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Mental health of primary school children in Romania

Analysis and considerations based on the results of

"School Children Mental Health in Europe" - SCMHE Project

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LIST OF ABBREVIATIONS

ADHD - Attention Deficit/Hyperactivity Disorder

AUC - Area Under the (Receiver Operator Characteristic) Curve

CI – Confidence Interval

DAWBA – Development and Well Being Assessment (questionnaire)

DI – Dominic Interactive

DSM-IV - Diagnostic and Statistical manual of mental disorders 4th edition

NA – Not Applicable

NPV – Negative predictive value

ODD – Oppositional Defiant Disorder

PPV – Positive predictive value

SCMHE – "School Children Mental Health in Europe"

SDQ – Strengths and Difficulties Questionnaire

SDQ P- Strengths and Difficulties Questionnaire parent version

SDQ T - Strengths and Difficulties Questionnaire teacher version

SDQ P/T - Strengths and Difficulties Questionnaire parent or teacher version

Se – Sensitivity

Sp - Specificity

WO- without impact

I. INTRODUCTION

Assessment of children mental health is important in the actual public health context since most psychiatric disorders accounting for a considerable proportion of "global burden of disease" have their origins in the early life (Costello, Egger and Angold 2005). Assessment of mental health in children as young as 6-11 years old may enable following preventive interventions in a population group sensitive enough for these interventions. Still, the number of available instruments for mental health evaluation in young children is limited. Moreover, most of these instruments have been originally developed in English and their use in any different cultural setting requires a rigorous validation process.

In this context, the project "School Children Mental Health in Europe"- SCMHE has been conducted in order to set up an instrument to collect information on mental health of primary school children comparable across participating European countries: Germany, Netherlands, Italy, Lithuania, Bulgaria, Romania and Turkey. Within this project two phases were carried out:

– Selection of scientifically sound instruments for measuring mental health and risk factors for mental health of children 6-11 years old using three informants (children, parents, teachers), and validation of these instruments against clinicians' judgment.

– Pilot survey in a random sample of primary schools.

This work has been based on the project progress and results in Romania and it will present:
1. Author's contribution to the fieldwork for both validation and pilot survey;
2. Collaboration to other team members in processing the data (data cleaning and data weighting).
3. Analysis based on the Romanian validation data
4. Development of scientific paper about Romanian validation of instruments

The specific Romanian context in the field of child mental health has to be considered in order to fully understand the implications of this project at all levels. First, the availability of Romanian versions of instruments designed to evaluate mental health in young children is limited, and literature about validation of these instruments is even sparser (Achenbach, et al. 2008). Second, assessment of mental health needs - like prevalence of most common internalized and externalized disorders and determinants of mental health - or use of care in this age group have not been produced for the past decades in Romania. Finally, cross-cultural

comparisons amongst Romania and other countries have not been feasible until now given these circumstances, and the obstacle of methodological differences (various instruments, study design etc.) which often hampers this kind of analysis (Pez, Gilbert, et al. 2010).

II.   METHODS AND MATERIALS
(Fieldwork description)

A. <u>Validation of instruments</u>

Selection of instruments. The first stage in SCMHE has been the selection of the appropriate instruments for assessment of most common externalized and internalized disorders in children aged 6-11 years old. The eligible questionnaires had to be scientifically sound, relatively short, easy to administer in general population and available in different languages. It was also necessary to collect data from three informants: child, parent and teacher because each of them might report different aspects of child functioning according to context, perspective, knowledge of norms, and reporting skills. (Horton, Laird and Zahner 1999, Kraemer, et al. 2003, Shojaei, Wazana, et al. 2009).

In March 2008 the project partners have completed selection of questionnaires based on these criteria and decided to use Dominic Interactive (child), Strengths and Difficulties Questionnaire (parent and teacher version) and Development and Well-Being Assessment questionnaire (parent and teacher version)

Dominic Interactive is a computerized cartoon-like questionnaire administered to children 6 to 11 years old. It contains 91 questions aimed to identify most common child disorders based on DSM-IV taxonomy (American Psychiatric Association 1994): ADHD, Conduct Disorder, Oppositional Defiant, Phobias, Separation Anxiety, Generalized Anxiety Disorder and Major Depressive Disorder (Valla, Bergeron and Smolla 2000), For each question a picture illustrates a precise situation and the child is asked if he/she feels like the character Dominic (Gabi in Romanian version) character in that situation. DI had already been used in different countries (Linares Scott, et al. 2006, Valla, Bergeron and Smolla 2000). It's easy to administer in general population and opposite to other psychiatric assessment instruments, translation in languages for which versions have not been already available - like Romanian for example – is less laborious. (Shojaei, Wazana, et al. 2009)

Strengths and Difficulties Questionnaire (SDQ, see Annex) is a brief self administered psychopathology screening questionnaire for children aged between 4 and 16 years old

(Goodman 1997). It asks about 25 attributes, some positive and some negative, generating scores for emotional symptoms, hyperactivity–inattention, conduct problems, peer relationship problems and prosocial behavior (Goodman, Meltzer and Bailey 1998, Goodman 2001). Its extended version includes a brief impact supplement measuring the distress, social impairment and burden for others. (Goodman 1999). Slightly different versions are available for parent and teacher. It has been translated in more than 60 languages and it has proven good psychometric properties for the original English version and several other languages (Becker, et al. 2004, Goodman 2001, Klasen, et al. 2000, Marzocchi, et al. 2004, Obel, et al. 2004, Samad, et al. 2005, Shojaei, Wazana, et al. 2008).

