9

Note. ^aMultiple response options available. Responses do not add up to 100%. Percentages are calculated out of total *n* = 137.

Table 7. Diagnostic groups for neuropsychological rehabilitation treatment and areas in which neuropsychologists in Italy perform neuropsychological rehabilitation treatment.

	Frequency	Percentage
Diagnostic groups ($n = 98$) ^a		
Stroke/vascular	61	62.2
Traumatic brain injury	48	49.0
Dementia	48	49.0
Multiple sclerosis	24	24.5
Learning disabilities	23	23.5
CNS tumor	19	19.4
Depression	16	16.3
Anxiety disorders	15	15.3
ADHD	14	14.3
Movement disorders	12	12.2
Mental retardation	12	12.2
Seizure disorders	9	9.2
Personality disorders	7	7.1
Pervasive Developmental Disorder	5	5.1
Other	5	5.1
Substance abuse	4	4.1
Toxic/metabolic	4	4.1
Pain	3	3.1
Schizophrenia	3	3.1
AIDS	1	1.0
Areas of neuropsychological rehabilitation treatment ($n = 98$) ^a		
Attention/ Concentration	80	81.6
Executive functioning	73	74.5
Memory	69	70.4
Emotional/ behavioral adjustment & well-being	56	57.1
Awareness of disability/disease	53	54.1
Communication/Speech & language	51	52.0
Autonomy & independence	39	39.8
Visual-perceptual & constructional abilities	38	38.8
Family functioning	22	22.4
Returning to work	14	14.3
Motor skills/ strength	7	7.1
Sexual adjustment problems	6	6.1
Other	5	5.1

Note. ^aMultiple response options available. Responses do not add up to 100%. Percentages are calculated out of total $n = 98$.

Table 8. Types of treatment provided and technological tools used in rehabilitation by neuropsychologists in Italy.

	Frequency	Percentage
Types of treatment provided ($n = 90$)		
Individual therapy	59	65.6
Mixed (individual and group) therapy	28	31.1
Group therapy	3	3.3
Technological tools used in rehabilitation ($n = 98$) ^a		
Personal computers	80	81.6
iPads or tablets	32	32.7
Mobile phones or smart phones	14	14.3
Virtual reality	3	3.1
Neuromodulation (TMS, tDCS)	15	15.3
Neurofeedback	3	3.1
Other	19	19.4

Note. ^aMultiple response options available. Responses do not add up to 100%. Percentages are calculated out of total $n = 98$.

concentration ($n = 80$; 81.6%), executive functioning ($n = 73$; 74.5%), and memory ($n = 69$; 70.4%).

Table 8 reports the full list of treated areas and technological tools used for rehabilitation. Most respondents ($n = 59$; 65.6%) reported providing

Table 9. Teaching by neuropsychologists in Italy.

	Frequency	Percentage
Institution where teaching occurs ($n = 86$)		
Public institution	52	60.5
Private institution	18	20.9
Both	16	18.6
Level at which teaching occurs ^a		
Undergraduate	51	55.4
Specialization (4/5 years postgraduation)	28	30.4
Masters	37	40.2
Doctoral	11	12.0
Level at which thesis or dissertations were supervised ^a		
Undergraduate	67	72.8
Specialization	30	32.6
Master's	24	26.1
Doctoral	17	18.5

Note. ^aMultiple response options available. Responses do not add up to 100%. Percentages are calculated out of total $n = 92$ (those who reported having engaged in teaching related to neuropsychology within the past year).

individual therapy, with personal computers being the most common technological tool used ($n = 80$; 81.6%).

Teaching

Of the 86.4% ($n = 133$) participants who answered the questions regarding having been engaged in teaching activities related to neuropsychology during the past year, 69.2% ($n = 92$) gave an affirmative answer and reported moderately high satisfaction with their role as professors in the area of neuropsychology (average of 7.5, using an ordinal scale of 1–10, where 1 is “not at all satisfied” and 10 “completely satisfied”). As seen in Table 9, the majority ($n = 52$; 60.5%) reported teaching in public institution. Most respondents reported teaching ($n = 51$; 55.4%) and advising theses or dissertations with topics in neuropsychology at the undergraduate level ($n = 67$; 72.8%).

