The incremental role of trait emotional intelligence on perceived cervical screening barriers

Sebastiano Costa

Division of Psychology, Nottingham Trent University - Nottingham, UK.

Nadia Barberis, Rosalba Larcan, and Francesca Cuzzocrea

Department of Clinical and Experimental Medicine, University of Messina - Messina, Italy

Correspondence concerning this article should be addressed to Sebastiano Costa, Division of Psychology, College of Business Law & Social Sciences, School of Social Sciences, Nottingham Trent University, Chaucer Street, NG1 5LP, Nottingham, UK. Email: sebastiano.costa@ntu.ac.uk

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Abstract

Researchers have become increasingly interested in investigating the role of the psychological aspects related to the perception of cervical screening barriers. This study investigates the influence of trait EI on perceived cervical screening barriers. Furthermore, this study investigates the incremental validity of trait EI beyond the Big Five, as well as emotion regulation in the perceived barrier towards the Pap test as revealed in a sample of 206 Italian women that were undergoing cervical screening. Results have shown that trait EI is negatively related to cervical screening barriers. Furthermore, trait EI can be considered as a strong incremental predictor of a woman's perception of screening over and above the Big Five, emotion regulation, age, sexual intercourse experience and past Pap test. Detailed information on the study findings and future research directions are discussed.

Key Words: cervical screening barriers; Pap test; Self-sampling; trait EI

Introduction

The Papanicolaou test (Pap test) is a cytological test that investigates pathological alterations of cervical cells. Since its introduction, it has been effective in decreasing rates of cervical cancer (Kowalski & Brown, 1994; SEER, 2011). Despite the reported health benefits, the availability of free or low-cost Pap screening and the overwhelming success of screening initiatives, some women diagnosed with cervical cancer have never had a Pap test or were infrequently screened (Centers for Disease Control and Prevention, 2013; Sabatino et al., 2015; Smith et al., 2017).

Perceived barriers to the Pap test, in fact, have received a great deal of attention in the literature (e.g., Kim, Kim, Gallo, Nolan, & Han, 2017; Mahas, Sheu, Singh, Jordan, & Geers, 2016); more recently, barriers to self-sampling have been reported (Ma'som et al., 2016; Sultana et al., 2016). Improving the uptake of Pap screening could be facilitated by a better understanding of the factors that might influence barriers to participation (Hill & Gick, 2011). Several variables have in fact demonstrated robust associations with barriers discouraging women from regular screening: lack of time, lack of previous experience of screening, low socio-economic status, low perceived susceptibility, sexual inactivity, and inconvenience (Documet et al., 2014; Hill & Gick, 2011; Lo, Waller, Wardle, & von Wagner, 2013; Walsh, Silles, & O'Neill, 2011). However, little is known about the psychological factors that may undermine participation in Pap screening.

Hill and Gick (2011) have investigated the part individual differences may play in Pap test barriers. They demonstrated the role of personality variables: Conscientiousness was negatively related with perceived Pap test barriers, while Extraversion showed a positive relation with lower Pap test barriers. Personality traits of the Big Five taxonomy are of particular interest in this context, as they have been linked to a variety of health perceptions and behaviours (Friedman & Kern, 2014; Hampson, 2012; Letzring, Edmonds, & Hampson, 2014; Magee, Heaven, & Miller, 2013), and because identifying people most likely to experience barriers in screening can help to

focus intervention efforts (Friedman, Hemler, Rossetti, Clemow, & Ferrante, 2012). Further, Gale, Deary, Wardle, Zaninotto, and Batty (2015) have shown that higher conscientiousness, openness to experience, and extraversion were associated with a higher participation in bowel cancer screening. Neeme and co-workers (2015) found that agreeableness, extraversion, and conscientiousness had a positive association, while neuroticism a negative association, with participation in prostate cancer screening.

Emotions have also been found to be motivational factors in women's decisions about cancer screening (Anagnostopoulos et al., 2012; Consedine, Magai, & King, 2004; Hope, Moss, Redman, & Sherman, 2017). In their review, Bukowska-Durawa and Luszczynska (2014) reported that most barriers related to negative emotions evoked during the examination and in receiving test results. Further, several studies have found that not only can emotions influence screening barriers, the strategies to regulate emotions also can play a relevant role. Wang et al. (2014) showed in a longitudinal study that greater positive refocusing, acceptance, and positive reappraisal reduced depressive symptoms in women who received a diagnosis of breast cancer. Li and colleagues (2015) reported that women newly diagnosed with breast cancer used more catastrophising and acceptance, while used less frequently positive refocusing, self-blame, refocusing on planning, positive reappraisal, blaming others, and rumination, than healthy women. Soo and Sherman (2014) also showed a positive association between the emotion regulation strategy "rumination" and the level of depression, anxiety and stress in women diagnosed with breast cancer.