Development and Well Being Assessment (DAWBA) has been selected as "gold standard" to produce diagnosis according to DSM-IV taxonomy. (American Psychiatric Association 1994) DAWBA combines highly structured questions with open-ended comments and is administered to parents of 5-17 years old children. Teachers complete a short version of the questionnaire reporting on children's main behavioural and emotional problems (Goodman, Ford, et al. 2000). A computerized algorithm is used to combine all this information and produce likely diagnosis. However, an experienced clinician finally reviews these computer–generated evaluations and open comments, and decides to accept or reject the computer-generated evaluation. DAWBA has psychometric properties close to other diagnostic interviews (Costello, Egger and Angold 2005), a computerized version is available, and it can easily be administered by lay interviewers.

Translation. SDQ both parent and teacher versions were already available in Romanian language and were downloaded from www.sdqinfo.org. In April 2008 - January 2009 the translation and additional procedures for development of Romanian version for DAWBA and DI have been performed under my direct coordination. The focus group in charge with this task comprised one psychiatrist (the author hereby), one child and adolescent psychiatrist and two professional translators. After the questionnaires were translated, discrepancies and ambiguities were discussed within this group and afterwards back-translation was performed.

In every stage of the process, also written reports were submitted to DAWBA's author (Goodman). Divergences were analyzed and the final Romanian version received his approval.

After completion of translation, DI questions have been audio recorded in a professional recording studio, procedure which I supervised. Then all written and audio material was sent to the author (Valla) in order to develop the Romanian version of DI software. I verified the

concordance of audio, written and pictorial material in this version, reported the divergences and provided additional material to address these divergences.

Sampling and procedures. The initial sample had to include 100 children of which 80 would be clinical cases (approximately 40 with internalized disorders and 40 with externalized disorders) and 20 normal. Therefore, the child and adolescent psychiatric clinic within the largest psychiatric hospital in Bucharest has been contacted by project team in order to grant a clinical sample. Approval was received from the head of this clinic and no additional ethical approvals were required. Information letter and consent form (translated and adapted by the author hereby) were provided and signed by the parents. Children within a large area of the country are usually referred to this clinic since there are few available services for child mental health assessment. Consequently the final sample included also the necessary normal cases.

In February-March 2009 I've trained two interview teams each comprising one specialist and one resident in child and adolescent psychiatry, for children recruitment and administration of SDQ, DAWBA and DI. During the same period and further on, I have been responsible of other logistic and technical aspect like software installation for DAWBA and DI, administration licenses download and upload of completed interviews to DAWBA central server.

Interviews from 70 children were completed during March 2009 – June 2010. The eligibility criteria were: (1) Age range 6-11 years old (primary school grades I-IV); (2) No psychotic disorder, developmental disorder (autistic or others) or mental retardation The parents of all eligible children in the clinic were informed about the study and invited to participate. After signing the informed consent, the parent completed the SDQ questionnaire and a trained interviewer administered DAWBA computer version. Meanwhile, DI was administered to the child. In the end, parent received a pre-stamped envelope with SDQ and DAWBA questionnaires for the teacher, and was asked to return it personally or by post mail. The parents who did not return the questionnaire within 2 weeks were contacted by phone. The teacher and SDQ P questionnaires were entered in a computer excel file. Lastly, the DAWBA final rating (clinician diagnosis) was done by me in cooperation with one child and adolescent psychiatrist. Results will be discussed in section "**Analysis and results**".

B. <u>School survey fieldwork</u>

Questionnaires. In the pilot survey, the instruments validated in the first phase were tested. Reports were collected from the same three informants: child, parent and teacher.
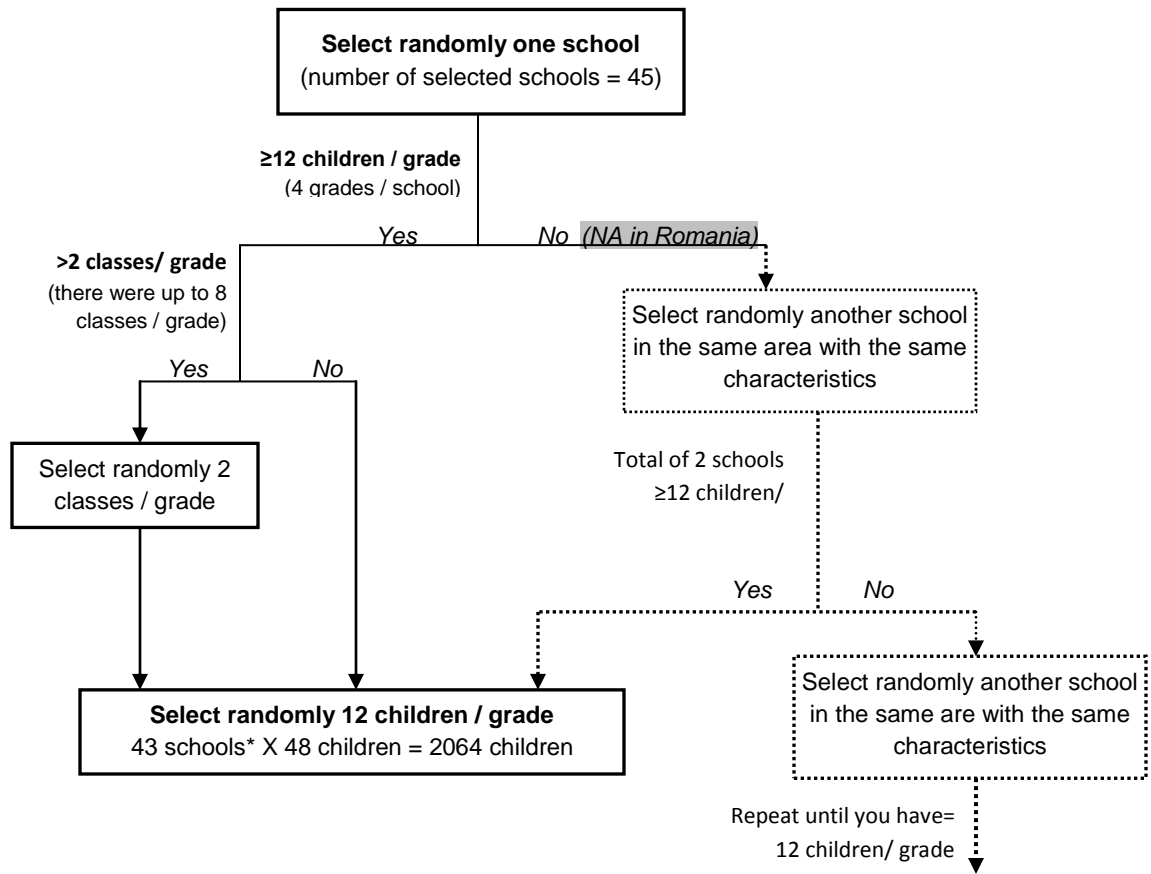- For children DI was used;