Research

The questions regarding having conducted research in the area of neuropsychology in the last year were answered by 131 (85%) of the 154 participants who meet inclusion criteria, with 79.4% of them responding affirmatively ($n = 104$). Almost all of respondents reported their institutions had an ethics committee ($n = 95$; 92.2%). The majority ($n = 91$; 87.5%) of those who performed research reported they always sought ethics committee approval before starting a new research project, and almost all ($n = 99$; 95.2%) reported obtaining informed consent from participants. About half of participants reported having never received a research grant ($n = 53$; 51.5%), yet half reported having sufficient resources and material to conduct neuropsychological research ($n = 57$; 54.8%).

Regarding the use of statistical software and statistical analysis, 39.6% reported a medium level of proficiency in SPSS, and 47.1% reported a high level of proficiency in Excel. However, most of the participants reported having no knowledge of analysis in Epi Info (84.1%), SAS (72.3%), or Stata (71.3%), with 60.6% ($n=63$) of the 104 participants who conduct research reporting never running statistical analyses by themselves.

Discussion

The present study is the first to describe the characteristics of professionals who practice neuropsychology in Italy. Neuropsychology in Italy is a relatively young field, mainly among professionals who are middle-aged women. Most Italian professionals were employed by the National Health System. The respondents reported high levels of satisfaction with their jobs and an average satisfaction with their salaries. Neuropsychologists in Italy identified a number of barriers that hinder the development of neuropsychology in their country. Barriers that were endorsed the most included the lack of willingness to collaborate among professionals in the field, the lack of academic and clinical training programs, and the lack of access to neuropsychological instruments. Professionals engaged in neuropsychological evaluations reported that the three main problems with the tests they used were high cost, lack of adequate psychometric properties, and lack of up-to-date normative data. The most targeted patient populations receiving neuropsychological assessment were those with dementia, stroke, and movement disorders. A smaller proportion of professionals reported having worked in neuropsychology research and teaching, the latter activity being primarily performed in public institutions, mainly at an undergraduate level. About half of those who engaged in research in the last year reported not having received any grants; yet, they reported having sufficient resources and materials to perform research.

Sociodemographic characteristics of the Italian neuropsychologists

The majority of respondents in the present study were women, which is comparable to the gender distribution reported in other surveys in Nordic Countries (Norup et al., 2017), Spain (Olabarrieta-Landa et al., 2016), the United States (Sweet et al., 2000, 2006, 2015), Latin America (Arango-Lasprilla et al., 2016), and South Africa (Truter et al., 2018). The mean age

for Italian Neuropsychologists (40 years) is younger than that of their colleagues in Nordic Countries and South Africa but older than those in Latin America and Spain.

Professional training

In Italy, most professionals have a psychology degree and have attained postgraduate training in neuropsychology. For the most part, postgraduate training programs and courses have different lengths. For example, a postgraduate specialization in neuropsychology takes approximately four to five years, a master degree takes one to two years, and a doctorate degree takes at least three years. Commonly, most doctorate programs focus on neuropsychology (some doctorates are in neuropsychology; others are in another subject such as neuroscience, but with some courses in neuropsychology); yet, the specialty schools in neuropsychology are less numerous. This is primarily due to the Italian regulations that only allow universities to open specialization programs if a high number of professors with specific competencies (e.g., in neuropsychology) work in that particular university, and if a high number of patients can be tested and treated by the students in the clinical premises connected to the university.

Unlike other European countries, a large number of Italian participants specified that their training in neuropsychology was at the undergraduate level. Following the European Reform of Higher Education (Sorbone Joint Declaration, 1998; Bologna Declaration, 1999), Italian universities started offering a wide range of neuropsychological courses at the undergraduate level degree in psychology. In Italy, neuropsychological training continues as an independent profession where psychologists and other professionals in the public health system must update their training in order to be accredited (via Continuing Education activities). This provision is consistent with the results from other surveys indicating that the amount of training in neuropsychology increases with more advanced education (Truter et al., 2017).

Supervision

The high level of satisfaction reported on training and quality supervision in neuropsychology is similar to that described in the Spanish and Nordic surveys (Olabarrieta-Landa et al., 2016; Norup et al., 2017). It is noteworthy to disclose that four of the neuropsychologists surveyed in this study reported having received poor supervision or none at all. Less than

half of Italian professionals have an official certification as clinical neuropsychologist, a result that could be understood by taking into account the current Italian regulations in the field. Despite the existence of specific training programs (e.g., specialization programs and master's degrees), specific qualification to work as a clinical neuropsychologist in Italy is not mandatory requirement. Thus, clinical neuropsychology could be accomplished by professionals (e.g., psychologists, physicians, and rehabilitation therapists) who never received any type of formal training in neuropsychology.

