

Chapter #10

THE INTERPLAY BETWEEN TRAIT EMOTIONAL INTELLIGENCE AND FACTORS OF DISTRESS IN ENDOMETRIOSIS: PAIN AS MEDIATOR

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ABSTRACT

Introduction: Studies shown the importance of pain-related symptomatology in endometriosis, which has been linked to higher depression, anxiety, and stress. Furthermore, consistent findings revealed that pain symptoms do not always correlate with the severity of endometriosis, showing how psychological and emotional factors may influence pain perception. In this regard, Trait Emotional Intelligence (Trait EI) was found to be relevant for adjusting to chronic conditions. The current study sought to verify whether the association between Trait EI and General distress (GD; depression symptoms, anxiety symptoms, and stress) in people with endometriosis would be mediated by Pain.

Methods: 276 women with endometriosis aged between 18 and 40 years old ($M=30.28$; $SD=6.07$) filled a protocol measuring Trait EI, Pain, and GD.

Results: Present results showed that Trait EI was negatively related to Pain and GD, whereas GD was positively associated to Pain. Furthermore, Pain showed a mediation role in the relationship between Trait EI and GD.

Discussion: Individuals low in Trait EI may have difficulty requesting support from significant others while dealing with pain-related symptomatology, which may favor the onset of internalizing symptomatology. Interventions may foster Trait EI to cope with pain and should screen for internalizing symptomatology to improve their efficacy.

Keywords: endometriosis, emotional intelligence, pain, distress.

1. INTRODUCTION

Endometriosis is a long-term gynecological condition, mainly characterized by growth of endometrial-like tissue outside the uterine cavity (Johnson et al., 2016). The cause of endometriosis is unknown, however, theories on its pathogenesis contend that a combination of immunological, hormonal, genetic, and epigenetic components may contribute to the disease's development (Laganà et al., 2017; Vetvicka et al., 2016, Vitale et al., 2018). Dysmenorrhea, dyspareunia, non-menstrual pelvic pain, fatigue, and infertility are the most prevalent symptoms (Dunselman et al., 2014), frequently in conjunction with urinary or gastrointestinal issues (Schomacker, Hansen, Ramlau-Hansen, & Forman, 2018). Past research suggested that the prevalence of Endometriosis is between 1% and 5% and has an incidence between 1.4 and 3.5 per thousand person-years (Sarria-Santamera et al., 2020) and determines several psychosocial problems, such as lowered professional performance (Facchin et al., 2018; Soliman et al., 2021; Sperschneider et al., 2019) and impaired social functioning (Culley et al., 2013; Facchin et al., 2021; La Rosa et al., 2020; Mellado et al., 2016).

Previous findings highlighted the central role of pain-related symptomatology in endometriosis (Evans et al., 2020), which may be associated with impaired quality of life and higher levels of stress, anxiety, and depression (Warzecha, Szymusik, Wielgos, & Pietrzak, 2020). When compared to patients with milder symptoms or controls, individuals reporting higher degrees of pain generally experience more severe internalizing symptomatology (Friedl et al., 2015). Indeed, a systematic review and meta-analysis of scientific literature published during the last 30 years highlighted that the association between endometriosis and depressive symptomatology is influenced mostly by chronic pain (Gambadauro, Carli, & Hadlaczky, 2019). In this regard, a consistent line of studies emphasized how women with endometriosis reporting higher levels of depressive symptomatology were more likely to report depressive symptomatology compared to those not reporting pain (As-Sanie et al., 2012; Facchin et al., 2015; Lorençatto, Alberto Petta, José Navarro, Bahamondes, & Matos, 2006; Waller & Shaw, 1995). Consistently, another meta-analysis carried out by Barneveld et al. (2020) observing 154,725 endometriosis patients emphasized how anxiety occurred in 10-79% of individuals, whilst Chen et al. (2016) reported an increased risk for women suffering from Endometriosis of developing anxious symptomatology. Indeed, previous studies showed that individuals with higher levels of anxiety reported lower pain tolerance compared to those with milder anxiety (James & Hardardottir, 2002). This may be due to the fact that more severe anxiety is linked with increased attentiveness to environmental threats and perceived pain (James & Hardardottir, 2002). Similarly, Kapoor et al. observed individuals reporting acute pain and highlighted that pain intensity was positively linked with catastrophizing and state anxiety (Kapoor, White, Thorn, & Block, 2016). In addition, Hermesdorf et al. showed how anxious symptomatology may predict a higher sensitivity to pain in individuals with depression (Hermesdorf et al., 2016).

