The relevance of psychological strength for physical and psychological well-being in trauma-exposed women

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Abstract

Background: Traumatic experiences have consistently been linked to poor health and well-being, particularly in women. Psychological factors have been theorized to directly affect the reporting of physical symptoms and perceptions of general health. Posttraumatic stress disorder (PTSD) has been proposed as a major pathway through which trauma affects health and emotion dysregulation. Trauma is considered to be a key psychological variable in the pathogenesis of PTSD. Fortunately, not all women who have experienced trauma manifest adverse effects. Resilience acts as a psychological protective variable following trauma. The present study tested a hypothetical model of the contribution of resilience, emotional dysregulation, and PTSD symptoms to physical and psychological well-being in a large sample of trauma-exposed women. Method: Transversal study with 753 female participants. Structural modelling was used to test linear associations between variables. Results: After experiencing trauma, resilience was negatively and significantly associated with emotional dysregulation, which, in turn, was positively associated with PTSD symptoms. Both resilience and PTSD symptoms were associated with physical and psychological well-being. Conclusion: The results suggest that resilience and emotional dysregulation are relevant to the health and well-being of women with PTSD symptoms and may help guide the development of psychological treatment in this group. Therefore, these findings may be relevant in promoting health and well-being in such

women, and may help to identify individuals who would receive the most benefit from interventions addressing emotional regulation and psychological resilience.

Keywords

Resilience, emotional dysregulation, PTSD symptoms, women, health, well-being.

Introduction

Traumatic experiences have consistently been linked to poor health and well-being (for a review, see López-Martínez et al., 2018). Studies of clinical populations have found increases in self-reported physical symptoms and poorer ratings of global health in several populations exposed to traumatic events such as wars, accidents, interpersonal traumas, or natural disasters (e.g. Kimerling, Clum, & Wolfe, 2000; Pat-Horenczyk et al., 2015; Wolfe, Schnurr, Brown, & Furey, 1994). These studies have also found decreases in health-related quality of life after exposure to trauma. Specifically, high rates of depression, anxiety, substance abuse, suicide attempts, somatization, and health care use have been reported in trauma-exposed individuals (Taft, Watkins, Stafford, Street, & Monson, 2011; Stein et al., 2004; Suris, Lind, Kashner, Borman, & Petty, 2004). Posttraumatic stress disorder (PTSD) has been proposed as a major pathway through which trauma leads to poor health-related quality of life (e.g., López-Martínez et al., 2018; Polusny, Dickinson, Murdoch, & Thuras, 2007; Westfall & Nemeroff, 2015). This is particularly pronounced in the case of women, who are twice as likely to develop PTSD than men after exposure to traumatic events (Breslau, 2009; Irish, et al., 2011).

Some authors have highlighted emotion dysregulation not only as a key psychological variable in the pathogenesis of PTSD (Lilly & Lim, 2013), but also as a variable that mediates trauma and PTSD (Mandavia, Robinson, Bradley, Ressler, & Powers, 2016; Pat-Horenczyk et al., 2015). Difficulties in emotional regulation have also been associated with more severe PTSD symptoms (Bonn-Miller, Vujanovic, Boden, & Gross, 2011). The literature has shown that emotional regulation is a

construct associated with both the development and maintenance of this disorder (Bardeen, Kumpula and Orcutt, 2013; Seligowski, Lee, Bardeen, & Orcutt, 2015). Likewise, women more frequently report difficulties in emotional regulation (Nolen-Hoeksema & Aldao, 2011).

Emotional regulation refers to a set of interrelated psychological and physiological processes that allow individuals to modulate feelings, behaviour, and physiological responses to events that elicit emotion (Mandavia et al., 2016). Thus, emotional regulation problems can lead to difficulties in the management of negative emotional states as well as to a decreased overall functioning (Kulkarni, Pole, & Timko, 2013). It has been proposed that, during and immediately after a traumatic event, deficits in emotional regulation can lead to a more threatening assessment of the traumatic situation and to more intense negative emotional reactions, which would increase the probability of developing post-traumatic symptoms (Bovin & Marx, 2011). Thus, traumatic events in themselves are a challenge to the regulatory system (Van der Kolk & d`Andrea, 2010). According to the Clinical-Contextual Model of Emotional regulation (Grazt & Roemer, 2004), post-trauma emotional regulation could be altered in four areas: a) awareness and understanding of emotions; b) acceptance of emotions; c) the ability to control impulses and behave in accordance with goals in the presence of negative affect; and d) access to emotional regulation strategies that are perceived to be effective for feeling better. Badour and Feldner (2016) suggested that PTSD is associated with persistent distress to stimuli associated with trauma only in individuals who have difficulties in emotional regulation; thus, it influences the posttraumatic emotional reactions that take place before the memory of the traumatic event is triggered.