The European Nordic Countries and the United States have specific mandatory requirements for becoming a clinical neuropsychologist, whereas in South Africa, the process of regulating the recognition of neuropsychology as a specific certification is pending. Italy, Spain, and Latin America have neither regulations nor an official certification that set a mandatory certification to practice neuropsychology. Nevertheless, an official academic certification with the title of "Specialist in Neuropsychology" exists in Italy, which is issued by the School of Specialization in Neuropsychology.

The vast majority of respondents reported that professionals should have a degree in psychology, which is consistent with the results from other surveys in Europe (Olabarrieta-Landa et al., 2016; Norup et al., 2017), the United States (Sweet et al., 2002), Latin America (Arango-Lasprilla et al., 2016), and South Africa (Truter et al., 2018). Similar to other countries, one of the main barriers to the development of neuropsychology in Italy is identified in the lack of willingness to collaborate among professionals in the field, even if technology (e.g., internet) facilitates communication. The collaboration between professionals in the field promotes the recognition of the neuropsychologist among its citizens; it promotes institutional recognition of the neuropsychologist in the National Health System; creates laws that sanction the neuropsychologist as someone who has specialized training in neuropsychology; and develops specific work spaces for neuropsychologists. When these barriers exist, they could depend on several factors, such as temporary work status, the vacancy of formal role definition of neuropsychologists, reluctance to share data, and the competition between professionals. To overcome these barriers in the field, Olabarrieta-Landa et al. (2016) proposed 1) to increase regulation of the profession and its training programs and promote the recognition of the profession by the national governmental body, 2) to include clinicians and researchers in

discussion groups to help write guidelines and define best-practice, 3) to provide funding opportunities for national and international multicenter studies, and 4) to advocate formal procedures of collaboration between clinical institutions and universities to overcome bureaucracy.

Current work situation

In Italy, the majority of respondents have been working in the area of neuropsychology for at least 15 years. Considering that the participants' were 40 years old on average, they likely began working in the field of neuropsychology upon earning their degree. Considering the high levels of unemployment in Italy (ISTAT, 2016), this suggests that neuropsychology is a good prospective career when compared to others fields of psychology (e.g., psychotherapy). Most professionals have a full-time job and generally work for the National Health Organisation, hospitals, or community services. If we compare the number of participants employed in the public health organization sector to the sum of other private work settings, this percentage is reversed, with more neuropsychology professionals working for private facilities and private practice than in the public health system. These results are indicative of a possible governmental limitation placed on the recruitment of professionals in the field, primarily due to financial reasons, regardless of the growing demand of neuropsychological services.

In Italy, the current results show a discrepancy between salary and job satisfaction. This finding and the reported average salary are similar to those stated by participants in Spain (Olabarrieta-Landa et al., 2016). This discrepancy may be due to a number of reasons, including the demanding expectations for work for professionals with higher level of education (i.e., master's, doctorate, specialization), the limited amount of positions and applicants in the field, and the working condition of the two countries.

Neuropsychological activities

In Italy, the services most frequently provided in the field of neuropsychology are evaluation and rehabilitation. Nevertheless, the large number of psychology professionals involved in research and teaching activities may be due to the nature of participants' reported education. Since some respondents attained a doctoral degree, they may be continuing to collaborate with their graduate-level universities.

Evaluation

The most identified patient referral source came from neurologists. The main activities performed by Italian professionals were diagnosis and assessment of adults with neurological conditions, primarily patients with dementia, stroke, movement disorders, and TBI. For the most part, Italian neuropsychologists used flexible neuropsychological batteries. The most commonly used assessment tools were the Stroop test, the MMSE, and the TMT A and B. Because these tests are quick to perform, the relative frequent use of these tests could explain the low average of time spent assessing, interpreting, and writing the neuropsychological reports (i.e., four hours). The most common tests chosen by Italian neuropsychologists were the same as those reported in the Spanish survey (Olabarrieta-Landa et al., 2016).

