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Impulsive Consumption: Gender, Personality Traits and Emotions

Marco Giovanni Mariani[1], Chiara Biselli[2], Salvatore Zappalà[1]

[1] Department of Psychology, University of Bologna, Italy
[2] Human Resource Psychologist, freelance professional, Italy

❧ *ABSTRACT*. La ricerca indaga la relazione tra l'acquisto impulsivo di capi di abbigliamento, i tratti di personalità e le emozioni degli acquirenti. I partecipanti sono stati 311 consumatori italiani adulti. I risultati hanno mostrato che, per le donne, l'acquisto l'impulsivo è un mediatore totale tra le emozioni (positive/negative) e la spesa mensile per l'abbigliamento. Invece, per gli uomini, l'acquisto impulsivo è un mediatore solo parziale rispetto alle stesse variabili.

❧ *SUMMARY. Introduction: This research investigates the relation between impulsive purchases of clothing, personality traits and emotions of purchasers. It is also investigated if impulsive purchases differ across genders. Aim: The model hypothesizes that: impulsive clothing consumption is affected by extroversion, conscientiousness, negative emotions and positive emotions; moreover, impulsive clothing consumption influences monthly clothing expenditure. Method: Participants were 311 Italian adult consumers; data were collected via a structured questionnaire. Structural equation models were used to test the model. Results: Results showed that, for women, impulsive purchase is a full mediator between emotions (positive/negative) and monthly clothing expenditures. Instead, for men, impulsive purchase is a partial mediator between the same variables. Conclusion: Consumers seem to be more prone to purchasing products impulsively when they experience positive consumption-related emotions and less prone when negative emotions are felt.*

Keywords: *Impulsive consumption, Gender, Personality, Emotions*

INTRODUCTION

When purchasing a product, consumers not only try to satisfy a purely utilitarian need (e.g. Scarpi, Pizzi & Visentin, 2014), but also look for the "added value" of excitement, amusement, sensory satisfaction and gratification, which are connected to the shopping experience per se.

Research on impulsive consumption has highlighted that shopping is a way to alleviate negative feelings (MacInnis, Patrick & Park, 2006) and the desire to improve one's own mood can increase the probability to buy some product. Impulsive consumption is so common that Mattila and Wirtz (2008) believe that from 27% to 62% of stores purchases are impulsive or unplanned purchases. In addition, some studies show that

gender plays a relevant role in this phenomenon; Tifferet and Herstein (2012), for instance, found that in comparison to men, women report higher level of impulse buying. However, previous studied have not yet examined the relative weight that some determinants of impulsive buying behavior have on buying behaviors of men and women. Thus, the present paper aims to investigate the relationship among impulsive purchase, consumers' personality traits and emotions. It also examines if these associations do differ with respect to consumers' gender. This paper contributes to the existing literature by testing, in a single causal model, a set of predictors of impulsive buying behavior, and checking if these predictors do affect differently the impulsive buying behavior of men and women. Finally, although literature suggests that any item can be purchased on impulse (e.g. Kacen & Lee, 2002), this paper focuses on the impulsive consumption of a specific product, namely clothing. Clothes are one of the most frequent items of impulse shopping (Canadian press, 2012), and many studies on impulsive purchase consider this type of item (e.g. Hulten & Vanyushyn, 2014). In addition, as "beauty" (in terms of aesthetics and style) is considered an "Italian obsession" (Bauer, 2001), this study is conducted in Italy. This "obsession" is an integral part of the self-image and identity of Italians and concerns the importance attributed to clothing and other controllable aspects of external appearance.

CONCEPTUAL BACKGROUND

Impulsive consumption

Even if several studies have taken into account impulsive consumption, a shared definition of the impulsiveness concept is not yet available (Lin, Shih & Huang, 2009): Engel and Blackwell (1982) defined it as "a buying action undertaken without a problem previously having been consciously recognized or a buying intention formed prior to entering the store" (p. 552). In the same way, Beatty and Ferrell (1998) described impulsive purchase as "a sudden and immediate purchase with no pre-shopping intentions either to buy the specific product category or to fulfill a specific buying task" (p. 170). The two definitions underline that the purchaser does not intend to buy a product before entering the shop and that satisfying a planned task (for example buying a present for a friend or relative) cannot be considered an impulsive purchase. In addition, the idea of "impulsiveness" implies a spontaneous act that does not consider consequences.

Definitions agree on the fact that an impulsive purchase occurs when individuals buy suddenly, in an occasional way and without reflection (Rook & Fisher, 1995). Previous studies have underlined the relation between a reduced self-control and impulse purchases (Baumeister, 2002) and the reduction of regulatory resources and a stronger urge to buy and actually do spend more money in unanticipated buying situations (Vohs & Faber, 2007). If individuals that tend to spend impulsively do not control their expenses, or the frequency of their expenses, we expect that this behavior influences, and increases, the amount of their expenditures. Thus, we hypothesize the following (Figure 1):

– *Hypothesis* 1a. Impulsive consumption, positively, affects the monthly expenditure on clothes.

Tifferet and Herstein (2012) observed that women reported higher level of impulse buying than men. Similarly, Lin and Lin (2005) and also Lai (2010) showed that female teenagers are more impulsive in their purchases than male teenagers. Other studies suggest that while women tend to buy impulsively more fashion products, men do so for electronics and music ones (Coley & Burgess, 2003). This different behavior is attributed to the fact that, when making purchases, women are more interested in clothes, beauty and accessories than men (Bloch, 1993). Gąsiorowska (2011) highlights that the tendency to impulsive purchases provides women a high level of stimulation that is related to the emotions originated from the purchase process or from owning a new product. On the contrary, the same scholar claims that, for men, the tendency to impulsive purchases has a major instrumental character, which facilitates quick decisions using a reduced level of attention. The tendency to impulsive purchases for men is related to temporal orientation, immediate gratification and the utility that can derive from what is bought. On the other side, using interviews after the purchase and shopping diaries, Herabadi, Verplanken and van Knippenberg, (2009) did not observe any statistically significant difference between men and women in the tendency toward impulsive purchases. However, even if there is some evidence of the different levels of impulsive purchases across genders, at present few studies have examined if the impulsive consumption of men and women has different predictors and outcomes. In other words, we assume that the impulsive purchase behavior is influenced by the same factors regardless of the gender of consumers.

Following this reasoning, we hypothesize the following:

– *Hypothesis* 1b: The effect of impulsive consumption to monthly cloth expenditure is constant across genders.

Figure 1 – The hypothesized model
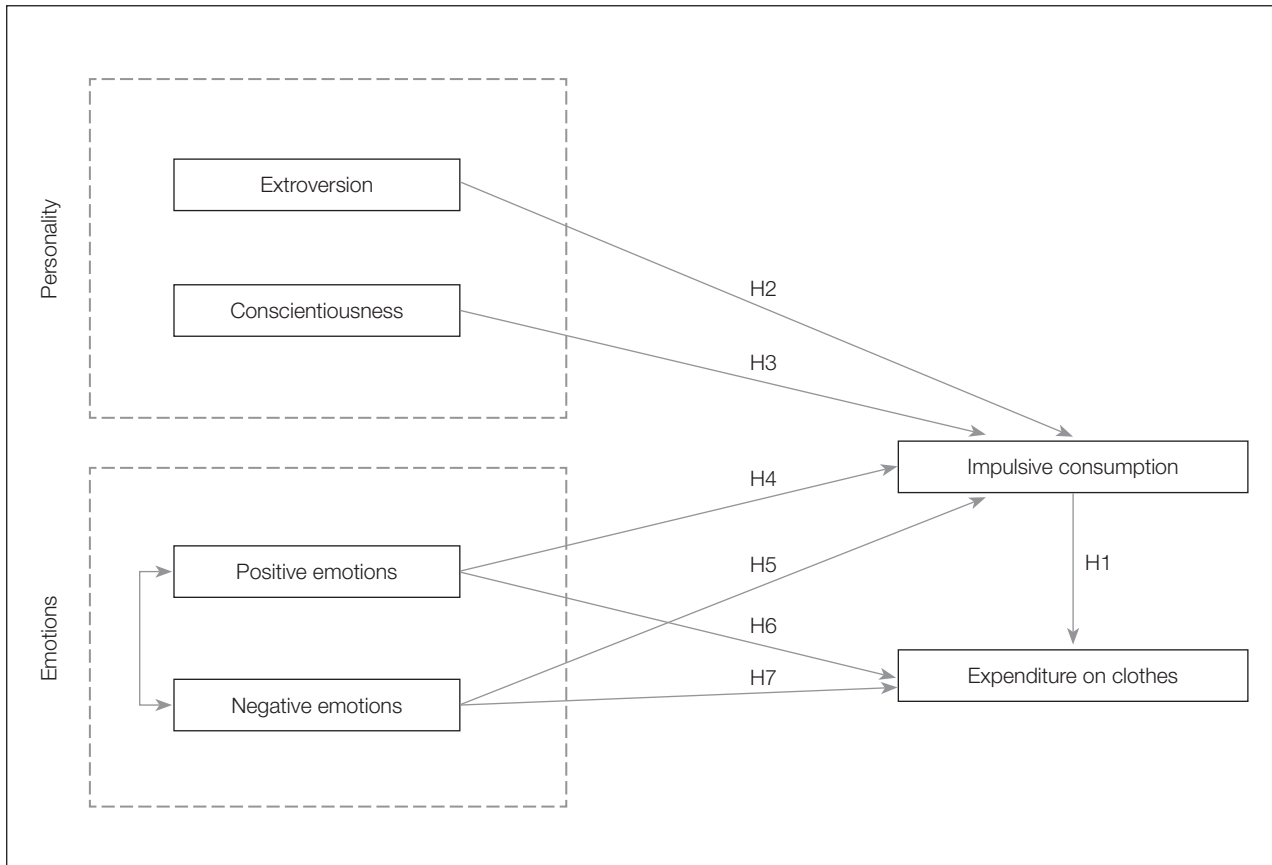
Extroversion, conscientiousness and impulsive consumption

Personality characteristics of consumers have been previously considered in literature, because they seem to influence consumers' purchase style.

The Big Five model, proposed by McCrae and Costa (1990), describes five dimensions of personality (extroversion, agreeableness, conscientiousness, neuroticism and openness to experience), composed in turn by sub-factors called facets. To clarify the nature of impulsivity, Whiteside and Lynam (2001), relying on the five factor model, administered many of the most widely used measures of impulsivity and found four dimensions that well describe the four impulsivity traits of the five factor model. The first dimension is urgency, which refers to the tendency to feel strong impulses, often stimulated by negative feelings. This dimension of impulsivity is associated with the neuroticism

factor dimensions of NEO-PI-R (Costa and McCrae, 1992). The second dimension – (lack of) premeditation – refers to the tendency to think and reflect on the consequences of an action before acting: this dimension was in the same factor of the NEO-PI-R scales of conscientiousness. The Big-Five factor of conscientiousness was associated also with the third dimension of impulsivity, lack of perseverance. Perseverance refers to the ability to remain focused on a task that is becoming boring or difficult. The last dimension is sensation seeking, which incorporates two aspects: 1) the tendency to enjoy and pursue activities that are exciting; 2) openness towards new experiences that can be, or become, dangerous. The sensation seeking dimension was associated to the extroversion factor of the big five model.

In another study, Verplanken and Herabadi (2001) found that impulsive purchase tendency was positively related to extroversion and negatively related to conscientiousness. The typical impulsive purchaser is, in fact, described as an

extroverted individual (Sun, Wu & Youn, 2004) with limited conscientiousness (Mowen & Spears, 1999). Considering that studies consistently show the influence of extroversion and conscientiousness on impulsive buying behavior, we posit the following hypotheses:

– *Hypothesis* 2: Extroversion, positively, affects impulsiveness in purchases (a); this effect is constant across genders (b).
– *Hypothesis* 3: Conscientiousness, negatively, affects impulsiveness in purchases (a); this effect is constant across genders (b).

Emotions during shopping and impulsive consumption

Literature on affect and social cognition shows that affective states play a major role in how individuals learn, think, remember, take risks and evaluate complex social information (e.g. Berkowitz, Jaffee, Jo & Troccoli, 2000). Emotions and mood are identified as variables that greatly influence many actions, among which is impulsive behavior. Research has highlighted the fact that impulsive consumers experiment emotional instability (Mowen & Spears, 1999) and purchase items in an attempt to "regulate or repair" their emotions, particularly negative emotions (Dittmar, Long & Bond, 2007). Even Herabadi et al. (2009) observed that emotions are related to the experience of impulsive purchases.

Previous studies support the idea that shopping involves a vicious circle of emotions (negative emotions before shopping, positive emotions while making purchases and negative emotions after shopping). However, in an ethnography study with 22 young consumers in a norther European country, Saraneva and Sääksjärvi (2008) found that respondents had positive emotions before shopping and a mix of negative and positive emotions during and after the purchase. Negative emotions experienced during the purchase can also influence negatively the impulsive purchase; however, the effects of negative moods on the purchasing behaviour are not so consistent and clear (Clark & Isen, 1982).

Based on the conceptual remarks and empirical results mentioned, we expect that:

– *Hypothesis* 4: Positive emotions during the shopping trip affect positively the impulsive purchase of specific products, in this case of purchasing clothing items (a); this effect is constant across genders (b).

– *Hypothesis* 5: Negative emotions during the shopping trip affect negatively the impulsive purchase of specific products, in this case of purchasing clothing items (a); this effect is constant across genders (b).

Moreover Pollai, Hoelzl and Possas (2010) observed that individuals that buy shoes more frequently experience more positive emotions related to the purchase compared with individuals that purchase shoes less frequently. Thus, if individuals that during the purchase experience more frequently positive emotions, and these emotions are related to a repeated impulsive purchase, then we expect:

– *Hypothesis* 6: Positive emotions during a dress shopping trip strengthen the shopping experience and, making more likely to repeat the clothing purchase, directly affect positively the monthly expenditure on clothes (a). This effect is constant across genders (b).
– *Hypothesi* 7: Negative emotions during a dress shopping trip, weaken the shopping experience and making less probable to repeat the clothing purchase, directly affect negatively the monthly expenditure on clothes (a). This effect is constant across genders (b).

Finally, following Chaudhuri (1998), the model includes a negative correlation between positive and negative emotion indexes.

METHODOLOGY

Sample and data collection

This study uses a convenience sample of 311 Italian consumers of whom 58% are women and the average age is 25 years old (min. 20 - max. 35 years; SD 2.71). About 53% of respondents has a university degree and 47% a high school degree; 55% are students and 27% workers. Clothing was considered as enough important by 50% of participants and very important by 20% of them; 60% shopped for clothing once or twice per month and 49% usually purchased clothes in clothes shops and 22% in malls. There is no significant association between gender and the other demographic measures.

Participants spent on average € 80 per month for clothing (min. € 10 - max. € 500; SD € 75.39). Data were collected by means of an online questionnaire investigating experiences on clothing consumption. Participation were recruited from social networks and internet sites often used by university

students and young workers; respondents did not receive any type of incentive or reward.

About the ethical standards for research, the study adhered to the latest version of the Declaration of Helsinki revised in Fortaleza (World Medical Association [WMA], 2013).

Measurement of variables

The Buying Impulsiveness Scale (BIS), by Rook and Fisher (1995), is a Likert-type scale composed by nine items (e.g. "I bought things without thinking"). Instructions were adapted and participants were asked to answer considering the last clothing purchase. To translate the scale from the original English version into Italian, the following procedure was used: *a*) two experts, familiar with the construct and English language, translated the items into Italian; *b*) the two versions of the experts were compared to produce a single version; *c*) this version was back-translated by an English mother-tongue, that did not know the original items; *d*) the final version of the scale was developed based on the entire translation process. Respondents were asked to answer the nine items referring to the last clothing purchase. With the present sample, confirmatory factor analysis suggests a good construct validity (Table 1) and Cronbach's alpha shows an excellent internal homogeneity (alpha = .91)

The Italian version (Chiorri, Bracco, Piccinno, Modafferi & Battini, 2015) of the Ten-Item Personality Inventory (Gosling, Rentfrow & Swann, 2003) was used. The measure refers to the five-factor model of personality. The scale uses a seven-point Likert-type scale ranging from 1 (strongly disagree) to 7 (strongly agree) and measures five constructs. The version of Chiorri et al. (2015) reached adequate levels in terms of convergent/discriminant validity and in terms

of test-retest reliability. Specifically, in this study only two scales attained a sufficient level of reliability: extroversion (Cronbach alpha of .71) and conscientiousness (Cronbach alpha of .70). We did not plan to use the other scales, however, for completeness, we report that these other scales showed an alpha lower than .60.

Eight words representing four positive and four negative emotion, derived from the scales of Chaudhuri (1998) and Beatty and Ferrell (1998), were used. The four positive emotion are excitement, enthusiasm, pride and delight and the four negative emotion are worry, irritation, distress and disappointment. The items use a 7-point Likert-type scale ranging from 1 (strongly disagree) to 7 (strongly agree).

To translate the emotion items into Italian the same procedure used for the BIS was implemented. The scale of positive emotion showed a Cronbach's alpha of .91 and the one of negative emotion a Cronbach's alpha of .92. Results of the confirmatory factor analysis show a good construct validity (Table 1).

Statistical analysis

The psychometric properties of the scales used in the study were analyzed using SPSS 23 to measure Cronbach's alpha and AMOS 23 for the confirmatory factor analysis and structural equation models.

Structural equation models were used to test the multi-group invariance across genders. As suggested in the literature (Byrne, 2001), GFI, AGFI, CFI and RMSEA were adopted to consider the fit of the models. A threshold of .90 of GFI, AGFI and CFI was considered as acceptable and values of .95 or higher as indicative of excellent fit (Hu & Bentler, 1999). For RMSEA, values up to .08 represent reasonable

Table 1 – SEM: fit indexes of confirmatory factor analysis

	χ^2	**DF**	**Chi2/df**	**GFI**	**AGFI**	**CFI**	**RMSEA**
Buying Impulsiveness	73.39	27	2.71	.974	.946	.992	.055
Emotions	33.17	19	1.75	.948	.910	.970	.077

Legenda. GFI = Goodness of Fit Index; AGFI = Adjusted Goodness of Fit Index; CFI = Comparative Fit Index; RMSEA = Root Mean Square Error of Approximation.

errors of approximation (Browne & Cudeck, 1993).

In order to test invariance across genders, firstly the baseline model was tested considering all respondents; then it was tested separately for each group with no invariance constraints and finally the two groups were jointly assessed to see the model fit. This last model was used as a basis for the assessment of more constrained models. The constraints are placed in a sequence of nested models.

To compare the models, we used the χ^2 score to test the equality constraints (Byrne, 2001). If the difference between the χ^2 statistics is not statistically significant then statistical evidence shows no cross-group differences between the constrained parameters. If the χ^2 difference is statistically significant, then there is evidence of cross-group inequality.

RESULTS

Table 2 shows the descriptive statistics of scales used in this study, and results of ANOVA between groups. Results show that women have significant higher means than men in three measures: Buying Impulsiveness scale ($F_{(1, 309)}$ = 13.50, $p<.001$), Positive emotions ($F_{(1, 309)}$ = 95.81, $p<.001$) and Monthly clothing expenditure ($F_{(1, 309)}$ = 4.25, $p<.05$). On the contrary, men got a significant higher mean than women in Negative emotions index ($F_{(1, 309)}$ = 80.63, $p<.001$).

Before conducting the multi-group analysis of structural invariance, the model-data fit and parameter estimates were examined for the entire sample (Model 0 – All participants), for the male group (Model 0 – Men) and for the female group (Model 0 – Women) (see Table 3). Fit indexes were good for the entire sample and for male group and sufficient for the female group.

