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Metacognitive Assessment Scale – Abbreviated and Indiana Psychiatric Illness Interview: Psychometric validation in two Italian clinical and non-clinical samples

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ABSTRACT. Lo scopo di questa ricerca è presentare la validazione linguistica e psicometrica in italiano della procedura sviluppata da Paul H. Lysaker per valutare la metacognizione. In due diversi studi confermiamo rispettivamente l'affidabilità della *Metacognitive Assessment Scale – Abbreviated (MAS-A)* e della versione clinica e non clinica della Indiana Psychiatric Illness Interview (IPII). Nello Studio 1 abbiamo reclutato un campione (*n* = 48) di persone avente diagnosi di gravi disturbi di salute mentale (disturbo di personalità; episodio psicotico breve). Tutti i soggetti sono stati valutati attraverso la versione clinica della IPII ed altre misure pertinenti concorrenti. Nello Studio 2 abbiamo reclutato adulti sani (*n* = 45) che sono stati intervistati attraverso la versione non clinica della IPII. La metacognizione è stata valutata in entrambi i campioni utilizzando la MAS-A. La traduzione italiana di entrambe le versioni della IPII, clinica e non clinica, ha mostrato una buona affidabilità tra valutatori. I punteggi MAS-A hanno riportato una correlazione significativa con altri punteggi concorrenti. I nostri risultati confermano che IPII e MAS-A insieme consentono una comprensione sfumata e su misura del livello di funzionamento metacognitivo in campioni sia clinici che non clinici. Ulteriori ricerche potrebbero confermare la validità predittiva della procedura in campioni più grandi.

SUMMARY. The aim of this research is to present the linguistic and psychometric validation in Italian of the procedure developed by Paul H. Lysaker to assess metacognition. In two different studies we confirm the reliability of Metacognitive Assessment Scale – Abbreviated (MAS-A) and of clinical and non-clinical version of Indiana Psychiatric Illness Interview (IPII), respectively. In Study 1 we recruited a sample (n = 48) of persons diagnosed with severe mental health disorders (personality disorder; brief psychotic episode). All the subjects were assessed through the clinical version of IPII and other concurrent relevant measures. In Study 2 we recruited healthy adults (n = 45) who were interviewed through the non-clinical version of IPII. Metacognition was then scored in both samples using MAS-A. The Italian translation of both clinical and non-clinical version of IPII showed a good inter-rater reliability. MAS-A scores reported a significant correlation with other concurrent scores. Our results confirm that IPII and MAS-A jointly allow a nuanced and tailored understanding of the level of metacognitive functioning in both clinical and non-clinical samples. Further research may confirm the predictive validity of the procedure in larger samples.

Keywords: *Indiana Psychiatric Illness Interview, Personality disorder, Psychosis, Metacognition, Metacognitive Assessment Scale-Abbreviated*

INTRODUCTION

Severe mental disorders such as schizophrenia and personality disorders (PDs) are characterized by an impairment in the ability of construe a nuanced, complex, integrated sense of oneself and others (Lysaker, Hamm, Hasson-Ohayon, Pattison & Leonhardt, 2018). Many authors claim that these multifaceted psychopathological manifestations may be better understood through the lens of metacognition (Carcione et al., 2019; Lysaker et al., 2019). The construct of metacognition has been differently used in the last 50 years, but generally refers to the process of thinking the thinking itself, both the one of mine and the one of the others (Moritz & Lysaker, 2018). Studies on autism and schizophrenia deeply explored this construct and formulated the hypothesis that the metacognitive impairments (as the inability to make sense of one own's and other's mental states) stand at the core of these disorders (Baron-Cohen, Leslie & Frith, 1985; Frith, 1992). Early studies on what later evolved as metacognitive interpersonal therapy (MIT) explored how different patterns of metacognitive functions may operate separately and may be linked to specific categorical disorders or psychopathological dimensions (Carcione, Semerari, Dimaggio & Nicolò, 2005; Dimaggio, Semerari, Carcione, Nicolò & Procacci, 2007; Semerari et al., 2003).

