

THE ASSESSMENT OF MENTALIZING ABILITY IN ADOLESCENTS: THE ITALIAN ADAPTATION OF THE MENTALIZATION QUESTIONNAIRE (MZQ)

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Mentalization ability includes the capacity to recognize and manage mental states, and it is strictly linked to psychological well-being. However, there is a lack of validated measures to assess this ability in the Italian context. The aim of the present study is to provide an Italian validation of the Mentalization Questionnaire (MZQ; Hausberg et al., 2012), which allows a comprehensive evaluation of the ability to infer and understand one's own mental states (Study 1). We also tested the predictive validity of the test, by comparing a normative sample with a clinical sample composed of restrictive eating disordered adolescents (Study 2). Overall, results show that the instrument is an accurate and reliable measure for assessing the mentalization ability of adolescents, also within the Italian context. Moreover, results support the predictive validity of the Italian version of the MZQ, showing that restrictive eating disordered adolescents have less ability in recognizing and expressing their own emotions. Limitations, strengths, and clinical implications of the two studies are discussed.

Key words: Mentalization ability; Mentalization Questionnaire (MZQ); Italian validation of MZQ; Eating disordered adolescents.

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In the last decade, mentalization has been a key concept in numerous developmental and psychopathological studies. The ability to pay attention to one's own and others' mental states is very broad and includes needs, desires, feelings, beliefs, thoughts, emotions and, finally, the ability to see mental states as separate from behaviors. This ability develops from the early years of age within the context of mirroring and attachment relationship, and begins to clearly emerge at 4-5 years of age, when the capacity to make initial assumptions and mentally represent the emotional states of oneself and others is highlighted (Fonagy & Target, 2001).

From a developmental point of view, such skills undergo a further boost in the period of adolescence, thanks to the maturation of neuronal circuits that simultaneously specialize in increasing specific cognitive functions related to certain brain areas — the prefrontal-limbic areas (Frith & Frith, 2003). Making good use of this ability is one of the main factors of social intelligence and psychological well-being.

A mentalization blackout can be found, in a more or less compromised and transitional manner, in evolutionary breakdown (Martinetti et al., 2010). It has also been found that the mentalization processes

are altered within a wide range of psychopathological diseases: in a structural and rigid manner within high-functioning autism spectrum pathologies (Baron-Cohen, 1995), or with unstable and qualitatively differentiated fluctuations in borderline personality disorders (Fonagy, 2006) and dissociative disorders (Liotti & Farina, 2011), and in eating disorders (Skarderud & Fonagy, 2012).

In particular, eating disordered patients, and especially anorexia nervosa (AN) patients present rigidity of thinking, weak central coherence, and deficits in empathy, mental processes of perception, and expression of emotions (Harrison, Tchanturia, Naumann, & Treasure, 2012; Russel, Schmidt, Doherty, Young, & Tchanturia, 2009; Tchanturia et al., 2012). Moreover, they are characterized by a limited ability to understand humor and joke conventions, and they interpret the minds of others obsessively, but not in a precise way, presenting an excessive concentration on details (Adenzato, Todisco, & Ardito, 2012; Hamatani et al., 2016), and exhibiting abnormal switching schemes (Russell et al., 2009; Shott et al., 2012).

Given the wide clinical relevance mentalization has, both in developmental and clinical processes, many tools have been devised to assess this ability across the lifespan. With particular regard to adolescence, the assessment of the ability to mentalize has been based overall on rating scales and semistructured interviews completed by clinicians (Albasi, Lasora, & Porcellini, 2007; Bateman & Fonagy, 2012). However, until now, there have been very few instruments for self-reports, especially those validated in the general Italian adolescent population (Albiero, Matricardi, Speltri, & Toso, 2009; Jolliffe & Farrington, 2006). Therefore, the main aim of this paper was to validate a reliable and valid instrument to measure the mentalization processes of Italian adolescents.