The increase in Italy's elderly population (Istituto Nazionale di Statistica, 2017) makes the diagnosis of dementia and other age-related neurological diseases critical in the field. The Public Health Organization in Italy (Piano Nazionale Demenze - Strategie per la promozione ed il miglioramento della qualità e dell'appropriatezza degli interventi assistenziali nel settore delle demenze, 2015) provides a specific service for dementia care that includes neuropsychological evaluation (i.e., Dubois et al., 2014), suggesting increasing growth in this area. The patient population assessed and the type of tests used indicates that a majority of responders work with adult populations, whereas in Nordic European Countries (Egeland et al., 2016), Latin America (Arango-Lasprilla et al., 2016), and South Africa (Truter et al., 2017), neuropsychologists' evaluation primarily addresses pediatric populations. These results could be explained by the enrolment of participants: The majority of participants in the study came from two Italian neuropsychological associations in which members work primarily with adult populations. Conversely, many Italian developmental neuropsychologists are enrolled in societies specific to a pediatric disease (e.g., ADHD, learning disabilities).

A greater number of Italian participants indicated the use of normative data from their own country over that of their colleagues from Latin America, South Africa, and Spain (Arango-Lasprilla et al., 2016; Olabarrieta-Landa et al., 2016; Truter et al., 2017). This finding is indicative of the availability of Italian standardization and norms for a wide-range of tests. In 1987, Tognoni and Spinnler (Tognoni, & Spinnler, 1987) published a number of neuropsychological norms for a vast collection of neuropsychological

tests, and in 2008, a second review was published (Bianchi & Dai Prà, 2008; Bianchi, 2008). More recently, a review of tests most commonly used in the assessment of adult populations with Italian norms edited from 1985 to 2005 was published. It is also available with the digital scoring only for SINP members (Ghidoni et al., 2011). Unfortunately, a complete review of the literature focused on the standardization of pediatric neuropsychological test does not exist at this time. In regard to the perceived problems with neuropsychological instruments, the majority of participants identified the high costs of tests as a main barrier, and nearly half of respondents reported obtaining neuropsychological instruments by making photocopies or reproducing them.

Rehabilitation

The results of this study indicated higher rates of rehabilitation work by Italian neuropsychologists than the rates of those professionals in Spain (Olabarrieta-Landa et al., 2016), Latin America (Arango-Lasprilla et al., 2017), and South Africa (Truter et al., 2018). Survey participants indicated that individual therapy was mainly provided to individuals suffering from stroke, TBI, and dementia. Treatment was reportedly focused on attention, executive functions, and memory, and the technological tools used most were personal computers. These results are similar to those from others countries (e.g., Latin America, the U.S., South Africa, and Spain). Also, the use of neuromodulation techniques such as transcranial magnetic and direct current stimulation is comparable with the results from South Africa. In Italy, these findings could be attributed to the proliferating research in this area. The high number of participants who provide rehabilitation services in Italy could be explained by the traditional approach of neuropsychological rehabilitation in the country (Basso, Capitani, & Vignolo, 1975, 1979). Neuropsychological rehabilitation was promoted in the 1970s by Basso (Basso et al., 1975, 1979) for aphasic patients, then extended to other neuropsychological diseases and formally recognized by the Consensus Conference held in Siena in 2010 (Vallar et al., 2012).

The finding that almost no data on pediatric rehabilitation exists is of a great concern, in spite of Italy's strong traditional focus in clinical developmental neuropsychology. As previously stated in the evaluation section, this result may be due to sampling limitations. However, it should also be noted that in Italy, both experimental and clinical neuropsychology

has historically focused on the comprehension, diagnosis, and treatment of acquired disorders; whereas, attention to developmental and child neuropsychology has only gained a strong interest among professionals in the last few decades (Sabbadini, 1995; Vicari & Caselli, 2002).

In regard to vocational training in Italy, it was reported that neuropsychologists and psychologists are not involved in the vocational aspects of rehabilitation, including family functioning, returning to work, sexual adjustment problems, and autonomy. This training usually falls under the field of occupational therapists and social workers. Moreover, neuropsychologists reported not being involved in the determination of possible levels of activity for individuals with disabilities.

Conclusions and implications

This is the first study reporting information regarding the characteristics and practice of neuropsychology professionals in Italy. The findings of this survey also identified areas that the field still needs to address. Three quarters of the respondents reported receiving neuropsychological training in their postgraduate education. However, the majority of Italian professionals reported not having an official certification allowing them to work as neuropsychologist. Currently, formal training is provided by postgraduate specialization programs in neuropsychology, which provide licenses for only three to eight students per year. This highlights the need to regulate the profession and to extend admission to postgraduate specialization schools. The specialty School in Neuropsychology offers a high and standard level of education in Neuropsychology, it guarantees skill training with an established numbers of clinical cases in several pathologies and a deep theoretical knowledge; therefore, it contributes to the increase of the quality of services and assistance.