Antonio Semerari and colleagues progressively formulated and tested a few tools to assess metacognition and its functions. A first procedure to assess metacognition in transcripts of psychotherapy sessions, namely *SVaM – Scala di Valutazione della Metacognizione (Metacognitive Assessment Scale – MAS*), focused on three dimensions (Carcione, Falcone, Magnolfi & Manaresi, 1997): Self-reflectiveness (i.e. the capacity to understand one's own mental states); Awareness of other's mind (i.e. the capacity to understand the other's mental states, and specifically Decentering as the capacity to distinguish the ones of the other and the one of mine); Mastery (i.e. the capacity to cope with psychological challenges). Each scale consists of a series of capacities which are arranged in hierarchical order, such that once a capacity is rated as not attained, no higher capacities should be possible. A standard interview procedure was later developed as a rapid tool to assess metacognition before a treatment starts: Intervista per la Valutazione della Metacognizione – IVaM (Semerari et al., 2008) later translated in English as Metacognitive Assessment Interview – MAI (Semerari et al., 2012). Four dimensions were initially defined and assessed: Monitoring (i.e. 9 items about the capacity to recognize emotions and thoughts referred to a mental state); Differentiating (i.e. 13 items to evaluate how much the person is able to distinguish reality and fantasy and recognize that his/her perspective is questionable); Integrating (i.e. 8 items related to understanding the transitions between mental states); Decentration (i.e. 8 items aimed at making the person reflect on the mental states of the other). Factor analysis did not confirm the existence of 4 separated domains, but rather of two low-order scales (i.e. Self and Other) and a high-order scale referring to the broad construct of metacognition (Semerari et al., 2012).

These studies confirmed the clinical and theoretical validity of the construct of metacognition as formulated by Semerari, but at the same time the need for implementing the assessment procedures. Thus, Paul H. Lysaker revised the MAS scoring procedure and replaced MAI with a structured interview already validated on people diagnosed with severe mental disorders. First, a new scoring system was created and then tested in clinical samples, that is the *Metacognition Assessment Scale – Abbreviated* form, that is MAS-A (Lysaker et al., 2005). The MAS-A contains the four original scales: "Understanding of one's own mind" or the ability to think about one's own mental states (9 levels); "Understanding of others' minds," or the ability to think about others' mental states (8 levels); "Decentration" or seeing the world as existing with others having independent motives (3 levels); and "Mastery" or the ability to implement effective strategies in order to cope with problems (9 levels). All four of the scales are reviewed individually after the interview and the rater assigns for each scale one point for each function on each scale that the rater judges the participant accomplished in the transcript. Finally, each subscale is afforded a score which suggests the level of metacognition in that domain. The individual subscales can be aggregated by summing their single scores to create a total score with a range of 0 to 29. MAS-A also allows for the provision of a .5 or half point in cases where it seems some of the intent of the function was met but not fully.

Instead of MAI, the procedure developed by Lysaker suggests the use of the Indiana Psychiatric Illness Interview – IPII (Lysaker, Clements, Plascak-Hallberg, Knipscheer & Wright, 2002). IPII is a psychiatric interview specifically developed to investigate the level of insight in patients diagnosed with severe mental disorders and more specifically the level of coherence and integration in their narratives of

their own life stories. Although not originally outlined to assess metacognition, IPII offers a very consistent background and robust psychometric validation. The interview procedure is individual and is divided into five sections: the first is aimed at establishing a relationship with the patient and asking about the patient's story of life; the second investigates whether and in what terms he/she recognizes his/her disorder; the third instead investigates the awareness of the effects of the disorder on the person's life; the fourth explores the impact of the disorder on daily choices; the fifth tries to understand how the person sees him/herself in the future. The original procedure (which provided for a specific rating on the coherence of the narratives) was modified by inserting the MAS-A as the scoring system. More recently, a non-clinical version of IPII has been developed so as to explore level of metacognition through MAS-A in healthy adults. The non-clinical version arose from the need to compare clinical samples with healthy subjects and replace the issue of mental disorder with non-clinically significant psychological distress.

The general procedure of MAS-A and IPII has been tested in large samples of persons diagnosed with severe mental disorders such as PD, schizophrenia, early psychosis and autism-spectrum disorders (Cheli, 2020; De Jong et al., 2019; Hasson-Ohayon et al., 2015; Lysaker et al., 2018). It has also been applied in different languages such as in Hebrew (Rabin et al., 2014), German (Bröcker et al., 2017), Spanish (Inchausti et al., 2017), and Russian (Lysaker et al., 2020).

Since in Italy MAS-A had been applied to date only in the form of a non-validated translation, we outlined a linguistic and psychometric validation of MAS-A, IPII clinical version and IPII non-clinical version according to usual procedures (Chan, 2014). In Study 1 we tested the clinical version of the IPII, while in Study 2 the non-clinical version. In both studies, the scoring system was MAS-A.