Among the instruments we looked at, we chose the Mentalization Questionnaire (MZQ), designed by Hausberg et al. (2012). This instrument allows an assessment of mentalization, especially in reference to the cognitive and affective components of one's own mentalization processes, both in healthy and clinical samples. Moreover, this instrument is a self-report scale, meaning that, in comparison with other assessment tools, it allows the evaluation of mentalizing abilities in an easy and quick, but also reliable, way. For this reason, this instrument is included in assessment and treatment clinical protocols (Midgley & Vrouva, 2012; Sharp et al., 2009).

THE MENTALIZATION QUESTIONNAIRE (MZQ)

The original German version of the MZQ consists of 15 items, starting with the Adult Attachment Interview (George, Kaplan, & Main, 1985). Each item, rated on a 5-point Likert scale (from 1 = *completely disagree* to 5 = *completely agree*), consists of a statement regarding the subject's ability to focus on one's own feelings. The MZQ allows us to get a unique total measure of the mentalization ability, and to assess four distinct measures, relating to four subscales: 1) the *refusing self-reflection scale* (REF), that captures avoidance of thinking about inner states or a categorical rejection of one's own feelings combined with fear of being overwhelmed by them (example of item: "Most of the time it is better not to feel anything"); 2) the *emotional awareness scale* (AW), that captures a lack of perceiving and differentiating one's own inner states (example of item: "I tend to ignore feelings of physical tension or of discomfort until they compel my full attention"); 3) the *psychic equivalence mode scale* (EQ), that reflects aspects of the psychic equivalence mode described by Bateman and Fonagy (2012). In the psychic equivalence mode, inner mental states and outer reality are equated so that everything appears to be real (example of item: "If I expect to be criticized or offended, my fear increases more and more"); and 4) the *regulation of affect scale* (RA), that describes the inability to modulate affect, which can lead people to experience feelings of helplessness and to feel threatened by their own feelings (example of item: "Sometimes feelings are dangerous for me").

From a psychometric point of view, the MZQ presents a satisfactory level of reliability in patients with mental disorders, with Cronbach's α values ranging from .62 to .72 for the four subscales, and .81 for the total scale. The scale shows adequate test-retest reliability and convergent and divergent validity for assessing different aspects of mentalizing ability in people with mental disorders. Moreover, confirmatory factor analysis indicated a satisfactory model fit for the multidimensional structure hypothesized by authors.

AIMS AND HYPOTHESES

Given the importance that mentalizing abilities increasingly play in clinical and developmental settings, and the paucity of validated instruments to measure this ability in the Italian population, the main aim of this paper was to fill this gap. In particular, our aims were to provide a validation of an Italian version for adolescents of the MZQ (MZQ-IT) (Study 1), and to test its predictive validity by analyzing the qualitative nature of the mentalization deficits in restrictive eating disordered patients compared to a normative sample (Study 2).

STUDY 1

The aims of the first study were: 1) to verify the factorial structure of the MZQ-IT by using confirmatory factor analyses; and 2) to test the reliability of the scale.

Method

Participants and Procedure

Participants in this study were 408 adolescents (109 males and 299 females) aged 14 to 25 years ($M = 18.35$, $SD = 3.01$) who were recruited from three high schools (a scientific lyceum, a human sciences lyceum, and a polytechnic school; $n = 275$) and from two University faculties (Psychology and Biology; $n = 133$), randomly selected from all public schools and faculties in the metropolitan area of a city in central Italy. In accordance with the guidelines for the ethical treatment of human participants, all participants were fully informed about the aims of the study and signed an informed consent after agreeing to participate. Formal consent was also obtained from educational authorities for student participants and from parents for minor participants. All respondents could withdraw from participation at any time during the study. All participants completed the Italian version of the MZQ in a booklet form in a time period ranging from 10 to 15 minutes during regular lessons.

