THE BIG FIVE PERSONALITY TRAITS AND DISPOSITIONAL MINDFULNESS AS PREDICTORS OF ALEXITHYMIA IN COLLEGE STUDENTS

Rasoul Heshmati, Monica Pellerone

Abstract

Objective: The aim of this research was to measure the relationship between the Big Five personality traits, dispositional mindfulness and alexithymia, and to investigate personality traits and dispositional mindfulness as predictors of alexithymia in a group of college students.

Method: In the present study, 150 college students at Tabriz University, aged between 18 and 26, were selected by convenient sampling method. NEO – Five Factor Inventory (NEO – FFI), Toronto Alexithymia Scale (TAS – 20), and Freiburg Mindfulness Inventory (FMI-SF) were used for data collection.

Results: The results showed that alexithymia was positively associated with neuroticism, and negatively associated with conscientiousness and openness to experiences. Neuroticism is the strongest predictor of alexithymia. After controlling for the effects of baseline characteristics and the Big Five personality traits, mindfulness did not remain a significant predictor of alexithymia.

Conclusions: These results suggest that neuroticism, openness to experiences and conscientiousness have an essential role in alexithymia.

Key words: Big Five personality traits, mindfulness, alexithymia, adolescence

Declaration of interest: none

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Introduction

People with different types of personality experience different emotions, and it is an integral part of human life, but not all people experience these emotions in the same way and have serious problems at different stages of this experience, including identifying, processing and regulating the emotions (Guarnera et al. 2015, Guarnera et al. 2017, Thorberg et al. 2009); these difficulties may determine an alexithymic disorder, described as the inability to process emotional information and emotional regulation (Taylor, Bagby and Parker 1997, Pellerone et al. 2017a). It is characterized by difficulties in identifying feelings and finding words for describing feelings to others, and the use of externally-oriented thinking (Nemiah, Freyberger and Sifneos 1976). Literature underlines that the early years of life have an undeniable role in shaping personality (Bickhard and Christopher 1994, Magnano et al. 2017a, Pellerone, Ramaci and Miccichè, 2018; Pellerone, Tomasello and Migliorisi, 2017), as it seems that personality affects alexithymia; so when a person does not have a positive relationship in childhood and experiences neglect, they may suffer from alexithymia in adulthood (Aust et al. 2013). In addition, alexithymia can be affected by dispositional mindfulness.

Personality has a basic role to play in the life of every human being and all aspects of life are affected by it. There is not consensus among researchers about how many basic dimensions are needed to describe personality differences (Pellerone et al. 2017b). Researchers in recent years have made progress in this field by using a hierarchical model (Linden, Nijenhuis and Bakker 2010), such as the Big Five (Costa and McCrae 1985), which has become one of the most important paradigms used in personality research (McCrae and Allik 2002). One of the most important European testing models for personality assessment, according to the Five Factors theory, is the revised NEO Personality Inventory, the most popular measure

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of the FFM (Costa and McCrea, 1992), which describes five main factors: openness, conscientiousness, extraversion, agreeableness, and neuroticism (McCrae and Costa 1997).

Although alexithymia was first studied in relation to a variety of psychosomatic disorders – such as dissociation, depression, anxiety disorders, and eating disorders – more recent research measures personality traits as predictive variables to the alexithymia.

In particular, the study by Singh and colleagues (2011) indicated that openness to experience is an important predictor of alexithymia. Luminet and colleagues (1999), by using the Toronto Alexithymia Scale (TAS-20), demonstrated the presence of a positive correlation with neuroticism, and a negative correlation with extraversion and openness, whereas no significant relations were found with agreeableness and conscientiousness; although Bibby and Ferguson (2012), in another research, showed that alexithymia is negatively correlated with conscientiousness only in university students. Furthermore, Zlotnick and colleagues (2005) indicated that most of the alexithymia scores are justified by low extraversion and openness, and high neuroticism. Similarly, Picardi, Toni and Caroppo (2005) indicated that TAS-20 total and subscale scores are correlated with low extraversion, openness, and agreeableness.

Furthermore, Ueno and colleagues (2014) demonstrated that individuals with high TAS-20 scores could be divided into two subgroups, one showed very high scores in difficulty in identifying feelings (DIF) and also neuroticism, and the other showed very high scores in externally-oriented thinking (EOT) and very low scores on openness to experience. Similarly, Gucht, Fontaine and Fischler (2004) showed that alexithymia was positively correlated with neuroticism, and negatively correlated with extraversion and openness to experience.