At the same time, subjective perceptions of pain vary among individuals with endometriosis and do not always correlate with the clinical severity of the illness (Chapron et al., 2012; Vercellini et al., 2006).

This discrepancy may be caused by the individual characteristics that affect how people perceive pain, such as individual dispositions, coping mechanisms, and beliefs about the pain (Facchin et al., 2015). Additionally, studies conducted to date have been unable to establish a connection between pelvic pain and the location or severity of the disease (Lorençatto et al., 2006; Vercellini et al., 1990; Nunnink et al., 2007). This may suggest that other components, such as psychological and emotional dimensions may account for individual variation in pain perception. Among psychological factors, previous studies emphasized the role of trait emotional intelligence when dealing with emotionally taxing situations in medical settings (Sarrionandia & Mikolajczak, 2020).

Trait EI is in fact a set of dispositions and self-perceptions related to one's emotional abilities (Petrides, Pita, & Kokkinaki, 2007) that past findings have pointed to as closely linked to one's adjustment to chronic illnesses. Specifically, it refers to a set of emotional self-perceptions located at the lower levels of personality hierarchies (Petrides et al. 2007) and describes people's perceptions of their emotional capabilities. It is conceptually distinct from ability EI, which theoretically refers to one's ability to understand and manage emotions and should be assessed via tests of maximal performance (Austin 2009; Ferguson & Austin 2010).

Several cross-sectional studies have in fact emphasized that the concept of Trait EI has implications in a broad range of conditions, such as renal disorders (Barberis et al., 2016; Barberis et al., 2017), pulmonary disorders (Benzo, Kirsch, Dulohery, & Abascal-Bolado, 2015) and diabetes (Schinckus, Avalosse, Van den Broucke,

& Mikolajczak, 2018; Yalcin, Karahan, Ozcelik, & Igde, 2008). Consistently, the meta-analysis conducted by Sarrionandia and Mikolajczak (2020) comprising 106 different studies and observing a broad spectrum of clinical populations suggested that trait EI is a key predictor of both subjective and objective health indicators. Given that poor understanding of one's and others' emotions hinder individuals' ability to manage daily stressors (Baudry, Grynberg, Dassonneville, Lelorain, & Christophe, 2018) lower ability to manage and cope with pain is likely to occur. Furthermore, people with low trait EI are more likely to have psychological and interpersonal problems (Petrides et al. 2016), which may foster distress symptoms (Russo et al. 2012; Andrei & Petrides, 2013). According to a large-scale multicenter study, endometriosis is a chronic condition that results in severe personal impairment and significant social costs, notably in terms of health care consumption and lost productivity, comparable to those of other serious clinical issues like diabetes (Simoens et al., 2012). Therefore, a greater understanding of the differences in perceived clinical significance in people with endometriosis may be helpful for developing more tailored interventions in healthcare settings.

In light of these considerations, the present study sought to test the hypothesis that an association between trait EI and General distress (anxiety, depression, and stress) in individuals with endometriosis would be mediated by Pain. Specifically, the goal of this research was to test a model in which lower Trait EI predicts higher levels of Pain and General Distress, whilst higher pain predicts higher General distress.

2. METHOD

2.1. Participants

The sample consisted of 276 women with endometriosis aged between 18 and 40 years old ($M=30.28$; $SD=6.07$). Regarding educational level, most of the sample (48%) had a high school diploma, whilst 6% had middle school certification, 40% had a university degree, and 6% had a post-graduation degree. Regarding marital status, 28% of the sample were married, 22% were single, 25% were cohabitating, 23% were engaged, and 1% were divorced. With regard to professional status, the overwhelming majority of the sample (46%) was an employer, 16% was a freelancer, 20% was a student, 5% was a housewife, and 13% was without any form of occupation.