- Parent questionnaire included: SDQ P, information about socio-demographic variables, child's activities, health conditions and injuries, parental attitudes and parent-child relationship; information about parents' mental health and well being, alcohol and smoking habits; use of care (GP, pediatrician, psychiatrist, psychologist etc.)
- Questionnaire for teacher included SDQ T and information about child's school competencies.

Sampling and methodology. In March – June 2011 the pilot survey has been conducted in Romania under my coordination. A multistage sampling procedure has been used for selection of participants within the urban (Bucharest) and rural (Ilfov county nearby Bucharest) area. 45 public schools have been randomized (private schools were not significantly represented in Romania) – 23 urban and 22 rural. In each school, two classes per each grade were randomly selected, then 6 children in each class were randomized or 12 if just one class per grade (see Figure 1). I conducted this procedure assisted by another team member. Finally 48 children have been selected in each school.

The General School Inspectorates of Bucharest and Ilfov County (local authorities representing the Ministry of Education) were contacted in order to obtain approval and support for conducting the study in the schools. In cooperation with these institutions, I've developed the protocol document which has been finally signed. The Inspectorates provided complete data about the schools. Subsequently to randomization which I performed, Inspectorate also nominated in each school one teacher responsible for the project. I was responsible of training these teachers and provide them all required information and materials. They distributed the information letters to parents of selected children, and collected their signed consent.

Two interview teams formed by me and psychiatry residents administered the DI into the schools according to a time planning that I established with each school. Parent and teacher questionnaires were in the same time delivered. Afterwards completed questionnaires were returned by the respondents to the project responsible in each school, from which I have collected it later.

The participating teachers were granted professional credit points for their involvement based on the participation certificates.

Select randomly one school
(number of selected schools = 45)

≥12 children / grade
(4 grades / school)

Yes

No (NA in Romania)

>2 classes/ grade
(there were up to 8
classes / grade)

Yes   *No*

Select randomly another school
in the same area with the same
characteristics

Total of 2 schools
≥12 children/

Select randomly 2
classes / grade

Yes   *No*

Select randomly 12 children / grade
43 schools* X 48 children = 2064 children

Select randomly another school
in the same are with the same
characteristics

Repeat until you have=
12 children/ grade

* participating schools

Figure 1 Sampling procedure in Romania (*adapted from Pez., Boyd and Kovess-Masfety "European Report - The School Children Mental Health Evaluation Project. Phase 2: The School Survey " 2011)*

Results. 43 schools out of 45 agreed to take part to the study and the final sample comprised 1408 participating children. Complete data from all three informants was available for 1106 children. Assessment of children mental health problems with or without needs was produced, as well as prevalence estimates for internalized and externalized disorders according to each informant report, gender and age group. The mental health determinants like child and family characteristics, parental attitudes, parental mental health, alcohol consumption and smoking habits were assessed, as well as use of healthcare services (consultations in GP, psychiatrist, psychologist etc.) (Pez., Boyd and Kovess-Masfety 2011). Detailed results will not

be presented here since it goes beyond the purpose of this paper and will be included in the national report.

I have also been working to produce national report based on the format suggested by main project coordinator. Along with Romanian team we have been establishing the proper strategy for effective national dissemination of results at all concerned levels: Ministry of Health, Ministry of Education, mental health professionals and large public.

C. <u>Data entry and additional procedures</u>

Data entry. During November 2010 – January 2011 the questionnaires filled in by parent and teacher have been entered into excel database provided by European project coordinator. I trained and supervised the team which performed this task. The database was then delivered to the project coordinator for further analysis.

Data cleaning. In February – April 2011 several data queries were addressed based on the initial analysis performed by project statistician. These queries involved different variables: and concerned the missing values, values in the abnormal range, entries with same ID and other discrepancies. For each value rectification, the original paper questionnaire was checked and compared to data file. Since missing data or various inaccuracies represent an important downside of self-completed questionnaires, this represented also a source of the queries. Some of these problematic values (e.g. child age) were deducted based on other answers within the same questionnaire or other reports (child, teacher). When deduction was not possible, these were considered "missing values". The final decision about the appropriate deducted value belonged jointly to statistician, project coordinator and me.