The different National Neuropsychological Societies in Italy could collaborate to create and offer instruments, provide training to share knowledge across professionals, define guidelines, and promote the definition of services that provide neuropsychological activities.

With the increasing number of immigrants in Italy, estimated to be 14.4 million by 2065 (Italian National Institute of Statistics, 2017), health professionals are called to improve their skills. Professionals in the field of neuropsychology need to take into account the challenges of diagnosing individuals coming from

different cultural backgrounds and the need for different standardization of measures, as research has shown that different variables such as age, education, ethnicity/race, and language greatly affect cognitive performance (e.g., Arango-Lasprilla et al., 2015b; Arango-Lasprilla et al., 2015c; Olabarrieta-Landa et al., 2015a; Olabarrieta-Landa et al., 2015b, Rivera et al., 2015a; Rivera et al., 2015b, Rivera & Arango-Lasprilla, 2017).

Rehabilitation is another neuropsychological area that involves a large amount of Italian professionals, relevant reasons indicate the importance to revise the practice, methodology, tools, and standard levels of rehabilitation facilities, which were defined in Siena Consensus Conference, already eight years ago (Vallar et al. 2012): The tradition of neuropsychological rehabilitation in Italy is mainly based on the experimental research assessing method and tools to restoring cognitive function rather than to a client-based holistic approach. This modularity perspective could lead to miss some living patient's essential area of need as family functioning, returning to work, or sexual problems. In addition, the new law from the Italian Ministry of Health (Legge 8 marzo 2017, n. 24) obliges every clinician to act in conformity with the national guideline set on evidence; it makes a compelling revision of neuropsychological rehabilitation practice that permits a standard level of assistance in the entire country.

This is the first study to evaluate the actual state of neuropsychology in Italy, which compares the results from different countries and underlines the need of regulation in this professional area.

Further research in this area should be addressed to an extended number of respondents as they could comprehend questions regarding the organization of facilities, services, and clinical departments of neuropsychology. These respondents could describe how they work and how they could be more specific regarding the Italian context, particularly describing the differences between several areas of the country.

Limitations

This study's results should be interpreted in light of some limitations. First, the survey is based on self-report, meaning there is a subjective component. Thus, we are unable to verify the accuracy of the responses. Second, questions did not include topics of increasing interest to neuropsychology, such as forensics. Third, the sample is limited to the members of two Italian neuropsychological associations. However, these analyses create a baseline for upcoming surveys

and provide a view of the current conditions of neuropsychology in Italy. These findings provide a basis for the understanding of the status of the field in Italy and can inform efforts to improve and grow the profession in the years to come.