Since fit indexes were substantially adequate, we went further with the multi-group analysis of structural invariance.

Subsequently, the structure was tested simultaneously across the men and women groups and the parameters were estimated for the two groups at the same time. The fit was good (Model 0 – Multigroup) and so this estimated model was used to provide the baseline value against which all the subsequently specified models were compared. The baseline chi-square for the equal pattern model is 30.23 with 14 d.f. These results indicate that the same pattern of parameters fits the data for each group. All regression structural weights of

the model are significant (for $p<.05$), except those concerning Negative emotions, that did not influence the monthly clothing expenditure in both groups. So we tested Model 1 which did not include this relation. Since the chi-square difference between Model 0 and Model 1 ($\Delta \chi^2$ = 1.20; Δ d.f. = 2) was not significant, the more parsimonious model (Model 1) was chosen. Thus, on the basis of this latter result, we can claim that the level of influence of extroversion and conscientiousness on buying impulsiveness does not change in the two samples.

Each regression structural weight of the two personality constructs (extroversion and conscientiousness) on the Buying Impulsiveness Scale (BIS) was forced to be equal across the two groups in Model 2. Model 2 has a good fit. The chi-square difference between Model 2 and Model 1 tests the invariance of structural weights. Since the measurement model appears to be invariant across subgroups (p = .76), we can claim that the level of influence of extroversion and conscientiousness on buying impulsiveness does not change in the two samples.

Subsequently, we tested for the invariance of the effect of positive emotions on buying impulsiveness across the two samples. This model (Model 3) has a substantially good fit. So we compared the chi-square of Model 3 with the chi-square of the model 2 with equality imposed constraint across groups: the difference was not significant (p = .54) and we chose Model 3 and we claim that the level of influence of positive emotions on buying impulsiveness does not change in the two samples.

In the next model, the invariance, across genders, of the effect of positive emotions on Monthly Clothing Expenditure was tested (Model 3 vs Model 4). Results showed a significant chi-square, so we chose Model 3 and we can assert that the level of influence of positive emotions on the monthly clothing expenditure variable changes in the two samples.

Subsequently, we tested for the invariance of the effect of negative emotions on Monthly Clothing Expenditure across the two samples. When the effect of negative emotions on the monthly clothing expenditure variable was constrained to be equal across genders (Model 5), the fit indices were generally good. The change in the chi-square is significant ($\Delta\chi^2$ = 4.43; Δ d.f. = 1) at a level of alpha = .05, so we chose Model 3 and we can assert that the level of influence of negative emotions on the monthly clothing expenditure variable changes in the two samples.

Table 2 – Descriptive statistics of scales and ANOVA between genders

	Entire sample (n = 311)		Men (n = 129)		Women (n = 182)		ANOVA
	M	SD	M	SD	M	SD	
Ext.	4.32	1.44	4.32	1.51	4.32	1.38	$F_{1,309} = 1.87$
Con.	4.86	1.38	4.73	1.44	4.95	1.33	$F_{1,309} = .03$
Pos. E.	3.53	1.53	2.64	1.07	4.15	1.50	$F_{1,309} = 95.81^{***}$
Neg. E.	2.21	1.25	2.89	1.53	1.73	.68	$F_{1,309} = 80.63^{***}$
BIS	2.49	.84	2.29	.71	2.64	.90	$F_{1,309} = 13.50^{***}$
MCE (€)	81.12	75.39	70.66	75.88	88.51	74.37	$F_{1,309} = 4.25^{*}$

Note. Ext. = Extroversion; Con. = Conscientiousness; Pos. E. = Positive Emotions; Neg. E. = Negative Emotions; BIS = Buying Impulsiveness Scale; MCE = Monthly Clothing Expenditure in Euro.
* $p<.05$; *** $p<.001$

Table 3 – SEM: fit indexes of path analysis

	χ^2	DF	Chi2/df	GFI	AGFI	CFI	RMSEA	Nested model	$\Delta\chi^2$ (Δ DF)	Significance level
Model 0 All participants	13.31	7	1.90	.986	.958	.969	.054			
Model 0 Men	8.16	7	1.16	.982	.945	.979	.036			
Model 0 Women	21.24	7	3.03	.971	.899	.912	.083			
Model 0 Multi-group	30.23	14	2.16	.969	.908	.922	.061			
Model 1	31.43	16	1.96	.968	.916	.925	.056	0 vs. 1	1.20 (2)	.54
Model 2	31.98	18	1.78	.968	.925	.932	.050	1 vs. 2	.55 (2)	.76
Model 3	32.35	19	1.70	.967	.928	.935	.048	2 vs. 3	.37 (1)	.54
Model 4	41.22	20	2.06	.959	.914	.897	.048	3 vs. 4	8.87 (1)	.00
Model 5	36.78	20	1.79	.964	.924	.924	.051	3 vs. 5	4.43 (1)	.03
Model 6	33.47	20	1.57	.966	.929	.9235	.047	3 vs. 6	1.12 (1)	.28

Legenda. GFI = Goodness of Fit Index; AGFI = Adjusted Goodness of Fit Index; CFI = Comparative Fit Index; RMSEA = Root Mean Square Error of Approximation.

N*ote.* Model 1= Without the effect of Neg.E. on MCE; Model 2 = Ext. → BIS and Con. → BIS are invariant across the genders; Model 3 = Pos.E. → BIS is invariant across the genders; Model 4 = Pos.E. → MCE is are invariant across the genders; Model 5 = Neg.E. → MCE is are invariant across the genders; Model 6 = BIS → MCE is are invariant across the genders. In the "Nested model" column, the accepted model is underlined.

Afterwards, we tested for the invariance of the effect of buying impulsiveness on the monthly clothing expenditure variable across the two samples. Also, this model (Model 6) shows a good fit. We compared the chi-square of Model 3 with the chi-square of the model with equality imposed constraint across groups. The difference ($\Delta \chi^2$ = 1.12; Δ d.f. = 1) was not significant, so we chose Model 6 and we can assert that the level of influence of buying impulsiveness on monthly clothing expenditure does not change in the two samples.

Model 6, which we accepted, explains 27% of the Buying Impulsiveness Scale variance in the group of men and 29% in the group of women; moreover, the independents variables explain 38% of the monthly clothing expenditure variance for male participants and 17% of the monthly clothing expenditure variance for female participants. Table 4 shows the specific standardized regression coefficients of the Model 6. They are all significant for $p<.001$, except, for women, the effect of positive and negative emotions on monthly clothing expenditures.

DISCUSSION AND CONCLUSIONS

The main aim of the present research was to study the impulsive purchase of clothing, examining if personality traits and emotions of purchasers are associated to that behavior. Particular attention has been paid to gender differences. The present study is, at our knowledge, the first study that, taking into account gender, examines the impulsive clothing purchasing in an Italian sample.

The explained variance of the Buying Impulsiveness Scale is more than sufficient. Buying impulsively seems to influence the monthly clothing expenditures of the two genders, supporting **H1b**. These results are in line with previous research that highlighted that the amount of money that a person thinks to be able to spend is correlated with the impulsive purchase behavior, which functions as a facilitator in the purchase of the desired object (Beatty & Ferrell, 1998).

In our research, negative emotions affect the monthly clothing expenditures only of men (**H7a**). Following Baumeister (2002), we think that when people have to choose whether to save some money or to spend it to feel better, emotional distress can move the decision in favor of the purchase. Emotional distress, therefore, contributes to putting down self-control: Baumeister (2002) highlighted

that, indeed, when people experience negative emotions, the goal to feel better has precedence over the self-control goals and therefore people tend much more to make purchases which help them achieve the goal that has become the priority. Beatty and Ferrell (1998), examining this aspect, too, discovered that available resources tend to influence the mood of a person: a lack of money produces negative feelings, while perception of the availability of money produces positive feelings and has a positive influence on the impulsive purchase behaviour (Beatty & Ferrell, 1998). However, this study suggests a gender difference: negative emotions do not seem to affect the monthly clothing expenditure of women. The explained variance of the monthly clothing expenditure, although good for the group of men, is sufficient for the group of women. In addition, confirming H6a, positive emotions have an effect on monthly clothing expenditures; however, this is valid only for men but not for women, thus disconfirming **H6b**.

Hypotheses **H2a** and **H3a**, which suggests that extroversion and consciousness, respectively positively and negatively, affect impulsive purchases are supported. These results confirm previous studies which observed a positive relationship between extroversion and impulsive purchases (Badgaiyan & Verma, 2014; Sun et al., 2004; Verplanken & Herabadi, 2001) and a negative relationship between conscientiousness and impulsive purchases (Mowen & Spears, 1999; Verplanken & Herabadi, 2001). Our study contributes t this literature showing that these relationships are invariant across genders, thus supporting **H2b** and **H3b**.

This study confirms that emotions are an important component of consumer responses. In fact, as **H4** suggested, positive emotions affect impulsive purchases and this effect is invariant across genders, thus **H4b** is supported too. These results are not surprising, because several authors (e.g. Isen, 1984) highlighted that positive emotions drive people "to reward themselves" more generously and to feel free to act and to execute behaviors that maintain this mood. Park, Kim & Forney (2006), considering specifically the impulsive purchase behavior of consumers, observed a positive relationship between positive emotions and impulsivity in purchases. It is instead unclear if negative emotions experienced during purchases facilitate the enactment of a proactive behaviour (like the purchase one) or not (Clark & Isen, 1982). In our research, **H5** hypothesis is not supported, and result suggest that negative emotions do not influence buying impulsiveness either for men or for women.

Table 4 – Results of the path model number 6 (N = 311)

Standardized Regression coefficients	Men	Women
Extroversion → Impulsive consumption	.18***	.15***
Conscientiousness → Impulsive consumption	−.22***	−.16***
Positive emotions → Impulsive consumption	.44***	.49***
Positive emotions → MCE	.36***	.04
Negative emotions → MCE	−.19***	−.05
Impulsive consumption → MCE	.31***	.38***
Standardized Covariance		
Positive emotions ← → Negative emotions	−.12*	−.21***

Note. MCE = Monthly Clothing Expenditure. * *p*<.05; *** *p*<.001.

Our findings suggest several practical implications, especially for marketers. Firstly, we affirm that consumers seem to be more open to impulsive purchases when they experience positive consumption-related emotions. Therefore, advertising and sale strategies should try to stimulate positive emotions linked to the purchase of specific goods and services. At the same time, one should try to prevent negative consumption-related emotions and this is particularly important for men because, as our research highlighted, men tend to spend less money when they experience negative emotions during the transaction, like distress, anxiety, irritation and discontent. It is to notice that we are talking about emotions linked to a low sense of agency, that is, emotions linked to vulnerability and to a lower control of the situation (e.g. Wiggins, 1982) and that, for this reason, are considered uncorrelated with the male stereotype. Therefore, it may be important to avoid, during the shopping, feelings that male consumers may consider as socially undesirable emotional manifestations. However, to control their behaviors, impulsive consumers should try to procrastinate the purchasing decision (Mariani & Ferrari, 2012).

This study presents some limitations. The participants are a convenience sample of young Italian adults, mainly university students. Therefore, further research should control whether similar results are observed in subjects that differ for ages, life situation and role, from participants of this study. At the same time, cross-cultural research should clarify whether what observed in this study is more peculiar of Italian consumers or whether it is, on the contrary, generalizable to other cultural contexts. Besides, in our study we asked subjects to remember the emotions felt during their last clothing purchase. It would be interesting to examine the emotions felt before and after having purchased the product, in order to investigate in a more punctual way the nexus of the behaviour of impulsive purchases. Lastly, clothing was the product selected for this research. Future research could use other products than clothing and could study the impact of impulsive purchases in online consumption (Mariani & Zappalà, 2012).

In conclusion, our results show that impulsive consumption fully mediates between positive emotions and monthly clothing expenditure only for female participants. A partial mediation model appears for male participants, because emotions (positive and negative) have also a direct effects on impulsive purchase and on monthly clothing expenditure. This result contributes to support the importance that emotions play in consumer behavior as proposed by theoretical models (Bagozzi, Gopinath & Nyer, 1999).

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Representations and feelings related to organizational change: A Grounded Theory study with Italian prison workers

Letizia De Luca, Emanuela Saita, Guendalina Graffigna

Catholic University of Holy Heart, Milan - Italy

♟ *ABSTRACT*. L'obiettivo della presente ricerca è esplorare e concettualizzare il processo di adattamento messo in atto da parte degli operatori penitenziari relativamente all'attuale cambiamento organizzativo in atto nel sistema penitenziario italiano. Attraverso l'applicazione della metodologia *Grounded Theory* (Glaser & Strauss, 1967) applicata su un campione costituito da 121 operatori provenienti da 4 regioni italiane, i risultati hanno evidenziato importanti elementi di similarità tra le diverse figure professionali considerate, nonostante la differenza di ruolo e delle micro culture di appartenenza. Il più importante elemento di trasversalità emerge rispetto ai problemi percepiti come essenziali nell'attuale pratica di lavoro all'interno del contesto penitenziario, riconducibili ad un livello organizzativo e ad un livello intrapsichico-relazionale. Inoltre, elementi di omogeneità caratterizzano anche i vissuti riferiti, a prevalenza emozionale negativa.

♟ *SUMMARY. The aim of this research was to explore and conceptualize the adaptation process activated by prison workers relating to the current organizational change that is characterizing the Italian prison system. To achieve the present goals, it has been selected the Grounded Theory methodology (Glaser & Strauss, 1967) with a sample constituted by 121 prison workers coming from four Italian regions (Lombardia, Liguria, Emilia-Romagna, Campania). Results showed many important elements of similarity between the various professionals, despite the difference of role, geographical origin and type of institute. The most important transversal element emerged about the perception of the problems in relation to two main levels of reading, the first concerning the organizational dimension and the second concerning the intrapsychic-relational dimension. Furthermore, elements of homogeneity also emerged in the range of mentioned emotions, often characterized by highly negative connotation.*

Keywords: *Prison workers, Prison, Organizational change, Italian penitentiary system, Work representation, Emotional work, Grounded Theory, Adaptation process*

INTRODUCTION

The aim of this study was to explore the representations about both the work environment and the organizational change concerning different professional roles employed in the Italian penitentiary system.

Two are the peculiarities for this work: the penitentiary context and the organizational change.

The first one regards an important area of interest for the political and social actuality in Italy. Lately, in agreement with the European Union, the Italian Government is focusing many effort towards the identification and resolution of matters that characterizes the penitentiary system (e.g. overcrowding, inadequate detention conditions, high level of suicide of detained population, conflict between punishment and education, inhuman treatment, etc.). More specifically, the reference goes to the innovative rules adopted after the sanctions delivered from the Court of Human Rights at the expense of Italy due to some critical deficit that characterizes the penitentiary system. Indeed, with the "Torreggiani and others vs. Italy" case issued on 8 January 2013, the second section of the European Court condemned Italy for violating Article 3 of the European Convention on Human Rights due to prison conditions experienced by seven detainees in Busto Arsizio (Lombardia) and Piacenza (Emilia-Romagna) (Maccanico, 2013).

Subsequently, the National Department of Prison Administration (D.A.P.) issued two circulars[1] by which it was started a process of change of the organizational and management system of Penitentiary Administration (Ministry of Justice, Lecture notes ISSP No.1, March 2013). The guidelines defined in the above-mentioned circulars outline a framework in which the dimensions of *time* and *space* acquire a new central value for the daily life in prison. The norms of "open prison" and "dynamic surveillance" are introduced; the first one establish that prisoners (of specific sections) are trusted to serve their sentences with minimal supervision and perimeter security and aren't locked up in prison cells, the second one determine that whereby all the prison workers (educators, penitentiary police, teachers, volunteers, health professionals) are called to contribute to a passage from the mere controlling custody system to a better knowledge of prisoners' personality.

This transformation represents a strong sign of discontinuity with the past and a transition to a conception of detention that is more oriented to the prevention of recidivism rather than to the punishment, closer to the new regulatory schemes corresponding to the most important requirements linked to the social development of the last decades (Gherardo, 2015).

Starting from these considerations, it becomes crucial to take into consideration the organizational change, that could be defined as the movement of an organization from the present state to a future desired scenario, with the aim of increasing its efficacy (George & Jones, 2002). It's an intentional act, planned to modify the organizational model and the flow of the decision-making process that puts into play the capacity of different groups to collaborate with each other's in an innovative way, as observed in actuality of Italian prison context.

There are different forms of organizational change - discontinuous and continuous (Weick & Quinn, 1999), evolutionary and revolutionary (Porras & Silvers, 1991) – but it's always possible to affirm that the organizational change is ever a phenomenon that owns to two principal aspects, one more technical and one more social. The technical aspect consists in the realization of a modification into the usual mechanical procedure of work, while the social aspect refers to the way in which people directly involved into the same process of change think about the way in which it will modify their rooted relations within the organization (Lawrence, 1954), with consequent effects on the complex system of organizational culture.

A final remark seems important: studying this process in such a rigid and formal context as the penitentiary system implies taking into account the need to constantly refer to the Institutions, in order to facilitate the access to the field and the involvement of the participants, active co-builders of the knowledge process. Therefore, a central role in the construction of the research was played by P.R.A.P. (Regional office of Superintendent for Prison Administration) and by D.A.P. (National Department of Prison Administration), main intermediaries between researchers and research stakeholders. Thanks to the synergic collaboration with these two offices it was

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possible to build a research project which allowed to deeply investigate some crucial aspects concerning, on one hand, the experience of the prison workers and, on the other hand, the actual modification process.

METHOD

Starting from the complexity related to previously mentioned dimensions and considering the lack of literature relating to this field, researchers chose to use the Grounded Theory qualitative methodology (Glaser & Strauss, 1967).

Bruscaglioni (2013) underlines that this kind of methodology disrupts the typical linearity of the hypothetical deductive process, delineating a "non-standard" path that assumes the impossibility to isolate the single steps that characterized the research process, preferring a logic of circularity. The Grounded Theory methodology distinguishes itself thanks to its highly applicative value, starting from a knowledge approach strongly anchored to data (Tarozzi, 2008). For the present study the researchers have chosen to adhere to Charmaz's contribution (2006), the Constructive Grounded Theory; this kind of approach strongly underlies the necessity to recognize the subjectivity of theory and the central role of negotiation, dialogue and understanding between researcher and investigated object.

The present research has involved 121 prison workers recruited by theoretical sampling[2]. The total sample has included subjects coming from 4 Italian regions (North: Lombardia; Middle: Emilia-Romagna and Liguria; South: Campania), subdivided between educators (49), penitentiary policeman (41), school teachers (15), social workers (6), psychologists (2), principals (2), employed in P.R.A.P. office (8)[3]. The final sample is recruited from 46 prisons, 4 P.R.A.P., 2 OPG (prison psychiatric hospitals), 5 UEPE (office for external penal execution).

A recent innovative use of focus group within a Grounded Theory research (Aresi & Pedersen, 2015) has inspired the use of the same technique for the present work. The use of group seems appropriate to investigate complex issues that goes beyond the sphere of behaviours and attitudes noted in individuals, such as sharing acts, values, knowledge, prejudices, fears, collective representations (Acocella, 2008), as well as in this case. Researchers chose to use mini-groups (4/7 subjects); these small number would create a secure and intimate place for each of these subject to talk with others unknown colleagues about their personal experience and eventually also about sensitive topics. All the focus groups have predicted the presence of one conductor and one observer, and all the discussions have been recorded (prior consent of all the participants).

