Articles

Trait emotional intelligence and eating problems in adults: associations with alexithymia and substance use

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Abstract

Background: Eating Disorders (EDs) often co-occur with substance use contributing to increasing concern about the individual's health; both the conditions share several core features such as the tendency to use maladaptive emotion regulation strategies. The present study investigated associations between trait emotional intelligence (Trait EI), alexithymia and EDs, namely dieting, bulimia and oral control, in a nonclinical sample of adults. Moreover, the relationships with substance use frequencies were also examined with the aim of exploring the links between personality emotional competence traits (trait EI and alexithymia) and different addictive risk behaviours (EDs and substance use) in adulthood.

Methods: Data were collected from a convenience sample composed of 394 (312 women; between ages 18 and 65; mean age = 32.34; SD = 11.97) participants, through online administration of questionnaires assessing trait emotional intelligence (TEIQue-SF), eating problems (EAT-26), alexithymia (TAS-20) and frequency of substance use (in the last year).

Results: The group that exceeds the cut-off for EDs (n = 58; 14.7 %) has significantly lower trait EI scores (in all dimensions) and higher alexithymia scores than the other group. Some differences between the two groups were found on frequencies of nicotine and diuretics use. Age and all trait EI factors were negatively associated with eating disorders and alexithymia. Weak inverse correlations have emerged between EI and frequencies of substance use (namely cocaine, amphetamines, alcohol and tobacco). Female gender, well-being and self-control factors of EI emerged as significant predictors of EDs in adulthood.

Conclusions: Our results suggest the importance of targeting emotion dysregulation for EDs and substance use behaviours. Interventions aimed at promoting healthy lifestyles could benefit from trait EI enhancement efforts. Practitioners and health educators need to recognize the potential efficacy of including trait EI within gender specific interventions planned to address ED symptoms and addictive behaviours in general.

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1. Introduction

Unsafe eating behaviours, namely dieting, oral control and bulimia, can lead to numerous health problems (Johansson et al., 2020). Additionally, individuals who engage in problematic eating behaviours are more likely to abuse substances than others (Dennis & Pryor, 2017; Lee & Lee, 2019), contributing to increasing concern about the individual's condition. For example, previous research has demonstrated that patients with eating disorders (EDs) exhibit a particular association with substance (alcohol and drug) problems or dependence at rates higher than normal controls or population base rates (Von Ranson et al., 2002). A recent meta-analysis (Bahji et al., 2019) estimated that the lifetime prevalence of any substance use disorder among adults with EDs is 26%, with tobacco, caffeine and alcohol most commonly abused. Expecially among women, EDs co-occur with substance use disorder, namely alcohol and nicotine dependence (Munn-Chernoff et al., 2020).

Moreover, eating disorders and substance use disorders are problematic conditions that share several core characteristics one of which is the tendency to use dysfunctional emotion regulation strategies: individuals with these disorders often lack conscious awareness of their own feelings (Morie & Ridout, 2018); indeed, eating disorder symptoms and substance abuse have been associated with more difficulties in identifying, describing and regulating emotions (Dvorak et al., 2014; Westwood et al., 2017); these "emotional deficits" lead to the maintenance and development of EDs symptomatology, as individuals with difficulties in regulating emotions often turn to food, drugs or alcohol to escape from or down-regulate their feelings.

In the field of research on emotions, one of the constructs which play a pivotal role is Emotional Intelligence (EI). The topic of EI has generated a great deal of interest in both scholars and mental health professionals as it offers a new perspective in the study of emotions and clinical disorders. From this perspective, the EI is considered crucial for psychological adaptation (Hansen et al., 2009).