Despite the indisputable association between trauma and PTSD, and the relevance of emotional regulation in this area, it should be noted that not all trauma-exposed individuals will develop PTSD or have difficulty in their ability to regulate emotions after a traumatic experience (Hovens et al., 2010; Luthar, Cicchetti & Becker, 2000). In this regard, there is growing interest in identifying psychological variables that provide protection after traumatic events. According to several authors (e.g. Rush, Shvil, Szanto, Neria, & Gill, 2015), resilience is clearly the most prominent variable in this area. Resilience is defined as the ability to maintain adaptive functioning following experiences of stress or trauma (Luthar, Cichetti, & Becker, 2000). Individuals high in psychological resilience tend to exhibit dispositional optimism and positive emotions (Ong, Bergeman, Bisconti, & Wallace, 2006), use active and adaptive coping strategies (Southwick, Vythilingam, & Chareney, 2005), and express a sense of purpose in life (Alim et al., 2008). Therefore, resilience is understood as a stable trajectory of healthy functioning (Bonnano, 2012). Resilience is a strong predictor of survival after adversity in women (Lakomý & Kafková, 2017). Empirical evidence suggests a strong association between resilience and perceived quality of life in women (Lakomý & Kafková, 2017; Netuveli, Pikhart, Bobak, & Blane, 2012).

Scali et al. (2012) used multivariate logistic regression to study a sample of 238 women (122 cancer survivors and 116 with no previous history of cancer). They found a negative association between current psychiatric disorder and high resilience. The authors suggested that the independent positive association between resilience and trauma exposure may indicate a "vaccination" effect. Poole, Dobson, and Push (2017) studied with a large sample of adults (N = 4006), who completed a battery of self-report measures associated with adverse childhood experiences, anxiety symptoms, emotion dysregulation, and psychological resilience. A moderated mediation analysis showed

that emotional dysregulation mediated the association between traumatic experiences and anxiety symptoms, and that the strength of this effect varied as a function of psychological resilience. Specifically, psychological resilience moderated the indirect effect of emotion dysregulation on anxiety symptoms. Therefore, resilience acted as a direct buffer of the effects of traumatic experience on emotion dysregulation and, indirectly, on anxiety symptoms.

Thus, it is relevant to determine the psychological variables that govern individual differences in outcomes after traumatic experiences to understand mental and physical health as well as to develop interventions and prevention programs. To date, no studies have analysed the combined effect of resilience, emotional dysregulation, and PTSD symptoms on physical and psychological well-being in the general population or in trauma-exposed women.

The present study used structural equation analysis to test a hypothetical model of the contribution of resilience, emotional dysregulation, and posttraumatic stress symptoms to physical and psychological well-being in a large sample of trauma-exposed women. We hypothesized that resilience would have direct and indirect effects (through emotional dysregulation and PTSD symptoms) on health-related quality of life (i.e. physical and psychological well-being). We predicted a negative association between resilience and emotional dysregulation, and a positive association between emotional dysregulation and PTSD symptoms. We also predicted that PTSD symptoms would also be associated with health-related quality of life.

Material and Method

Participants and procedure

A total of 753 women participated in the study. The sample comprised undergraduate degree students studying Psychology, Speech Therapy, Engineering, Occupational Therapy, Criminology, and Social Work Sciences. All participants had experienced at least one traumatic event during their lifetime.

The study complied with the Declaration of Helsinki and received institutional review board approval at the University. The research protocol was developed online using an open source software survey tool (LimeSurvey 2.0, PHPSurveyor). Teachers and students were informed of the aims of the study before they agreed to participate. The survey was voluntary and students who completed it received course credits for their participation. They accessed the online protocol via a specific link that was provided by the research team to prevent misuse of the survey. Participants were informed that the purpose of the study was to investigate the association between stressful life experiences and well-being. The consent form was displayed on the first screen of the survey. All participants were required to agree to participate in the study before they continued and completed the research protocol. Inclusion criteria were: female gender, more than 18 years old, a history of trauma exposure, and good mastery of the Spanish language.

Measures

Demographic variables

Participants were asked to provide information on age, gender, marital status, type of university degree, and current year of study.