Based on the above findings, the results of various studies are inconsistent, because some of the studies show that high neuroticism and low openness and extraversion are predictors, whereas others show that low agreeableness and conscientiousness are predictors of the level of alexithymia; thus, clarification of this relationship needs further research.

The relationship between personality traits, dispositional mindfulness and alexithymia

According to the definition by Kabat-Zinn, mindfulness is typically defined as an awareness that appears as a reaction to environmental stimuli and inner experiences in the present moment, and being non-judgmental (Kabat-Zinn 2003). Western scholars acknowledge that mindfulness is derived from eastern meditation. In Buddhist tradition it is said that practicing mindfulness helps people to develop wisdom, equanimity, compassion, and well-being (Baer 2014, Magnano et al. 2017b).

Dispositional, or trait mindfulness, is defined as a level of mindfulness that an individual experiences in daily life. This type of mindfulness is opposite of mindfulness as a state, because a person obtains state mindfulness through meditation exercises (Cahn and Polich 2006). To simplify, dispositional mindfulness reflects an individual's inherent tendency to mindfulness, whereas mindfulness as a trait exists without mindfulness training (Dorjee et al. 2015).

There are some studies about the association of dispositional mindfulness and alexithymia; for example, according to the research by Stasiewicz and colleagues (2012) the association between alexithymia and mindfulness is negative. Similarly, the research of Teixeira and Pereira (2015) showed the presence of negative correlations between alexithymia and mindfulness dimensions. In another research Arias, Justo and Granados (2010) studied the effects of meditation programs (mindfulness) on the measure of alexithymia, and results showed a reduction in the total score of alexithymia, and the presence of a negative correlation between mindfulness and alexithymia.

The above-mentioned literature underlines that there is negative association between alexithymia and mindfulness and their dimensions; only the study conducted by Banner (2009) showed that this association is positive; so according to the above findings, it is difficult to achieve a general result, and in order to clarify their association more research needs to be done.

However, the literature agrees that trait mindfulness is correlated to greater use of putatively adaptive regulation strategies, such as cognitive reappraisal (Jermann et al. 2009), and a reduction in putatively maladaptive strategies, such as suppression (Tamagawa et al. 2013), rumination (Borders, Earleywine and Jajodia 2010), and worry (Feldman et al. 2007).

It is interesting to observe the study conducted by Lyvers and colleagues (2014) which examined relationships between trait mindfulness, mood, executive functions, and emotion regulation in university students. This research showed that mindfulness can be considered as a predictor of the negative mood regulation, of depression, anxiety and stress, of impulsivity and above all of the general level of alexithymia.

Similarly, Lee, Bowen and Bay (2011) examined the relationship between the Big-Five personality factors and levels of mindfulness at baseline, and the predictive value of these personality factors on changes in mindfulness after eight weeks of mindfulness-based training. Data showed that four of the five personality factors (conscientiousness, extraversion, agreeableness, and neuroticism) were significantly correlated with decentering of mindfulness at baseline; instead, neuroticism and openness to experience were significantly related to curiosity.

Furthermore, a study by Giluk (2009) provided an empirical estimate of the relationship between mindfulness and the Big Five personality traits, as well as trait affect. Results indicated that, although all of the traits display appreciable relationships with mindfulness, the strongest relationships are found with neuroticism, negative affect, and conscientiousness.

Interest in the application of mindfulness-based intervention for the treatment of psychological disorders and promotion of well-being has grown exponentially in recent years. Mindfulness-based interventions have been found to be beneficial for treatment of various forms of psychopathology, as well as improving psychological well-being and enhancing physical health (Ledda et al. 2017).

For these reasons the aim of this research was:

a) to measure the relationship between the Big Five personality traits, dispositional mindfulness and alexithymia in a group of college students; in particular, it is assumed that mindfulness is positively related to openness, extraversion and conscientiousness, but negatively related to neuroticism and general level of alexithymia, a

hypothesis which accords with the international literature (Giluk, 2009);

b) to investigate the Big Five personality traits and dispositional mindfulness as predictors of alexithymia in college students; in particular, it is assumed that, according to the literature, dispositional mindfulness, neuroticism (Besharat 2007, Zimmermann et al. 2005) and openness to experience (Kamlesh, Arteche and Holder 2011, Yekta, Besharat and Roknoldini 2011, Elfhag and Lundh 2007) are the predictive variables to the general level of alexithymia.