In 1990 Salovey and Mayer originally conceptualized EI as an individual's emotional competence, more clearly defined as "the subset of social intelligence that involves the ability to monitor one's own and others' feelings and emotions accurately, to discriminate among emotions, and to use this information to guide one's thinking and actions" (Salovey & Mayer, 1990, p. 189). Research showed a direct link between ability EI and physical as well as psychological health (Tsaousis & Nikolaou, 2005). In the early 2000s, Petrides and Furnham (2000, 2001) extended the construct to a theoretical framework that integrates emotions, personality traits, and intelligence, broadly defined. Trait EI, which is composed of a cluster of

emotional self-perceptions that make up a person's emotional aptitude, has emerged as an important individual difference variable referring to a constellation of emotional self-perceptions assessed by self-reported questionnaires and rating scales (Petrides et al., 2007). Essentially, the construct concerns people's perceptions of their emotional disposition and has been identified as a distinct latent variable present in the lower levels of the multi-level personality hierarchies (i.e., the Giant Three and the Big Five Model). In order to investigate EI as a personality trait, the Trait Emotional Intelligence Questionnaire (TEIQue; Petrides, 2001; Petrides & Furnham, 2003), and subsequently its short form (TEIQue-SF; Petrides, 2009) which we employed in the present study, were developed.

Several studies have explored the influence of trait EI across the life-span and, especially, its impact on health (for a review see Andrei et al., 2016), highlighting that trait EI is a strong positive predictor of well-being and mental health (see the comprehensive meta-analysis by Martins et al., 2010). For example, high levels of trait EI amplify the beneficial effects of active coping to reduce disruptive behaviour symptomatology in adolescents (Davis & Humphrey, 2012); trait EI is positively linked to adaptive coping strategies (e.g. problem-solving and social support seeking) and negatively associated to maladaptive strategies such as substance abuse (Mikolajczak et al., 2009); in addition, direct effects on general health were observed for trait EI in university students (Johnson et al., 2009). A recent meta-analysis (Sarrionandia & Mikolajczak, 2020) suggests that EI affects physical health through several behavioural variables, and substance use play a significant role. Moreover, low perceived EI has been inversely associated with anxiety and depression, conditions commonly affiliated with EDs (Pettit et al., 2010).

However, only a few studies involving adults have explored the associations between trait EI and addiction symptoms such as those related to substance (alcohol) and eating abuse (e.g. Gardner & Qualter, 2010). Previous studies indicating negative associations between EI – intended as an ability – and the dimensions of EDs across diverse stages of development (Romero-Mesa et al., 2020 for a review) showed that individuals with high levels of EI reported fewer eating behaviours and concerns than those with low EI (Resurrección et al., 2014). However, the diverse range of EI measurements and the prevalent focus of EI studies on childhood and adolescence make it difficult to clarify the associations between EI and EDs in the adult population and apply them to practice. In addition, relatively few studies have investigated the associations between trait EI and substance use frequencies, and those that exist focus only on alcohol use or tobacco smoking (Kun & Demetrovics, 2010).

This limited attention on the associations between EI, EDs and substance use (Kun & Demetrovics, 2010; Kun et al., 2019) represents a clear gap in the literature, particularly when we take into account the central role of emotions in addictive behaviours.

While EI can be considered a protective factor for general health, Alexithymia has, on the contrary, been identified as a potential risk factor related to eating problems and substance use. The term "Alexithymia" was introduced by Nemiah and Sifneos (1970) and encompasses a cluster of cognitive and affective characteristics, of which the main one is an inability to describe and/or recognize one's own emotions (Brewer et al., 2015). With regard to difficulty in identifying and describing feelings, significant negative correlations occurred with emotional well-being, and general health (Myles & Merlo, 2021; Merlo et al., 2021).

Alexithymia was observed initially among patients with classic psychosomatic diseases, and later also among patients with EDs (Peres et al., 2020) and substance use (Morie & Ridout, 2018; Taylor, 2000; Treasure & Schmidt, 2013; Thorberg et al., 2009).

Nehra and colleagues (2013), referring to ability EI, showed that cannabis addicted had a low EI and high alexithymia than nondependent individuals; their findings highlighted considerable negative correlations between EI and alexithymia. However, not many studies have examined this measure of trait EI in relation to alexithymia. A previous research (Baughman et al., 2013) reported a strong negative correlation between Toronto Alexithymia scale (TAS-20; Bagby et al., 1994) total score and TEIQue in a sample of psychopaths. As opposed to alexithymia, it is presumed that those individuals with good social and emotional competencies (high trait EI) can more easily control their substance use habits (Kun et al., 2019).