The initial stimulus was represented by the choice of a picture[4] by a photographic set, a technic utilized to promote and facilitate self-disclosure about personal experiences and emotional expression (Saita, Parrella, Facchin & Irtella, 2014). The photographic set - specifically developed for the prison context during the Grundtvig Program "Phototherapy Europe in Prison"[5] - includes different photos representing a big variety of subjects, actions, and landscapes; the participants were asked to choose the one that better could help them to introduce their role to the group, with a particular reference to the current change process. This could be considered an easy and direct way to introduce the key-words of the discussion and to make the operators start thinking about the themes are going to be discussed.

After the initial stimulus, the focus group "ad hoc" track was submitted. According to the traditional Grounded Theory data collection and data analysis processes, all of the focus group are been verbatim transcribed and codified along 4 specific phases directed to identify the emerging interpretative categories (see Table 1).

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2 This kind of sampling, regulated by the emerging theory, consists in identifying subjects following the indications coming from analysis process (Tarozzi, 2008), deepening the emerged dimensions step by step in order to verify the capacity in different contests. The enlargement of the sampling is interrupted when all the emerged categories are considered saturated (Morse, 1995).

3 Operators were contacted in proportion correspondent to the number of subjects nationally employed in each role; the final number respect the percentage for all the professions, except for Penitentiary Police group, subscribed in minor number.

4 This technique, called photo-projection, is based on the assumption that the significance of an image is first created by the observer, thanks to the projective mechanism from the individual inner world to the reality (Cavallo & Callieri, 2007).

5 The "Phototherapy Europe in Prison" project (2013/2014) had as its aim the development of the use of phototherapy in EU prisons, with the purpose of: 1. improving the emotional awareness of detainees; 2. equipping prison workers of a new useful method for re-education and social reintegration of prisoners.

Table 1 – Example of coding process

Quotations	Open Coding	Focus Coding	Theoretical Coding
"I have been working in prison from 10 years as penitentiary police, and my point of view is very different from theirs! I work in close contact with the audience"	– Conflict between educators and penitentiary police – Different mansions	Fragmentation of work	**Relational dimension**
"The change has been very fast, we hesitated to understand what it was, it seemed contradictory (…) but the main role limit that I feel is that it was not made clear to people who are the real protagonists"	– Introduction of organizational change – Misunderstanding about change	Top down change	**A paradoxal change**
"This reminds me the question of excessive bureaucracy. I think it's very heavy in our work and that still causes delays that often go to affect the final result, because this overload of paperwork reduces the proactivity and crushes us"	– Excessive bureaucracy – Risk of overload – Delays in work procedures – Limited proactivity	Formal limits of prison work	**The penitentiary organization**
"I am an agent of section and I often have to seek help in an office where there are only two persons who have to manage a prison now reaching 600 prisoners! They don't have time to give us a practical help, a response (...). We could talk about little cooperation, little communication and big jitters"	– Risk of overload – Lack of time – Lack of collaboration – Asking for help – Big jitters	Risk of burnout Fragmentation of work	**Coping strategies** **Relational dimension**
"We are nucleus scattered throughout the institution, each force may be used by itself. I get along with my colleague, we share a specific kind of work (…), because our superiors are often absent, they don't support us, they don't 0help us"	– Scattered nucleus – Lack of supervision – We and They – Lack of support	Fragmentation of work Lack of apical figures	**The penitentiary organization**

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continued

Quotations	Open Coding	Focus Coding	Theoretical Coding
"I think that you have to attempt to collect what is there, what I find in terms of personal resources (…), and you have to be serene. Me and some of my colleagues share the difficulty of not living a good life here, far from family, and, however, this affect the work, but in the sense that you have to make more effort to try to pull out the positive resources, first of all optimism!"	– Optimism – Personal resources – Share the difficulties	Possible answers to problems	**Coping strategies**
"It also true that the bulk of difficulties is related to the organizational level, so it's not just the person"	– Lack of organizational aspects	Perception of work system	**The penitentiary organization**

After the first phase of data collection – which took place in Lombardia – researchers activated the "open coding" process (Charmaz, 2006), thanks to which they identified firsts codes connected together by the logic of similarity/overlap, in order to create the first categories. From this first phase relations between categories and sub-categories have been suggested (Tarozzi, 2008).

Once completed the first phase, researchers came back on field (specifically, in Campania, South of Italy) in order to collect new data to integrate with those previously emerged; this moment is typically called "focus coding". Participants were not given information about what emerged in the previous data collection phase and the track of focus group remained unchanged as well as the conduction of the group, expect for the introduction of some deepening questions related to emerging categories. The codes used for phase one are reused to synthesize the new data and other codes are created ad hoc. Thanks to the constant comparison technique, researchers immediately observed a transversality of data that permitted to outline the definitive core category[6].

The third phase predicted another return on field (in Liguria exactly) similar to the previous one.

The fourth and last phase - called "theoretical coding" - represents a turning point, in which it has reached the saturation of the data and has outlined the core category. Researchers came back on field (in Emilia-Romagna) re-proposing the same data collection procedure (participants were not given information about what emerged in the previous data collection phase and the track of focus group remained unchanged as well as the conduction of the group, expect for the introduction of some deepening questions related to emerging categories). Charmaz (2006) underlies that thanks to this step it is possible to reach a sophisticated level of coding that follows the codes selected during focus coding, as in this case.

RESULTS

Our evidences suggest the emerging of 5 main interpretative categories related to the experience of organizational change in prison. These categories are declined in specific subcategories - 13 in total - as shown in the General Diagram (Figure 1). Each category (bold character and capital

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6 The core category is the principle organizer concept that could be inductively individuated by proceeding in hierarchization work of emerging data (Tarozzi, 2008).

letters in the Diagram) is now described in detail, in order to deeply understand the representations about prison workers experience in this era of change.

1. *The vagabond in a desert of snow*

The emerging core category has been denominated "*The vagabond in the desert of snow*". This "in vivo" label has suddenly appeared appropriate to describe the set of current representations of prison workers experience, with a particular lunge to emotional aspects connected to them.

This metaphor evokes a condition of severe loss and uncertainty into an inaccessible and threatening context. The indication goes to the emotional spectrum described by prison operators – regardless to the role of belonging and the region of origin - that seems to be purely characterized by negative emotions (anger, anxiety, fear, sadness, disorientation), feelings of frustration, disappointment, desolation, loss, despair, sense of inadequacy.

The prison operators describe their work practice as studded by lot of blinds moments where it is difficult to not get carried away by negative feelings ("*Ours is a labour of suffering, in every sense*", educators, Emilia-Romagna; "*Lately, I feel unrecognized, abused every day, without dignity, more controlled then the detainees*" educator, Emilia-Romagna). In many cases these feelings are difficult to contain, as if penitentiary setting could not take charge of an emotional burden, paradoxically urged by the same context.

In this sense, the reference to the current process of organizational change seems to further encourage such a state of anxiety and fear, putting operators in a difficult state of

Figure 1 – The general diagram
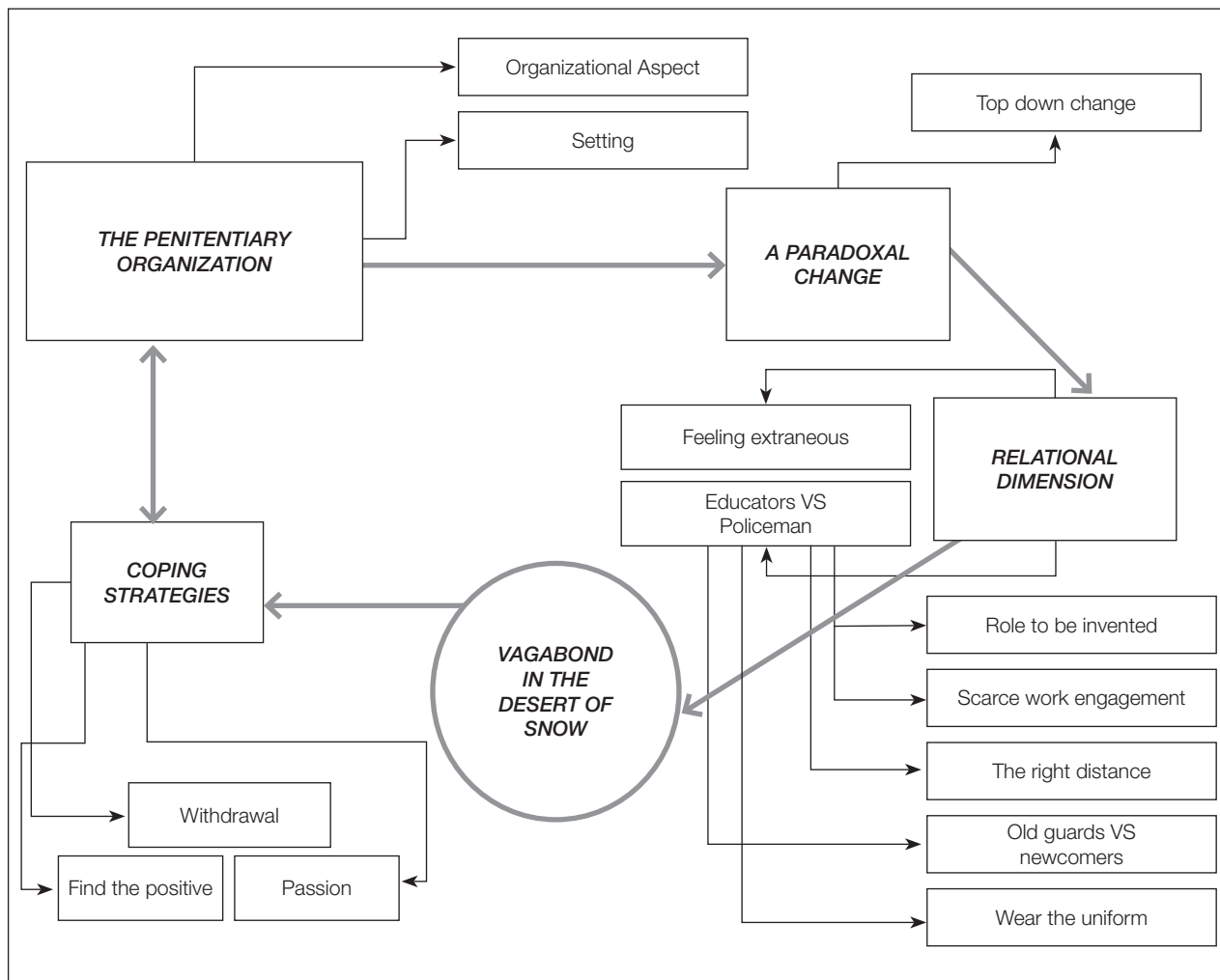
"meandering", paradoxical compared to the new required tasks.

2. Relational dimension

As already emerged from the core category, the data analysis underlines that the relational dimension is to considered a crucial element for the understanding of the experience of working in prison, particularly in this time of change. A total absence of sharing appears to prevail both intra and inter group, a lack perceived in most cases as extremely detrimental ("*Everyone must be find the strength inside themselves*", school teacher, Lombardia). What is clear almost unanimously is a sense of great fragmentation between the parties; the spirit of solidarity between colleagues seems to be completely missing, as well as the ability and opportunity to communicate - both vertically and horizontally – compared to the new ways of working and the collaboration towards a truly shared mission ("*The circulars about change are not enough*", policeman, Liguria).

Thus, the relational dimension seems highly compromised and the conflict seems lord it, particularly between two crucial professionals: educators (representatives of the treatment area) and policemen (representatives of the security area). This conflict is recognized and mentioned by both parties and it seems to be traced and justified by specific dimensions such as diametrically opposed tasks, different mentalities, prejudices between the parties, different attitudes to change, lack of clarity regarding the specific skills. In short, two different organizational cultures. This condition is exacerbated by the required changes that seem to ignore the deep differences within the system, taking for granted a flattening of visions between parts.

This collision opens the scene to a difficult situation also for other operators, especially for teachers group, "smashed" within this conflict and unable to feel themselves part of the field, feeling as foreign observers of an issue that, in some way, does not concern them.

3. The penitentiary organization

Trying to explain the causes of such a state of disorientation and loneliness, prison operators first of all refer to the limits that seem to be deeply rooted within the prison organization, both in its structural and contextual aspects.

The context is described as very complex, unpredictable and ambivalent; all the operators refer to a very uncomfortable setting, both for them and for prisoners; in their words there are numerous references to the structural deficiency and shortcomings that seem clearly oppose to the new open prison rules ("*Lack of space is the main problem! We don't have room to stay*", school teacher, Lombardia, "*It's impossible to carry out our work in such a structure*" policeman, Liguria).

In most cases, when they talking about prison as an organization, they describe it as a rigid and overly pyramid, in which the distribution of power has to do with well-defined hierarchical scales, characterized by subordination and dependency dynamics, ("*There is a big difference between those who decide, the upper floors, and who does the job, the low manpower*", policeman, Lombardia). With a particularly reference to this period of change, this severance is described as one of the main causes of the difficulties in coordinating a truly efficient work procedure ("*Who requires us to change? An organization that is actually absent*", school teacher, Campania). The context is described as very complex, unpredictable and ambivalent; all the workers refer to a very uncomfortable setting, both for them and for prisoners; in their words there are numerous references to the structural deficiency and shortcomings that seem clearly oppose to the new open prison rules ("Lack of space is the main problem! We don't have room to stay", school teacher, Lombardy, "It's impossible to carry out our work in such a structure" policeman, Liguria).

4. A forced change

A similar representation of their own work context drives prison workers to value this organizational change as highly dysfunctional and problematic.

Indeed, they feel themselves forced to adhere to a modification process that takes shape within an intrinsically immobile context that seems to fear evolution and change ("*It seems paradoxical to ask the prison to change*", policeman, Lombardia). All workers recognize this change as "epochal" but continue to interpret it in terms of a mere ministerial fulfilment rather than as real opportunity to develop the operative system: in other words, it's a paradoxical change.

More specifically, the norm that seems to strongly make doubters the operators is the dynamics surveillance, defined as an "empty container", not filled with recommendations, directions, indications.

This lack of reference points induces diverse feelings in the prison professionals; for example, educators suffer for the lack of apical figure able to lead them to the required changes ("*Here is a constant demand to do something, but we don't know why and what*", educator, Liguria), while the policemen focus their attention on the possible consequences

of the application of the rule, in particular the deletion of the barriers between them and the prisoners ("*I still have colleagues who are afraid to get too close to the bars of the cells, what could happen by opening them?*", policeman, Emilia-Romagna). The theme of "feel exposed and vulnerable" often returns in the words of policemen; they don't feel prepared or trained for such openness and sharing of space ("*Used to being ghettoized now we are in the middle of this reckless and without goals opening*", policeman, Campania). By contrast, the teachers perceive themselves as external from prison establishment, even if they recognize problematic aspects in engaging prisoners in a really felt path in such a condition of less control.

5. Coping strategies

Such a state of isolation and anxiety, connected to the important work overload that involves all roles in every Italian Regions, appears closely related to continuous exposure to the risk of burnout. Prison workers talk about this construct directly, well restoring their sense of concern about the continuous exposure to massive psycho-physical efforts, source of stress, intense fatigue and tiredness ("*The most urgent problem? The constant exposure to the risk of burnout*", educator, Lombardia; "*I feel like a climber on a high peak, I'm afraid to fall into the void*", educator, Lombardia).

Such exposure, certainly accentuated by the introduction of the open prison system and the annulment of distances, appears the more difficult raw plug to manage. Indeed the prison operators, regardless of role and region of origin, repeatedly emphasize the aspect related to daily exposure to severe existential distressing situations, condition that seems to increase with the introduction of dynamic surveillance. This new norm is perceived as an element of reduction of the physical distance between workers and prisoners, and it potentially could also reduce the emotional distance.

These fears are forcing workers to seek adaptive strategies; despite the reference to the possibility to draw on passion for their work and to attempt to look at the positive side of the experience, workers are mostly referring to maladaptive strategies, in particular withdrawal. These feelings of discomfort and unease seem to be linked to a kind of coping paralysis ("*I'm tired to feel bad, I prefer to retire*" educator, Lombardia), defence mechanism again paradoxical compared to the change process.

CONCLUSIONS

Starting from the classical use of the Grounded Theory analysis – that is the exploration of psycho-social process – this research allows to define an interesting overview of the representations and feelings about work experiences that characterize the actuality of the Italian prison context, connoted by numerous and significant normative changes that require the reference to a different organizational culture and a modification of the practical and relational functions.

Data analysis shows how to provide contribution within the prison context represents a constant highly challenging task at multiple levels, but our evidences underline that this condition of distress is increased from the current situation of organizational change[7].

First of all our findings underline the pervasiveness of feeling of loneliness and confusion, as well as clearly expressed by the core category, "*Vagabond in a desert of snow*". The prison workers perceived themselves as solitary players within a playing field impervious and not suitable, made even more uncertain by the introduction of sudden, radical and dropped from above changes, experienced as element of ulterior chaos.

Relational experiences are unsuitable, especially considering the international literature, that underlines the importance to eliminate conflicts and distances between different professionals to increase the perception of effectiveness and satisfaction about their own contribution (Lambert, Hogan & Tucker, 2009).

The penitentiary context is indeed based on multi-professional teams, established to deal with the complexity of the control and the rehabilitation process, that require the contribution of different skills. However, the data presented in this study suggest that every professional role protects its own identity at the expense of achieving a common mission, firmly maintaining boundaries among parties; the prison context seems to push each one to consider their membership rooted elsewhere,

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7 A preliminary note appears important: the prison context of each Nation is closely interconnected to the set of rules and laws that characterize it. Due to the total absence of Italian contributions about this theme, it seemed appropriate to make reference to the international literature, always taking into account the peculiar specificities of each country.

as if everything had to be in the hands of the top management and the confrontation with the other is pushed toward confusion and identity's uncertainty. The process of organizational change seems to further increase such a complexity and exacerbates the fragmentation between parties, involving professionals in innovative processes that appear impossible to deal with in a state of such a confusion and distance.

The ambivalences that characterize any kind of change have already been discussed in literature, because of the perception of possible positive aspects of a changing process is flanked by inevitable negative consequences. As well as underlined from this study, the complexities increase when the change is required to apply a rule; constraints of compliance often extinguish the possibility of redesign operative given and indisputable practices, with the consequent activation resistances towards change (Saita, 2015).

The changing Italian prison system seems to encourage a profound sense of confusion and bewilderment in all operators, state at the base of the perception of high stress related to their role because of a lack of internalization of the tasks now required. Also the Italian workers perceive themselves as included in an organization whose directives are often contradictory and this seems to negatively affect their work experience, as well as confirmed also by the international literature (Hepburn & Knepper, 1993).

Furthermore, we note that the primary source of stress and dissatisfaction within this time of change is to be search in the organizational behaviour more than in the work itself and in the time spent with the prisoners; consistently with the international literature, also the Italian prisons workers refer to the difficulty of working with their respective user only as a result of organizational dimensions described above (Armstrong & Griffin, 2004).

Finally, despite only in recent years the role of emotions in organizations has found renewed interest (Zapf, 2002) it seems crucial to consider this topic to better understand the experience of working within the changing penitentiary context. The multidimensional construct of "emotion work" (Hochschild, 1979) explains how the employees of any organization should not only deal with the tasks required by their jobs, but also with the dose of emotions it stressed (Zapf, 2002). Penitentiary work, as a professional help, is characterized by highly meaningful emotional aspects; however, it is surprising how prison workers experience strong negative emotions to aspects in relation to the organization itself rather than to the work with their users.