Another issue was represented by the apparent very high number of respondents accessing the mental healthcare services for children (consultation of psychiatrist, psychologist, psychotherapist, speech-therapist etc.), which strongly contrasted to the actual availability of these services in Romania and the results of other countries. Therefore, the best method for checking the accuracy of data needed to be found. I have verified and estimated the proportion of positive answers for relevant variables in the excel database and found it was much lower than the produced results. An error occurred in data processing due to high number of missing values has been identified and properly addressed in further data analysis.

After the results of initial analysis have been available, I've compared it to the available evidence for some of the variables, like socio-demographic characteristics (e.g. distribution of families depending on children number, unemployment rate) and other family characteristics.

Data weighting. During the same time period, I have collected additional information required for data weighting in the statistical analysis from Inspectorate, school responsible, available questionnaires and signed consents. This report provided information about number of classes per school and grade, number of children per school, grade and class, refusal rate, rate of non-eligible or absent children and loss rate due to other reasons.

III. ANALYSIS AND RESULTS

A. <u>Results of validation in Romania</u>

I performed statistical analysis using STATA IC version 11.0 (*StataCorp LP, College Station TX*) based on the dataset provided by project statistician. I have analyzed the number of completed interviews per informant and also the prevalence of disorders by age and gender (according to "gold standard" DAWBA). I evaluated the sensitivity, specificity, and also positive predictive values (PPV) and negative predictive values (NPV) of the questionnaires to be validated,(SDQ parent and teacher and DI). I performed also the kappa concordance test between these and the "gold standard" for clinical diagnosis, DAWBA.

The final sample comprised 70 children. A relatively low number of teachers completed the DAWBA (21) and SDQ questionnaires (23). (Detailed information about number of completed questionnaires can be found in Table 1).

Table 1. Completed questionnaires by each informant

	DI	DAWBA	SDQ
Children	69	NA	NA
Parent	NA	70	69
Teacher	NA	21	23

I've estimated prevalence of internalized and externalized disorders by gender and age in the validation sample according to the DAWBA clinical diagnosis (table 2). More than half of the sample presented at least one diagnosis (36 cases), out of which one fourth presented comorbidity of externalized and internalized disorders. The number of cases for externalized disorders (N=29) was almost two folds higher than for internalized disorders (N=16).

Table 2. Prevalence estimates by age and gender according to DAWBA diagnosis
in the Romanian validation sample

	Total N=70 (%)	Gender		Age	
		Boys N=42 (%)	Girls N=28 (%)	≤ 8yrs N=30 (%)	> 8yrs N=40 (%)
Internalized disorders	16 (22.9)	9 (21.4)	7 (25.0)	11 (36.7)	5 (12.5)
Depression	6 (8.6)	5 (11.9)	1 (3.6)	4 (13.3)	2 (5.0)
Separation anxiety	6 (8.6)	2 (4.8)	4 (14.3)	5 (16.7)	1(2.5)
Phobia	7 (10)	2 (4.8)	5 (17.9)	5 (16.7)	2 (5.0)
Generalized anxiety	3 (4.3)	1 (2.4)	2 (7.1)	3 (10.0)	0 (0.0)
Externalized disorders	29 (41.4)	22 (52.4)	7 (25.0)	15 (50.0)	14 (35)
ADHD	24 (34.3)	19 (45.2)	5 (17.9)	13 (43.3)	11 (27.5)
Conduct / Oppositional defiant	22 (31.4)	16 (38.1)	6 (21.4)	10 (33.3)	12 (30)
Internalized and externalized d.	9 (12.9)	6 (14.3)	3 (10.71)	5 (16.7)	4 (10)
Any diagnosis (internalized or externalized)	36 (51.4)	25 (59.5)	11 (39.2)	21 (0.7)	15 (37.5)

External consistency was assessed for SDQ parent / teacher with and without considering the impact supplementary questions versus DAWBA (tables 3, 4). SDQ without impact had better sensitivity for any diagnosis (91.7%) than SDQ with impact (72.2%). On the other hand, when considering impact very good specificity (91.2%) and PPV (89.7%) were achieved. The concordance test showed similar results for any diagnosis with kappa of 0.63. However, in both cases, Romanian version of SDQ performed from good to excellent for all diagnosis, with AUC ranging from 0.71 to 0.91, and kappa from 0.38 to 0.85. When looking at type of disorder, important divergences can be noticed. For internalized disorders performance

Table 3. Consistency of SDQ parent / teacher without impact supplement vs. DAWBA for any disorder and internalized and externalized disorders in the Romanian validation sample

	DAWBA	SDQ P/T WO imp.	Se (95% CI)	Sp (95% CI)	PPV (95% CI)	NPV (95% CI)	AUC (95% CI)	Kappa (95% CI)
Any diagnosis (internalized or externalized)	51.4%	61.4%	91.7 (77.5-98.2)	70.6 (52.5-84.9)	76.7 (61.4-88.2)	88.9 (70.8-97.6)	0.81 (0.72-0.90)	0.63 (0.45-0.81)
Internalized disorders	22.9%	42.9%	87.5 (61.7-98.4)	70.4 (56.4-82.0)	46.7 (28.3-65.7)	95 .0 (83.1-99.4)	0.79 (0.69-0.89)	0.44 (0.24-0.64)
Externalized disorders	41.4%	47.1%	89.7 (72.6-97.8)	82.9 (67.9-92.8)	78.8 (61.1-91.0)	91.9 (78.1-98.3)	0.86 (0.78-0.94)	0.71 (0.55-0.88)
ADHD	34.3%	41.4%	87.5 (67.8-97.3)	82.6 (68.6-92.2)	72.4 (52.8-87.3)	92.7 (80.1-98.5)	0.85 (0.76-0.94)	0.67 (0.49-0.84)
ODD/Behaviour	31.4%	37.1%	86.4 (65.1-97.1)	85.4 (72.2-93.9)	73.1 (52.2-88.4)	93.2 (81.3-98.6)	0.86 (0.77-0.95)	0.68 (0.50-0.86)