1.1 The current study

The present study investigated associations between trait EI, alexithymia and EDs, namely dieting, bulimia and oral control, in a nonclinical sample of adults. Moreover, the relationships with substance use frequencies were also examined with the aim of exploring the links between personality emotional competence traits (trait EI and alexithymia) and different addictive risk behaviours (EDs and substance use) in adulthood.

In detail, we hypothesize that: (1) individuals with EDs have higher alexytimic trait and lower EI traits than individuals without eating problems; 2) there are significant inverse correlations among EI and Alexythimia (3) there are significant direct correlations among EDs and substance use; 4) EI and Alexithymia differently (negatively and positively respectively) predict EDs.

2. Methods

2.1 Participants and Procedure

A total of 394 participants [312 women between ages 18 and 65; mean age = 32.34; SD = 11.97] were recruited online using a survey-generating tool (https://www.google.com/forms/about/) implemented by Google Forms. The validity of online sampling was verified by Gosling and colleagues (2004), who empirically demonstrated that the findings obtained by Internet survey are coherent with those obtained by traditional methods. The online survey was publicly accessible and an invitation with the link to the questionnaire was disseminated by means of mailing lists and social networking sites, namely Facebook and Instagram. All participants provided their consent and received a full written explanation of the purpose of the study, its anonymous nature, and the possibility to withdraw from the study at any time. In order to check a person re-entering the survey site, the subject's IP address was monitored. The data were collected at the beginning of 2020 when the pandemic had not yet emerged. The research was conducted in agreement with the ethical standards as laid down in the 1964 Declaration of Helsinki and its later amendments.

As regards the participants' level of education, 54.6% (215) declared they had a high school diploma, 22.8% (90) had a university degree, 17.3% (68) a master's degree, and finally 5.3% (21) a PhD qualification. 65% (256) of the participants were employed, 23.1% (91) were college students and the remaining 11.9% (47) were unemployed.

2.2 Measures

2.2.1 Demographic details

This questionnaire asked for participant details such as age, gender, education level and occupational status.

Trait Emotional Intelligence (TEI). The Trait Emotional Intelligence Questionnaire – Short Form (TEIQue-SF; Petrides, 2009) includes 30 items designed to measure global trait EI. This self-report questionnaire uses a 7-point Likert scale, ranging from 1 (*completely disagree*) to 7 (*completely agree*). While global trait EI is the average score of all 30 items, the four subscale scores can be derived from 26 of these items: Well-Being (6 items), Self-Control (6 items), Emotionality (8 items), and Sociability (6 items). The remaining 4 items add directly to the global score without contributing to any of the four factors. Cronbach's alpha values were .90 for global trait EI, .85 for Well-Being, .69 for Self-Control, .66 for Emotionality, and .74 for Sociability. The TEIQue-SF can be scored from www.psychometriclab.com

Eating disorders (EDs)

The Eating Attitude Test-26 (EAT-26) (Garner & Garfinkel, 1979; Garner et al., 1983) includes 26 items developed to measure eating disorder symptoms, namely those indicative of anorexia nervosa and bulimia. It uses a six-point scale: (from 1 = *never* to 6 = *always*). Three factors emerged from the factor analysis including dieting (13 items), bulimia/food preoccupation (6 items), and oral control (7 items). A total eating attitudes score was used to describe overall eating disorder symptoms among participants; a cut-off score of ≥ 20 on the total score indicates an individual is susceptible to developing an ED. Cronbach's alpha value was .91.

Alexithymia

The Toronto Alexithymia Scale (TAS-20; Bagby et al., 1994) is the most widely used 20-item questionnaire assessing the level of alexithymia. The TAS-20 assesses the capacity to identify feelings and to distinguish between feelings and the bodily sensations of emotional arousal, the inability to communicate feelings to other people and externally oriented thinking. This self-report questionnaire uses a 5-point Likert scale (1 = *strongly disagree* to 5 = *strongly agree*). A total alexithymia score is obtained by summing the ratings for the 20 items. The cut off of ≥ 60 indicates high levels of alexithymia. Cronbach's alpha value was .85.