Such negative and distressing feelings seem to increase when prison workers perceive to have any control on the tasks to be performed, as in the case of the changing process, considered at total unanimity as dropped from above. Therefore, also within the Italian context the lack of involvement of prison staff in the decision-making process plays a key role in increasing dissatisfaction on the work in prison (Lambert et al., 2009), while, on the contrary, being part of the decision-making process increases the perception of simplification of the procedures and relieves the stress of the experience of the role, increasing job satisfaction and decreasing the possibility of experiencing job stress (Dowden & Tellier, 2004).

Such exposure to a highly ambiguous situations could have severe negative effects on the person, both from a psychological point of view that from a physical point of view, arriving to diminish even the level of general life's satisfaction (Dowden & Tellier, 2004). Low levels of satisfaction also increase the probability of absenteeism, excessive staff turnover, burnout, as found with Italian prison workers (Petitta, Rinaldi & Manno, 2009).

The current analyses provide support to the idea that the main difficulty perceived with regard to work experience in the changing prison context is connected with the organizational coexistence, a construct referred to the quality of relationships between organizational subjects, capacity to experience and trait deal with the differences and recognize in others the resources that they bring (Lavanco & Di Maria, 2002), represents that particular way of "stay together" that individuals realize on work place (Avallone & Paplomatas, 2005).

Starting from the relational dimensions between its members, it's possible to understand the specific kind of organizational coexistence (everyone with own specific significance system, values, power, practices and reference culture) mediated by the work object.

With reference to these considerations, it's possible to affirm that the Italian prison system it's characterized by a chaotic/paralyzing/confused coexistence (Gozzoli, 2014), in which distrust in the encounter with the other and fear of difference strongly emerges; the object of the work seems not to be assumed or just individually assumed, because the organizational mandate isn't clear and shared or it often appears as senseless. In this kind of coexistence it's possible to perceive a pervasive conflict that seems to be pushing to defend oneself against the enemies rather than to confrontation and negotiation about work practices, exactly as is happen in the Italian prison context.

Certainly, a similar condition seems to be connected to a state of intense paralysis, contrary to the intrinsic meaning of construct of "change". However, as underlined by previous works, the individuation of an organizational specific form of coexistence in a specific moment isn't a way to rigidly label its relational patterns but it's crucial to provide an access way to the complexity of the organizational life; this is the first step useful to better understand and treat resources and limits inherent to the "stay together", coming out of the temptation to reduce the problem / opportunity to the individual workers, to be able to intervene with efficacious changes (Di Maria, 2000).

Despite its innovative value, this research shows some limitations. Future studies should consider the opportunity to monitor changes with longitudinal researches, in order to provide further evidence to the opportunity and the limitations into the changing settings.

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Cognitive and intellectual performance of children with borderline intellectual functioning: An explorative study

Bastianina Contena[1], Margherita Lang[2], Valeria Scandurra[3], Maria Rosaria Scordo[4],
Rosetta Storino[4], Stefano Taddei[1]

[1]Health Sciences Department, University of Florence
[2]Department of Psychology, University of Milan, Bicocca
[3]Department of Child Neuropsychiatry, University Hospital of Siena
[4]Department of Child Neuropsychiatry, University of Florence

✺ ABSTRACT. Introduzione: Il funzionamento intellettivo limite (*Borderline Intellectual Functioning*, BIF) è spesso studiato in associazione ad altre manifestazioni cliniche ma raramente vengono indagate le caratteristiche cognitive a esso associate. Metodi: A partire dal dibattito scientifico circa la performance intellettiva e il funzionamento esecutivo, il presente studio si propone di esplorare il funzionamento cognitivo di 28 bambini con BIF utilizzando la teoria PASS (Pianificazione, Attenzione, Simultaneità e Successione). Risultati: I risultati suggeriscono la presenza di una debolezza nel dominio verbale dell'intelligenza e dei processi cognitive di Pianificazione e Attenzione. Conclusioni: Il funzionamento cognitivo è discusso in relazione ai differenti profili emersi e ai problemi comportamentali associati.

✺ SUMMARY. Introduction: Borderline Intellectual Functioning (BIF) is often investigated with other clinical conditions, but little it is known about the cognitive functioning of children with this intellectual performance. Methods: Starting from the scientific debate about the relationship between intellectual performance and executive and cognitive functioning, the present study uses the Planning, Attention, Simultaneous and Successive (PASS) theory to explore the cognitive functioning of 28 children with BIF. Results: Results suggest the presence of weaknesses in the verbal domain of intelligence and in the cognitive profile, particularly concerning Planning and Attention. Conclusions: The cognitive functioning is discussed in its relationship with the different profiles and the behavioral problems associated.

INTRODUCTION

Borderline Intellectual Functioning (BIF) refers to children with IQ scores ranging from 71 to 84 and, in the fifth edition of Diagnostic and Statistical Manual of mental disorders (DSM 5; APA, 2013), this category indicates a special focus for clinical attention that suggests special needs in diagnosis and treatment. The DSM 5 (APA, 2013) suggests differentiating carefully between BIF and mild intellectual disability (MID), a category of intellectual developmental disorder. In fact, the IQ scores of BIF are between -2 and -1 standard deviations, and so BIF, represents a normal variation of intellectual level (Fernell & Ek, 2010). This intellectual level below the mean causes a particular slowness in learning processes, and in fact, people with BIF have inadequate occupations, more mental health and social problems, and longer hospital admissions then individuals with a normal IQ (Masi, 1998; Van Nieuwenhuijzen, Castro, Aken & Matthys, 2009). People with BIF represent the largest population at risk for school failure (Shaw, 2008), and they are commonly referred to as "slow learners". Although it is estimated that individuals with BIF comprise more than 7% of the school population, few studies are mainly directed at assessing their problems and cognitive functioning (Fernell & Ek, 2010).

The main part of research about BIF refers to this functioning in conjunction with pathological conditions such as genetic syndromes (Bartocci et al., 2008), autism spectrum disorder (Embregts & Van Nieuwenhuijzen, 2009), Attention Deficit Hyperactivity Disorder (ADHD; van der Meere, Van Der Meer, Kunert, Borger & Pirila, 2008), communication disorders (Ek, Norrelgen, Westerlund, Dahlman, Hultby & Fernell, 2012), specific learning disabilities (Bonifacci & Snowling, 2008), and conduct and disruptive behavior disorders (López-Villalobos, Llano, Sánchez-Azón, Sanguino-Andrés & Alberola-López, 2012). These studies highlight how the condition of BIF is generally associated with different disorders and it affects their severity and their outcomes in term of physical health (Emerson & Robertson, 2010) and mental health (Emerson, Einfeld & Stancliffe, 2010). Even if BIF is studied in its association with other developmental disorders, it remains poorly studied as a condition by itself (Fernell & Ek, 2010; Ferrari, 2009). Ferrari (2009) has considered that since BIF has been ruled out from the categories of intellectual disability, the diagnosis of specific learning disabilities

increased significantly; although, it was not demonstrated to be a cause-effect relationship. Furthermore, some studies have investigated the academic achievement of people with BIF, showing how most of them reach only the lower levels of education and receive inadequate aid because of a lack of recognition of their difficulties (Emerson & Robertson, 2010; Fernell & Ek, 2010). Some authors suggest deepening our understanding of cognitive functioning associated with BIF (Schuchardt, Gebhardt & Mäehler, 2010): the simple presence of a low IQ is not sufficient neither for understanding the school and social problems of these subjects, nor for developing appropriate diagnosis and treatment processes.

Fiorello et al. (2007) have discussed the relevance of IQ score in the comprehension of children with disabilities; being underlined as in some conditions, like specific learning disabilities, ADHD and traumatic brain injury, the IQ score loses its predictivity, and it does not offer the possibility of understanding the difficulties of these subjects. For this reason, authors (e.g. Fiorello et al., 2007) suggest investigating the structure of intellectual functioning considering that the interpretation of global IQ can be inadequate. As suggested by Fiorello et al. (2007), the usefulness of IQ for the clinical comprehension of children with disabilities represents a challenge, and integrative evaluations of cognitive processes are often suggested (Flanagan, Fiorello & Ortiz, 2010; Willis Dumont & Kaufman, 2011).

In fact, some recent studies, focusing on cognitive processes, have underlined the importance of cognitive and executive functioning in the diagnosis and remediation of different neurodevelopmental disorders (e.g. Asonitou, Koutsouki, Kourtessis & Charitou, 2012; Taddei & Contena, 2013a), as well as in the usual context of learning (Barkl, Porter & Ginns, 2012). Studies that have investigated the executive functioning associated with BIF, have highlighted the role of inhibition response (van der Meer & van der Meere, 2004) and working memory (Alloway, 2010); these executive functions would be able to predict the low IQ. The cognitive functioning of children with BIF and MID seems related to motor functioning, influenced by the dysfunction in visual-spatial working memory, as underlined by Vuijk, Hartman, Scherder & Visscher (2010). The same dysfunctions would be able to explain even the behavioral problems of children with BIF; the lack of impulse control influences the presence of externalizing and aggressive behaviors (Van Nieuwenhuijzen et al., 2009) and inhibition skills and working memory

predict social information processing and they explain the problems in social situations and in peer relations (Van Nieuwenhuijzen, & Vriens, 2011).

For the comprehension of cognitive and executive functioning the Planning, Attention, Simultaneous and Successive (PASS; Das, Naglieri & Kirby, 1994) theory, inspired by Luria's work, seems to provide an interesting and relevant point of view (Chan, Shum, Toulopoulou & Chen, 2008).

The PASS theory conceptualizes cognitive functioning as an integrated work of four cognitive processes that operate on the knowledge basis of the subject. The different processes are localized in different areas of the brain, and they are delegated to different tasks (Naglieri, 1999). *Planning* refers to cognitive control, self-regulation, and plans formulation to achieve a desired goal. *Attention* refers to the capability of focusing cognitive activity on specific stimuli, avoiding distractions. *Simultaneous* refers to the comprehension of complex relationships between different stimuli in order to integrate the parts into a whole. *Successive* is a mental process that allows individuals to sort stimuli in a serial order. The Cognitive Assessment System (CAS; Naglieri & Das, 1997) is the operationalization of PASS theory and it measures the 4 cognitive processes and it offers a total score of cognitive functioning, named Full Scale. Studies that have used this theory, measuring cognitive functioning with the CAS, have underlined typical cognitive profiles for different clinical conditions. For example, subjects with reading disabilities have a low score in Successive process (Taddei, Contena, Caria, Venturini & Venditti, 2011). Children with ADHD show difficulties in Planning (Iseman, 2012) or in Planning and Attention at the same time (Najafi, Sadeghi, Molazade, Goodarzi, & Taghavi, 2010); those with autism spectrum disorder show low performance in Planning and Attention (Goldstein & Naglieri, 2009). The analysis of PASS cognitive functioning seems to allow differentiating between these clinical conditions and suggests a better understanding of the executive dysfunction associated with different conditions, even when IQ analysis suggests a confusing overlap (Taddei & Contena, 2013b). Planning and Attention could be considered the executive core of cognitive functioning; as suggested by Goldstein, Naglieri, Princiotta and Otero they represent the functional description of executive function because they are responsible of the goal-oriented functions controlled by prefrontal cortex commonly defined as

executive function (Best, Miller, & Jones, 2009). For this reason the analysis of Planning and Attention could be used to evaluate the executive performance of subjects (Goldstein & Naglieri, 2014).

However, although the PASS theory has been applied to the study of intellectual disabilities (Das & Naglieri, 1996) and the other neurodevelopmental disorders above mentioned, and the CAS seems to be a useful instrument to evaluate the cognitive functioning (Chan et al., 2008), research on BIF does not seem to be present in the international scientific literature.

Briefly, BIF is, as underlined above, a complex condition that is usually defined because of global IQ (Fernell & Ek, 2010). An important characteristic related to BIF is the slowness in learning processes that often causes a low academic achievement (Shaw, 2008). The association of BIF with other clinical conditions and its severe social and health-related outcomes (Emerson et al., 2010) highlight the importance of understanding its characteristics and investigating the cognitive functioning associated with it (Schuchardt et al., 2010). PASS theory seems to provide a useful framework for investigating cognitive processes in order to point out the global cognitive functioning related to different neurodevelopmental disorders (Chan et al., 2008). However, no study has directly investigated the PASS cognitive functioning in individuals with BIF. Therefore, the purpose of this study is to explore the intellectual and cognitive performance of subjects with BIF in order to understand if there is a specific PASS cognitive functioning and what kind of relationship exists between BIF, intellectual functioning, and children's behaviors.

Specific hypotheses of this study are:

– if PASS theory is a useful framework to assess the cognitive functioning (Chan et al., 2008) we should obtain a specific CAS profile for subjects with BIF. Considering the relation with PASS processes and executive function CAS profile should show a weakness in Planning and, secondarily, in Attention;

– PASS functioning should be only weakly related with IQ profile of these subjects;

– PASS functioning should be related with the behavioral problems associated with BIF.

Furthermore considering the sensitivity of CAS to differentiate the cognitive functioning within a diagnostic category, It should be possible differentiating BIF using PASS profiles.

METHODS

Participants and selection method

We selected the medical records of 33 children, referred for academic difficulties with a diagnosis of BIF from patients referred to a unit of neuropsychiatry of infancy and adolescence, in central Italy, in a period ranging from January to December 2012. Of these, 28 met the inclusion criteria: 1) IQ between 71 and 84; 2) absence of organic disease, neurological, and sensory deficits; 3) absence of severe psychopathology. The 28 participants were children aged 7 to 14 (M = 10.18; *SD* = 2.37). Twenty were male (71.4%), and eight were female (28.6%); they were homogeneous for age ($t_{(26)} = .09$; $p = .92$). From each medical record we extracted the intellectual, cognitive and behavioral evaluation obtained by clinicians using instruments specified by the clinical protocol, described in the instruments section. All children and their parents were informed about the purpose and procedures of the evaluation and had signed the informed consent form at the time of the admission to the neuropsychiatry unit.

Instruments

Intellectual performance was evaluated by the *Wechsler Intelligence Scale for Children-III* (*WISC-III*; Wechsler, 1991) in its Italian adaptation (Orsini & Picone 2006). This test allows for the evaluation of the total intelligence quotient (TIQ), the verbal IQ (VIQ) and the performance IQ (PIQ). The WISC-III, the only version of WISC in use in Italy at the time of diagnosis, is composed of 13 subtests; six are included in the verbal scale and seven in the performance scale. Each subtest score has a mean of 10 and a standard deviation 3. TIQ, VIQ, and PIQ have a mean of 100 and a standard deviation of 15.

The cognitive performance, as explained by the PASS theory (Das et al., 1994), was evaluated by the Cognitive Assessment System (CAS) (Naglieri & Das, 1997), in its Italian adaptation (Taddei & Naglieri, 2005). The CAS is composed of four scales, one for each PASS process, and a Full Scale (FS). The scales have a mean of 100 and a standard deviation of 15. Each subtest (three for each scale) has a mean of 10 and a standard deviation of 3. Reliability of Full and PASS scales ranges from .83 to .96. A subject's performance could be classified into descriptive categories, provided by

the test manual (Naglieri & Das, 1997). Planning subtests of CAS require the application of strategies to solve a novel situation presented (for example: complete a page that contains 7 rows and 8 columns of letters without codes using the specific codes shown at the top of the page). Attention subtests require to select and to focus a stimulus, using the inhibitory control (for example Stroop test). Simultaneous subtests require to perceive objects as a whole (for example the child has to indicate "Which picture shows a circle to the left of a cross under a triangle above a square?" choosing the correct picture between different figures). Successive subtests require to operate with stimuli in a specific serial order (for example the child has to respond to questions as "The blue is yellowing. Who is yellowing?").

Children's behavior was evaluated by the Child Behavior Checklist, for ages 6-18, Parent's Report Form (CBCL) (Achenbach & Rescorla, 2001) in its Italian translation (Frigerio et al., 2004). The CBCL is a rating scale that allows for investigating the behavioral, social and emotional problems of children ages 18 months to 18 years. The 118 items are grouped into eight Empirically Based Syndrome Scales (EBSS), scored using T scores for Italy (<64 = normal; 65-69 = borderline; 70-100 = clinical). The EBSS are Anxious/Depressed (A/D; Cronbach's alpha = .77), Withdrawn/Depressed (W/D; Cronbach's alpha = .66), Somatic Complaints (SC; Cronbach's alpha = .60), Social Problem (SP; Cronbach's alpha = .54), Thought Problems (TP; Cronbach's alpha = .36), Attention Problems (ATP; Cronbach's alpha = .72), Rule-Breaking Behavior (RBB; Cronbach's alpha = .53), and Aggressive Behaviour (AB; Cronbach's alpha = .83). The A/D, W/D and SC form the Internalizing Problems score (InP; Cronbach's alpha = .83) while the RBB and AB form that of Externalizing Problems (ExP; Cronbach's alpha = .85). These scales are calculated using T scores for Italy (<59 = normal; 60-63 = borderline; 64-100 = clinical). Parents have to indicate if the item seems to apply to their child (for example: cries a lot).

Procedure

Authors examined independently each clinical report about the 33 children considering the selection criteria mentioned above. A case was enrolled for the study when at least three authors had selected it, on the basis of judges' agreement. The study-cases selected were 28.

Statistical procedures

Data were subjected to descriptive analysis. Particularly the frequency of the PIQ/VIQ discrepancy it is analyzed. This discrepancy refers to the abnormal difference in the scores of PIQ and VIQ and it is considered significant when it is major of 11 points.

In order to evaluate the relationship between intellectual performance, cognitive functioning, and behavioral problems, an analysis of correlations was conducted. In order to explore the possibility of identifying specific groups of cognitive functioning, a hierarchical cluster analysis was performed introducing the PASS scales as variables and using Average Linkage method to identify the clusters. All analyses were carried out with SPSS 21.0 (IBM, 2012).

RESULTS

In Table 1, the scores obtained from participants in the cognitive evaluation with the WISC-III and the CAS are reported. For what concern the evaluation with WISC-III, it is possible to notice that the average PIQ is higher than VIQ. Specifically, 11 subjects present scores of PIQ higher than scores of VIQ. Analyzing the frequency of the PIQ/VIQ discrepancy, it is significant (higher than 11) in 57% of cases. CAS average scores are lower for Attention and Planning. However, all mean scores are under 85, highlighting a performance that falls in the descriptive category of "low average." Subtest analysis allows underling scores below the mean in all tasks which suggest the absence of emotional disturbance and an unvarying cognitive functioning. The CBCL scores are analyzed concerning the eight EBSS and the internalizing/externalizing problems (see Table 2). Most of the subjects showed a score without clinical relevance; however, a significant percentage of subjects presented clinical scores on the W/D and ATP scales. Considering borderline and clinical scores, the 35.7% of the subjects show attention problems and symptoms of anxiety/depression and the 25% show problems with peers. The 60.7% reveal problems of internalization or externalization. Behavioral problems are lower for subjects with higher scores of PIQ than VIQ, particularly for what concern RBB ($t_{(25)}$ = −3.50; $p \leq .01$) and AB ($t_{(25)}$ = −2.75; $p \leq .01$), and consequently, of ExP ($t_{(25)}$ = −3.49; $p \leq .01$).

The analysis of correlation allows us to obtain interesting results (Table 3). For what concern correlation within IQ dimensions, TIQ is correlated only with the PIQ (r = .41), while the correlation between TIQ and VIQ is not significant from a statistical point of view. PIQ and VIQ are inversely correlated (r = −.66). Correlations within CAS scales show that all PASS scores are correlated only with the Full Scale (respectively r = .53, r = .70, r = .64, r = .71). Concerning the correlations between WISC-III and CAS, it is possible to notice that TIQ is correlated only with Planning (r = .40), while VIQ does not present correlations with PASS scores.