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References

- Arango-Lasprilla, J. C., Stevens, L., Morlett-Paredes, A., Ardila, A., & Rivera, D. (2017). Profession of neuropsychology in Latin America. *Applied Neuropsychology: Adult*, 24, 318–330. doi:10.1080/23279095.2016.1185423
- Arango-Lasprilla, J. C. O., Landa, L., Rivera, D., Olivera, Plaza, S. L., De los Reyes Aragón, C. J., ... Quijano, M. C. (2015a). Situación actual de la neuropsicología en Colombia. In J. C. Arango-Lasprilla & D. Rivera (Eds.), *Neuropsicología en Colombia: Datos normativos, estado actual y retos a futuro* (pp. 21–46). Manizales, Colombia: Editorial Universidad Autónoma de Manizales.
- Arango-Lasprilla, J. C., Rivera, D., Garza, M. T., Saracho, C. P., Rodríguez, W., Rodríguez-Agudelo, Y., ... Perrin, P. B. (2015b). Hopkins verbal learning test–Revised: Normative Data for the Latin American Adult Population. *NeuroRehabilitation*, 37, 699–718. doi:10.3233/NRE-151286
- Arango-Lasprilla, J. C., Rivera, D., Rodríguez, G., Garza, M. T., Galarza-del-Angel, J., Rodríguez, W., ... Perrin, P. B. (2015c). Symbol digit modalities test: Normative data for the Latin American Spanish speaking adult population. *NeuroRehabilitation*, 37, 625–638. doi:10.3233/NRE-151282
- Basso, A., Capitani, E., & Vignolo, L. A. (1979). Influence of rehabilitation on language skills in aphasic patients: A controlled study. *Archives of Neurology*, 36, 190–196. doi:10.1001/archneur.1979.00500400044005
- Basso, A., Faglioni, P., & Vignolo, L. A. (1975). Etude contrôlée de la rééducation du langage dans l'aphasie: Comparaison entre aphasiques traités et non-traités. *Revue Neurologique*, 131, 607–614.
- Bianchi, A. (Eds). (2008). *L'esame neuropsicologico dell'adulto. Applicazioni cliniche e forensi*. Giunti: Organizzazioni speciali Psicologia Applicata.
- Bianchi, L. (1895). The functions of the frontal Lobes. *Brain*, 18, 497–522. doi:10.1093/brain/18.4.497
- Bianchi, A., & Dai Prà, M. (2008). Twenty years after Spinnler and Tognoni: new instruments in the Italian neuropsychologist's toolbox. *Neurological Sciences*, 29, 209–217. doi:10.1007/s10072-008-0970-x
- Block, C., Santos, O., Flores-Medina, Y., Rivera, D., & Arango-Lasprilla, J. C. (2017). Neuropsychology and rehabilitation services practices in the United States: Brief report from a survey of clinical neuropsychologists. *The Archives of Clinical Neuropsychology*, 32, 369–374.
- Boller, F. (2015). Ennio De Renzi (1924-2014). A loving remembrance. *Functional Neurology*, 30, 5–7.
- Bologna Declaration of 19 June 1999. Joint declaration of the European Ministers of Education. https://ec.europa.eu/education/policy/higher-education/bologna-process_en
- Chapman, D. W., & Carter, J. F. (1979). Translation procedures for the cross cultural use of measurement instruments. *Educational Evaluation and Policy Analysis*, 1, 71–76. doi:10.3102/01623737001003071
- Decreto del Ministero dell'Università e della Ricerca 24.7. 2006 (2006). Riassetto delle scuole di specializzazione di area psicologica. *Gazzetta Ufficiale n.246 del 21 ottobre 2006*.
- Decreto del Presidente della Repubblica 6 Febbraio (1985). n. 216, Modificazioni all'ordinamento didattico universitario relativamente al corso di studi per il conseguimento della laurea in psicologia. *Gazzetta Ufficiale Serie Generale n. 128 del 1-6-1985*.
- Decreto del Presidente della Repubblica n. 452 del 11.05 (1971). Istituzione del corso di laurea in Psicologia presso la Facoltà di Lettere e Filosofia e Magistero dell'Università degli Studi di Roma.G.U. *Serie generale n. 183 del 21 luglio 1971*.
- Decreto Rep. n. 2505 del (2017). 16.07 Bando di ammissione alla scuola di specializzazione in Neuropsicologia A.A.2017-18, Università degli studi di Padova.
- Decreto Rettoriale del 29.04 (1999). Modificazioni allo statuto dell'Università relativamente alla scuola di specializzazione in neuropsicologia. *Gazzetta Ufficiale n. 115 del 19 maggio 1999*.
- Decreto Rettoriale del 21 luglio 2008, n. 0022586 (2008). del 21.07 Istituzione scuola di specializzazione in neuropsicologia Università degli studi "Bicocca" di Milano.
- Decreto Rettoriale del 27 ottobre 2011, n. 3546 del (2011). 27.10 Istituzione scuola di specializzazione in neuropsicologia, Università degli studi "Vita e Salute San Raffaele" di Milano.
- Denes, G., & Dalla Barba, G. (1998). G.B. Vico, precursor of cognitive neuropsychology? The first reported case of noun-verb dissociation following brain damage. *Brain and Language*, 62, 29–33. doi:10.1006/brln.1997.1867
- Dubois, B., Feldman, H. H., Jacova, C., Hampel, H., Molinuevo, J. L., Blennow, K., ... Cummings, J. L. (2014). Advancing research diagnostic criteria for Alzheimer's disease: The IWG-2 criteria. *The Lancet Neurology*, 13, 614–629. doi:10.1016/S1474-4422(14)70090-0
- Egeland, J., Løvstad, M., Norup, A., Nybo, T., Persson, B. A., Rivera, D., ... Arango-Lasprilla, J. C. (2017). Questionnaire use among Nordic neuropsychologists: Shift from assessing personality to checking ecological validity of neuropsychological assessments? *Professional Psychology: Research and Practice*, 48, 227–235. doi:10.1037/pro0000119
- Egeland, J., Løvstad, M., Norup, A., Nybo, T., Persson, B., Rivera, D., ... Arango-Lasprilla, J. C. (2016). Following international trends while subject to past traditions: Neuropsychological test use in the Nordic countries. *The Clinical Neuropsychologist*, 30, 1479–1500. doi:10.1080/13854046.2016.1237675