Frequency of alcohol/substance use

Participants were asked how frequently, in the last year, they used (1) heroin (2) cocaine, (3) amphetamine (4) hashish/ marijuana, (4) alcohol, (5) nicotine and (6) diuretics. They responded on a 6-point scale (from 1 = never to 6 = every day). The questionnaire, specifically designed for the purpose of the survey was inspired by other studies on drug consumption (Biolcati & Passini, 2019). Cronbach's alpha value was .68.

2.3 Data analysis

Statistical analysis was performed with the SPSS Version 26 statistic software package (IBM, 2019). We conducted descriptive, ANOVA and Pearson correlational analyses. We then used multiple linear regression to determine whether there was a relationship between one constant dependent variable (ED) and independent variables (gender, age, alexithymia and trait EI).

3. Results

14.7% (58) scored ≥ 20 on EAT-26, indicating a possible eating disorder. Means and ANOVA differences of scores on study variables for Gender and Eating Disorder are shown in Table I.

Table 1. Means and ANOVA Differences for Gender and ED among Study Variables.

Measures	M	SD	M Men (n = 82)	M Women (n = 312)	F	M No-ED (n = 336)	M ED (n = 58)	F
			Gender			ED		
Age	32.34	11.97	31.43	32.58	.606	27.16	24.18	5.97*
TEIQue-SF (1, 7)								
Well-Being	4.90	1.28	4.87	5.04	1.20	5.05	4.07	31.56***
Self-Control	4.03	1.10	4.34	3.95	8.09*	4.13	3.48	18.06***
Emotionality	5.08	92	5.03	5.09	.338	5.14	4.74	9.39**
Sociability	4.44	1.86	4.58	4.41	1.58	4.53	3.93	15.76***
Total	4.66	.85	4.77	4.65	1.54	4.76	4.12	29.26***
EAT-26 (0, 61)	9.85	10.97	5.61	10.96	16.05***	6.09	31.62	837.05***
Dieting-scale (1, 6)	5.52	7.13	2.80	6.24	15.60***	3.23	18.81	589.55***
Bulimia (1, 6)	2.46	3.21	1.56	2.70	8.33**	1.43	8.41	579.19***
Oral-Control (1, 6)	2.14	3.30	1.37	2.35	5.86*	1.59	5.38	78.46***
TAS-20 (23, 80)	47.64	12.51	46.76	47.88	.522	46.68	53.24	14.07***
Substance use frequency (1, 6)								
Heroin	1.06	.41	1.02	1.06	.62	1.05	1.07	.07
Cocaine	1.27	.84	1.34	1.25	.77	1.25	1.38	1.17
Amphetamine	1.18	.66	1.24	1.16	.78	1.17	1.22	.38
Hashish/ marijuana	2.07	1.66	2.45	1.97	5.62*	2.05	2.19	.37
Alcohol	3.21	1.60	3.46	3.14	2.65	3.20	3.26	.07
Nicotine	3.02	2.17	2.83	3.07	.78	2.92	3.59	4.72*
Diuretics	1.26	.83	1.05	1.31	6.71*	1.16	1.84	36.87***

Note. *** $p < .001$. ** $p < .01$. * $p < .05$. The numbers in parentheses represent the scale range. ED = Eating Disorder.

As far as gender differences are concerned, females scored significantly higher on all dimensions of EAT-26, namely dieting, bulimia and oral control; males have more self-control – a dimension of trait EI – than females. Regarding substance use, males consume more hashish/ marijuana than females, who instead use more diuretics, although the average frequencies are very low. The group that exceeds the cut-off for EDs has significantly higher alexithymia scores and lower trait EI scores (in all dimensions) than the other group. No differences between the two groups were found on frequencies of substance use except for nicotine and diuretics, which are more used by participants with eating problems. Correlations were conducted between the trait EI, ED, Alexithymia and substance use frequencies variables. Table 2 shows negative correlations between trait EI and ED and positive correlations between Alexithymia and ED; trait EI also strongly negatively correlates with Alexithymia. Weak inverse correlations emerged between the Self Control dimension of trait EI and the frequencies of substance use (namely cocaine, amphetamines, alcohol and nicotine).