These research showed clear evidence that emotion-related variables are implicated in the development of barriers to the Pap screening. Hence, it is meaningful to examine the role of affective aspects of personality in the context of barriers to the test. Trait Emotional Intelligence (Trait EI) could be an effective link between aspects of women's personalities and barriers to the Pap test. Trait EI refers to "a constellation of emotional self-perceptions assessed through questionnaires and rating scales" (Petrides, Pita, & Kokkinaki, 2007), and has an important impact in clinical settings (e.g., Barberis et al., 2016; Costa, Petrides, & Tillman, 2014; Wilson &

Saklofske, 2017); numerous studies have revealed the incremental trait EI effects over various relevant variables (see Andrei, Siegling, Aloe, Baldaro, & Petrides, 2016, for a review). Moreover, Trait EI has made a relevant contribution to cancer studies. Smith, Petrides, Green and Sevdalis (2012a) have shown that high trait EI was associated with less worry, less anxiety, and higher social support. Similarly, these researchers (Smith, Petrides, Green, & Sevdalis, 2012b) found that low trait EI is predictive of increased worry levels in the early stages of the diagnostic cancer pathway. These studies suggest that it may be important to take into consideration Trait EI in preventive processes and screening.

Screening barriers mainly involve negative experiences and emotions (Bukowska-Durawa, & Luszczynska, 2014); consequently, trait EI could be a significant variable to help women deal with emotional distress related to screening. Trait EI is, in fact, a lower-order personality trait that shares common variance with the Big Five personality taxonomy (Petrides, Perez-Gonzalez, & Furnham, 2007), but provides an incremental contribution to emotionally laden criteria (e.g., screening barriers). Similarity, trait EI and emotion regulation strategies share the orientation towards emotional aspects; however, trait EI captures several processes that affect emotional responding. It also captures individual differences in emotion regulation, moderating the choice of the numerous emotion regulation strategies. Further, considering that previous studies (Friedman et al., 2012; Hill & Gick, 2011) have examined the incremental role of psychological variables beyond demographic factors in the prediction of screening barriers, trait EI should be indispensable for explaining the variance of incremental criteria not accounted for by other relevant and similar constructs on screening barriers. As such, it should help define primary targets of an intervention programme to promote screening participation.

The main purpose of the present study was to investigate the influence of trait EI on perceived screening barriers to the Pap test and Self-sampling. We hypothesised that trait EI may be inversely predictive of perceived Pap test and Self-sampling barriers. Further, this study aims to examine its incremental validity over and above the Big Five, and emotion regulation in the barrier

of the Pap test and Self-sampling prediction. Accordingly, we hypothesised that trait EI may exert a unique role in predicting the Pap test and Self-sampling barriers above and beyond the role of personality traits, emotion regulation, previous Pap test and demographic factors.

Methods

Participants

Participants were 206 Italian women who were recruited from a hospital before they underwent a regular Pap test screening. After reading a description of the study, interested individuals voluntarily completed an informed consent and a set of questionnaires in a separate room of the hospital. Their age ranged from 18 to 60 years with a mean of 37.87 (SD = 13.15). In terms of education level, most of the participants (n = 115) had a high-school diploma, 38 had a lower secondary education diploma, 45 had a university degree, six had a primary education level and two did not report this information. In terms of marital status, 73 participants were single, 104 were married, eight were living with a partner, 10 were divorced or separated, eight were widowed, and three did not report this information.

Measures

Personality. The Big Five Inventory (BFI) was used to measure personality using short phrases (John et al., 1991). The BFI consists of 44 items in a 5-point Likert scale from 1 (*Strongly Disagree*) to 5 (*Strongly Agree*) to measure five scales: Extraversion, Agreeableness, Conscientiousness, Neuroticism, and Openness to Experience. The Italian version of BFI (Fossati, Borroni, Marchione, & Maffei, 2011) has good validity, and in our study the instrument has good reliability (Table 1).

Trait Emotional Intelligence. The Trait Emotional Intelligence Questionnaire – Short Form (TEIQue–SF; Petrides, 2009) is a questionnaire to measure trait emotional intelligence (e.g., "I usually find it difficult to regulate my emotions"). The TEIQue–SF consists of 30 items with a Likert scoring system that ranges from 1 (*Completely Disagree*) to 7 (*Completely Agree*). The Italian version of TEIQue-SF has good validity (Di Fabio & Palazzeschi, 2011); in this study it has also shown good reliability (Table 1).