Correlations between problematic behaviors, intellectual performance, and cognitive performance are reported in Table 4. It seems important to emphasize the presence of a statistically significant inverse correlation between VIQ and externalizing problems (r = −.45), SC (r = −.48) and RBB (r = −.46), and between SU and SP (r = −.55) and FS and SP (r = −.46).

Cluster analysis, with Average Linkage method, highlights the presence of three different groups (Figure 1): 3 subjects fall into the first group, 22 in the second and 3 in the third. A qualitative analysis of these cluster allow highlighting that these three groups do not differ in intellectual performance (Figure 2) and present similar scoring of TIQ and PIQ, while it is possible to notice a difference in their cognitive performance (Figure 3) for what concern Attention scale, Successive scale and Full scale. For what concern the differences between groups in behavioral problems, the more relevant difference seems to be on SP scale. Particularly first group, with the highest score on Attention scale, presents even a lower score of Social Problems.

DISCUSSION AND CONCLUSIONS

The intellectual assessment of these subjects with BIF shows a general weakness in the verbal domain of intelligence with a consistent discrepancy between verbal and performance IQ; these subjects seem to be characterized by poor verbal competence. The PASS profile of subjects with BIF shows, in line with the IQ assessment, a general weakness in the cognitive functioning. As suggested by Schuchardt et al. (2010) the cognitive evaluation of these subjects allow a better comprehension of their problems. The general weakness in Planning, as hypothesize, is consistent with the presence of an executive dysfunction, as suggested in different studies (Alloway, 2010; van der Meer & van der Meere, 2004). The relative strength in Successive and its relation with the ability to cope with social environment

Table 1 – Observed minimum and maximum, mean, and standard deviation of WISC-III and CAS

		Min_o-Max_o	Mean (SD)
WISC-III	Verbal IQ (VIQ)	60-90	75.25 (7.08)
	Performance IQ (PIQ)	73-99	87.25 (7.58)
	Total IQ (TIQ)	72-84	79.04 (3.23)
CAS	Planning (P)	56-96	80.86 (10.39)
	Attention (A)	60-114	79.57 (12.21)
	Simultaneous (SI)	64-98	82.54 (9.64)
	Successive (SU)	62-124	84.89 (13.89)
	Full Scale (FS)	55-99	75.11 (10.64)
CAS SUBTEST	Matching Numbers (MN)	2-14	7.11 (2.66)
	Planning Codes (PlCd)	4-11	7.79 (2.06)
	Planning Connections (PlCn)	2-10	6.29 (2.34)
	Expressive Attention (EA)	4-11	7.54 (1.88)
	Numbers Detection (ND)	1-15	7.39 (2.30)
	Receptive Attention (RA)	3-12	7.61 (2.60)
	Non verbal Matrices (NvM)	1-15	6.79 (3.30)
	Verbal-Spatial Relations (VSR)	5-19	8.29 (2.73)
	Figure Memory (FM)	1-12	6.39 (2.59)
	Word Series (WS)	4-15	8.00 (2.23)
	Sentence Repetition	2-12	7.93 (2.28)
	Speech Rate or Sentence Questions (SR/SQ)	2-19	8.11 (4.00)

Table 2 – Observed minimum and maximum, mean, and standard deviation, percentage of borderline and clinical scores at CBCL

		Min_o-Max_o	Mean (SD)	% borderline scores	% clinical scores
CBCL	Withdrawn/Depressed (W/D)	50-82	59.89 (9.78)	.0%	21.4%
	Somatic Complaints (SC)	50-81	57.18 (8.84)	7.1%	10.7%
	Anxious/Depressed (A/D)	50-82	61.36 (9.13)	21.4%	14.3%
	Social Problem (SP)	50-80	60.82 (9.17)	10.7%	14.3%
	Thought Problems (TP)	50-70	54.96 (6.71)	3.6%	.0%
	Attention Problems (ATP)	50-86	65.29 (8.37)	14.3%	21.4%
	Rule-Breaking Behaviour (RBB)	50-67	54.71 (5.77)	3.6%	.0%
	Aggressive Behaviour (AB)	50-75	55.54 (7.91)	7.1%	7.1%
	Internalizing (InP)	33-74	60.68 (10.99)	43.9%	7.1%
	Externalizing (ExP)	30-69	52.32 (9.97)	25.0%	.0%
	Total	33-74	59.54 (9.64)	57.1%	3.6%

Table 3 – Correlation between scores of WISC-III and CAS scales

	TIQ	VIQ	PIQ	P	SI	A	SU	FS
TIQ	1	.37	.41**	.40*	.15	.07	−.03	.12
VIQ		1	−.66**	.25	.07	.16	−.12	.11
PIQ			1	.13	.14	−.10	.17	.06
P				1	.23	.26	.11	.53**
SI					1	.24	.42*	.63**
A						1	.29	.70**
SU							1	.71**
FS								1

* $p \le .05$; ** $p \le .01$

Table 4 – Correlation between scores of CBCL, WISC-III and CAS scales

	TIQ	VIQ	PIQ	P	SI	A	SU	FS
W/D	−.29	.28	−.03	−.13	.01	−.15	.14	−.10
SC	.19	−.48*	−.27	−.27	−.25	−.05	−.18	−.26
A/D	−.02	.01	.02	.01	−.29	.20	−.22	−.11
SP	.17	−.18	.09	−.13	−.28	−.28	−.55**	−.46*
TP	.01	−.11	−.05	−.36	−.24	−.08	.03	−.17
ATP	.12	.02	.18	−.05	.06	.28	.21	.21
RBB	.39**	−.46*	−.04	−.13	−.14	−.03	−.13	−.16
AB	.24	−.41*	−.15	−.39*	−.12	−.05	−.05	−.17
InP	−.14	.01	−.13	−.15	−.19	.08	−.11	−.15
ExP	.29	−.45*	−.15	−.26	−.16	−.00	−.04	−.12
Total	.11	−.24	−.10	−.23	−.24	.00	−.14	−.20

* p≤.05; ** p≤.01

shows that the ability to solve practical problems and operate with data and images to understand the sequential order of stimuli influences the social competence of these subjects, ameliorating their capability to understand and respect social rules. This datum is particularly interesting because can address the intervention programs suggesting to operate with the Successive process. The enhancement of Successive can produce a direct effect on the behavioral problems of these subjects, influencing their social competencies.

The analysis of cognitive profiles suggests the presence of three BIF groups, the first group has higher Attention and the second has higher Successive than the third, which is characterized instead by lower cognitive profiles. It is the first group, with its strength in Attention, to show the better social functioning. The second group collects the largest number of subjects highlighting the relevance of identifying these children in order to help them in the learning process and foster better social adjustment, even in adult life, according to Schuchardt et al. (2010). These results confirm the presence of BIF category and even the measure of cognitive processes seems to highlight the existence of a border functioning, according to the IQ assessment. Therefore, for what concern the first hypothesis, the presence of a specific profile for BIF seems to refer to a weakness in Planning and Attention processes but some considerations seem to be essential. In fact, the ability to plan seems to be, generically, compromised, as hypothesized, but a different reasoning is necessary for Attention. The functioning of this process seems to be generally low but, in some profiles, it seems to be a strength, contrary to our hypothesis, and it could be a way to improve the general functioning. So, the possibility to identify the cognitive functioning of BIF seems to allow a best clinical understanding of the children with this clinical condition.

For what concern the relationship between PASS profile and IQ is possible to notice only a weak relationship, as hypothesized but even the relationship between PASS profile

Figure 1 – Dendrogram of cluster analysis
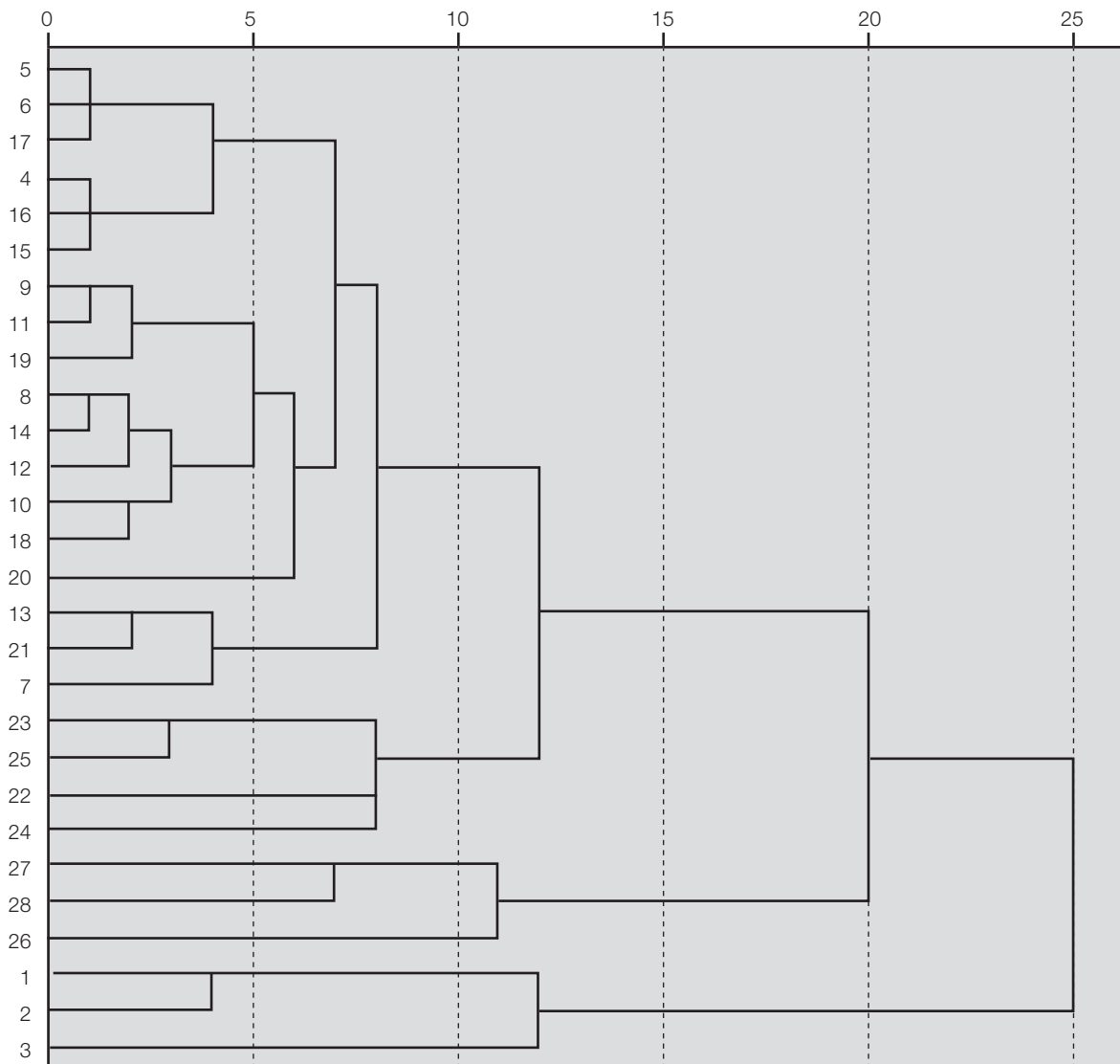
Note. In the X axis rescaled distance; in the Y axis subjects' codes.

and behavioral problems does not appear so strong, contrary to our hypothesis. Obviously, these results concern only data collected about children with BIF; these relationships could be different in children with typical development.

All these results must be interpreted with caution. The exploratory character of this study suggests the possibility of concentrating future analyses on the comparison between BIF and other neurodevelopmental disorders to better understand the cognitive specificities of this condition but it is important to highlight some important limitations of this study. First of all this study analyzed the medical record of subjects with BIF and for the authors an in-depth analysis of the cases was impossible. Furthermore the number of enrolled cases is very limited. These two factors don't allow generalization of results and they suggest to be very careful in their interpretation. Future studies, enrolling subjects with BIF, can compare their cognitive functioning with that of subjects with typical development or intellectual disabilities.

Figure 2 – Intellective profiles of the three groups

Intellective clusters of functioning
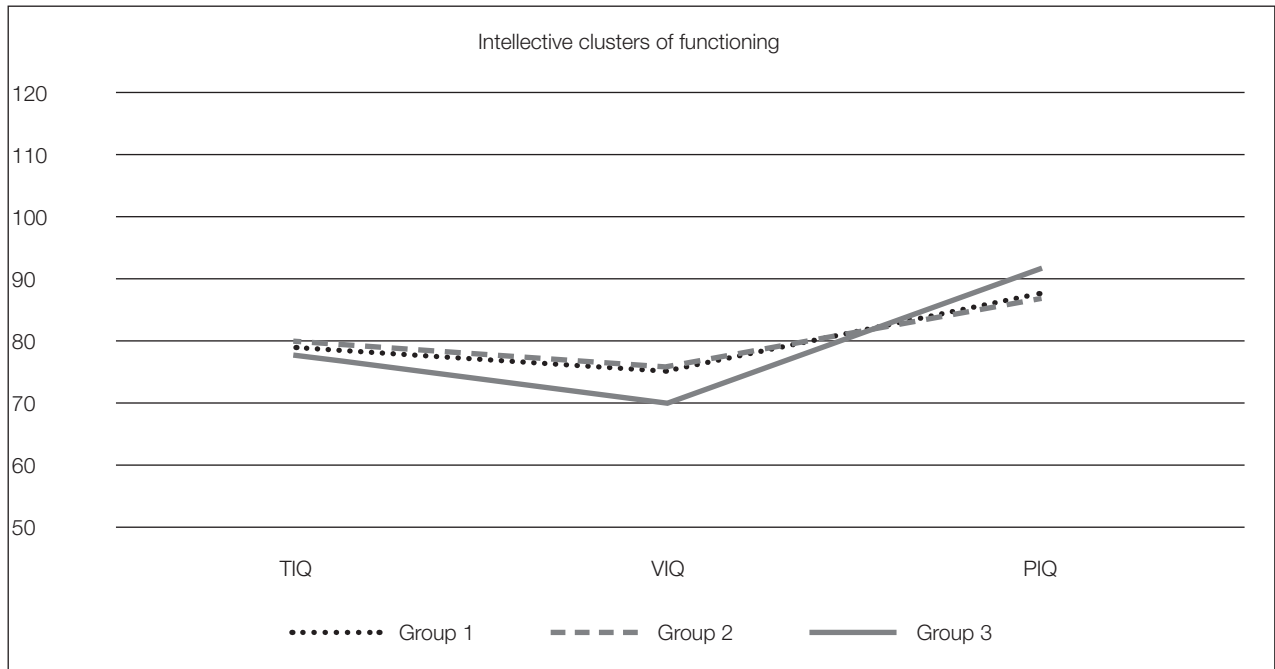
Note. In the X axis TIQ (Total IQ), VIQ (Verbal IQ) and PIQ (Performance IQ).

Figure 3 – Cognitive profiles of the three groups

Cognitive clusters of functioning
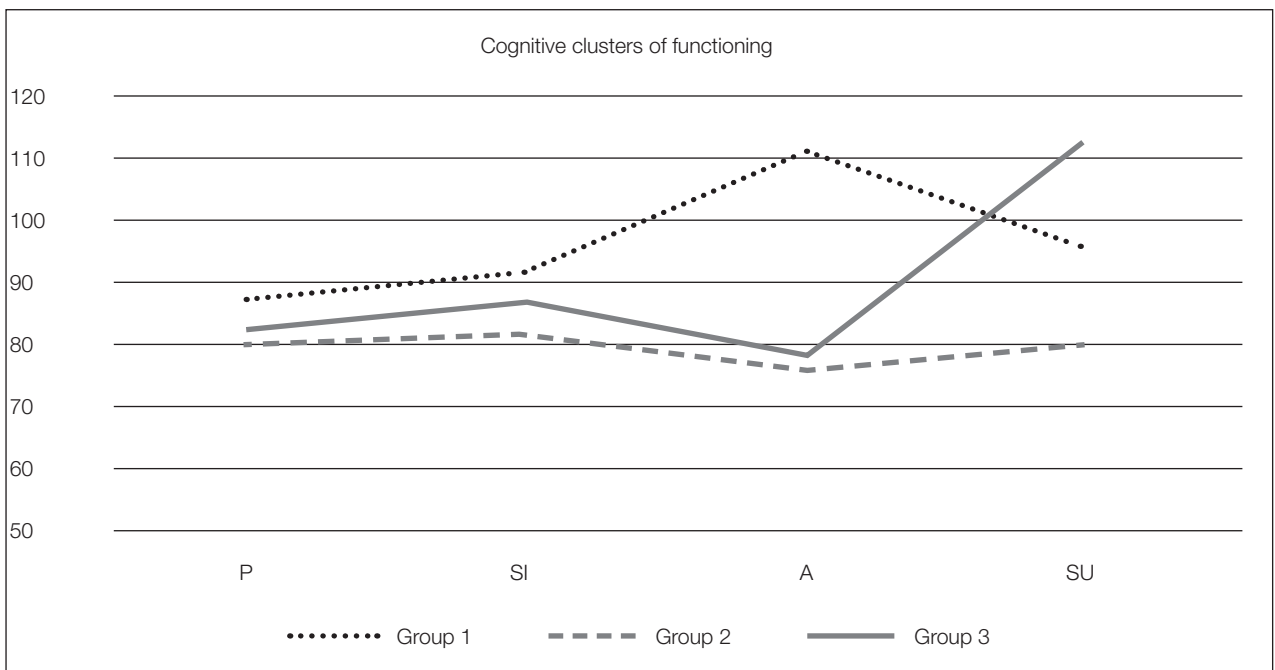
Note. In the X axis the PASS scales.

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The Factor Structure of the Italian version of the MCMI-III compared to the Dutch and American versions

Claudia Pignolo[1], Rosalba Rosato[1], Agata Andò[1],
Stefania Cristofanelli[2], Laura Ferro[2], Alessandro Zennaro[1]

[1] Department of Psychology, University of Turin, Italy
[2] Social and Human Sciences Department, University of Valle d'Aosta, Italy

☙ *ABSTRACT*. Studi precedenti sull'analisi fattoriale del *Millon Clinical Multiaxial Inventory-III* (Millon, Millon, Davis & Grossman, 2009), utilizzando diverse procedure di estrazione dei fattori, hanno individuato tre o quattro fattori. Lo scopo del presente studio è stato quello di esplorare la struttura fattoriale della versione italiana del MCMI-III utilizzando entrambe le scale, linearmente dipendenti e indipendenti, sia per valutare le differenze di genere, sia per confrontare i risultati ottenuti con quelli della versione olandese ed americana dello strumento. Sono stati identificati quattro fattori, simili nei due sottocampioni, maschile e femminile, ma differenze di contenuto sono state rilevate tra le scale *overlapping* (che presentano, cioè, item condivisi) e le scale *non-overlapping*. La soluzione a quattro fattori risulta simile a quella olandese ed i primi due fattori ottenuti si sono mostrati coerenti alla soluzione a tre fattori proposta negli studi americani.