Table 2. Correlation Analysis between Variables in the Total Sample (n = 394)

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1. Age	–																	
2. Well-Being	.21**	–																
3. Self-Control	.27**	.57**	–															
4. Emotionality	.06	.49**	.47**	–														
5. Sociability	.02	.49**	.44**	.44**	–													
6. TEIQue-Total	.20**	.84**	.78**	.75**	.73**	–												
7. EAT-26	-.14**	-.31**	-.29**	-.19**	-.16**	-.30**	–											
8. Dieting-scale	-.10*	-.23**	-.22**	-.13**	-.11**	-.21**	.93**	–										
9. Bulimia	-.09	-.33**	-.26**	-.18**	-.19**	-.31**	.83**	.71**	–									
10. Oral-control	-18**	-.24**	-.25**	-.18**	-.12*	-.25**	.61**	.37**	.30**	–								
11. TAS-20	-.16**	-.50**	-.58**	-.75**	-.43**	-.72**	.23**	.16**	.22**	.20**	–							
12. Heroin	.03	-.02	-.05	.01	-.04	-.03	.05	.03	-.01	.12*	.06	–						
13. Cocaine	-.18**	-.09	-.16*	-.05	.04	-.10	.06	.02	.07	.07	.10*	.38**	–					
14. Amphetamine	-.16**	-.07	-.17**	-.08	.04	-.11	.04	.02	.10	.01	.07	.22**	67**	–				
15. Hashish/marijuana	-.34**	-.07	-.10	-.03	-.02	-.08	.03	-.01	.03	.08	.12*	.15**	.45**	.37**	–			
16. Alcohol	-.43**	-.11*	-.22**	-.08	-.01	-.15**	.06	.05	.05	.05	.13*	.08	.38**	.30**	49**	–		
17. Nicotine	-.26**	-.08	-.12*	.08	.08	-.03	.14**	.13**	.12*	.10	.03	.13*	.33**	.28**	47**	.48**	–	
18. Diuretics	.00	-.07	-.05	-.02	.04	-.03	.27**	.33**	.21**	.03	.03	.00	-.01	.07	.03	-.04	.06	–

Note. ** = $p < .01$; * = $p < .05$; TEIQue = Trait Emotional Questionnaire; EAT = Eating Attitude Test; TAS = Toronto Alexithymia Scale.

A multiple linear regression (stepwise method) was performed to determine the risk factors for ED. The results of the regression model were significant, $F(3, 393) = 21.59$, $p = .000$, $R^2 = .142$. In the multiple linear regression analysis (stepwise) (see Table 3), three predictors were found to have contributed towards ED level: Gender, Well-Being and Self-Control. Age, alexithymia, emotionality, sociability and Total EI score were excluded from the model. The adjusted R-square value was 0.142, which implies that gender, well-being and self-control were dimensions implicated in eating problems in adulthood; the three variables explained 14.2% of the variance in ED among adults.

Table 1. The results of linear regression analysis (stepwise) of ED in the Total Sample (n = 394)

Dependent variable	Independent variables	β	t-value	P-value	Δ R2
	Constant		11.64	.000	.142
	Gender	-.167	-3.52	.000	
	Well-Being	-.226	-3.96	.000	
	Self-Control	-.135	-2.35	.019	

Note. β=Standardized coefficient.

4. Discussion

The main result of the present study is that trait EI – specifically its dimensions of Self-control and Well-being – was implicated in ED in a non-clinical sample of adults (18-65). Well-being – a generalized sense of well-being extending from past achievements to future expectations – and Self-control – the ability to regulate one's emotions, as well as to manage external pressures and distress – predicted eating problems, along with the gender variable, while surprisingly age and alexithymia are not significant predictors of EDs. The results suggest that trait EI can provide additional information on existing personality traits relating to emotional competences such as alexithymia.

As widely supported in the literature (e.g. Eskander et al., 2020), our results confirmed that EDs are dramatically more common in women than in men. Women are more likely to report dieting, bulimia symptoms and oral control. In accordance with the literature (Brewer et al., 2015), individuals with EDs are found to have a more displaced alexithymic trait (Peres et al., 2020).