Method

Participants

This research is a cross-sectional survey and correlation design. Cochran's sample size formula was used to calculate the sample size[1]. According to this method, the sample size was composed of 150 college students at Tabriz University, selected by convenient sampling method. The mean age of participants was 22 (*SD*= 2.96) years old, with a range between 18-26. Of all participants, 74 (49.3%) were male and 76 (50.7%) were female; the majority (80.7%) had an average socio-economic status. Sixty percent of participants had a bachelor degree. In reference to the professional status, 37.3% of the participants had a governmental job status, and 62.7% were freelance.

Procedure

A convenience sampling was used to recruit the participants of the present research; in particular, the participants were consecutively selected in order of appearance according to their convenient accessibility (also known as consecutive sampling).

The questionnaires were distributed by qualified researchers and they were collected anonymously. Participants were informed about the study aims and procedures, and they completed a written informed consent. After informed consent had been obtained, the questionnaires were distributed to the participants, asking them to study the questions carefully, to select the answers according to their personality traits, and to not leave the questions unanswered.

The questionnaires were completed in a classroom setting via paper-and-pencil format. Inclusion criteria included: the willingness to participate in the research, aged between 18 to 30 years old; exclusion criteria included having a history of psychiatric disorders, substance abuse and substance dependency. To check the inclusion and exclusion criteria, a semi-structural interview was conducted with participants. Therefore, all participants reported no known neurological or psychiatric problems and to be in good health.

All study participants were given both verbal information and a written summary of the study, where voluntary participation, guarantee of anonymity, free will of withdrawal from the participation, and no disadvantage upon withdrawal were explained.

Upon both verbal and written consents from the subjects, data was collected.

Measures

Big Five personality traits

NEO-FFI (Costa and McCrea 1992) consists of 60 items, 12 for each of the "FFM" variables. For each item, participants express agreement or disagreement on a five-point Likert type scale ranging from "completely disagree" (1) to "fully agree" (5). Half of the items in each sub-scale are worded positively, and the other half negatively, so as to avoid response set bias. The items of the different sub-scales are mixed, so that every fifth item represents one of the FFM. Cronbach's α for the present study are 0.73.

Mindfulness

The 14-item short form version of the Freiburg Mindfulness Inventory (FMI-SF; Buchheld, Grossman and Walach 2001) was used to measure dispositional mindfulness with a 4-point Likert scale. This scale is reliable (Cronbach`s alpha .86), as is evident from correlations with related constructs such as self-awareness (Buchheld, Grossman and Walach, 2001; Walach et al. 2006). The reliability of this research showed a Cronbach`s alpha of .75.

Alexithymia

Alexithymia was measured using the 20-Item Toronto Alexithymia Scale (TAS-20), a 20-item self-report measure of alexithymia (Taylor, Ryan and Bagby 1985). Each item is rated on a five point Likert scale. The questionnaire provides a total alexithymia score (TAS Total) and three subscales, which reflect the three main facets of the alexithymia construct: factor scale TAS F1 assesses difficulties in identifying feelings (DIF), factor scale TAS F2 concerns difficulties in describing feelings (DDF), and factor scale TAS F3 reflects concrete externally oriented-thinking (EOT) or a preoccupation with the details of external events. The TAS Total score was used to classify the subjects in cases and controls. A cut-off of 61 was used to diagnose alexithymia and categorize the subjects into non-alexithymic (TAS Total score = < 60) and alexithymic (TAS Total score = < 61) (3). Cronbach's α for the present study are .80.

Statistical analysis

The data was processed by using SPSS 22 software. Questionnaire data were initially checked for missing item responses. Overall, .005% of items were missing from the questionnaire data. A single imputation using the expectation maximization algorithm was therefore utilized to replace these missing items. Missing data were imputed using Missing Values Analysis within SPSS 22. To correct for the inclusion of multiple analyses in this study, was set to .01 for all outcomes.