Table 4. Consistency of SDQ parent / teacher with impact supplement vs. DAWBA for any disorder and internalized and externalized disorders in the Romanian validation sample

	DAWBA	SDQ P/T with imp.	Se (95% CI)	Sp (95% CI)	PPV (95% CI)	NPV (95% CI)	AUC (95% CI)	Kappa (95% CI)
Any diagnosis (internalized or externalized)	51.4%	41.4%	72.2 (54.8-85.8)	91.2 (76.3-98.1)	89.7 (72.6-97.8)	75.6 (59.7-87.8)	0.82 (0.73-0.91)	0.63 (0.45-0.80)
Internalized disorders	22.9%	30.0%	62.5 (35.4-84.8)	79.6 (66.5-89.4)	47.6 (25.7-70.2)	87.8 (75.2-96.4)	0.71 (0.58-0.84)	0.38 (0.14-0.62)
Externalized disorders	41.4%	34.3%	82.8 (64.2-94.2)	100.0 (91.4-100.0)	100.0 (85.8-100.0)	89.1 (76.4-96.4)	0.91 (0.84-0.98)	0.85 (0.72-0.97)
ADHD	34.3%	32.9%	83.3 (62.6-95.3)	93.5 (82.1-98.6)	87.0 (66.4-97.2)	91.5 (79.6-97.6)	0.88 (0.80-0.97)	0.78 (0.62 - 0.93)
ODD/Behaviour	31.4%	30.0%	86.4 (65.1-97.1)	95.8 (85.7-99.5)	90.5 (69.6-98.8)	93.9 (83.1-98.7)	0.91 (0.83-0.99)	0.83 (0.69-0.97)

Table 5. Consistency of DI vs DAWBA for any disorder and internalized and externalized disorders in the Romanian validation sample

	DAWBA	DI	Se (95% CI)	Sp (95% CI)	PPV (95% CI)	NPV (95% CI)	AUC (95% CI)	Kappa (95% CI)
Any diagnosis (internalized or externalized)	52.2%	26.1%	33.3 (18.6 - 51.0)	81.8 (64.5-93.0)	66.7 (41.0-86.7)	52.9 (38.5-67.1)	0.58 (0.47-0.68)	0.15 (-0.05 - 0.35)
Internalized disorders	23.2%	17.4%	37.5 (15.2-64.6)	88.7 (77.0-95.7)	50.0 (21.1-78.9)	82.5 (70.1-91.3)	0.63 (0.5-0.76)	0.29 (0.02 - 0.55)
Major depressive episode	8.7%	2.9%	16.7 (0.4-64.1)	98.4 (91.6-100)	50.0 (1.3-98.7)	92.5 (83.4-97.5)	0.58 (0.41-0.74)	0.22 (-0.18- 0.61)
Separation anxiety	8.7%	10.1%	33.3 (4.3-77.7)	92.1 (82.4-97.4)	28.6 (3.7-71.0)	93.5 (84.3-98.2)	0.63 (0.42-0.84)	0.24 (-0.11 - 0.58)
Phobia	10.1%	5.8%	14.3 (0.4-57.9)	95.2 (86.5- 99)	25.0 (0.6-80.6)	90.9 (81.3-96.6)	0.55 (0.40-0.69)	0.12 (-0.20 - 0.44)
Generalized anxiety	4.4%	5.8%	0.0 (0.0-70.8)	93.9 (85.2-98.3)	0.0 (0.0-60.2)	95.4 (87.1-99.0)	0.47 (0.44-0.50)	- 0.05 (-0.11 - 0.01)
Externalized disorders	42.0%	18.8%	31.0 (15.3-50.8)	90.0 (76.3-97.2)	69.2 (38.6-90.9)	64.3 (50.4- 76.6)	0.61 (0.51-0.70)	0.23 (0.02 - 0.43)
ADHD	34.8%	11.6%	16.7 (4.7-37.4)	91.1 (78.8-97.5)	50.0 (15.7-84.3)	67.2 (54.0-78.7)	0.54 (0.45-0.63)	0.09 (-0.11 - 0.29)
Oppositional defiant	29.0%	14.5%	30.0 (11.9-54.3)	91.8 (80.4-97.7)	60.0 (26.2-87.8)	76.3 (63.4-86.4)	0.61 (0.50-0.72)	0.26 (0.01-0.50)
Conduct disorder	15.9%	7.3%	18.2 (2.3-51.8)	94.8 (85.6-98.9)	40.0 (5.3-85.3)	85.9 (75.0-93.4)	0.57 (0.44-0.69)	0.17 (-0.12 -0.46)

Table 6. Accuracy of either DI or any SDQ considering impact in predicting main disorders in Romanian validation sample