Emotion Regulation. The Cognitive Emotional Regulation Questionnaire (CERQ; Garnefski, Teerds, Kraaij, Legerstee, & van den Kommer, 2004) is a 36-item instrument used to measure specific cognitive-emotion regulation strategies. The CERQ consists of nine subscales (four items for each) on a 5-point Likert scale from 1 (*Almost Never*) to 5 (*Almost Always*). The reliability and validity of this scale has been documented in Italy (Presaghi & Ercolani, 2005); in this study it has shown good reliability (Table 1).

Screening barriers questionnaire. The screening barriers questionnaire (Hill & Gick, 2011) was designed to assess Pap test barriers and self-sampling barriers. Participants responded on a 7-point Likert scale ranging from 1 (*Strongly Disagree*) to 7 (*Strongly Agree*) on 11 items for Pap test barriers and 14 items for Self-sampling barriers. Both subscales have strong internal reliabilities (Table 1).

Data analysis

In order to test the incremental validity of trait EI on screening barriers to the Pap test and Self-sampling, we performed two separate hierarchical multiple regressions. In Block 1, to control for demographic variables, age, Past Pap test, and Sexual Intercourse Experience were entered. In Block 2, the five dimensions of personality and nine dimensions of emotion regulation were entered into the regression. In the third and final block of the model, the trait EI score was entered. Data

were marked by multicollinearity; both variance inflation (Pap test: from 1.10 to 2.36; Self-sampling: from 1.10 to 2.41) and tolerance (Pap test: from .43 to .91; Self-sampling: from .42 to .91) values indicated that the assumption of multicollinearity was not violated.

Results

Descriptive Statistics

Table 1 displays the means, standard deviations, and correlations for the study variables. Among participants, 97% (n = 199) had sexual intercourse (1 = yes; 2 = no) and 77% (n = 159) had obtained a previous Pap test (1 = yes; 2 = no).

Pap test Barriers

Block 1 explained 10% of the variance in the Pap test Barriers, $F_{(3,195)} = 7.49$; $p < .001$, $R^2_{adj} = .11$, with Age (β = .23) and Past Pap test (β = .30) being significant positive predictors of Pap test Barriers.

In Block 2 when the five dimensions of personality and the nine dimensions of emotion regulation were entered into the regression, there was a significant change in R^2 and the model explained an additional 16% of the variance in Pap test Barriers, $F_{(17,181)} = 3.85$; $p < .01$, $R^2_{adj} = .20$, with the age (β = .28) and Past Pap test (β = .25) maintaining a unique contribution and Conscientiousness (β = -.22) and Neuroticism (β = .17) providing additional unique contributions.

In Block-3 when trait EI was entered into the regression, there was a significant change in R^2 and the model explained an additional 2% of the variance in Pap test Barriers, $F_{(18,180)} = 4.089$; $p < .01$, $R^2_{adj} = .22$, with the age (β = .25), Past Pap test (β = .23) and Conscientiousness (β = -.17) maintaining a unique contribution and Trait EI (β = -.23) providing additional unique contributions (Table 2).

Self-sampling Barriers

Block 1 explained 8% of the variance in the Self-sampling Barriers, $F_{(3,184)} = 4.97$; $p < .001$, $R^2_{adj} = .06$, with Age (β = .22) and Past Pap test (β = .27) being significant positive predictors of Pap test Barriers.

In Block 2 when the five dimensions of personality and nine dimensions of Emotion Regulation were entered into the regression, there was a significant change in R^2 and the model explained an additional 14% of the variance in Self-sampling Barriers, $F_{(17,170)} = 2.78$; $p < .01$, $R^2_{adj} = .14$, with the age (β = .23) and Past Pap test (β = .27) maintaining a unique contribution and Conscientiousness (β = -.15), and Other-blame (β = .23) providing additional unique contributions.

In Block 3 when trait EI was entered into the regression, there was a significant change in R^2 and the model explained an additional 2% of the variance in Self-sampling Barriers, $F_{(18,169)} = 3.93$; $p < .01$, $R^2_{adj} = .15$ with the age (β = .21), Past Pap test (β = .18), and Other-blame (β = .21) maintaining a unique contribution and Trait EI (β = -.20) providing additional unique contributions (Table 2).

Discussion

The main study objectives were to examine the relationship between trait EI and cervical screening barriers controlling for psycho-demographic variables. We found that trait EI is negatively related to cervical screening barriers. We also found that trait EI can be considered as a strong incremental predictor of woman's reduction of screening barriers over and above the Big Five, emotion regulation, age, sexual intercourse experience and past Pap test. More detailed information on the study findings and future research directions are discussed below.