Data were presented by mean (SD) and frequency (%) for quantitative and qualitative variables, respectively. The normality of data was assessed and confirmed by one sample K-S test. To investigate the

[1] Cochran's sample size formula for categorical data for an alpha level a priori at .05 (error of 5%) is the following:

n0=(t)2*(p)(q)/(d)2=384

Where: n0 is the sample size, t is the value for the selected alpha level, e.g. 1.96 for (0.25 in each tail) a 95 percent confidence level. p is the estimated proportion of an attribute that is present in the population. q is 1-p. (p)(q) are the estimate of variance. d is the acceptable margin of error for proportion being estimated, so the confidence interval, in decimals.

relationship between alexithymia with psychological factors, a multivariate hierarchical strategy was applied controlling for baseline characteristics and demographical variable.

To assess the relationships of alexithymia scales and personality dimensions and mindfulness a Pearson's correlation coefficient was conducted.

To investigate the Big Five personality traits and dispositional mindfulness as predictors of alexithymia the multivariate analysis a three-step hierarchical strategy was used, wherein in the first step, a backward strategy to select significant baseline characteristics was applied at p=0.1. In the second step, the entire personality dimensions were entered in the model and in the third step, mindfulness. The final model consisted of significant baseline characteristics and all psychological factors. The qualitative variables were entered as indicators. The regression assumptions of residual normality, homogeneity of residual variances, residual independence, and co-linearity were assessed and confirmed using normal probability plot, residual versus predicted values plot, Durbin-Watson Statistics (values between 1.5 to 2.5 as the acceptable range), and Variance Inflation Factor (VIF<5 as the acceptable values). All the assumptions were fulfilled. Additionally, regression coefficients and their 95% confidence intervals were presented.

Results

In reference to the preliminary analysis, means, standard deviations, and correlations for all the measured variables in the current study are displayed in **table 1**.

In reference to the first hypothesis, the correlation analysis shows that most variables were moderately correlated (**table 2**). In particular, it is interesting to observe the presence of a negative correlation of alexithymia with extraversion (r=-.34, p<.01), agreeableness (r=-.43, p<.01), conscientiousness (r=-.36, p<.01), openness (r=-.30, p<.01) and mindfulness (r=-.29, p<.01); and the presence of a positive correlation between alexithymia and neuroticism (r=.61, p<.01).

The first research hypothesis seems therefore to be confirmed.

In reference to the second hypothesis, the results of the three-step hierarchical modeling lead to selecting gender, SES (socio-economic status), education and marriage among the demographical variables and all psychological factors (**table 3**). In particular, in the first-step of hierarchical model, none of the demographical variables have any significant relationship with alexithymia. This result shows that the gender variable,

SES, education and marriage could not predict alexithymia because of low ability.

Furthermore, the second set of variables including extraversion, agreeableness, conscientiousness, neuroticism and openness to experiences seem to be predictive variables to the level alexithymia, explaining 42% of total variance [$F_{(5, 140)} = 21.36$, p=0.001].

Also, in the third-step, mindfulness seems not to

Table 1. *Means and standard deviation of the Big Five personality traits, alexithymia and mindfulness*

Variables	*M*	*SD*
1.Alexithymia	51.99	11.02
2. DDF	13.12	3.822
3. DIF	18.30	6.21
4. EOT	20.56	3.96
5. Extraversion	29.60	6.75
6. Agreeableness	27.55	5.38
7. Conscientiousness	32.81	7.25
8. Neuroticism	22.61	8.83
9. Openness experiences	25.63	4.86
10. Dispositional mindfulness	37.16	6.82

Abbreviation: DDF=Difficulty Describing feeling; DIF=Difficulty Identifying Feeling; EOT=Externally-Oriented Thinking

Table 2. *Correlations between the Big Five personality, alexithymia and mindfulness*

Variables	1	2	3	4	5	6	7	8	9
1.Alexithymia	-								
2. DDF	.80**	-							
3. DIF	.91**	.69**	-						
4. EOT	.59**	.19*	.29**	-					
5. Extraversion	-.35**	-.29**	-.30**	-.22**	-				
6. Agreeableness	-.43**	-.32**	-.43**	-.23**	.37**	-			
7.Conscientiousness	-.36**	-.23**	-.28**	-.35**	.47**	.34**	-		
8. Neuroticism	.61**	.50**	.60**	.29**	-.40**	-.53**	-.29**	-	
9. Open. experiences	-.29**	-.22**	-.15	-.38**	.24**	.16*	.23**	-.14	-
10.Disp.mindfulness	-.29**	-.14	-.26**	-.25**	.37**	.43**	.49**	-.41**	.19*