STUDY 1

Study 1: Sample

We recruited 48 consecutive patients diagnosed with either a PD (n = 32) or a brief psychotic episode (BPE; n = 16), in accord with DSM-5 diagnostic criteria (American Psychiatric Association, 2013). The male to female ratio was almost equal to 1:1, and mean age was 26.83 (see Table 1). Inclusion criteria were: (i) to be diagnosed with either PD or BPE in the last 1 week; (ii) to able to read and sign the inform consent form. Exclusion criteria were: (i) not being an Italian mother tongue; (ii) to be diagnosed with either a neurodevelopmental or neurological disorder; (iii) being under psychopharmacological or psychosocial treatment. The study was approved by the Ethical Committee of Tages Onlus (Ref. No. 03-120919).

Study 1: Measures

- *Beck Cognitive Insight Scale (BCIS*). The BCIS is a 15-item scale aimed at assessing the level of cognitive insight in patients diagnosed with psychosis (Beck et al., 2004), even it has been applied on several disorders. BCIS is composed of two subscales, of which we have only used the first in the present study: self-reflectiveness (BCIS-SR) and self-certainty (BCIS-C). Higher values refer to lower insight.
- *Indiana Psychiatric Illness Interview (IPII*). IPII is a semi-structured individual interview aimed at assessing illness narrative (Lysaker et al., 2002). It generally lasts between 30 and 90 minutes and can be typed verbatim during the interview or taped and later transcribed. IPII is divided conceptually in five sections aimed at exploring how patients describes their life and their course of illness. The original version included a scoring system for assessing the narrative coherence, in the present study as suggested by Lysaker such a score is replaced by MAS-A.
- *Metacognitive Assessment Scale – Abbreviated* (*MAS-A*; Lysaker et al., 2005). It is a scoring system for the assessment of metacognition. It comprises four scales that can be scored on specific levels of functioning: Self-reflectivity (score ranging from 0 to 9), Understanding others' mind (score ranging from 0 to 7), Decentration (score ranging from 0 to 3), and Mastery (score ranging from 0 to 9). The individual subscales can be summed to create a total score with a range of 0 to 28. The scoring system was previously translated by the first author of this paper for the Italian version of the manual of metacognitive reflection and insight therapy (MERIT), that is the Lysaker's protocol for treating severe mental disorders (Lysaker & Klion, 2019).
- *Structured Clinical Interview for the DSM-5 Alternative Model for Personality Disorders* (*SCID-5-AMPD*; Bender et al., 2018). It is a semi-structured diagnostic interview for the assessment of the personality pathology as presented in the AMPD. It comprises three modules allowing to

Table 1 – Descriptives of Sample 1 (Study 1)

Sample	48
Age	26.83 (*SD* = 4.28)
Sex	M = 22 (54.84%) F = 26 (54.16%)
Education	
Middle School or less	1 (2.08%)
High School	36 (75.01%)
College	10 (20.83%)
Advanced Degree	1 (2.08%)
Primary diagnosis	
Personality Disorder	32 (66.66%)
Brief Psychotic Episode	16 (33.34%)

score the Global Level of Personality Functioning (GLPF, ranging from 0 to 4), the 5 traits domains and the 25 traits facets, the six specific personality disorders.

Study 1: Procedure and statistical analysis

A first version of Italian IPII was translated by a researcher together with an English mother tongue. Then, another English mother tongue back-translated the first Italian version. Discrepancies between the back-translation and the original English version were discussed and solved by the research team together with the developer of both MAS-A and IPII (i.e. Paul H. Lysaker). Finally, the second version of Italian IPII was tested in a focus group (n = 5) of patients diagnosed with PD. The Italian version showed good linguistic and cultural validity, with only one significant difference from the English original version. The word "illness" has not been translated literally (i.e. "malattia"), but with the expression "psychological problem" (i.e. "problema psicologico"). This change was motivated by two reasons. First, IPII was born as a psychiatric interview for inpatient, while in the current use with the MAS-A it is used in more varied fields. Second, the focus group confirmed research team's hypothesis that the literal translation (i.e. illness-malattia) was perceived as stigmatizing in the Italian language.

Once an Italian translation was linguistically and culturally validated, a psychometric validation procedure was defined. A researcher blind to the other team members conducted the initial assessment and confirmed the inclusion and exclusion criteria. If the patient was eligible for the study and signed the informed consent form, the same researcher did the interview and collected the other measures. The IPII was recorded and then transcribed in an anonymized text file. Then, two different researchers analyzed the text blind to each other through the MAS-A scoring system. All the team's members had at least five years of experience in PD an BPE.

The raters had also five years of experience in metacognitively oriented psychotherapy and completed a specific training on MAS-A and IPII.