	DAWBA	COMBI with imp.	Se (95% CI)	Sp (95% CI)	PPV (95% CI)	NPV (95% CI)	AUC (95% CI)	Kappa (95% CI)
Any diagnosis (internalized or externalized)	52.2%	49.3%	72.2 (54.8-85.8)	75.8 (57.7-88.9)	76.5 (58.8-89.3)	71.4 (53.7-85.4)	0.74 (0.63-0.84)	0.48 (0.28-0.69)
Internalized disorders	23.2%	34.8%	62.5 (35.4-84.8)	73.6 (59.7-84.7)	41.7 (22.1-63.4)	86.7 (73.2-94.9)	0.68 (0.54-0.82)	0.31 (0.07-0.54)
Externalized disorders	42.0%	40.6%	82.8 (64.2-94.2)	90.0 (76.3-97.2)	85.7 (67.3-96.0)	87.8 (73.08-95.9)	0.86 (0.78-0.95)	0.73 (0.57-0.90)
ADHD	34.8%	36.2%	83.3 (62.6-95.3)	88.9 (76.4-96.4)	80.0 (59.3-93.2)	90.9 (78.3-97.5)	0.86 (077-0.95)	0.72 (0.54-0.89)
ODD/Behaviour	31.9%	36.2%	90.9 (70.8-98.9)	89.4 (76.9-96.5)	80.0 (59.3-93.2)	95.5 (84.5-99.4)	0.90 (0.83-0.98)	0.77 (0.61-0.93)

of SDQ P/T with and without impact was good (AUC 0.71 and respectively 0.79, and kappa 0.38 and respectively 0.44) while for externalized disorders, better results were achieved (AUC 0.91 and respectively 0.86, kappa 0.85 and respectively 0.71). Performance indicators of Romanian version of SDQ parent or teacher were above the average value of all participating countries (Pez, Boyd and Kovess-Masfety 2011). The results in the Romanian validation sample are concordant to international reported results for SDQ in different languages and cultural settings (Becker, et al. 2004, Samad, et al. 2005, Stone, et al. 2010).

The results for DI were lower than those for SDQ, with average values for AUC and poor values for kappa coefficient (Table 5). Since kappa assesses inter-rater agreement, these values can be explained by the expected divergence between informants' reports (child versus parent / teacher) (Achenbach, et al. 2008, Kraemer, et al. 2003) and are in line with existing data (Linares Scott, et al. 2006). Still, DI proved good specificity with 81.8% for any disorder and up to 98.4% for major depressive disorder.

Finally, I have assessed accuracy of combined instruments (either DI or SDQ parent or teacher with impact) in predicting any diagnosis and different types of disorder (table 6). Instruments proved satisfactory sensitivity (72.2%) and specificity (75.8%) for any diagnosis, with AUC 0.74. Concordance between any of the instruments to be validated and DAWBA was good (kappa 0.48). Also important differences between internalized and externalized disorders were observed (AUC 0.68 and 0.86 respectively, kappa 0.31 and 0.73 respectively).with best predictive properties for conduct problems (AUC 0.90 and kappa 0.77).

We have to consider when interpreting these results that a low number of teachers completed the questionnaires. On one side, DAWBA algorithm produces clinical diagnosis by combining parent and teacher reports, therefore an important proportion of these diagnoses have been based just on the parent perspective. On the other side, there has been a significantly higher number of completed SDQ P compared to SDQ T.

Additional analysis yet to be performed will be described in the following section.

B.   Writing a scientific article

. Since available literature about Romanian version of instruments for mental health assessment in children especially in the age range 6-11 years old, is sparse, we considered of high importance to produce a paper on the results of validation phase. Therefore, since March I have started to write a scientific article about validation of this set of instruments in Romania. This article will provide data about two completely new questionnaires for Romania - DI and

DAWBA, it will bring additional evidence about validity of SDQ Romanian version, and moreover it will enable cross-cultural comparisons within SCMHE project and future studies.

After I improved knowledge about main objectives and standards that a scientific article requires, I have established along with my professional advisor the steps in this process.

- Literature review. The first stage has been to review the literature about methods used in psychiatric epidemiology to assess mental health in young children. I have been reviewing literature about cross-cultural comparisons, use of multiple informants, alternative instruments and assessment of psychometric properties for SDQ, DI and DAWBA in different languages and cultural settings. Out of this instruments, by far most extensive literature concerns SDQ for which internal and external validity measures have been evaluated in several languages and cultures (Achenbach, et al. 2008, Becker, et al. 2004, Klasen, et al. 2000, Marzocchi, et al. 2004, Muris, et al. 2004, Shojaei, Wazana, et al. 2008, van Widenfelt, et al. 2003)

- Methods will include description of instruments and translation procedures, sample selection and validation protocol, performed analysis.

- Besides previously presented results, analysis will include also evaluation of interitem correlation (internal consistency - Cronbach's alpha) and interrater correlations for SDQ and DI. Moreover, discrepancies between DAWBA diagnosis and evaluations performed by psychiatry clinic will be assessed. Therefore, during this period I have collected information from psychiatry clinic about recorded diagnosis of children in the validation sample.

- Results will be discussed and comparison to the average European results of this project will be made.