Note: **p < .01, two-tailed; *p < .05, two-tailed
Abbreviation: DDF=Difficulty Describing Feeling; DIF=Difficulty Identifying Feeling; EOT=Externally-Oriented Thinking

increase the predictive ability of alexithymia [$F_{(5, 139)} = 1.62$, $p>.05$]. This means that after checking for the effects of sex, SES, education, marriage and Big Five personality dimensions, mindfulness did not remain a significant predictor of alexithymia, accounting for .006% of the unique variance ($\Delta R^2 = .006$, $p > .5$); overall, this model accounted for 43% of the variance in alexithymia.

According to the multivariate three-step hierarchical modeling**,** among the study constructs and personality dimensions, neuroticism had a positive relationship with alexithymia; as a result, by increasing one unit in the score of neuroticism the score of alexithymia increases by .50 units. Inversely, conscientiousness and openness to experiences had a negative relationship with alexithymia; furthermore, by increasing one unit in the score of conscientiousness and openness to experiences, the score of alexithymia decreases by .19 and .18 units respectively. These results show that among study variables and personality dimensions, neuroticism has a high ability in predicting alexithymia in college students. However, among the personality dimensions, extraversion and agreeableness seem to not have a significant relationship with alexithymia. Also, mindfulness did not have significant relationship with alexithymia.

As demonstrated in **table 4**, the multivariate modeling revealed some significant relationships among alexithymia subscales with Big Five personality dimensions and mindfulness, including: difficulties in describing feelings with neuroticism and mindfulness, difficulties in identifying feelings with neuroticism, externally-oriented thinking with conscientiousness and openness to experiences. By increasing one unit in the score of neuroticism (p=.001) and mindfulness (p=.05) the score of difficulties in describing feelings increases by .46 and .17 units respectively. On the other hand, by increasing one unit in the score of neuroticism (p=.001) the score of difficulties in identifying feelings increases by .51.

Furthermore, regression coefficients showed that by increasing one unit in the score of conscientiousness (p=.007) and openness to experiences (p=.001), the score of externally oriented thinking decreases by .25 and .31 units respectively. Big Five personality dimensions and mindfulness accounts for 27% of the variance in the difficulties in describing feelings (R^2=.27), 36% in the difficulties in identifying feelings

Table 3. *Multivariate three-step hierarchical modeling for relationship between alexithymia with demographical and psychological variables*

Variables	SE B	B	ΔR^2	T	p-value
First Step Hierarchical Model					
Gender	2.424	-.048		-.431	.667
SES	2.223	-.075	.04	-.846	.399
Education	2.490	-.235		-2.113	.036
Marriage	2.368	.024		.290	.772
Second Step Hierarchical Model					
Gender	1.880	-.044		-.511	.610
SES	1.731	-.023		-.332	.740
Education	1.976	-.059		-.666	.507
Marriage	1.833	.031	.42	.485	.628
Extraversion	.125	.004		.056	.955
Agreeableness	.158	-.096		-1.245	.215
Conscientiousness	.112	-.152		-2.059	**.041**
Neuroticism	.103	.486		5.894	**.000**
Openness	.147	-.179		-2.752	**.007**
Third Step Hierarchical Model					
Gender	1.913	-.022		-.253	.800
SES	1.765	-.042		-.588	.558
Education	1.986	-.045		-.511	.610
Marriage	1.830	.029		.452	.652
Extraversion	.125	.001	.006	.018	.986
Agreeableness	.162	-.118		-1.493	.138
Conscientiousness	.120	-.188		-2.380	**.019**
Neuroticism	.104	.504		6.038	**.000**
Openness	.147	-.184		-2.829	**.005**
Mindfulness	.130	.102		1.273	.205

Table 4. *Relationships among alexithymia subscales and psychological factors in the multivariate regression model*