2.2. Measures

2.2.1. Trait Emotional Intelligence

The Trait Emotional Intelligence Questionnaire- Short Form (Petrides, 2009) is a 30-item self-report questionnaire designed to evaluate one's level of trait emotional intelligence. The items are sampled from the 15 facets of the Trait EI sampling domain (two items for facet). It is also possible to get a score on four factors of major relevance: well-being (e.g.: "On the whole, I'm pleased with my life"), self-control (e.g.: "I usually find it difficult to regulate my emotions"), emotionality (e.g.: "I'm normally able to get into someone's shoes and experience their emotions") and sociability (e.g.: "I would describe myself as a good negotiator"), as well as a total score. Individuals are required to report their level of agreement with each statement on a 7-point Likert scale. Higher scores indicate higher trait EI. The Trait Emotional Intelligence Questionnaire-SF is a widely used instrument (Dåderman & Kajonius, 2022; Pérez-Díaz & Petrides, 2019) and past research provided evidence for its robust psychometric properties (Andrei, Siegling, Aloe, Baldaro, & Petrides, 2015; Siegling, Vesely, Petrides, & Saklofske, 2015). In the present study, internal consistency was good (Table 1).

2.2.2. Pain Perception

The Pain Intensity and Interference scale (PEG; Krebs et al., 2009) is a 3-item self-report questionnaire used to assess perceived pain intensity and to what extent it interferes with one's life. Participants are required to rate, on an 11-point scale, their level of agreement with each item (e.g.: What number best describes your pain on average in the past week?). Higher scores represent higher levels of pain intensity and interference. In the present study, internal consistency was good (Table 1).

2.2.3. General Distress

The Depression Anxiety Stress Scales-21 in its Italian validation (DASS21; Bottesi et al., 2015) evaluates aspects relating to general distress. In particular, 7 items assess anxiety (e.g.: "I felt scared without any good reason"), 7 items assess depression (e.g.: "I felt that life was meaningless") and 7 items assess stress (e.g.: "I felt that I was rather touchy"). The scales have a 4-point Likert scale response system, from 0 (= "Did not apply to me at all") to 3 (= "Applied to me very much or most of the time"). A higher score indicate higher general distress. The DASS21 is a widely used instrument in clinical research (Fox, Lillis, Gerhart, Hoerger, & Duberstein, 2017; Weiss, Aderka, Lee, Beard, & Björgvinsson, 2015) and past findings provided evidence for its robust psychometric properties (Bibi, Lin, Zhang, & Margraf, 2020; Lee, 2019). In the present study, internal consistency was good (Table 1).

2.3. Procedure

Participants were enrolled through social media groups of women's associations with endometriosis via targeted advertisements. The inclusion criteria were: age of majority, Italian nationality, and having a diagnosis of endometriosis. Participants were considered ineligible if the following were present: lack of an Endometriosis diagnosis from a health professional, presence of gynecological comorbidities, being pregnant at the moment of protocol administration, insufficient fluency in Italian, or being under of majority.

Women filled out an online survey, with consent implied by submission. All questions in the electronic survey had been set as mandatory and therefore no data was missing. Participants were guaranteed the anonymity of their data. The analyses were carried out using Statistical Package for the Social Sciences (SPSS) and the Lavaan Package (Rosseel, 2012) for R (version 4.1.1; R Development Core Team, 2013) with the integration of RStudio (R Studio Team, 2017). This study was conducted in accordance with the recommendations of the Ethical Code of the Italian Association of Psychology (AIP) and in line with the ethical guidelines of the Helsinki Declaration. The protocol was approved by the Ethics Committee of the Centre for Research and Psychological Intervention of the University of Messina.

2.4. Data Analysis

Correlations and descriptive analyses were carried out for all the observed variables. A structural equation modeling (SEM) with latent variables was conducted to test a model with Trait EI as predictor variables, Pain as mediator, and General Distress as outcome. For Trait EI and Pain latent constructs a parceling approach was used, while for General Distress latent variable the three scales that rate Anxiety, Depression, and Stress were used. Parcels are more likely to meet the assumptions of normality and less likely to be influenced by method effects (Little, Cunningham, Shahar, & Widaman, 2002; Marsh, Hau, Balla, & Grayson, 1998).