☙ *SUMMARY. Introduction: Previously factor analytic research on the Millon Clinical Multiaxial Inventory-III (MCMI-III) using different factor extraction procedures, found three or four factors. In particular, Rossi, van der Ark, and Sloore (2007), through a sophisticated research design that examined and compared various aspects of the factor structure of the MCMI-III, identified a four-factor solutions for both male and female subsamples and for both linearly dependent and independent scales. The aim of this study was to explore the factor structure of the Italian version of the MCMI-III using both linearly dependent and independent scales, to evaluate gender differences, and to compare our results with the Dutch and American factor structure. Method: The present study used a sample of 881 psychiatric patients of Northern and Central Italy. Principal Factor Analysis with direct oblimin rotation was performed for the entire sample and for both men and women. Results: We identified four factors that were similar for men and women, but we found differences in content between solutions with overlapping and non-overlapping scale. The four-factor solution was similar to the Dutch one and the first two factors were congruent with the three-factor solution proposed in American studies. Conclusions: Taken together, our findings indicate that the factor structure of the MCMI-III is consistent across countries.*

Keywords: *MCMI-III; Factor structure; Cross-cultural; Gender*

INTRODUCTION

The *Millon Clinical Multiaxial Inventory – Third Version* (*MCMI-III*; Millon, Millon, Davis & Grossman, 2009) is one of the most frequently used psychological inventories. It consists of 24 scales measuring personality disorders (1 = Schizoid, 2A = Avoidant, 2B = Depressive, 3 = Dependent, 4 = Histrionic, 5 = Narcissistic, 6A = Antisocial, 6B = Aggressive, 7 = Compulsive, 8A = Negativistic, 8B = Masochistic, S = Schizotypal, C = Borderline, and P = Paranoid), and clinical syndromes (A = Anxiety, H = Somatoform, N = Bipolar: Manic, D = Dysthymia, B = Alcohol Dependence, T = Drug Dependence, R = Posttraumatic Stress, SS = Thought Disorder, CC = Major Depression, and PP = Delusional Disorder). Four validity scales are also included (V = Invalidity, X = Disclosure, Y = Desirability, and Z = Debasement). The third version of the MCMI was introduced in 1994, with the purpose of more closely reflecting the changes which had been implemented with the Diagnostic and Statistical Manual of Mental Disorders, IV edition (APA, 1994).

The MCMI has been translated into many languages (*Dutch*: Sloore & Derksen, 1997; Sloore, Derksen & De Mey, 1994; *Spanish*: Cardenal & Sánchez, 2007; *French*: D'Elia & Lagier, 1986; *Italian*: Zennaro, Ferracuti, Lang & Sanavio, 2008), but factor analytic research across different versions is relatively limited in quantity and quite heterogeneous in methods and results. Some researchers have analyzed only personality disorder scales (Choca, Retzlaff, Strack, Mouton, & Van Denburg, 1996; Cuevas, García, Aluja & García, 2008; O'Connor & Dyce, 1998), whereas others have examined the personality disorder and clinical syndrome scales together. Craig and Bivens (1998) and Haddy, Strack and Choca (2005) identified three factors: *General Maladjustment, Paranoid/Delusional Thinking with Detached Emotionality, and Antisocial Acting out*, the former, and *Low versus High Psychopathology, Psychotic Thinking/Social Alienation*, and *Low versus High Emotional Constraint*, the latter. Both these studies used Principal Component Analysis (PCA) with varimax rotation. Moreover, the Dutch version has been investigated by Rossi, van der Ark and Sloore (2007) through a sophisticated research design that examined and compared various aspects of the factor structure of the MCMI-III. The authors tested a number of statistical approaches, including different factor analytic techniques, such as PCA and Principal Factor Analysis (PFA); different rotation procedures, varimax and direct oblimin rotation

as well; and two statistical procedures applied to both linear dependent (overlapping) and independent scales (non-overlapping). Ultimately, four factors were identified: G*eneral Maladjustment, Aggression/Social Deviance, Paranoid/Delusional Thinking, and Emotional Instability/Detachment*. As researchers from different countries have found three to four factors using the MCMI as a whole, the factor structure of the inventory is not definite.

Furthermore, gender differences in the factor structure has been poorly investigated. It is generally argued that men and women differ in terms of personality disorders and psychopathology (Fenigold, 1994; Widiger & Samuel, 2005). Examining the personality scales of MCMI-III, Lindsay, Sankis and Widiger (2000) found no significant differences between the two biological sexes. Besides this, it is also worth considering that factor structure should be evaluated across different cultures and gender (see Comrey & Lee, 1992). As far as we know, only one study has explored this issue. Rossi et al. (2007) found a similar four-factor structure in both male and female subsamples, reporting coefficients of congruence greater than .98. This suggest that more research is needed to fill this gap.

Recently, Zennaro et al. (2013) investigated the validity and reliability of the Italian MCMI-III, although they did not report on its factor structure. The validity and reliability data indicated that it has acceptable values regarding internal consistency: Cronbach's alpha ranged from .72 to .88 in clinical scales and from .66 to .82 for personality scales with the exception of the Histrionic (α = .44) and Compulsive (α = .49) scales. Moreover, Specificity (SP) values indicate that the MCMI-III is extremely adequate in correctly identifying individuals when they truly have no Axis I syndromes, with the exception of the Anxiety scale (SP = .57). Sensitivity (SE) values were lower than expected, but resembled values published by Millon in 1994. Overall, the Italian version of the MCMI-III has similar psychometric properties to those reported by Millon (1994).

To date, no studies have yet investigated the factor structure of the Italian MCMI-III. To extend the literature on this under investigated topic, this article aims to explore the factor structure of the MCMI-III in an Italian sample using both linearly dependent and independent scales and to test the factor structure between the male and female subgroups. Moreover, we aimed to investigate cross-cultural invariance of the Italian version of the MCMI-III compared to the American and Dutch versions of the inventory.

C. Pignolo, R. Rosato, A. Andò, S. Cristofanelli, L. Ferro, A. Zennaro

METHOD

Participants

We collected 885 MCMI-III protocols of Italian speaking patients. All subjects were recruited at either public or private clinical services in Northern and Central Italy. Out of the 885 collected records, 4 were eventually excluded due to invalid MCMI-III profiles. Data included in the analysis refer to: 313 men (35%) and 568 women (65%), ranging from 17 to 83 years of age with a mean age of 38.8 (SD = 14.12).

All diagnoses were based on patients' charts. Forty patients had not met the diagnostic criteria for any disorder and 36% (n = 314) had comorbid conditions. About 93% (n = 822) received an Axis I primary diagnosis (30% Eating Disorder; 23% Mood Disorder; 19% Anxiety Disorder; 6% Substance-Related Disorder; 3% Somatoform Disorder; 1% Delusional Disorder) and about 38% (n = 333) received an Axis II primary diagnosis (3% Cluster A; 13% Cluster B; 14% Cluster C; 9% Personality Disorder NOS).

Measures

The MCMI-III is a 175-item self-report developed to assess personality disorders and clinical syndromes in clinical settings. In the current study, alphas ranged from .58 to .85, with a mean alpha of .74. These values closely resemble those of the Italian MCMI-III validation study by Zennaro et al. (2008). Four scales display Cronbach's alpha values to be lower than the bound criterion of $\alpha = .70$ proposed by Nunnally (1978; see West & Finch, 1997): $\alpha = .67$ for the Narcissistic scale, $\alpha = .62$ for the Antisocial scale, $\alpha = .58$ for the Compulsive scale, and $\alpha = .66$ for the Bipolar scale.

Procedure

The Italian version of the MCMI-III was administered during psychodiagnostic evaluation by expert psychologists and psychiatrists, who have been in practice for many years.

Clinicians informed all patients during their first clinical interviews that if they wanted to participate in the research project, they had to complete both the MCMI-III and the informed consent. The instrument was part of routine assessment following presentation for treatment. Not one of the contacted patients refused to participate.

The MCMI-III profiles were scored with the Psy4S software to obtain both raw[1] and base rate (BR) scores. According to standard guidelines, the MCMI-III profiles were considered valid if the total number of omitted or invalid responses was less than 12, the Validity Index was less than 2, and the raw score on the Disclosure (X) scale was within the range 34 to 178 (Millon et al., 2009).

Data Analysis

The factor structure of the MCMI-III Italian version was tested using raw scores instead of BR scores. BR are weighed transformations based on the prevalence of disorders in a given population and they can differ for gender and across countries and subgroups. The use of BR scores could, thus, intensify the differences between males and females because, on the basis of MCMI-III manual, they would undergo separate transformation. For example, on the Histrionic scale, a raw score of 22 is transformed into a BR scores of 73 for men and 88 for women. Since the focus of this research project was to investigate the factor structure of the MCMI-III in male and female subgroups, using BR scores could affect the results of our analysis. Moreover by processing raw scores we could make our results comparable to those from the American and Dutch MCMI-III.

Data analyses were carried out by using IBM SPSS Statistics V22. The number of factors to extract was determined using both parallel analysis (Horn, 1965; O'Connor, 2000), eigenvalues greater than 1 (Kaiser criterion) and scree plot (Cattel, 1966) in PCA with direct oblimin rotation. We subsequently performed PFA with direct oblimin rotation. To interpret the factor solutions, we considered the scales with a factor loading greater than .40. First, we compared factor solutions of linearly dependent and independent

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1   The raw scale scores obtained are actually weighted raw scale scores, as prototypal items receive a weight of 2 points and nonprototypal items receive a weight of 1 point. Thus, linearly dependant scales (overlapping scales) comprise both prototypal and nonprototypal items whereas linearly independent scales (non-overlapping scales) comprise exclusively prototypal items.

scales for the entire sample. Second, we investigated gender differences by comparing factor solutions based on linearly dependant scales. All comparisons were carried out by performing Procrustes rotation (Mardia, Kent & Bibby, 1979) and computing the coefficient of congruence (Φ; Tucker, 1951). Several authors (Bentler & Bonett, 1980; Gorsuch, 1983; Mulaik, 1972; Van de Vijver & Leung, 1997) suggested, as a rule of thumb, that two factors should be considered consistent if Φ is greater than .90, whereas Lorenzo-Seva & ten Berge (2006) suggested the following more accurate threshold: .85 to .94 = *fair similarity*, higher than .95 = *good similarity*. The Φ values were also used, in this study, so as to compare our factor solutions with those reported by Craig and Bivens (1998), Haddy et al. (2005) and Rossi et al. (2007).

RESULTS

Table 1 provides means, standard deviations, and medians of the weighted raw scores for women, men, and entire sample. In the entire sample, absolute values of skew ranged from .004 to 1.398, kurtosis ranged from .151 to 1.986 for linearly dependent scales, and, respectively, from .049 to 2.188 and from .047 to 4.260 for linearly independent scales. These values indicate that the distributions are "relatively close" to normal (West, Finch & Curran, 1995).

In determining the number of factors to extract, parallel analysis, eigenvalue criteria and scree plot determined that four factors should be retained for linearly dependent scales. Regarding linearly independent scales, the results are ambiguous. Parallel analysis recommended that three factors should be retained, whereas the scree plot suggested a maximum of four factors and eigenvalue criteria proposed a five-factor solution. Comparing the eigenvalues from real data and random data obtained by parallel analysis, the difference between the two values for the fourth factor is very small (real data eigenvalue = 1.136, random data eigenvalue = 1.193). We therefore decided to extract four factors for linearly dependent scales and three through five factors for linearly independent scales to evaluate the best solution.

Linearly Dependent Scales

To test the initial adequacy of the data and the degree of relatedness of the linearly dependent scales, we computed the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy and Bartlett's sphericity test: KMO was .933 and Bartlett's test of sphericity was significant. The extracted factors explained 70.97% of the total variance before direct oblimin rotation (factor 1 = 49.25%, factor 2 = 12.51%, factor 3 = 5.16%, factor 4 = 4.05%). Table 2 shows the pattern matrix. Factor 1 is composed of the Depressive (2B), Dependent (3), Negativistic (8A), Masochistic (8B), Schizotypal (S), Borderline (C), Anxiety (A), Somatoform (H), Dysthymia (D), Posttraumatic Stress (R), Thought Disorder (SS) and Major Depression (CC) scales. This factor seems to be characterized by anxiety and mood disorders and could suggests an internalizing dimension. However, this factor seems to represent a general state of psychological distress (*General Maladjustment*). Factor 2 includes positive loadings of the Antisocial (6A), Aggressive (6B), Alcohol Dependence (B) and Drug Dependence (T) scales and negative loading of the Compulsive (7) scale. The second factor seems to suggest an externalizing disorder dimension and an impulsive personality style on the one hand and a controlled behavior on the other (*Aggression/Social Deviance*). The Schizotypal (S), Paranoid (P) and Delusional Disorder (PP) scales have positive factor loadings on factor 3. The third factor reveals elements of paranoia, disturbed thinking and social detachment and probably represents *Paranoid/Delusional Thinking*. The Schizoid (1) and Avoidant (2A) scales have positive factor loadings on factor 4 whereas the Histrionic (4) and Narcissistic (5) scales have negative loadings on the same factor. The last factor is bipolar with social imperturbability and emotional instability at one extreme and severe relationship deficits and emotional detachment at the other, reflecting *Emotional Instability versus Schizoid Detachment*.

Linearly Independent Scales

For linearly independent scales, the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy was .934 and Bartlett's test of sphericity was significant. Before direct oblimin rotation, the three-factor solution explained 46.65% of the total variance (factor 1 = 35.38%, factor 2 = 7.67%, factor 3 = 3.59%), extracting four factor the explained total variance was 50.02% (factor 1 = 35.52%, factor 2 = 7.91%, factor 3 = 3.67%, factor 4 = 2.92%), while the five-factor solution accounted for 52.95% of the total variance (factor 1 = 35.62%, factor 2 = 8.01%, factor 3 = 3.82%, factor 4 = 2.99%, factor 5 = 2.50%).

Table 1 – Mean Weighted Raw Scores of the MCMI-III for Men (*n* = 313), Women (*n* = 568), and the entire sample (N = 881)

MCMI-III Scale	Women			Men			Total		
	M	**SD**	**Median**	**M**	**SD**	**Median**	**M**	**SD**	**Median**
1 (Schizoid)	9.5	4.7	9	7.9	4.7	8	8.9	4.8	9
2A (Avoidant)	9.9	5.8	9	8.1	5.8	7	9.3	5.9	9
2B (Depressive)	11.0	6.4	11	8.4	5.8	8	10.1	6.3	9
3 (Dependent)	10.3	5.7	10	7.8	5.5	7	9.4	5.8	9
4 (Histrionic)	11.9	5.3	12	13.7	5.4	14	12.5	5.4	13
5 (Narcissistic)	12.6	4.7	12	13.8	4.6	14	13.0	4.7	13
6A (Antisocial)	7.6	4.1	8	7.8	4.3	7	7.7	4.2	8
6B (Aggressive)	10.0	5.1	10	9.3	5.3	9	9.8	5.2	10
7 (Compulsive)	13.5	4.6	13	14.6	4.5	15	13.9	4.6	14
8A (Negativistic)	11.3	5.8	11	10.3	5.4	10	10.9	5.7	11
8B (Masochistic)	8.1	5.3	8	5.7	5.0	4	7.3	5.3	7
S (Schizotypal)	7.7	5.5	6	6.2	5.5	5	7.2	5.6	6
C (Borderline)	9.5	5.7	9	7.6	5.4	7	8.8	5.6	8
P (Paranoid)	8.2	5.6	8	7.3	5.8	7	7.9	5.7	7
A (Anxiety)	9.0	5.1	9	7.4	5.4	7	8.5	5.3	8
H (Somatoform)	7.1	4.4	7	5.6	4.5	5	6.6	4.5	6
N (Bipolar): manic	6.8	4.0	7	6.3	4.0	6	6.6	4.0	6
D (Dysthymia)	9.9	5.7	10	8.0	5.8	7	9.2	5.8	9
B (Alcohol Dependence)	5.5	3.5	5	5.3	3.7	5	5.4	3.6	5
T (Drug Dependence)	4.3	3.4	4	4.7	3.9	4	4.5	3.6	4
R (Posttraumatic Stress)	8.8	5.8	8	6.7	5.6	5	8.0	5.8	7
SS (Thought Disorder)	9.3	5.7	9	7.8	5.7	7	8.8	5.8	8
CC (Major Depression)	9.5	5.9	10	7.1	5.9	6	8.6	6.0	8
PP (Delusional Disorder)	3.5	3.5	2	2.9	3.3	2	3.3	3.4	2

Table 2 – Rotated Pattern Matrix for the MCMI-III Linearly Dependent Scales

MCMI-III Linearly Dependent Scales	Communality Extraction	Factor 1	Factor 2	Factor 3	Factor 4
1 (Schizoid)	.643	.308	.036	.295	**−.484**
2A (Avoidant)	.844	.291	.082	.300	**−.629**
2B (Depressive)	.802	**.838**	.016	−.027	−.128
3 (Dependent)	.631	**.668**	.031	.029	−.191
4 (Histrionic)	.802	.010	−.094	−.103	**.892**
5 (Narcissistic)	.661	−.219	.132	.389	**.612**
6A (Antisocial)	.966	.002	**.934**	.118	.003
6B (Aggressive)	.607	.221	**.471**	.311	.110
7 (Compulsive)	.344	−.016	**−.625**	.200	.023
8A (Negativistic)	.608	**.632**	.161	.138	.012
8B (Masochistic)	.714	**.597**	.121	.136	−.247
S (Schizotypal)	.795	**.475**	.042	**.474**	−.179
C (Borderline)	.815	**.798**	.281	−.050	.022
P (Paranoid)	.857	.100	−.003	**.859**	−.144
A (Anxiety)	.742	**.832**	−.041	.118	.046
H (Somatoform)	.671	**.864**	−.130	.004	.023
N (Bipolar): manic	.580	**.435**	.217	.304	.388
D (Dysthymia)	.844	**.949**	−.020	−.142	−.068
B (Alcohol Dependence)	.564	.117	**.649**	.103	−.059
T (Drug Dependence)	.537	−.115	**.735**	.083	.005
R (Posttraumatic Stress)	.715	**.797**	−.009	.127	.038
SS (Thought Disorder)	.838	**.914**	.045	−.012	.023
CC (Major Depression)	.768	**.908**	−.056	−.075	−.037
PP (Delusional Disorder)	.684	.027	.054	**.793**	.024

Note. Bold is used for factor loadings above or equal .40.

Furthermore, in all the solutions some scales did not yielded a factor loading of at least .40: Alcohol Dependence (B) and Delusional Disorder (PP) scales in the three-factor solution, the Schizoid (1), Masochistic (8B) and Alcohol Dependence (B) scales in the four-factor solution, and Schizoid (1), Antisocial (6A), Compulsive (7) and Masochistic (8B) scales in the five-factor solution. Additionally, some factor did not fulfill the requirement of three variables per factor (Anderson & Rubin, 1956; McDonald & Krane, 1977, 1979; Rindskopf, 1984). Overall, all the solutions revealed some problems, indicating that linearly independent scales, although they have better psychometric properties, are difficult to interpret.

Referring to solutions with regard to the interpretability of the factors, we found that the four-factor solution seemed to be the best. Table 3 shows the pattern matrix. The Depressive (2B), Dependent (3), Borderline (C), Anxiety (A), Somatoform (H), Dysthymia (D), Posttraumatic Stress (R), Thought Disorder (SS) and Major Depression (CC) scales load on factor 1. This factor is similar to the first factor based on linearly dependent scales, so we labelled it *General Maladjustment*. Factor 2 is composed by the Narcissistic (5), Antisocial (6A), Aggressive (6B), Schizotypal (S), Paranoid (P), Bipolar: manic (N) and Delusional Disorder (PP) scales. The second factor is congruent with the Paranoia/Delusional Thinking factor, but it seems to be characterized also by narcissism, sadistic features and impulsive behaviors with a state of psychotic decompensation. So we called it *Decompensated Narcissism/ Paranoia*. The Compulsive (7) scale has a negative loading on factor 3 whereas the Drug Dependence (T) scale has a positive loading on the same factor, so it may represent S*ocial Deviance*. Lastly, the Avoidant (2A) scale has a negative loading on factor 4, whereas the Histrionic (4) scale has a positive loading on the same factor. This factor resembled the last factor of the solution based on linearly dependent scales, which is *Emotional Instability versus Schizoid Detachment*.