Data Analysis

Prior to conducting the factor analyses, the English version of the MZQ was translated into Italian using the back-translation procedure. In order to examine whether the structure of the MZQ-IT was similar

to the one which had previously emerged, a series of confirmatory factor analyses was conducted. The analysis was performed using the AMOS 5.0 statistical program (Arbuckle, 2005). Modification indices were examined to identify sources of misfit. However, prior to factor analysis, preliminary analyses were conducted to assess the normality distribution of the Italian version of the MZQ items (Fox, 2008). Moreover, we explored whether some items presented low item-total correlations, contributing to poor fit.

Next, three-factor models were compared. The first (Model 1) specified the presence of four dimensions (refusing self-reflection, emotional awareness, psychic equivalence mode, and regulation of affect). The second model was a hierarchical model, in which the four first-order factors were subsumed by a second-order factor (Model 2). Finally, the third model examined a single-factor structure in which all items were loaded on a general factor representing the mentalizing abilities (Model 3). To compare the models, several fit indices were used: the χ^2/df , the comparative fit index (CFI; Bentler, 1990), the root mean square error approximation (RMSEA; Browne & Cudeck, 1992) and its 90% confidence interval (CI), and the standardized root mean square residual (SRMS; Bentler, 1995). For the CFI fit criteria, a satisfactory fitting model is suggested by values of .90 or higher (Hu & Bentler, 1999). Regarding the fit criteria for the RMSEA and the SRMS, values of less than .08 are considered satisfactory (Browne & Cudeck, 1992). Moreover, to compare the three-factor models, the Akaike information criteria (AIC; Akaike, 1987) was used. The AIC is a modification of the standard χ^2 that includes a penalty for complexity. The model with the minimum value of AIC is regarded as the best fitting model (Byrne, 1994; Hooper, Coughlan, & Mullen, 2008). The reliability of the scale was calculated using Cronbach's α .

Results

In Table 1, all descriptive statistics (means, standard deviations, skewness, kurtosis, and the item-total correlations) of the 15 items of the MZQ-IT are reported, divided by the four dimensions (refusing self-reflection, emotional awareness, psychic equivalence mode, and regulation of affect) of the scale.

Preliminary analyses revealed a normal distribution for all 15 items, showing asymmetry values within the range of +1 and -1 (Marcoulides & Hershberger, 1997). Moreover, the item-total correlations showed that four items presented low values and were deleted from the subsequent analyses: Item 2 "Explanations from others are of little assistance in understanding my feelings"; Item 4 "I only believe that someone really likes me a lot if I have enough realistic proof for it (e.g., a date, a gift or a hug)"; Item 10 "Sometimes I only become aware of my feelings in retrospect"; and Item 13 "If someone yawns in my presence, that's a reliable sign that he is bored in my company."

TABLE 1
 Descriptive statistical of the 15 items of the MZQ-IT

	<i>M</i>	<i>SD</i>	Skewness	Kurtosis	Item-total correlation
Refusing self-reflection					
Item 5	3.91	1.37	-.99	-.41	.44
Item 9	3.36	1.41	-.25	-1.37	.45
Item 13	4.01	1.04	-.74	-.64	.28
Item 14	2.93	1.38	.12	-1.33	.40

(Table 1 continues)

Table 1 (continued)

	<i>M</i>	<i>SD</i>	Skewness	Kurtosis	Item-total correlation
Emotional awareness					
Item 8	3.27	1.26	-.15	-1.16	.31
Item 10	3.15	1.15	-.02	-.95	.22
Item 11	3.21	1.33	-.16	-1.24	.41
Item 15	2.97	1.48	-.01	-1.45	.52
Psychic equivalence mode					
Item 1	2.43	1.27	.70	-.69	.30
Item 4	2.89	1.44	.07	-1.41	.27
Item 7	3.75	1.25	-.73	-.56	.36
Item 12	3.00	1.43	.10	-1.43	.41
Regulation of affect					
Item 2	3.45	1.22	-.40	-.91	.20
Item 3	3.19	1.40	-.11	-1.31	.41
Item 6	3.01	1.38	.03	-1.34	.39

Results for the three-factor models tested with 11 items are reported in Table 2. Each model included a covariance between error variables of two items. The fit indices for the tested models were all satisfactory. However, a loading (Item 5) in the first two models was lower than .30. Moreover, the best AIC index was related to Model 3, supporting the superiority of this model compared to the other models. In Model 3, all loadings were significant, $p < .001$ (see Table 3).