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IV. CONCLUSIONS

Considering actual Romanian context in the field of children mental health, the objectives and complex design of SCMHE project covered several important methodological aspects in assessment of young children mental health. Performing all required tasks through all these stages of the project during three years, better understanding of these aspects has been facilitated and increased competencies have been developed. This task variety has comprised translation of questionnaires according to guidelines and elaboration of final version approved

by questionnaire's author, ethical procedures (approvals purchase, elaboration of documents etc.), sample selection (randomization, recruitment etc.) training activities, provision of logistic support and data management (data collection and data entry). Finally, competencies for data analysis have been improved while collecting information for data weighting, contributing to data cleaning along with other team members (like statistician and main project coordinator), and evaluating properties of Romanian version of questionnaires. The final and an important step in this process has been the development of scientific article which contributes to results dissemination.

This work and the whole project are expected to impact in different ways the field of child mental health in Romania, from assessment to service planning. A set of instruments collecting and combining perspectives from different informants (child, parent and teacher) has now been made available. Although further analysis is needed, the Romanian version of these instruments proved good accuracy in predicting most common disorders in 6-11 years old children. The results of the school survey using these instruments produce in Romania the first prevalence estimates of internalized and externalized disorders in a very long time. Moreover, evaluation of the degree to which healthcare services meet the mental health needs of children has been made possible. Finally, cross-cultural dimension has been integrated and comparison of results in Romania and other countries are now feasible.

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ANNEX: SDQ Parent and SDQ Teacher (English version)

Strengths and Difficulties Questionnaire   P 4-16

For each item, please mark the box for Not True, Somewhat True or Certainly True. It would help us if you answered all items as best you can even if you are not absolutely certain or the item seems daft! Please give your answers on the basis of the child's behaviour over the last six months.

Child's Name ....   Male/Female

Date of Birth..

	Not True	Somewhat True	Certainly True
Considerate of other people's feelings	☐	☐	☐
Restless, overactive, cannot stay still for long	☐	☐	☐
Often complains of headaches, stomach-aches or sickness	☐	☐	☐
Shares readily with other children (treats, toys, pencils etc.)	☐	☐	☐
Often has temper tantrums or hot tempers	☐	☐	☐
Rather solitary, tends to play alone	☐	☐	☐
Generally obedient, usually does what adults request	☐	☐	☐
Many worries, often seems worried	☐	☐	☐
Helpful if someone is hurt, upset or feeling ill	☐	☐	☐
Constantly fidgeting or squirming	☐	☐	☐
Has at least one good friend	☐	☐	☐
Often fights with other children or bullies them	☐	☐	☐
Often unhappy, down-hearted or tearful	☐	☐	☐
Generally liked by other children	☐	☐	☐
Easily distracted, concentration wanders	☐	☐	☐
Nervous or clingy in new situations, easily loses confidence	☐	☐	☐
Kind to younger children	☐	☐	☐
Often lies or cheats	☐	☐	☐
Picked on or bullied by other children	☐	☐	☐
Often volunteers to help others (parents, teachers, other children)	☐	☐	☐
Thinks things out before acting	☐	☐	☐
Steals from home, school or elsewhere	☐	☐	☐
Gets on better with adults than with other children	☐	☐	☐
Many fears, easily scared	☐	☐	☐
Sees tasks through to the end, good attention span	☐	☐	☐

Do you have any other comments or concerns?

Please turn over - there are a few more questions on the other side

Overall, do you think that your child has difficulties in one or more of the following areas: emotions, concentration, behaviour or being able to get on with other people?

	No	Yes- minor difficulties	Yes- definite difficulties	Yes- severe difficulties
	☐	☐	☐	☐

If you have answered "Yes", please answer the following questions about these difficulties:

● How long have these difficulties been present?

	Less than a month	1-5 months	6-12 months	Over a year
	☐	☐	☐	☐

● Do the difficulties upset or distress your child?

	Not at all	Only a little	Quite a lot	A great deal
	☐	☐	☐	☐

● Do the difficulties interfere with your child's everyday life in the following areas?

	Not at all	Only a little	Quite a lot	A great deal
HOME LIFE	☐	☐	☐	☐
FRIENDSHIPS	☐	☐	☐	☐
CLASSROOM LEARNING	☐	☐	☐	☐
LEISURE ACTIVITIES	☐	☐	☐	☐

● Do the difficulties put a burden on you or the family as a whole?

	Not at all	Only a little	Quite a lot	A great deal
	☐	☐	☐	☐

Signature .... Date ....

Mother/Father/Other (please specify:)

Thank you very much for your help

23

Strengths and Difficulties Questionnaire

T 4-16

For each item, please mark the box for Not True, Somewhat True or Certainly True. It would help us if you answered all items as best you can even if you are not absolutely certain or the item seems daft! Please give your answers on the basis of the child's behaviour over the last six months or this school year.

Child's Name .... Male/Female

Date of Birth...

	Not True	Somewhat True	Certainly True
Considerate of other people's feelings	☐	☐	☐
Restless, overactive, cannot stay still for long	☐	☐	☐
Often complains of headaches, stomach-aches or sickness	☐	☐	☐
Shares readily with other children (treats, toys, pencils etc.)	☐	☐	☐
Often has temper tantrums or hot tempers	☐	☐	☐
Rather solitary, tends to play alone	☐	☐	☐
Generally obedient, usually does what adults request	☐	☐	☐
Many worries, often seems worried	☐	☐	☐
Helpful if someone is hurt, upset or feeling ill	☐	☐	☐
Constantly fidgeting or squirming	☐	☐	☐
Has at least one good friend	☐	☐	☐
Often fights with other children or bullies them	☐	☐	☐
Often unhappy, down-hearted or tearful	☐	☐	☐
Generally liked by other children	☐	☐	☐
Easily distracted, concentration wanders	☐	☐	☐
Nervous or clingy in new situations, easily loses confidence	☐	☐	☐
Kind to younger children	☐	☐	☐
Often lies or cheats	☐	☐	☐
Picked on or bullied by other children	☐	☐	☐
Often volunteers to help others (parents, teachers, other children)	☐	☐	☐
Thinks things out before acting	☐	☐	☐
Steals from home, school or elsewhere	☐	☐	☐
Gets on better with adults than with other children	☐	☐	☐
Many fears, easily scared	☐	☐	☐
Sees tasks through to the end, good attention span	☐	☐	☐

Do you have any other comments or concerns?