As regards substance use, tobacco use is more common in individuals with EDs, confirming that the "legal substance" can be used as an appetite suppressant. Nicotine can be consumed as a distractor from thinking about food and weight. This is consistent with the possibility that females use tobacco in an instrumental fashion to control weight (Thomas et al., 2018). The higher use of diuretics can be linked to the pursuit of weight loss (Eskander et al., 2020), although this is infrequent in the present sample. In contrast to findings in clinical populations (Bahji et al., 2019; Von Ranson et al., 2002), except for nicotine use that is confirmed to be most used by those with eating problems (Munn-Chernoff et al., 2020), these community-based results suggest there is no relationship between EDs and other alcohol/substance use frequencies.

Furthermore, consistent with our hypothesis and Baughman's study (2013), trait EI and alexithymia have shown a strong negative correlation in our non-clinical sample of adults. Studies on the relationship between EI – as a personality trait – and EDs are still in their infancy (Barberis et al., 2018). However, our findings revealed that Well-being and Self- Control were the TEIQue subscales related to ED in adulthood. Probably, individuals who perceive more control over their emotions perceive more control over food and eating concerns. Those low in Well-being may perhaps be in more stressful situations and in more difficulty, as well as experiencing more eating problems as an attempt to self-regulate emotions. Notably, the predictive effect we found was small and the results should be handled with caution. However, they suggested that ED might also be counteracted by increasing trait EI dimensions, particularly in women.

Sociability and Emotionality were not found to be significant predictors of ED. In fact, even though the TEIQue has a multi-factorial structure, and the majority of studies focused on the total trait EI score, Andrei et al. review (2016) showed that, at the factor level, the predictive power of trait EI appears to be mostly due to its Well-Being and Self-Control factors, which tended to be the strongest incremental predictors.

The fact that gender, through the pressure of culture, was found to have a predictive role on EDs is nothing new. These results highlighted the importance of developing gender-specific interventions aimed at addressing eating behaviours in the adult population by increasing trait EI. Because of its importance to people's well-being and health, researchers and practitioners alike have wondered if anything can be done to change trait EI profiles in adulthood (see Petrides et al., 2016 for a review). It appears that trait EI is amenable to change, and that this change may lead to concomitant improvements in some of its correlates (Mikolajczak & Pena-Sarrionanda, 2015). These changes are visible after a few weeks of training and continued for at least one year of follow-up (Kotsou et al., 2011). The primary benefit of trait EI training is improved mental well-being: EI training leads to the relief of unpleasant psychological symptoms of distress, thus increasing quality of life. The ductility of trait EI suggests opportunities for increasing emotional competencies in adulthood, such as through continuing education programmes and targeted employment-job interventions (Wilson & Saklofske, 2018).

Our results suggest the importance of targeting emotion dysregulation for ED and substance use behaviours (Nehra et al., 2013): the dimension of Self-control also correlates with the frequency of use of cocaine, amphetamine, alcohol and nicotine; the findings suggest the importance of integrated interventions to simultaneously prevent EDs and promote healthy lifestyles through optimizing trait EI. Indeed, addictive risk behaviours represent maladaptive coping responses (Frisone et al., 2020). Practitioners and health educators need to recognize the potential efficacy of including trait EI within

gender specific interventions planned to address ED symptoms and addictive behaviours in general. To facilitate health programming, health educators should cooperate with specialists in EI, namely psychologists, and other mental health experts (Pettit et al., 2010).

5. Limitations and conclusions

This study had a number of limitations. First of all, the sample of convenience of this study that may greatly limit the generalizability of interpretations, is the unequal distribution of males and females enrolled. Secondly, it should be noted that participants were susceptible to self-report bias and the limitations inherent in self-report measures. Additional limitations of this study involved the tools employed. While the EAT-26 is characterized by notable validity and reliability, it mainly assesses symptoms of selected EDs, namely anorexia nervosa and bulimia. Moreover, single items created ad hoc were used to investigate the alcohol/substance use frequencies. Future studies should investigate substance addiction and EDs with more targeted survey tools and expand the research to clinical samples. However, this study can be seen as a starting point for future research enrolling clinical populations (individuals diagnosed with EDs and addictions) in order to improve our understanding of the predictive role of trait EI on health.

Conflict of Interest Statement

The authors declare that the research was conducted in the absence of any potential conflict of interest.

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