Therefore, factor analyses suggested that the best fitting model was one with a single factor in which all 11 items were loaded on a general factor representing the mentalizing abilities. The MZQ-IT (Table 3) registered a high internal consistency, with a Cronbach's α of .75 and a Spearman-Brown coefficient of .78.

TABLE 2
Model fit indices of confirmatory factor analyses

	Covariance between error variables of:	χ^2/df	CFI	RMSEA [90% CI]	SRMS	AIC
Model 1	Item 7 and Item 8	2.51	.92	.06 [0.05, 0.08]	.06	151.05
Model 2	Item 7 and Item 8	2.40	.92	.06 [0.04, 0.07]	.06	147.56
Model 3	Item 1 and Item 12	2.19	.93	.05 [0.04, 0.07]	.05	140.03

Note. CFI = comparative fit index; RMSEA = root mean square error approximation; CI = confidence interval; SRMS = standardized root mean square residual; AIC = Akaike information criteria.

Discussion

The aim of this study was to provide an Italian version of the MZQ (MZQ-IT) and to test its psychometric properties. To this aim, we compared three-factor models. Despite the fact that the fit indices of the three models were satisfactory, different psychometric aspects led us to choose the unidimensional solution. First, in the multidimensional models there was an item that was not statistically significant.

TABLE 3
Factor loadings from a single-factor model of the 11 items of the MZQ_IT

	Factor loading
Item 1	.30
Item 2	.51
Item 3	.50
Item 4	.47
Item 5	.39
Item 6	.36
Item 7	.50
Item 8	.49
Item 9	.43
Item 10	.45
Item 11	.66

Moreover, fit indices were better for Model 3 (unidimensional). Finally, our preliminary analyses led us to the elimination of four items; consequently, the regulation of affect dimension was composed of only two indicators. According to certain authors, it is better not to consider less than three markers for each expected factor (Barbaranelli, 2007). Therefore, our results did not confirm the multidimensional structure found by Hausberg and colleagues (2012). On the contrary, we found support for a unidimensional MZQ-IT measure. This difference in factor structure is in line with a previous validation study performed on the Dutch general population (Pleuni, 2012).

Overall, the psychometric characteristics of the MZQ-IT are promising. The Italian version showed good fit indices and satisfactory internal consistency, highlighting its ability to detect the level of mentalizing ability.

STUDY 2

The aim of the second study was to test the predictive validity of the MZQ-IT, comparing a normative/nonclinical sample with a clinical one. The inclusion criterion for the clinical group was a diagnosis of restrictive eating disorder. This inclusion criterion was motivated by the broad and consistent literature discussed above (Russel et al., 2009; Skarderud & Fonagy, 2012), showing that restrictive eating disordered patients present relevant and specific deficits in mentalization abilities.

Method

Participants and Procedure

Participants in this study were 113 adolescents (34 males) with a mean age of 15.77 ($SD = 1.19$), divided into two groups: normative group, and clinical group. The normative group consisted of 60 adolescents (24 males) aged from 14 to 19 ($M = 15.96$, $SD = 1.11$), who were recruited from two high schools (a

scientific lyceum and a human sciences lyceum). The clinical group consisted of 53 adolescents (10 males) aged from 14 to 19 ($M = 15.62$, $SD = 1.15$) recruited from the Child and Adolescent Psychiatry Ward at a hospital in a city of central Italy.

The study was conducted in accordance with the guidelines for the ethical treatment of human participants. In addition to the authorization of the educational authorities, the Ethical Committee of the healthcare company of the city approved the study, and signed informed consent from parents or participants (if they were of legal age) was obtained before starting data collection. All participants completed the MZQ-IT in a booklet form. Students completed the questionnaire in groups during regular lessons. Clinical participants completed it during the first meeting of a psycho-educational group within the first week of hospitalization.