Collected data were preliminarily analyzed through standard descriptives. Then, criterion and concurrent validity were explored though Pearson's *r* correlation between MAS-A and BCIS-SR and SCID-5-AMPD, respectively. Finally, inter-rater reliability was assessed through intraclass correlation coefficient (ICC), by considering a two-way mixed effect where rater was the fixed effect, and subject the random effect (Bartko, 1966). ICC result can be interpreted as follows: values less than .5 indicate poor reliability; values between .5 and .75 indicate moderate reliability; values between .75 and .9 indicate good reliability; values greater than .90 indicate excellent reliability.

Study 1: Results

Table 2 reports the correlation between all the measures of Study 1. We found significant and medium correlations (Pearson's *r* ranging between .3 and .5; $p<.05$) between all three scales. Results indicate that the total score of MAS-A though the Italian version of IPII is reliable, in respect to both construct validity (i.e. correlation between MAS-A and BCIS-SR; $r = -.370$; $p<.05$) and predictive validity (i.e. correlation between MAS-A and GLPF; $r = -.478$; $p<.005$).

Inter-rater reliability is extremely high and can be considered excellent (Bartko, 1966). ICC between raters at total score of MAS-A (see Table 3) was greater than .9 considering either the single measure or its average.

STUDY 2

Study 2: Sample

We recruited 45 consecutive healthy young adults from college students. The male to female ratio was almost equal to 2:1, and mean age was 22.05 (see Table 4). Inclusion criteria were: (i) be over 18 years of age; (ii) to able to read and sign the inform consent form. Exclusion criteria were: (i) not being an Italian mother tongue; (ii) to be diagnosed with a mental disorder; (iii) being under psychopharmacological or psychosocial treatment. The study was approved by the Ethical Committee of Tages Onlus (Ref. No. 03-120919).

Study 2: Measures

For details of BCIS, IPII, and MAS-A see S*tudy 1: Measures*.

– *Depression, Anxiety and Stress Scale* (*DASS-21*). DASS-21 is 21-item likert scale for the assessment of depression, anxiety and stress trhough three different subscales. A total score (DASS-21T) can be computed by adding all the items. The reliability of the scales is good, with Cronbach's α ranging from .78 to .89 (Henry & Crawford, 2005).

Table 2 – Correlation between measures of Study 1

		MAS-A	BCIS-SR	GLPF
MAS-A	Pearson's *r*	1	−.370	−.478
	Sig. (2-tailed)		.012	.001
BCIS-SR	Pearson's *r*	−.370	1	−.378
	Sig. (2-tailed)	.012		.010
GLPF	Pearson's *r*	−.478	−.378*	1
	Sig. (2-tailed)	.001	.010	

Note. MAS-A: total score of *Metacognitive Assessment Scale – Abbreviated*; BIS-SR: impaired self-reflectiveness score at *Beck Cognitive Insight Scale*; GLPF: Global Level of Personality Functioning at SCID-5-PD-AMPD.

Table 3 – Intraclass Correlation Coefficient between raters at MAS-A total score

			95% Confidence Interval		F Test with True Value 0			
		Intraclass Correlation	Lower Bound	Upper Bound	Value	*df1*	*df2*	Sig
Study 1	Single measures	.968	.944	.982	61.923	47	47	.000
	Average measures	.984	.971	.991	61.923	47	47	.000
Study 2	Single measures	.797	.659	.883	8.859	44	44	.000
	Average measures	.887	.795	.938	8.859	44	44	.000

Note: The Intraclass Correlation Coefficient has been calculated on *Metacognitive Assessment Scale – Abbreviated (MAS-A)* total score, through a two-way mixed effects model where people effects are random and measures effects are fixed.

Table 4 – Descriptives of Sample 2 (Study 2)

Sample	45
Age	22.05 (*SD* = 2.02)
Sex	M = 16 (35.55%) F = 29 (64.45%)
Education	
Middle School or less	0 (0%)
High School	43 (95.55%)
College	2 (4.45%)
Advanced Degree	0 (0%)

Study 2: Procedure and statistical analysis

For the linguistic validation of the non-clinical version of IPII we followed the same procedure as in Study 1. The only difference was the recruitment of healthy young adults for the focus group ($n = 5$) instead of patients diagnosed with PD. The Italian version showed good linguistic and cultural validity. The psychometric validation procedure and statistical plan were also the same as in Study 1. The only difference was the use of DASS-21 for concurrent validity (instead of SCID-5-AMPD).