Please turn over - there are a few more questions on the other side

Overall, do you think that this child has difficulties in one or more of the following areas: emotions, concentration, behaviour or being able to get on with other people?

	No	Yes- minor difficulties	Yes- definite difficulties	Yes- severe difficulties
	☐	☐	☐	☐

If you have answered "Yes", please answer the following questions about these difficulties:

● How long have these difficulties been present?

	Less than a month	1-5 months	6-12 months	Over a year
	☐	☐	☐	☐

● Do the difficulties upset or distress the child?

	Not at all	Only a little	Quite a lot	A great deal
	☐	☐	☐	☐

● Do the difficulties interfere with the child's everyday life in the following areas?

	Not at all	Only a little	Quite a lot	A great deal
PEER RELATIONSHIPS	☐	☐	☐	☐
CLASSROOM LEARNING	☐	☐	☐	☐

● Do the difficulties put a burden on you or the class as a whole?

	Not at all	Only a little	Quite a lot	A great deal
	☐	☐	☐	☐

Signature .... Date ....

Class Teacher/Form Tutor/Head of Year/Other (please specify:)

Thank you very much for your help

ABSTRACT

Assessment of children mental health is important in the actual public health context since most psychiatric disorders accounting for a considerable proportion of "global burden of disease" have their origins in the early life. In 2008-2011 the project "School Children Mental Health in Europe" – SCMHE has been conducted in order to set up an instrument to collect information on mental health of primary school children comparable across all participating countries. The project comprised 2 phases: selection and validation of instruments, and a pilot study in the primary school to test these instruments. This work has been based on the Romanian part of the project and presents author's contribution to the fieldwork and data processing of both phases, analysis of Romanian validation results and development of scientific paper based on these results.

Instruments were selected to collect information about most common internalized and externalized disorders from three informants: children, parents and teachers. Dominic Interactive (DI) for children and Strengths and Difficulties Questionnaire (SDQ) for parents and teachers, were validated against Development and Well-Being Assessment interview (DAWBA)-parent and teacher version which was selected as "gold standard" for clinical diagnosis. The analysis of validation data I performed includes prevalence of assessed internalized and externalized disorders, characteristics of Romanian version of validated instruments (sensibility, sensitivity, positive and negative predictive values, AUC), as well as concordance test (kappa).

This work results in author's improvement of competencies and comprehension of adequate methodology when assessing mental health of young children, especially from cross-cultural perspective. This is due to different tasks performed through all stages of this project, from translation of instruments and fieldwork, to data analysis and dissemination of results.

Keywords: children mental health, instruments: Dominic Interactive, SDQ, DAWBA, internalized and externalized disorders.

La santé mentale des enfants des écoles primaires en Roumanie

Analyse et considérations basé sur les résultats

de projet « School Children Mental Health in Europe » - SCMHE

SOMMAIRE

Évaluation de la santé mentale des enfants est important dans le contexte actuel de la santé publique étant donné que la plupart des troubles psychiatriques en grande partie responsables de la ''charge mondiale de morbidité " ont leurs origines dans l'enfance. En 2008-2011 a été élaboré le projet ''School Children Mental Health in Europe" - SCMHE dont l'objectif principal était d'établir un outil de collecte d'informations sur la santé mentale chez les enfants de l'école primaire comparable entre les pays participants. Le projet comportait deux phases : de sélection et de validation d'instruments, puis une étude pilote à l'école primaire de l'essai de ces instruments. Ce travail est basé sur la partie roumaine du projet et montre la contribution de l'auteur de travaux sur le terrain et le traitement des données dans les deux étapes, les résultats de l'analyse des données de la phase de validation en Roumanie et un article scientifique sur la base de ces résultats.

Les instruments ont été choisies pour recueillir des informations sur les troubles intériorisés et extériorisés les plus fréquents, de trois répondants: enfant, parent et enseignant. Ont été validées Dominique Interactif (DI) pour les enfants, Strengths and Difficulties Questionnaire (SDQ) pour les parents et les enseignants versus interview Development and Well Being Assessment (DAWBA) - versions parents et des enseignants, choisi comme le «gold standard» pour le diagnostic cliniquement. L'analyse des données de la phase de validation comprend la prévalence des troubles intériorisés et extériorisés dans l'échantillon clinique, les caractéristiques de la version roumaine des instruments validés (sensibilité, spécificité, valeurs prédictif positives et négatives, l'AUC) et le test de concordance (kappa).
Ce travail a abouti à une meilleure connaissance de l'auteur de la méthodologie appropriée pour évaluer la santé mentale chez les jeunes enfants, en particulier dans une perspective transculturelle. Cela est dû aux différentes tâches effectuées dans toutes les phases du projet, la traduction des outils et le travail sur le terrain dans l'analyse des données et la diffusion.

Mots clés : santé mentale des enfants, instruments, Dominic Interactive, SDQ, DAWBA,, troubles intériorisé et extériorisé