Comparing factors based on linearly dependent and independent scales (Table 4), the congruence coefficients Φ between factors indicated excellent similarity for factors 1 and 4 of both types of scales, good similarity for factor 2 of the linearly dependent scales and factor 3 of the linearly independent scales, and fair similarity for factor 3 of the linearly dependent scales and factor 2 of the linearly independent scales. These results seem to confirm the similarity in the factor structure of the MCMI-III between the overlapping and non-overlapping scales in the Italian version of the inventory.

Gender differences

Because of the Φ values obtained for the linearly dependent and independent scales in the entire sample were good, we performed PFA with direct oblimin rotation only on linearly dependent scales to test the potential differences in the MCMI-III factor structure between men and women. The KMO measures were respectively .932 for men and .928 for woman and Bartlett's sphericity test was significant in both cases. The amount of explained variance before direct oblimin rotation was 71.85% for men (factor 1 = 51.54%, factor 2 = 10.90%, factor 3 = 5.66%, factor 4 = 3.76%) and 70.45% for women (factor 1 = 47.45%, factor 2 = 13.41%, factor 3 = 5.06%, factor 4 = 4.53%). Table 5 provides Φ values between factor solutions for men and women. Φ values were greater than .95 for factors that should have been congruent suggesting a good similarity between the factor structures.

Cross-Cultural Invariance

We tested cross-cultural invariance by computing Φ values between our factor solution based on linearly dependent scales with direct oblimin rotation and the results obtained by the abovementioned researchers. Referring to the solution reported by Rossi et al. (2007), Φ values were 1.00 for factors 1, 2 and 3, and .99 for factor 4. Then we compared our results with three-factor solutions found by Haddy et al. (2005) and Craig and Bivens (1998). We could not perform the Procrustes rotation because of the different number of factors of the two solutions. In the first comparison, Φ values were .87 for factor 1, .91 for factor 2 and .78 for factor 3. Our fourth factor did not reach significant congruency with any factors. In the second comparison, Φ values were .85 for factor 1, .88 for factor 2 and .74 for factor 3. Again, our fourth factor did not reach significantly congruency with any factor. On the whole, factors 1 and 2 showed fair to good similarity to those reported in other studies, whereas factors 3 and 4 were congruent only with those found in Rossi's four-factor model.

As for the linearly independent scales, only Haddy et al. (2005) published factor loading values based on non-overlapping scales. Thus, we compared our results with the authors' three-factor solutions (*High versus Low Psychopathology; Decompensated Narcissism/Paranoia; Low versus High Emotional Constraint*). As a result, Φ values were .89 for factor 1 and .91 for factor 2, while factors 3 and 4 did

Table 3 – Rotated Pattern Matrix for the MCMI-III Linearly Independent Scales

MCMI–III Linearly Independent Scales	Communality Extraction	Factor 1	Factor 2	Factor 3	Factor 4
1 (Schizoid)	.443	.295	.215	−.146	−.372
2A (Avoidant)	.641	.257	.345	−.076	**−.509**
2B (Depressive)	.651	**.618**	.146	−.129	−.205
3 (Dependent)	.458	**.543**	.110	−.008	−.153
4 (Histrionic)	.557	−.002	.189	−.104	**.722**
5 (Narcissistic)	.431	.014	**.617**	.067	.166
6A (Antisocial)	.386	.067	**.463**	.318	.044
6B (Aggressive)	.300	.008	**.544**	−.026	.034
7 (Compulsive)	.220	.066	.150	**−.446**	.023
8A (Negativistic)	.532	**.443**	.346	−.197	−.066
8B (Masochistic)	.542	.377	.344	.016	−.260
S (Schizotypal)	.678	.311	**.578**	.003	−.144
C (Borderline)	.634	**.680**	.150	.080	−.050
P (Paranoid)	.625	−.005	**.777**	−.092	−.178
A (Anxiety)	.625	**.715**	.155	.031	.068
H (Somatoform)	.542	**.797**	−.086	.020	.048
N (Bipolar): manic	.464	.069	**.543**	−.024	.380
D (Dysthymia)	.683	**.891**	−.170	−.062	−.028
B (Alcohol Dependence)	.184	.122	.100	.369	−.002
T (Drug Dependence)	.342	−.019	.115	**.566**	−.025
R (Posttraumatic Stress)	.405	**.500**	.208	.102	.062
SS (Thought Disorder)	.622	**.729**	.100	−.054	−.003
CC (Major Depression)	.689	**.922**	−.203	.077	.007
PP (Delusional Disorder)	.351	.080	**.480**	.214	−.061

Note. Bold is used for factor loadings above or equal .40.

C. Pignolo, R. Rosato, A. Andò, S. Cristofanelli, L. Ferro, A. Zennaro

Table 4 – Coefficients of Congruence (Φ) between Factors Based on linearly dependent scales and Factors based on linearly independent scales

Factors Based on Linearly Independent Scales	Factors Based on Linearly Dependent Scales			
	1	**2**	**3**	**4**
1	**1.00**	.10	.11	−.19
2	.36	.47	**.93**	.03
3	−.04	**.95**	−.08	.01
4	−.18	−.06	−.29	**.98**

Note. Bold is used for coefficients of congruence between factors that are congruent.

Table 5 – Coefficients of Congruence (Φ) between Factors Solution for Men and Women Estimated with PFA

Women	Men			
	1	**2**	**3**	**4**
1	1.00	.25	−.22	−.28
2	.04	.29	**−.99**	−.10
3	.12	**.98**	−.18	−.32
4	−.08	.07	−.01	**.97**

Note. Bold is used for coefficients of congruence between factors that are congruent.

not reach a significant level of congruency. As before, only factors 1 and 2 displayed a fair similarity to those found in a three-factor model.

DISCUSSION

The relevance of studying cultural invariance, sex differences and, more in general, factor structure has been acknowledged by many authors (Reise, Smith, and Furr, 2001; ten Berge, 1986). In the present study, we pursued these objectives by performing different exploratory factor analysis,

using the Italian version of the MCMI-III. We found a four-factor solution for both linearly dependent and independent scales. The first factor, *General Maladjustment*, closely resembles that reported in literature independently of the number of factors extracted. The second factor (Aggression/ Social Deviance) is the other factor that is similar in the Dutch (Rossi et al., 2007) and American (Craig & Bivens, 1998; Haddy et al., 2005) cultures, while Paranoid/Delusional Thinking and Emotional Instability versus Schizoid Detachment factors are similar only to those reported by Rossi et al. (2007). Furthermore, with regard to linearly independent scales, we found that *General Maladjustment*

and *Decompensated Narcissism/Paranoia* factors were significantly congruent, respectively, with High versus Low Psychopathology and Decompensated Narcissism/Paranoia factors (Haddy et al., 2005). In comparing the factor solution based on overlapping scales between man and women, we observed that the factors are similar in both cases, demonstrating that the factor structure of the MCMI-III is not different for man and women. Overall, the comparison of our results with previous factor analytic studies may confirm that the Italian version of the MCMI-III has a factor structure that is similar to those of other countries.

As highlighted by Haddy et al. (2005), the differences between linearly dependent and independent factors are difficult to interpret. Linearly independent scales may be better from a psychometric point of view, but they can lose significance according to Millon's theory of Personality Disorders and Clinical Syndromes. It is also noteworthy that Cuevas et al. (2008) found that models based on overlapping scales fitted worse than those based on non-overlapping scales. Our results suggest the opposite. Parallel analysis, eigenvalue criteria and scree plot identified different numbers of factors to be retained and the explained total variance was less than expected. Furthermore, some scales did not yield a factor loading of at least .40 and some factors did not fulfill the requirement of three variables per factor. All these elements suggest that further analysis should be conducted to explain these differences in the Italian version of the inventory.

One potential limitation associated to this study is that we did not perform a multigroup confirmatory factor analysis (MCFA) in evaluating the cross-cultural invariance of the factor structure of the MCMI-III. Given that researchers from different countries have found three to four factors using the MCMI as a whole, we preferred an exploratory approach to assess the factor structure of the MCMI-III. Our findings suggested that the factor structure of the MCMI-III is invariant across countries, thus further studies may investigate this aspect using MCFAs. In conclusion, given that the MCMI-III is frequently used in clinical settings, when questions arise about specific personality disorders characterizing some individuals, the investigation of its psychometric properties may also provide a useful contribute to an accurate diagnosis.

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The Italian version of the Dutch Workaholism Scale (DUWAS): A study on a group of nurses

Marcello Nonnis[1], Stefania Cuccu[1], Claudio G. Cortese[2], Davide Massidda[1]

[1]*Departments of Pedagogy, Psychology, Philosophy, University of Cagliari, Italy*
[2] *Department of Psychology, University of Turin, Italy*

❧ ABSTRACT. In Italia sono molto pochi gli studi sulla dipendenza da lavoro in ambito infermieristico. Lo studio esplora l'incidenza del workaholism su un campione di 485 infermieri ospedalieri italiani e offre un contributo all'adattamento italiano della *Dutch Workaholism Scale* (*DUWAS*), mediante il modello di Rasch. Le dimensioni Working Excessively e Working Compulsively, costitutive della scala DUWAS, presentano una bassa consistenza interna, hanno diversi punti di contatto e appaiono relate fra loro. Circa il 18% degli infermieri intervistati è workaholic, il 29% circa è a rischio.

❧ SUMMARY. Introduction: The risk for nurses to be exposed to workaholism is widely demonstrated in the relevant international literature; however, this does not seem to be paid sufficient study and analysis in Italy. The Italian adaptation of the Dutch Workaholism Scale (DUWAS) comprises the working excessively (WE) and working compulsively (WC) scales. Method: A group of 485 Italian nurses, balanced in terms of gender and seniority, compiled the DUWAS questionnaire. The Rasch model was used to analyse the retrieved data, which helped to identify nurses at risk of workaholism. Results: The WE and WC scales within the DUWAS show low internal consistency, some points of contact, and appear to relate to each other. About 18% of the group of subjects shows a workaholic profile, and approximately 29% are at risk of becoming workaholic. Conclusions: This study contributes to improve the validation of the Italian version of the DUWAS, and helps to assess workaholism in nursing, a crucial healthcare profession.

Keywords: *Workaholism, Nursing, Scale adaptation*

INTRODUCTION

Workaholism

In the last few decades, the scientific literature related to work addiction has increased significantly (Clark, Michel, Zhdanova, Pui & Baltes, 2014; Van Beek, Hu, Schaufeli, Taris & Schreurs, 2012). Workaholism as a term was first introduced by Oates in the 1970s to describe a constant need to work. Workaholism is closely intertwined with the social, cultural and economic changes developed in the last few decades. Also the meaning that individuals and society have attached to work has changed, along with the time devoted to it and the range of workplaces and working methods involved.

Several definitions of work addiction exist: therefore, models and taxonomies to describe workaholics are many and varied as well. They stem from different (quantitative and qualitative) screening methodologies, as well as from the type of setting under scrutiny (for example, clinical or non-clinical contexts). Furthermore, some models are supported by empirical data, while others are mainly based on solid theoretical grounds or narrative data (see Robinson, 1989).

More recently, some researchers have attempted to integrate different approaches to the study of workaholism (Clark et al., 2014), so as to identify its main features. Schaufeli, Taris and Bakker (2008) define workaholism as the tendency to work excessively and compulsively. This definition clearly describes the central features of workaholism, including working excessively hard (which relates to the individual's behaviour) and being obsessed with work (which relates to the individual's cognitive sphere). Workaholism is diagnosed when both traits can be significantly detected in a person (Schaufeli, Shimazu & Taris, 2009).

Workaholism and nursing

As anticipated, some relevant literature reports that nursing is one among the professions at risk of work addiction (Quinones & Griffiths, 2015). A study conducted by Burke, Matthiesen, and Pallesen (2006) used an *ad hoc* measuring scale to study a sample of 496 Norwegian nurses, focusing on workaholism. They demonstrated that workaholism may affect well-being at work, when associated with specific personality traits and certain work features. They also

showed that a strong drive to work (one of the determining factors linked to workaholism) can lead to a lower level of work satisfaction. Kubota et al. (2010) carried out a study on 312 Japanese hospital nurses; they focused on the relationship between workaholism and a series of sleep disorders reported on a checklist. They found that nurses with the highest scores for workaholism (according to the model described by Schaufeli et al., 2008, 2009) not only tended to work excessively and compulsively, but they were also reported having trouble sleeping, feeling tired at work, and having difficulties to wake up, as well as showing signs of fatigue in the morning.

Subsequently, Van Beek et al. (2012) conducted a study on a sample of Chinese healthcare professionals ($n = 760$), the vast majority of whom were nurses ($n = 544$). They were seeking to enhance the understanding of the relationship between the motivational factors postulated by Deci and Ryan's Self-Determination Theory (SDT) and the resulting outcomes in terms of well-being/unease at work, including workaholism. Deci and Ryan proposed a major distinction between intrinsic and extrinsic motivation. Among the many studies on nursing and work addiction, Van Beek et al. (2012) demonstrated that workaholism is positively associated with high levels of introjected regulation (a dimension of the extrinsic motivation), which implies the adoption of external standards of self-esteem and social acceptance without necessarily identifying with such standards. Moreover, workaholism is negatively affected by intrinsic motivation.

Given that workaholism is such a significant and potentially pervasive phenomenon in a demanding field such as nursing is – which implies high levels of responsibility and workload, in both quantitative and qualitative terms – it is surprising that empirical research has scarcely focused on studying work addiction among nurses in Italy. There are, however, some relevant exceptions. For example, Falvo, Visintin, Capozza, Falco and De Carlo (2013) conducted a study on a sample of 215 hospital nurses to evaluate potential correlations of locomotion (the tendency of individuals to move rapidly, and to find the easiest way to reach their goals), a proactive personality (the tendency of individuals to strive to reach a high-level performance, and its subsequent outcome), self-efficacy (individuals believe that their proactive engagement can lead them to obtain the expected result) and workaholism. This study has found a positive correlation between workaholism

and locomotion among nurses. Conversely, a negative correlation between workaholism and proactivity could be detected. Interestingly, self-efficacy did not seem to influence work addiction.

Measuring workaholism

Drawing on their theoretical model, Schaufeli et al. (2008, 2009) developed a scale to measure workaholism: the *Dutch Workaholism Scale (DUWAS)*. This instrument was further revised, and the scale translated into many languages, allowing researchers to measure workaholism by means of two scales: working excessively and working compulsively.

In Italy, some scholars proposed open-ended (Kravina, Falco, Girardi & De Carlo, 2010) or partial (Molino, Ghislieri & Colombo, 2012) versions of the DUWAS. More recently, Balducci, Avanzi, Consiglio, Fraccaroli, and Schaufeli (2015) created a validated version for the Italian context, which was also used for this study and shall be described in more detail below.

Aims

According to its premise, this study has a double aim. First, and most importantly, to contribute to validate the Italian version of the DUWAS scale. Second, due to the scarce amount of research on work addiction in the Italian nursing environment, this study aims at exploring and measuring the presence of workaholism on a group of Italian nurses. The data will be significantly compared with data available within previous studies on workaholism.

METHOD

Participants

This research was carried out on a group of 485 Italian nurses, working in five hospitals in Sardinia. They all took part in this study on a voluntary basis. 70.6% of the nurses were women, while 29.4% were men (these percentages also mirror the overall gender distribution within this profession). Their work experience ranged from 0-10 years (24.8%), to 11-20 years (36.3%), to 21 years and over (38.8%).

Measurement instruments

The adapted version of the DUWAS used for this research was created by Balducci et al. (2015), and it is in line with the other versions that have been created in other languages. It comprises 10 items on a 4-point scale ranging from 1 = (Almost) never to 4 = (Almost) always; the questionnaire is divided into two 5-item scales: working excessively (WE) and working compulsively (WC). After consulting an experienced English native speaker, we decided to modify slightly the Italian translation of some items to ensure a more natural fluency. However, the original meaning of these items remains unaltered. Table 1 shows the items in both scales in English and Italian.

The results obtained during this study are consistent with the theoretical assumptions informing it. In other words, individuals scoring high on both WE and WC are considered *workaholics*. Conversely, a combination of high WE and low WC identifies *hard workers* whereas a combination of low WE and high WC characterizes *compulsive workers*. Finally, individuals who are low on both WE and WC are *relaxed workers* (Schaufeli et al., 2008, 2009).

In general, the Italian version of the DUWAS shows good internal consistency (Cronbach's alpha = .82), while the internal consistency within the scales WE and WC is adequate (.74 in both cases, see Balducci et al., 2015).

Procedure

The data were collected inside the hospitals where the nurses worked, while they were on duty. Some participants completed the questionnaire in the researcher's presence. In other cases, the researcher explained to the nurses how to complete the questionnaires, and collected them at a later stage.

The consent to carry out this survey had been previously granted by the hospital executives. No further permission was deemed necessary to be obtained from their Ethics Committee, as no sensitive topic was dealt within this project. The project was carried out via self-evaluation procedures, ensuring all participants anonymity and privacy.

A total of 546 questionnaires were distributed and 487 were returned (amounting to an 89.19% redemption score). Questionnaires returned with missing data were discarded, if more than 4 questions had been left unanswered. Missing data partly completed – but still acceptable –were replaced via the *k*-Nearest Neighbour method.

Table 1 – DUWAS items in English and Italian

DUWAS - English version	DUWAS- Italian version
Item Working Excessively	
1 - I seem to be in a hurry and racing against the clock 2 - I find myself continuing to work after my co-workers have called it quits 3 - I stay busy and keep many irons in the fire 4 - I spend more time working than on socializing with friends, on hobbies, or on leisure activities 5 - I find myself doing two or three things at one time such as eating lunch and writing a memo, while talking on the telephone	1 - Mi sembra di essere di fretta e in corsa contro il tempo 2 - Continuo a lavorare dopo che i miei colleghi hanno smesso 3 - Mi tengo impegnato e 'metto molta carne sul fuoco' 4 - Dedico più tempo al lavoro che a socializzare con gli amici, ad hobby o ad altre attività del tempo libero 5 - Mi ritrovo a fare due o tre cose contemporaneamente, come pranzare, scrivere un promemoria e parlare al telefono
Item Working Compulsively	
1 - It's important to me to work hard even when I don't enjoy what I'm doing 2 - I feel that there's something inside me that drives me to work hard 3 - I feel obliged to work hard, even when it's not enjoyable 4 - I feel guilty when I take time off work 5 - It is hard for me to relax when I'm not working	1 - È importante per me lavorare intensamente anche quando quello che faccio non mi piace 2 - Sento che c'è qualcosa dentro di me che mi spinge a lavorare duro 3 - Mi sento in dovere di lavorare intensamente, anche quando non è piacevole 4 - Mi sento colpevole quando mi prendo del tempo libero dal lavoro 5 - È difficile per me rilassarmi quando non lavoro

The percentages of the missing data are shown in Table 2. The highest scores regarding missing data refer to WE3 (2.87%). As for all the other items, the amount of missing data appears to be sufficiently low (1.6%). 485 nurses actually answered the questionnaire.

Data analysis

As a first step, descriptive statistics on the correlation between the ten items of the scale are provided. The internal consistency of each scale was assessed by inspecting the item-total correlation by using the polyserial index (the total score was calculated without taking into account the item under analysis).