Alexithymia subscales	Predictive variables	SE B	B	Adjusted R^2	T	*p-value*
DDF	Extraversion	.048	-.059		-.689	.492
	Agreeableness	.062	-.067		-.773	.441
	Conscientiousness	.046	-.102		-1.176	.241
	Neuroticism	.038	.463	.27	5.339	**.000**
	Openness	.057	-.134		-1.840	.068
	Mindfulness	.049	.172		1.976	**.050**
DIF	Extraversion	.073	-.005		-.069	.945
	Agreeableness	.094	-.148		-1.822	.070
	Conscientiousness	.069	-.104	.36	-1.282	.202
	Neuroticism	.057	.511		6.298	**.000**
	Openness	.087	-.046		-.675	.501
	Mindfulness	.074	.075		.922	.358
EOT	Extraversion	.052	.057		.641	.522
	Agreeableness	.066	-.024		-.268	.789
	Conscientiousness	.049	-.246	.22	-2.752	**.007**
	Neuroticism	.040	.182		2.032	.044
	Openness	.062	-.308		-4.079	**.000**
	Mindfulness	.052	-.003		-.037	.970

Abbreviation: DDF=Difficulty Describing Feeling; DIF=Difficulty Identifying Feeling; EOT=Externally-Oriented Thinking

(R^2=.36), and 22% in the externally oriented thinking (R^2=.22).

Discussion

The purpose of the current study was to measure the relationship between the Big Five personality traits, dispositional mindfulness and alexithymia in a group of college students, and investigate the Big Five personality traits and dispositional mindfulness as predictors of alexithymia.

The results, according to literature and to research hypothesis, show that extraversion, agreeableness, conscientiousness and openness are associated with a low level of alexithymia; furthermore, it is interesting to see that a high level of alexithymia is associated with a low level of mindfulness. According to Ricardo and Pereira (2015) this result indicates that mindfulness seems to be a construct with great therapeutic benefits, suggesting that some aspects of mindfulness seem to promote a better self-differentiation and to prevent alexithymia, because mindfulness encourages open curiosity and attentiveness to inner experiences and becoming familiar with arising thoughts or feelings in one's body.

By conducting a multivariate three-step hierarchical model analysis, the first step revealed that there is not a significant relationship between demographical variables and alexithymia. Although previous studies reported significant association between demographic variables and alexithymia, in addition, most of them reported that, male gender, advanced age, low educational level, and low socio-economic status are associated with alexithymia (Honkalampi et al. 2004, Lane, Sechrest and Riedel 1998, Salminen et al. 1999). Our results, despite the conflict with some studies, are explainable because our sample was from university students with an average age of 22, of which only 15% were married and the rest were single. Due to the high level of education in university students compared to the general population, marriage and education cannot be significantly associated with alexithymia in the present study. If our sample had been from different levels of age and education and the number of singles and married participants been equal, maybe the results would have been different. The other component of demographic variables was the socio-economic status, since our questionnaires were self-report, and bias in these instruments is common. Most students do not want to mark their socio-economic status as low, thus they marked average (80.7%), and only 10% marked low and 9.3% marked high. A non-significant association between socio-economic status and alexithymia would be justified.

The current study takes the second step toward investigating the role of personality dimensions in predicting alexithymia, among neuroticism, openness to experience, and conscientiousness. Neuroticism has the highest Coefficient of Determination in predicting alexithymia, therefore the strongest predictor of alexithymia is neuroticism, consequently this result supports some of the previous findings (Besharat 2007, Luminet et al. 1999, Zimmermann et al. 2005). Individuals with high scores in neuroticism seem to be more likely to experience feelings such as anxiety, anger, envy, guilt, and depressed mood (Matthews and Deary 1998). Their reaction to stressors is very weak, and in normal situations they also feel threatened. They feel embarrassed in social situations and have difficulty

in controlling and delaying desires. Most of these traits are common in alexithymia because of difficulty in identifying and describing emotions (Iacolino et al. 2017, Montebarocci et al. 2004, Pellerone et al. 2017c). Since alexithymia is strongly correlated with emotional inhibition and controlling of feelings, there is a link between the behavioral inhibition system (BIS) and alexithymia because, in this system, the physiological mechanism controls the experience of anxiety in response to anxiety-relevant cues. The BIS inhibits behavior which may cause negative or painful results, thus activation of BIS prevents moving toward goals and causes feelings such as fear, anxiety, frustration, and sadness in response to stressful situations (Gray 1987b, 1990, Pellerone et al. 2017d). Based on Gray's theory and features of neuroticism and alexithymia, the presence of a positive relationship between alexithymia and neuroticism in the present study is not surprising.