Results

In order to test for any differences in the MZQ-IT between the clinical group and the normative group, a one-way ANOVA was conducted. Means and standard deviations for the 11 items of the scale for the two groups are presented in Table 4.

Considering the total mentalizing score (the sum of the 11 items) we found a significant difference between the two groups, $F(1, 111) = 12.80$, $p = .001$, $\eta^2 = .10$. More specifically, the clinical group ($M = 30.43$, $SD = 1.12$) had a lower score of mentalizing ability than the normative group ($M = 35.95$, $SD = 1.06$).

TABLE 4
Means and standard deviations of the 11 items of the MZQ-IT in the clinical and normative groups

	Clinical group ($n = 53$)		Normative group ($n = 60$)	
	M	SD	M	SD
Item 1	2.26	1.47	2.63	1.40
Item 2	3.28	1.28	3.47	1.48
Item 3	3.02	1.63	3.80	1.45
Item 4	2.51	1.45	3.33	1.40
Item 5	3.38	1.28	3.75	1.24
Item 6	3.21	1.28	3.15	1.13
Item 7	2.92	1.53	3.08	1.38
Item 8	2.70	1.31	3.25	1.50
Item 9	2.55	1.53	3.38	1.40
Item 10	2.45	1.41	2.97	1.39
Item 11	2.15	1.35	3.13	1.51

Discussion

The aim of this second study was to assess the predictive validity of the MZQ-IT, comparing a normative with a clinical sample consisting of restrictive eating disordered adolescents. Overall, our results highlighted the ability of the scale to discriminate between the clinical and normative samples. Specific-

ly, in line with previous studies (Holiday, Tchanturia, Landau, Collier, & Treasure, 2005; Oldershaw, Hambrook, Tchanturia, Treasure, & Schmidt, 2010; Russell et al., 2009), our data indicated lower scores on mentalizing ability in the clinical group.

CONCLUSION

The aim of the present study was to provide a contribution for the validation of the MZQ in the Italian context (the MZQ-IT), and to assess the mentalization ability in healthy and restrictive eating disordered adolescents. We focused our attention on restrictive eating disorders because, as discussed above, literature has consistently shown that restrictive disordered patients present significant and specific deficits in mentalization abilities (Hamatani et al., 2016; Harrison et al., 2012; Skarderud & Fonagy, 2012; Tchanturia et al., 2012).

Overall, both our studies showed that the MZQ-IT is an easy, but also accurate and reliable, measure for the assessment of adolescent mentalization ability within the Italian context. In particular, our results did not confirm the multidimensional structure of the scale. However, they supported a unidimensional structure, showing good psychometric characteristics and adequate predictive validity. In fact, in line with previous studies, our results showed that restrictive eating disordered adolescents have more difficulty in recognizing and expressing their own emotions (Oldershaw et al., 2010; Russell et al., 2009).

Although the findings of our studies represent an important first step in providing a valid and reliable tool to assess mentalization ability in the Italian general and clinical adolescent population, they show some limitations. First, the great imbalance between males and females in our samples could have affected the results, because females tend to be characterized by higher mentalization skills in comparison with males (Abu-Akel & Bo, 2013; Midgley & Vrouva, 2012). Moreover, we tested only the predictive validity. It would be useful to conduct further studies, aimed at examining other kinds of validation. Finally, our clinical sample showed a limited size. Further studies could replicate our findings with larger and more differentiated clinical samples.

Despite these limitations, these outcomes allow us to fill the methodological gap on mentalizing assessment existing in the Italian context; they confirm that the MZQ-IT is a promising measure for improving future clinical and developmental research, and increasing knowledge about mentalization processes in both healthy and disordered adolescents. A broader understanding of these processes would be very useful in improving the development of specific treatments.

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