The main analyses were performed by using the Rasch model (Rasch, 1960), referring to its polytomous formulation called *Partial Credit Model* (Wright & Masters, 1982). The Rasch model can be used to evaluate the properties of a unidimensional psychometric instrument with ordinal response scale. The Rasch approach assumes that the probability of scoring a positive outcome depends on two components: the "ability" of a person and the "difficulty" of an item. The Rasch approach aims at placing individual abilities and the item difficulties into the same logit scale, thus testing the calibration of the instrument.

The two DUWAS scales were studied separately. The reliability of each scale was evaluated using the separation index G for persons (G_P) and items (G_I), and the person separation reliability R, which corresponds to Cronbach's alpha.

The G index is based on the assumption that, in order to be reliable, any measurement should consider a highly variable number of individuals' abilities and several levels of item difficulty. Hence, these indicators should provide sufficiently high values. Linacre (2012) suggests that the G_P index should be at least 2 and the G_I at least 3. When G_P is low, the instrument may not be sensitive enough to distinguish between individuals with high and low abilities. Conversely, when G_I is low, either the variance of item difficulties may be too small, or the group of subjects may not be large enough.

Table 2 – Item scores according to the WE and WC scales (n = 485)

Item	% of missings	Item-total correlation	Mean score	Location	Infit MSQ	Outfit MSQ
WE1	.82	.23	2.31	.10	.94	.95
WE2	.82	.39	2.19	.29	.77	.75
WE3	2.87	.28	2.01	.51	.89	.87
WE4	1.03	.24	2.44	.00	.92	.93
WE5	1.44	.37	2.13	.40	.79	.78
WC1	1.23	.48	2.55	.03	.72	.73
WC2	1.64	.44	1.84	.98	.81	.77
WC3	1.64	.46	2.46	.10	.75	.74
WC4	1.23	.16	2.64	.01	1.11	1.17
WC5	2.67	.31	2.36	.31	.92	.93

Note. For each item is reported: the percentage of missing values, the item-total correlation, the mean observed score, the Rasch location (mean of thresholds), Infit and Outfit MSQ.

Item properties were evaluated using the Infit (information-weighted fit) and the Outfit (outlier-sensitive fit) (Linacre, 2012). Both indices are calculated starting with the mean square of standardized residuals for items (MSQ), but the Outfit is more sensitive to outliers than the Infit. Good values ranged between .6 and 1.4; lower values indicate overfit (redundancy in the set of items) and higher values indicate underfit (unexplained variance).

The actual unidimensionality of each scale was assessed by inspecting the results of the Parallel Analysis on the residuals, using the method of the principal components. The unidimensionality is confirmed when the eigenvalues of the principal components calculated on residuals are lower than the 95° percentile of eigenvalues calculated on 1000 matrices of random permutated residuals. Furthermore, Linacre (2012) suggests that the eigenvalue of the strongest component must be less than 2 (i.e., a strength of less than two items).

Analyses were performed in the R environment, using the package eRm 0.15-6 for the Rasch analysis.

The test χ^2 was used to compare the profiling of the group of subjects selected for this study with previous research conducted with the DUWAS scale in healthcare and nursing contexts (Schaufeli et al., 2008, 2009). The one-sample t test was used, with Cohen's d index to evaluate effect size, to compare the average score of our nurses with the widest Italian sample available in literature – though not actually pertaining to healthcare (Balducci et al., 2015).

RESULTS

Validating the instrument

The relationships between the DUWAS items were descriptively analysed using the polychoric correlation (Table 3). The positive correlations among items vary from a minimum of .003 to a maximum of .529, whereas the negative correlations vary from a minimum of –.003 to a maximum of –.111.

In Figure 1, the items are represented as a sort of web. Each knot represents an item and the colour of each circle

Table 3 – Polychoric item correlation matrix (n = 485)

	WE1	WE2	WE3	WE4	WE5	WC1	WC2	WC3	WC4	WC5
WE1	1.000									
WE2	.523	1.000								
WE3	.139	.161	1.000							
WE4	−.085	.078	.245	1.000						
WE5	.074	.242	.211	.413	1.000					
WC1	−.018	−.003	.325	.345	.200	1.000				
WC2	.090	.117	.529	.376	.261	.391	1.000			
WC3	.029	.011	.376	.451	.242	.423	.450	1.000		
WC4	−.052	.101	−.111	.318	.208	.185	.031	.197	1.000	
WC5	.003	.190	.336	.242	.330	.292	.320	.201	.090	1.000

Figure 1 – Items web
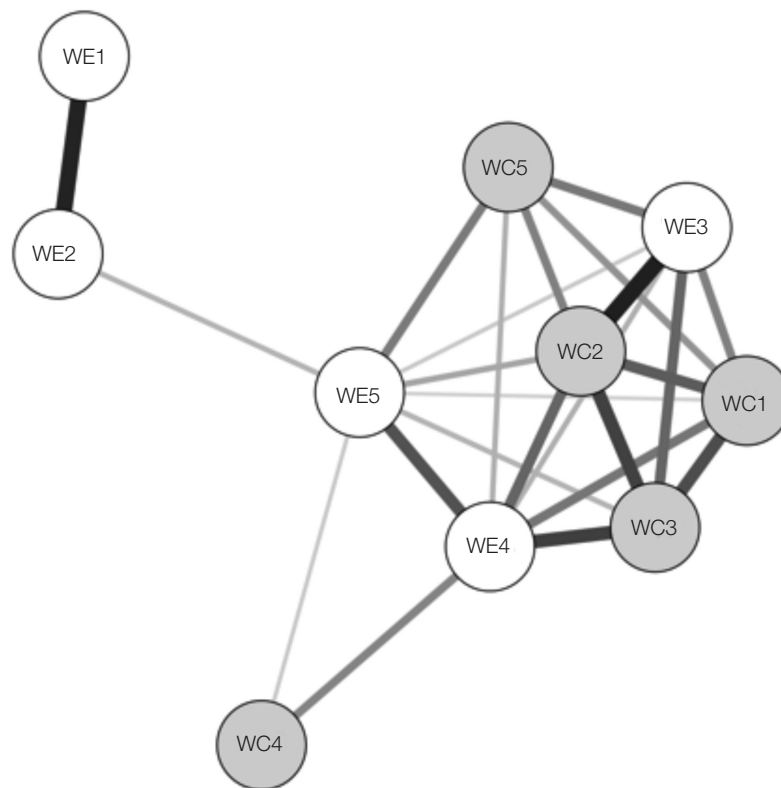
Note. The white knots refer to the items on the WE scale whereas the grey knots refer to the items on the WC scale. Two items are linked by means of a segment if their correlation is equal or above .2; the segment thickness is proportional to the correlation level (maximum correlation: .53).

depends on which scale it belongs to (white refers to the WE scale while grey refers to the WC scale). Two items are connected if their correlation is at least .2. The thicker the segment connecting two items, the higher their correlation. The items in the WC scale appear to be more interconnected with one another, thus assuming a more central position in the web. In particular, item WC2 seems to be mostly connected to all other items, be they part of the WC or the WE scale. Conversely, WC4 seems to be marginal and appears to have little connection to the other items. Item WE3 appears to be more connected to the items in the WC scale than to those in the WE scale. Finally, WE1 and WE2 seem to be isolated elements, despite being interconnected with one another. In general, they are also quite unconnected with all other items.

All the items in the WE scale display low correlations to the overall score, with values around .3. Conversely, the items in the WC scale display slightly higher values, around .4, although WC4 showed a correlation to the overall score that appears to be extremely low (.16).

The analysis carried out by means of the Rasch model confirms the lack of consistency of the scale itself, as it is also shown by the low values regarding the person separation reliability R, which scored .49 in the WE scale and .56 in the WC scale. The G_P separation indexes are both extremely low, i.e. .97 in the WE scale and 1.14 in the WC scale. Conversely, the G_I separation indexes provided more encouraging results, i.e. 5.35 in the WE scale and 7.12 in the WC scale respectively.

Table 2 shows the fit indices for each item, while figures 2 and 3 show the person-item maps for each scale. The obtained values seem to be satisfactorily within the optimal range. Most items display a location mean value that is close to zero, thus indicating that the average difficulty of the items corresponds to the average abilities of the informants under scrutiny. Item WC2 seems to be the more difficult one, with a location value equal to .98 and the second and third thresholds above 1 (Figure 3).

Figures 2 and 3 show the person-item map for both scales, comparing the distribution of people's abilities and item difficulties. Low scores represent a low presence of the latent trait (i.e. non-workaholic individuals) and high scores represent high presence of the latent trait (i.e. workaholic individuals). The items scoring higher are those that provide more significant data as they emerge from the answers provided by individuals with a marked latent trait. Each dot represents the threshold for each item; since there are four categories of answers, there are three cut-off points. All items seem to cover all the informants' abilities. WE3 and WC2 appear to be the most difficult items since all three cut-off points are on the positive end of the scale.

The parallel analysis of the residuals shows that the WE scale has two significant components. However, the eigenvalues (1.89 and 1.31) are below the cut-off point, which was set at 2, thus making them negligible. The WC scale revealed three significant components but again the eigenvalues were low (1.49, 1.34, 1.17).

Group of subjects assessment

To date, a completely validated and standardised measuring scale of the Italian version of the DUWAS is not available. Hence, the group of subjects was evaluated by first categorising the results obtainable via its two dimensions, WE and WC respectively (through a xmedian split method, as suggested in Schaufeli et al., 2008, 2009). In order to categorize the participants, without a reference standard based on an Italian sample with the same features of our group of subjects, it was decided to calculate the mean of the answer to the items of each scale, and to divide participants accordingly whether the scored more or less than 2.5 value. Codifying the four alternatives of the answer with a value ranging from 1 to 4, 2.5 represents the median of the instrument scale. Subsequently, all those individuals were detected who could be clearly subsumed under any of the four DUWAS conditions, as described above: workaholism (WE and WC scores above 2.5); hard worker (WE above 2.5 and WC below 2.5); compulsive worker (WE below 2.5 and WC above 2.5); relaxed worker (WE and WC below 2.5).

As shown in Table 4, we found that a significant percentage of the group of subjects (ca. 18%) can be described as being affected by workaholism. In addition, including hard workers and compulsively workers at risk of workaholism too, around 29% of our nurses falls within an overall category subjected to potential uneasiness at work.

A comparison with previous studies in healthcare and nursing environments shows that there are no recent studies applying the DUWAS scale. Yet, on a descriptive level, the group of nurses involved in this study can be compared to other partially similar samples. As shown in Table 5, our group of subjects seems to relate on a higher well-being in the workplace, rather than the reference sample.

Figure 2 – Person-item map for the scale WE
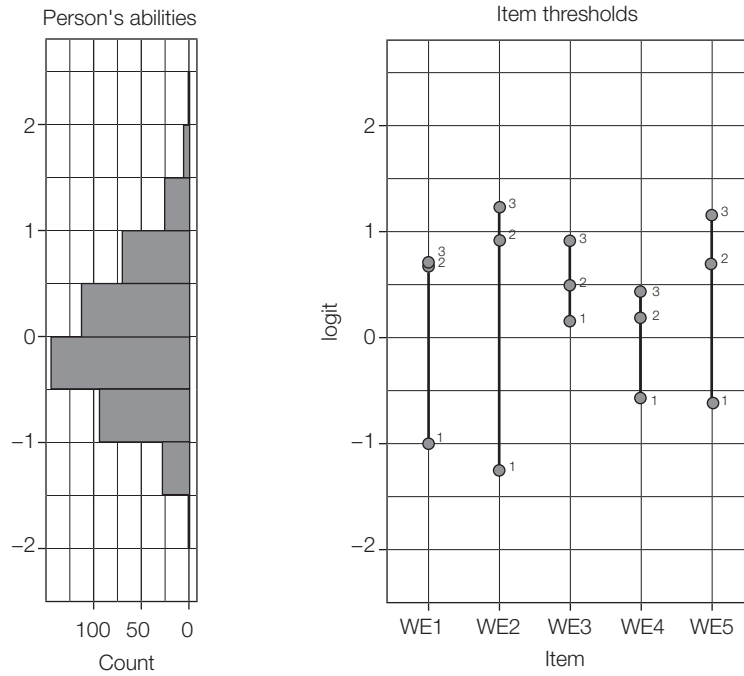
Note. The panel on the left-hand side reports the histogram of person's abilities, while the panel on the right-hand side reports the values of item thresholds.

Figure 3 – Person-item map for the scale WC
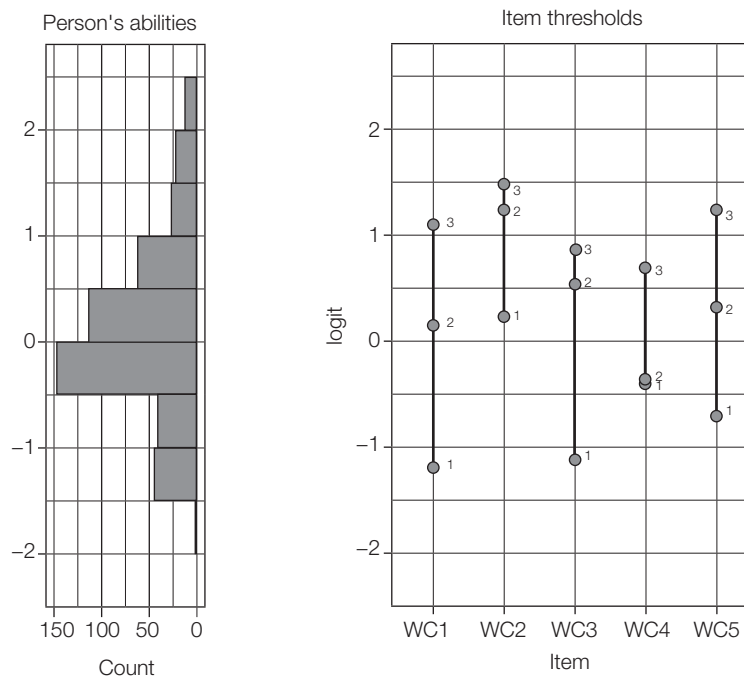
Note. The left panel reports the histogram of person's abilities, while the right panel reports the values of item thresholds.

Table 4 – Measuring workaholism in the sample group (n = 485)

DUWAS Dimensions	Working Compulsively ≤ 2.5	Working Compulsively > 2.5
Working Excessively ≤ 2.5	259 (53.4%) *Relaxed Worker*	87 (17.9%) *Compulsive Worker*
Working Excessively > 2.5	52 (10.7%) *Hard Worker*	87 (17.9%) *Workaholic*

The group of subjects of this study shows indeed a lower rate of workaholic nurses, compared both to the study performed on medical residents by Schaufeli et al. (2008), and to the study performed by Schaufeli et al. (2009) on a sample made of nurses for around its 50%. Moreover, the rate of relaxed workers in our study amounts to half of our group of subjects, while it amounts to one third of the samples analysed by the other studies.

Table 6, instead, shows the results of the comparison of the means of WE and WC rates of our group of subjects with a larger Italian sample (Balducci et al., 2015).

The test conducted by this study highlights a significant difference, a big one for the WC rate, and a smaller one for the WE rate. For the first rate, the answers of our group of nurses are featured between the second and third step of the scale, on average, while the sample interviewed by Balducci et al. (2015) provided answers which on average locate on the second step. Therefore, we conclude that the nurses interviewed by our study suffers from slightly more problematic conditions inside the working environment.

DISCUSSION AND CONCLUSIONS

The study of the data reported so far has demonstrated that, to a certain extent, the WE and WC components are sufficiently interconnected. As for the WE scale, items WE3, WE4 and WE5 appear to be correlated with the items in the WC scale, while WE1 and WE2 could be lumped into a self-standing component. As for the WC scale, WC4 seems to be quite distant from the others, and captures an aspect of workaholism which bears little correlation with the other ones. Conversely, WC2 appears to be central to and prototypical of the latent trait and, at the same time, it is also

the most discriminating item. Hence, it may indeed represent one central trait of workaholism.

Both scales appear to have little internal consistency; it is therefore not surprising that the G_p separation indexes provided extremely low results. Nonetheless, these findings are consistent with previous experiments based on scales having a limited number of items (Linacre, 2012). Since they include few measuring items, WE and WC must be able to capture two different and rather broad aspects of workaholism. For this reason, the analysis actually benefits from the fact that both scales can cover a wide range of differentiated aspects of the phenomenon under scrutiny. The parallel analysis suggests the possibility that additional components are not captured by the WE and WC scales. However, considering the limited number of items per scale, trying to break them down into further subcategories may not necessarily produce significant results. By contrast, adding new items that may define more prototypical WE and WC factors and discriminating features might improve the instrument and its effectiveness in measuring the latent trait.

As for the general conditions of the group of subjects, it can be confirmed that workaholism is a relevant issue in nursing. Around 18% nurses shows a drive to work excessively and compulsively. Two additional profiles at risk of workaholism could also be detected. A significant number of nurses tend to work extremely hard (about 18%) while some of them display a marked tendency to work compulsively (10%).

Moreover, despite the comparison with previous studies is indirect and descriptive for the reasons explained so far, our group of subjects displays better working conditions regarding workaholism than the other two healthcare-based samples; conditions which are worse, however, if compared to the general Italian sample currently available.

This study has some limitations. First, the group of subjects

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Table 5 – Comparison of the profiles of our study with other research in health care

	Our study	**Schaufeli et al. (2009)**	**Schaufeli et al. (2008)**
Workaholics	17.9% (87)	31.9% (1031)	41.7% (827)
Relaxed workers	53.4% (259)	33.3% (1076)	31.9% (633)
Hard workers	17.9% (87)	16.8% (543)	14.4% (286)
Compulsive workers	10.7% (52)	18.1% (585)	12.0% (238)
Total n = 485		n = 3235	n = 1984
		$\chi^2(3) = 88.60$, *p*<.001	$\chi^2(3) = 112.95$, *p*<.001

Table 6 – Comparison with the study of Balducci et al. (2015)

Dimensions of DUWAS	**Working Compulsively**		**Working Excessively**	
Studies	**Our study**	**Balducci et al. (2015)**	**Our study**	**Balducci et al. (2015)**
Mean	2.37	2.01	2.22	2.34
Standard dev.	.58	.63	.55	.64
Sample size	485	1027	484	1027
Test t	t(484) = 13.69, *p*<.001		t(484) = −4.90, *p*<.001	
Effect size	Cohen's d = .59		Cohen's d = .20	

was selected *ad hoc* according to a specific profession; hence, the selection of the informants was not based on a systematic approach. Second, choosing nurses as case study resulted in an extremely homogeneous group, thus allowing us to have a firm control over possible professional, social and demographic factors. However, these factors do not allow the formulation of more general hypotheses regarding workaholism as experienced by a broader working population. Also, the application of a *cross-sectional* e *self-report* methodology to collect the data may have affected the measurement quality of the dimensions underlying workaholism. On the latter issue, Balducci, Avanzi and Fraccaroli (2016) suggest the combination of these measures with objective data of psycho-physiological. Finally, due to the fact that a standardised validating scale for the Italian version of the instrument is currently unavailable (and in particular a scale specifically designed for workaholism in nursing), an in-depth and detailed investigation could not be carried out.

Despite these limitations, the results obtained remain valuable. As regards the instrument, this study contributed to the further improvement and testing of the Italian version of DUWAS. It is therefore hoped that its proponents will create a validated version to assess the different types of job categories at risk of workaholism. As for nursing, this study shed some light on the incidence of workaholism, despite the scarcity of studies considering the incidence of regulatory, cultural, and organizational differences regarding workaholism internationally. Moreover, it has helped to detect those working profiles that are particularly at risk, considering the crucial role that nurses play in the healthcare system.

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