First, our results confirm previous research (Hill & Gick, 2011; Mahas et al., 2016), that both psychological and behavioural variables are relevant predictors of Pap test barriers.

Specifically, conscientiousness was negatively correlated with perceived Pap test screening barriers, while age and past Pap test were positively related to both the Pap test barriers model and the Self-sampling barriers model. In line with Hill and Gick (2011), conscientiousness emerged as a significant predictor of both perceived Pap test barriers and perceived Self-sampling barriers, explaining variance above and beyond that explained by the behavioural variables. A highly conscientious individual who is strong-willed and systematic in carrying out tasks would be expected to perceive fewer barriers because of the high level of determination. However, this study has shown that by adding trait EI in the model, conscientiousness was not more significant for Self-sampling barriers. This may be because conscientious individuals might wish to be more cautious and wait to have more information about Self-sampling (a more recent procedure) and because they could be afraid of not properly carrying out the Self-sampling test (feeling more confident being screened by a professional person) (Hill & Gick, 2011).

Our findings that past Pap test participation predicted lower Pap test barriers was not unexpected and confirm the previous study of Hill and Gick (2011). They suggested that women who had previous experience in Pap test screening had already faced and overcome the possible screening barriers. The relationship with age is interesting. It suggests that, controlling for the effect of past Pap test participation, older woman may also demonstrate more screening barriers than younger woman. This result was evident also in some previous studies (e.g., Consedine, Magai, & Neugut, 2004), however, given that the zero-order correlation between age and screening barriers was essentially zero, the significant positive regression coefficient for age may be the result of a suppression effect, and should be interpreted with caution.

Furthermore, results from the present study suggest that the relationship between trait EI and screening barriers remained statistically significant in the presence of other predictors. This attests to the major relevance of the construct in mental health (see Martins, Ramalho, & Morin, 2010) and its ability to explain variance beyond a multitude of other variables (Andrei et al., 2016). This result is also in line with previous studies that have shown that trait EI was associated with less state

anxiety and less worry about cancer diagnosis (Smith et al., 2012a; 2012b). Subjects with high trait EI, in fact, have a healthy degree of control over their desires and urges and are able to regulate stress and pressures (Petrides et al., 2016). In contrast, low scorers experience difficulty in the regulation of impulsive behaviour, the identification of internal states and the expression of feelings to others (Petrides et al., 2016). For this reason, subjects with low trait EI could have more barriers to screening, as they could have difficulties in managing, recognising and expressing their embarrassment, fear, worry, and anxiety about the screening. Given the strong influence of trait EI on the participants' personal world of emotions and thoughts, the positive effects of trait EI are understandable in the reduction of Pap test and Self-sampling Barriers.

Our findings highlight a potentially productive possibility for future research in the areas of prevention and individual differences. Identifying people who are most likely to fail to overcome barriers can help professionals focus intervention efforts on those who are most at risk. Although for some women it is sufficient to send a reminder of the screening, for those participants who actively avoid the Pap test and Self-sampling screening, a focus on their trait EI could be useful in overcoming such barriers.

Although these study results advance the existing literature, several limitations exist. One major limitation is that screening behaviours were not investigated; rather, perceived screening barriers were considered. Future studies should try to integrate perceived screening barriers with behavioural data. Second, time restrictions prevented us from using the full-form of the TEIQue. Although previous studies (Laborde, Guillén, & Watson, 2017; Petrides, 2009) have shown that short and full forms of the TEIQue provide near-identical estimates of trait EI, the short-form has systematically showed higher scores than those obtained with the full-form. Further, at the factor level the four trait EI factors tend to have lower internal consistency in the short-form. Future studies could include the full-form of the TEIQue, which provides more comprehensive coverage of the sampling domain of trait EI. Third, the reciprocal associations among all the variables in the

model prevent us from drawing conclusions about the direction of effects; future longitudinal studies are needed to clarify this issue.

Conclusion

Despite these limitations, results from the current study confirm the role of psychological variables in the decline of barriers to the participation in Self-sampling and Pap test screening. This study showed also that trait EI was negatively related to Pap test and Self-sampling barriers. Moreover, trait EI can be considered a strong incremental predictor of women's perception of screening over and above the Big Five, emotion regulation, age, sexual intercourse experience and past Pap test. Exploring psychological variables that can facilitate participation in screening represents an essential aspect of the prevention process; it merits further study and research.