Study 2: Results

Table 5 reports the correlation between all the measures of Study 2. We found significant and medium correlations (Pearson's r ranging between .3 and .5; $p<.05$) between all three scales. Results indicate that the total score of MAS-A as calculated on transcripts of the Italian non-clinical IPII is reliable, in respect to both construct validity (i.e. correlation between MAS-A and BCIS-SR; $r = -.363$; $p<.05$) and predictive validity (i.e. correlation between MAS-A and DASS-21; $r = -.375$; $p<.01$). Moreover, inter-rater reliability is high and can be considered good (Bartko, 1966). ICC between raters at total score of MAS-A (see Table 3) ranged between .75 and .9 considering either the single measure or its average.

DISCUSSION

Over the past 20 years, the metacognition construct has become increasingly relevant in the conceptualization of DPs and psychosis. Clinicians need reliable tools that support them in understanding patient metacognitive functioning and outlining an appropriate treatment. Indeed, the fragmentation of experience in people struggling with severe mental disorders affects the course of therapy and it is pivotal to adapt the intervention to the patient's level of metacognition.

Although MAS-A is derived from studies conducted by Semerari and colleagues in Italy (Carcione et al., 1997; Semerari et al., 2012), the abbreviated version by Lysaker (Lysaker et al., 2019; Lysaker et al., 2002, 2011) has facilitated the dissemination of this complex assessment procedure. Today MAS-A is used not only in English-speaking countries but also in Spain, Germany, Israel, Russia. The present research presents for the first time the linguistic and psychometric validation of IPII and MAS-A in both their

Table 5 – Correlation between measures of Study 2

		MAS-A	BCIS-SR	DASS-21
MAS-A	Pearson's *r*	1	−.363	−.375
	Sig. (2-tailed)		.014	.006
BCIS-SR	Pearson's *r*	−.363	1	−.378
	Sig. (2-tailed)	.014		.010
DASS-21	Pearson's r	−.375	−.378*	1
	Sig. (2-tailed)	.006	.010	

Note. MAS-A: total score of *Metacognitive Assessment Scale – Abbreviated*; BCIS-SR: impaired self-reflectiveness score at *Beck Cognitive Insight Scale*; DASS-21: total score of Depression, *Anxiety and Stress Scale-21*.

clinical and non-clinical versions.

Our results show that the clinical version of the Lysaker's protocol is extremely reliable between different raters (ICC>.90) and in respect to concurrent measures such as cognitive insight and personality pathology. The non-clinical version reports lower inter-rater reliability even if the values are still good. It is interesting to note that the measure of cognitive insight shows a smaller correlation with metacognition when compared with measure of psychopathology (see Table 2 and Table 5). This result can be interpreted differently. On the one hand, it could be a methodological limitation linked to the Italian validation process. The low sample size or the diverse characteristics of the raters could have conditioned the small correlation. However, this interpretation contrasts with the high values of ICC and so of inter-rater reliability. On the other hand, the self-reflectivity scale of BCIS might score only a component of the wider construct of metacognition. A construct that in person with a fragmented experience is difficult to be assessed through self-reported measure. Indeed, MAS-A showed an excellent ability to predict not only the fragmentation of narratives, but also neurocognitive functioning (Lysaker et al., 2005). Conversely, self-reported measures show several biases with people with low metacognition, especially at initial assessment. The BCIS was precisely developed as a routine tool with psychiatric inpatients. At the same time, the GLPF can be seen as a broad measure of both functioning and psychopathology which is expected to correlate with broad measures such as MAS-A (Widiger et al., 2019).

There are a few important limitations. First, we recruited either participants who voluntarily asked for psychotherapy treatment (Study 1) or college students (Study 2). Samples with different characteristics may partially invalidate our results. Moreover, the two sample sizes were low, even if adequate for an inter-rater reliability study. Second, the two raters had a long experience in the assessment of metacognition and in the treatment of DP and BPE through metacognitively oriented psychotherapy. Further research should explore the inter-rater reliability controlling for the duration and format of training in MAS-A and IPII. Finally, several scholars highlight how a pairwise interview design has to be considered basically optimistic in the results (Widiger & Oltmanns, 2016). Although it is the most used research design to psychometrically validate interviews, the collected evidence might not be considered robust.

In conclusion, our research confirms the reliability of MAS-A and IPII in assessing metacognition in Italian clinical and non-clinical samples. Inter-rater reliability, construct and predictive validity are at least adequate. Trained clinicians can effectively apply in Italian one of the most used procedures for assessing metacognition in severe mental disorders, that is the MAS-A scoring system on the transcripts of IPII.

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