- Fernandez, A. L., Ferreres, A., Morlett-Paredes, A., Rivera, D., & Arango-Lasprilla, J. C. (2016). Past, present, and future of neuropsychology in Argentina. *The Clinical Neuropsychologist*, 30, 1154–1178. doi:10.1080/13854046.2016.1197313
- Fonseca-Aguilar, P., Olabarrieta Landa, L., Rivera, D., Aguayo Arellis, A., Ortiz Jiménez, X. A., Rabago Barajas, B. V., ... Arango-Lasprilla, J. C. (2015). Current state of professional Neuropsychological practice in Mexico. *Psicología Desde El Caribe*, 32, 1–363. doi:10.14482/psdc.32.3.7896
- Ghidoni, E., Barletta-Rodolfi, C., Gasparini F., & Bianchi A. (Eds.). (2011). *KIT del neuropsicologo Italiano*. Milano: Dynamicom.
- IBM Corp. (2013). *IBM SPSS statistics for Windows, Version 22.0*. Armonk, NY: IBM Corp.
- ISTAT. (2016). I percorsi di studio e lavoro dei diplomati e dei laureati. Indagine 2015 su diplomati e laureati 2011. Statistiche report, diplomati e laureati ISTAT90, pp. 1–24.
- Istituto Nazionale di Statistica. (2017). Il futuro demografico del paese, previsioni regionali della popolazione residente al 2065. Statistiche report 26.4.2017. pp. 5–6.
- Legge 8 marzo. (2017). n.24 Disposizioni in materia di sicurezza delle cure e della persona assistita, nonché in materia di responsabilità professionale degli esercenti le professioni sanitarie. Gazzetta Ufficiale Serie Generale n.64 del 17-03-2017.
- Marhaba, S. (Eds.). (1981). *Lineamenti di psicologia italiana:1870-1945*. Florence, Italy: Giunti Editore.
- Norup, A., Egeland, J., Løvstad, M., Nybo, T., Persson, B. A., Rivera, D., ... Arango-Lasprilla, J. C. (2017). Education, training, and practice among nordic neuropsychologists. Results from a professional practices survey. *The Clinical Neuropsychologist*, 31, 20–41. doi:10.1080/13854046.2017.1291857
- Olabarrieta-Landa, L., Caracuel, A., Pérez-García, M., Panyavin, I., Morlett-Paredes, A., & Arango-Lasprilla, J. C. (2016). The profession of neuropsychology in Spain: Results of a national survey. *The Clinical Neuropsychologist*, 30, 1335–1355. doi:10.1080/13854046.2016.1183049
- Olabarrieta-Landa, L., Rivera, D., Galarza-del-Angel, J., Garza, M. T., Saracho, C. P., Rodríguez, W., ... Arango-Lasprilla, J. C. (2015a). Verbal fluency tests: Normative data for the Latin American adult population. *NeuroRehabilitation*, 37, 515–561. doi:10.3233/NRE-151279
- Olabarrieta-Landa, L., Rivera, D., Morlett-Paredes, A., Jaimes-Bautista, A., Garza, M. T., Galarza-del-Angel, J., ... Arango-Lasprilla, J. C. (2015b). Standard form of the Boston naming test: Normative data for the Latin American adult population. *NeuroRehabilitation*, 37, 501–513. doi:10.3233/NRE-151278
- Panyavin, I., Goldberg-Looney, L., Rivera, D., Perrin, P., & Arango-Lasprilla, J. C. (2015). Perception of ethical misconduct by neuropsychology professionals in Latin America. *Archives of Clinical Neuropsychology*, 30, 413–423. doi:10.1093/arclin/acv026
- Piano nazionale demenze - Strategie per la promozione ed il miglioramento della qualità e dell'appropriatezza degli interventi assistenziali nel settore delle demenze. (2015). G.U. Serie Generale, n. 9 del 13 gennaio 2015.
- Ponsford, J. (2016). The practice of clinical neuropsychology in Australia. *The Clinical Neuropsychologist*, 30, 1179–1192. doi:10.1080/13854046.2016.1195015
- Rivera, D., & Arango-Lasprilla, J. C. (2017). Methodology for the development of normative data for Spanish Speaking pediatric population. *NeuroRehabilitation*, 41, 581–592. doi:10.3233/NRE-172275
- Rivera, D., Perrin, P. B., Morlett-Paredes, A., Galarza-del-Angel, J., Martínez, C., Garza, M. T., ... Arango-Lasprilla, J. C. (2015a). Rey-Osterrieth complex figure: Normative data for the Latin American adult population. *NeuroRehabilitation*, 37, 677–698. doi:10.3233/NRE-151285