3. Results

3.1. Descriptive Results and Correlations

The Means, Standard Deviations, Skewness, and Kurtosis of scores of each variable are shown in Table 1. Furthermore, Table 1 illustrates the correlations among the observed variables. Specifically, Anxiety was positively related to Depression, whilst Stress positively related to Anxiety and Stress. Moreover, General Distress was positively related to Depression, Anxiety, and Stress. Furthermore, Pain was positively related to Depression, Anxiety, Stress, and General Distress. In addition, Trait EI was negatively related to Depression, Anxiety, Stress, and General Distress.

Table 1.
Descriptive analyses and correlations between the observed variables.
*Note: *p < .05. **p < .01.*

	α	M	SD	Skew	Kurt	1	2	3	4	5
1. Depression	.87	1.38	.86	.29	-1.10					
2. Anxiety	.85	1.15	.77	.58	-.45	.66**				
3. Stress	.90	1.74	.74	-.11	-.92	.75**	.68**			
4. General distress	.95	1.42	.71	.31	-.84	.91**	.87**	.90**		
5. Pain	.96	4.69	2.79	-.36	-1.08	.26**	.28**	.25**	.30**	
6. Trait EI	.89	4.67	.84	-.04	-.36	-.59**	-.36**	-.43**	-.52**	-.12

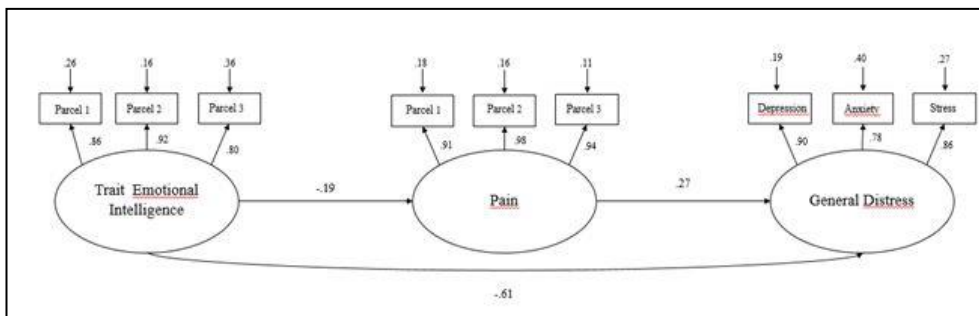
3.2. Mediation Model

The model showed adequate fit indices, $\chi^2(24) = 64.16$; $p < .01$, CFI = .98, SMSR = .04, RMSEA = .08 (90% CI = .06 – .10). Trait EI was associated with Pain ($\beta = -.14$) and General Distress ($\beta = -.61$), moreover, Pain related with General Distress ($\beta = .22$). To explore the significance of the indirect effects that emerged (i.e., drop from the total to direct effect) we used the bootstrap-generated bias-corrected confidence interval approach (Preacher & Hayes, 2004; Shrout & Bolger, 2002) A significant indirect path was found from Trait EI to General Distress by Pain ($\beta = -.03$)

Table 2. Path estimates, SEs and 95% CIs.
Note: SE = standards errors; BC 95% CI = Bias Corrected-Confidence Interval.

	β	p	SE	Lower bound (BC) 95% CI	Upper bound (BC) 95% CI
Trait EI → Pain	-.19	<.01	.17	-.88	-.23
Pain → General distress	.27	<.05	.01	.04	.09
Trait EI → General distress	-.61	<.05	.04	-.51	-.36
Trait EI → Pain → General distress	-.05	<.05	.01	-.07	-.02

Figure 1. Mediation model between the observed variables.
Coefficients shown are standardized path coefficients.