This study shows that after neuroticism, the most effective variable is openness to experience in predicting alexithymia. This result is consistent with some studies (Bagby, Taylor and Parker 1994, Kamlesh, Arteche and Holder 2011, Yekta, Besharat and Roknoldini 2011, Elfhag and Lundh 2007, Luminet et al. 1999, Pandey and Mandal 1996, Wise and Mann 1994). Openness to experience is evaluated by six indicators, including imagination, aesthetics, feelings, activities (actions), opinions and values (Costa and McCrae 1992). An individual with low openness to experience tends to enjoy following routines, likes predictability and structure and tends not to engage his imagination on a regular basis. His beliefs typically match the status quo and his choices in profession, clothing, eating, shopping and other activities tend to go along with the mainstream standards. Thus, in a person with a dominant openness dimension, alexithymia is rare because the opposite of these features is prominent in individuals with alexithymia. Therefore, according to the characteristics of alexithymia and openness, the negative association that has been demonstrated in the present study is explainable.

The last effective variable of personality dimensions in the current study is conscientiousness; this variable has a negative relationship with alexithymia. This finding is consistent with Taylor et al. (2014), Wise and Mann (1994). Conscientiousness implies the will to do a task in the best way and exhibits being careful, cautious, and observant. Conscientious people are efficient and do their job in an organized manner; they set and keep long-range goals, deliberate over choices or behave impulsively, and take obligations to others seriously. Being conscientious is a key ingredient to success but, individuals with alexithymia, due to a low rate of excitement and low level of mood do not obligate themselves to do tasks conscientiously.

The third step of the current study was to investigate the role of dispositional mindfulness in predicting alexithymia. In particular, in this investigation, dispositional mindfulness is not a predictor of alexithymia and association between them is not significant. One of the reasons that this result does not conform with other studies – such as Baer and colleagues (2006), Teper and Inzlicht (2013), or Lykins and Baer (2009) – is related to the instrument used to carry out the present research. In these studies, in fact, the FFMQ and Philadelphia Mindfulness Scale were often used; however, in the present study FMI was used. FMI is a one-dimensional questionnaire, yet FFMQ consists of Five Facets, which include items such as observation, description, acting with awareness, being non-judgmental, and not showing a reaction. FMI consists of acceptance and presence items, because an alexithymic person has difficulties in describing feelings and in FMI there is not the description of these items. Furthermore, FMI consists of 14 items and FFMQ consists of 39 items, thus the items in FMI are more general, and one item consists of many cases; for example, the second item in FMI is the following: "I sense my body, whether eating, cooking, cleaning or talking". This item in FMI is equivalent with three or more items in FFMQ, as follows: "When I'm walking, I deliberately notice the sensations of my body moving"; "When I take a shower or bath, I stay alert to the sensations of water on my body"; "I notice how foods and drinks affect my thoughts, bodily sensations, and emotions". According to the limitations that have been indicated, non-significant association between alexithymia and dispositional mindfulness in the present study is likely related to the use of FMI questionnaire.

According to the findings of this study, it can be concluded that neuroticism, conscientiousness, and openness have a major role in predicting alexithymia in the non-clinical population, thus in studying alexithymia and educational and therapeutic interventions for reducing the level of alexithymia, it is necessary to investigate neuroticism, openness, and conscientiousness dimensions, in order to reduce the level of alexithymia in young-adult subjects.

The present study contains some limitations which must be acknowledged. The first limitation was our statistical population, because we chose our sample from college students and the average age was about 22, thus it is difficult to generalize these findings to younger or older people with different educational levels. The second limitation was the use of self-report instruments to measure the research variables, because there is the possibility of bias in responding to questions. Thus, it is essential to carry out this research with other age groups and level of socio-economic status. Another limitation of this study is associated with instrument restriction; the results could have been affected by the use of the common instrument FMI for measuring dispositional mindfulness.

To conclude, it is important to consider that the absence of the influence of mindfulness on alexithymia could be obscured by the effects of personality traits, for this reason it may be necessary to replicate this study to measure if personality traits variables moderate the relation between mindfulness and alexithymia.

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