- Rivera, D., Perrin, P. B., Stevens, L. F., Garza, M. T., Weil, C., Saracho, C. P., ... Arango-Lasprilla, J. C. (2015b). Stroop color-word interference test: Normative data for the Latin American adult population. *NeuroRehabilitation*, 37, 591–624. doi:10.3233/NRE-151281
- Sabbadini, G. (ed.). (1995). *Manuale di neuropsicologia dell'età evolutiva*. Bologna, Italia: Zanichelli.
- Sorbonne Joint Declaration. (1998). Joint declaration on harmonization of the architecture of the European higher education system by the four Ministers in charge for France, Germany, Italy and the United Kingdom Paris, the Sorbonne, May 25, 1998.
- Sweet, J. J., Benson, L. M., Nelson, N. W., & Moberg, P. J. (2015). The American Academy of Clinical Neuropsychology, National Academy of Neuropsychology, and Society for Clinical Neuropsychology (APA Division 40) 2015 TCN Professional Practice and 'Salary Survey': Professional Practices, Beliefs, and Incomes of U.S. Neuropsychologists. *The Clinical Neuropsychologist*, 29, 1069–1162. doi:10.1080/13854046.2016.1140228
- Sweet, J. J., & Moberg, P. J. (1990). A survey of practices and beliefs among ABPP and non-ABPP clinical neuropsychologists. *The Clinical Neuropsychologist*, 4, 101–120. doi:10.1080/13854049008401504
- Sweet, J. J., Moberg, P. J., & Suchy, Y. (2000). Ten-year follow-up survey of clinical Neuropsychologists: Part II. Private practice and economics. *Clinical Neuropsychology*, 14, 479–495. doi:10.1076/clin.14.4.479.7201
- Sweet, J. J., Moberg, P. J., & Westergaard, C. K. (1996). Five-year follow-up survey of practices and beliefs of clinical neuropsychologists. *The Clinical Neuropsychologist*, 10, 202–221. doi:10.1080/13854049608406681
- Sweet, J. J., Nelson, N. W., & Moberg, P. J. (2006). The TCN/AACN 2005 "salary survey": Professional practices, beliefs, and incomes of U.S. neuropsychologists. *Clinical Neuropsychology*, 20, 325–364. doi:10.1080/13854040600760488
- Sweet, J. J., Peck, E. A. III., Abramowitz, C., & Etzweiler, S. (2002). National Academy of Neuropsychology/Division 40 of the American Psychological Association Practice Survey of Clinical Neuropsychology in the United States, Part I: Practitioner and practice characteristics, professional activities, and time requirements. *The Clinical Neuropsychologist*, 16, 109–127. doi:10.1076/clin.16.2.109.13237
- Tognoni, G., & Spinnler, H. (1987). Italian standardization and classification of Neuropsychological tests. The Italian Group on the Neuropsychological Study of Aging. *Italian Journal of Neurological Sciences*, (Suppl 8), 1–120.
- Truter, S., Mazabowb, M., Morlett-Paredes, A., Riverad, D., & Arango-Lasprilla, J. C. (2018). Neuropsychology in

- South Africa. *Applied Neuropsychology: Adult*, 25(4), 344–355. doi: [10.1080/23279095.2017.1301453](https://doi.org/10.1080/23279095.2017.1301453).
- Vallar, G., Boller, F., Grossi, D., & Gainotti, G. (2015). Italian neuropsychology in the second half of the twentieth century. *Neurological Sciences*, 36, 361–370. doi: [10.1007/s10072-014-2044-6](https://doi.org/10.1007/s10072-014-2044-6)
- Vallar, G., Cantagallo, A., Cappa, S. F., & Zoccolotti, P. (Eds). (2012). *La riabilitazione neuropsicologica*. Milan: Springer.
- Vicari, S., & Caselli, M. C. (2002). I disturbi dello sviluppo. www.biologia.units.it Bando di ammissione alla scuola di specializzazione in Neuropsicologia A.A.2017-18. Il Mulino, Bologna Italia: Università degli studi di Trieste.

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