4. DISCUSSION

The purpose of this study was to test a mediation model in which the relationship between Trait EI and General distress is mediated by Pain. As expected, the results of this study showed that Trait EI is negatively correlated with both pain and symptoms of distress. As suggested by Petrides et al. (2007) low levels of aspects of trait EI, such as emotional awareness, would make individuals prone to difficulties in processing emotions, and this could in turn lead to experiencing one's emotional processes as threatening and overwhelming, thus promoting the onset of psychological distress. In a similar vein, underdeveloped Trait EI would render individuals vulnerable to greater pain intensity and interference because of an inability to comprehend and utilize affect-laden information and to cope with stressors (Baudry et al., 2018).

In line with the expectations, Pain was positively associated with General distress, because long-term exposure to aversive events like painful symptomatology associated with endometriosis may be viewed as inescapable or unavoidable, thereby leading to a sense of uncontrollability (Trindade, Mendes, & Ferreira, 2020). As a result, individuals may be predisposed to depressive-like symptomatology in the long run.

Moreover, Pain showed a mediation role in the relationship between Trait EI and General distress. In other words, a lack of awareness of one's own and others' emotions may render it difficult to understand and use emotion-related information to cope with difficult situations (Baudry et al., 2018), such as seeking support from others or engaging in healthier behaviors, thereby lowering individuals' motivation to adhere to treatments and, in turn, fostering the onset of distressing states. In fact, people with higher trait EI tend to understand, regulate, and use emotional information to cope with daily stressors and handle challenging scenarios (Petrides et al., 2016). That is why they are more likely to adapt to their environment and utilize help-seeking behavior, adaptive interpersonal communication, and coping strategies (Baudry et al., 2018). This study is in line with previous insights suggesting that Trait EI may be a relevant dimension in medical settings (Sarrionandia & Mikolajczak, 2020) but extended those findings by assessing a burdening gynecological condition like endometriosis. These findings suggest that one's level of trait EI, that is, individual's perception of their emotional world as well as regulation and acknowledgment of affective states, may have a pivotal role in influencing internalizing symptomatology and perception of somatic pain in the context of Endometriosis. One possible explanation for the relationship between trait EI and somatic symptoms is the inability in distinguishing between emotional states and physical sensations that characterizes individuals low in this personality dimension (Swami, Begum, & Petrides, 2010). At the same time, depression, stress, and anxiety are considered as difficulties in managing emotions which is a key component of trait EI (Cisler, Olatunji, Feldner, & Forsyth, 2010; Joorman & Gotlib, 2010; Joorman & Stanton, 2016).

Overall, these findings are consonant with the meta-analytic findings provided by Sarrionandia and Mikolajczak, (2020) that suggested that individuals' perceptions of their emotional capabilities are key aspects of how people cope with their illness.

These findings have several clinical implications. First of all, individuals with endometriosis may develop symptoms of distress. Clinicians should carefully screen for the presence of internalizing symptomatology to improve their clinical interventions. Second, the current findings suggest that fostering Trait EI may have a desirable effect on reducing psychological distress, intervention programs for individuals with Endometriosis should thus include a module aimed at fostering one's Trait EI to improve their clinical efficacy. Thus, fostering trait EI in individuals with Endometriosis may be crucial to helping them develop the ability to respond and cope with painful stimuli. Although trait EI is conceived as a personality trait, it is malleable and can change depending on circumstances and experience (McIlvain, Miller, Lawhead, Barbosa-Leiker, & Anderson, 2015; Nelis, Quoidbach, Mikolajczak, & Hansenne, 2009; Nelis et al., 2011; Ruttledge & Petrides, 2012). Intervention and prevention programs may also want to include women's partners to improve their effectiveness, as the disease may negatively affect women's intimate relationships (Facchin et al., 2020). Of note, this study is cross-sectional, and thus future studies with a longitudinal design are needed to disentangle the relationship between the observed variables. In addition, participants enrolled for the current study were only of Italian nationality and this may limit the generalizability of the findings. Future studies should use multi-centric or cross-cultural samples to confirm the associations observed in this study.

Finally, the current study provides a contribution regarding the psychological underpinnings of pain in Endometriosis, thus providing a broader comprehension of this burdensome condition.

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