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Table 1 – Descriptive statistics and Correlation analyses

	α	M	SD	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
1.Age	-	37.87	13.14																	
2.Extraversion	.66	3.41	.61	-.11																
3.Agreeableness	.70	3.68	.65	.28**	.08															
4.Coscientiousness	.74	3.79	.66	.11	.16*	.32**														
5.Neuroticism	.64	3.16	.63	-.12	-.19**	-.20**	-.10													
6.Openess	.75	3.68	.60	-.05	.43**	.17*	.18**	-.12												
7.Self-blame	.60	2.27	.72	.09	-.13	-.16*	-.18**	.13	-.11											
8.Accceptance	.60	3.14	.78	.04	.04	-.10	-.12	.14*	.01	.37**										
9.Rumination	.67	3.25	.85	-.09	.06	-.15*	-.06	.15*	.14	.32**	.50**									
10.Positive refocusing	.75	2.91	.92	.10	.17*	.08	.07	-.14*	.12	.05	.18**	.19**								
11.Refocus on planning	.69	3.49	.79	.07	.17*	.06	.11	-.13	.22**	.22**	.32**	.44**	.36**							
12.Positive reappraisal	.67	3.65	.81	.10	.19**	.18**	.19**	-.18**	.15*	.10	.19**	.19**	.41**	.56**						
13.Putting into perspective	.69	3.56	.88	.18*	.11	.16*	.09	-.08	.13	.09	.21**	.15*	.30**	.38**	.60**					
14.Catastrophizing	.71	2.31	.91	.09	-.10	-.10	-.05	.22**	-.08	.44**	.26**	.47**	.19**	.10	-.03	.04				
15.Other-blame	.71	2.23	.81	-.10	.07	-.28**	.02	.08	-.02	.42**	.22**	.36**	.19**	.06	.05	.03	.50**			
16.Trait EI	.84	4.94	.73	-.05	.39**	.22**	.35**	-.38**	.37**	-.25**	-.04	.09	.19**	.29**	.41**	.30**	-.28**	-.14*		
17.Pap-Test Barriers	.89	3.08	1.44	.09	-.12	-.08	-.21**	.30**	-.08	.15*	.10	.08	-.08	-.09	-.18**	-.09	.26**	.14*	-.38**	
18.Self-Sampling Barriers	.87	3.26	1.27	.09	-.06	-.03	-.12	.25**	-.10	.16*	.13	.08	-.10	-.04	-.12	-.03	.25**	.19**	-.31**	.82**

Note: * $p \leq .05$; ** $p \leq .01$

Table 2 – Regression Analyses

	Pap Test Barriers			Self-sampling Barriers		
	R^2_{adj}	β	t	R^2_{adj}	β	t
Step 1	.01			.07		
Age		.23	3.16**		.22	2.78**
Sexual intercorse experience		.09	1.22		.03	.42
Past Pap test		.30	3.90*		.27	3.36**
Step 2	.21			.14		
Age		.28	3.63**		.23	2.82**
Sexual intercorse experience		.10	1.38		.06	.75
Past Pap test		.25	3.28**		.20	2.50**
Extraversion		.02	.21		.06	.77
Agreeableness		.05	.63		.12	1.44
Coscientiousness		-.22	3.11**		-.15	1.99*
Neuroticism		.17	2.45*		.15	1.92
Openess to experience		.09	1.24		.00	.01
Self-blame		-.04	.48		-.04	.48
Accceptance		.05	.63		.09	1.11
Rumination		.00	.01		-.04	.42
Positive refocusing		-.07	.89		-.16	1.89
Refocus on planning		-.01	.06		.03	.30
Positive reappraisal		-.02	.23		-.02	.18
Putting into perspective		-.05	.61		.00	.05
Catastrophizing		.15	1.73		.14	1.44
Other-blame		.15	1.72		.23	2.57**

Step 3	.24		.16	
Age	.25	3.28**	.21	2.52**
Sexual intercorse experience	.09	1.33	.05	.71
Past Pap test	.23	3.07**	.19	2.30*
Extraversion	.05	.68	.09	1.16
Agreeableness	.05	.71	.12	1.51
Coscientiousness	-.18	2.39*	-.11	1.35
Neuroticism	.12	1.66	.10	1.22
Openess to experience	.12	1.60	.02	.28
Self-blame	-.06	.74	-.06	.69
Accceptance	.03	.39	.08	.94
Rumination	.06	.60	.02	.17
Positive refocusing	-.07	.87	-.16	1.92
Refocus on planning	-.01	.17	.02	.17
Positive reappraisal	.02	.24	.02	.20
Putting into perspective	-.02	.30	.03	.32
Catastrophizing	.11	1.27	.10	1.00
Other-blame	.12	1.49	.21	2.39*
Trait EI	-.22	2.48**	-.20	2.01*

Note: * $p \leq .05$; ** $p \leq .01$