Trauma exposure

Exposure to traumatic events was assessed using the Spanish version of the Stressful Life Event Screening Questionnaire Revised (SLESQ-R; Ruiz-Párraga &

López-Martínez, 2015). This measure is a dichotomous self-report (Yes/No) to assess previous exposure to 13 specific DSM IV PTSD criterion A events; that is, the person experienced, witnessed, or was confronted with an event or events that involved actual or threatened death or serious injury, or a threat to the physical integrity of self or others. An open item provided participants with the opportunity to provide further information on other traumatic life events. If the participants reported more than one traumatic event, they were asked to nominate the most distressing life event for subsequent investigation into PTSD.

Resilience

Resilience was assessed using the Resilience Scale (RS-25; Wagnild and Young, 1993). This instrument comprises a 25-item self-report checklist which is rated on a 7-point Likert-scale (ranging from 1 = totally disagree to 7 = totally agree) to indicate the degree of personal competence (Factor I) and acceptance of self and life (Factor II). A high score indicates greater resilience. The present study used the global score. The scale showed excellent reliability for the sample of the present study (Cronbach´s alpha = .95).

Emotional Dysregulation

Emotional Dysregulation was assessed using the Spanish version (Hervás & Jódar, 2008) of the Difficulties in Emotional regulation Scale (DERS). This scale assesses different features of the emotional dysregulation process (lack of emotional control, life interference, emotional inattention, emotional confusion and emotional rejection) using 36 items on a 5-point Likert-scale (ranging from 0-10% = hardly ever, to 90-100% = almost always). The present study used the global score. A high score indicates greater difficulty in emotion regulation. The scale showed good reliability for the sample of the present study (Cronbach´s alpha = .90).

PTSD symptoms

Posttraumatic Stress Disorder symptoms were assessed using the Spanish version (Orlando & Marshall, 2002) of the Posttraumatic Stress Disorder Checklist-Civilian Version (PCL-C). This instrument comprises a 17-item self-report checklist which is rated on a 5-point Likert-scale (ranging from 1 = not at all to 5 = extremely) and indicates the degree to which each particular symptom had been experienced by the participant over the past month in relation to 3 factors (re-experiencing, avoidance and hyperarousal). The present study used the global score. The scale showed excellent reliability for the sample of the present study (Cronbach´s alpha = .94).

Physical and Psychological Well-being

Physical and psychological well-being were assessed using two instruments. Quality of life was assessed using the Spanish Version of the 12-Item Short Form Health Survey (SF-12; Vera-Villarroel, Silva, Celis-Atena, & Pávez, 2014). This multipurpose questionnaire includes 12 categorical questions (e.g. excellent, very good, good, fair, and poor or yes-no). The SF-12 includes concepts that are common in the health setting: physical functioning, general health, social functioning, and emotional functioning. A high score indicates better physical functioning. The SF-12 showed suitable reliability for the sample used in the present study (Cronbach´s alpha = .84). Psychological well-being was assessed using the Spanish version (Rocha, Pérez, Rodríguez-Sanz, Borrell, & Obiols, 2011) of the 12-Item General Health Questionnaire (GHQ-12; Goldberg & Williams, 1988). This questionnaire comprises 12 items that measures minor psychiatric disorders using a unifactorial scale. The GHQ-12 is the most extensively used screening instrument for common mental disorders or psychiatric well-being. Items are rated on a 4-point Likert-type scale (from 0 = not at all to 3 = more than usual). A high score indicates greater psychological well-being or the

absence of mental disorder. The questionnaire showed suitable reliability for the sample of the present study (Cronbach´s alpha = .83).

Analysis

Statistical analyses were conducted using the SPSS (Windows version 22.0, SPSS Inc., Chicago, IL) and AMOS Graphics (version 22.0; Small Waters Corp., Chicago, IL) software packages.

In an initial step, data were examined for incomplete responses, the within-groups Mahalanobis distance, and the assumptions of normality and homoscedasticity. Means, standard deviations, and Pearson´s correlations were then calculated for each continuous variable measured in the study. The hypothetical model was tested via SEM. All analyses used maximum likelihood estimation and the robust estimation methods. In line with the recommendations of Byrne (2010) and Ullman (2001), model fit and convergence between findings were analysed using several goodness-of-fit indexes: the Satorra-Bentler chi-square, the root mean square error approximation (RMSEA), the goodness-of-fit index (GFI), the adjusted goodness of fit index (AGFI), and the comparative fit index (CFI). The Satorra-Bentler chi-square is a fit index that corrects the statistic under distributional violations (Bentler, 1990). RMSEA values less than 0.08 indicate an adequate fit. Regarding the GFI and AGFI, the closer the values are to 1 the better the fit; higher values indicate well-fitting models. The CFI measures the proportional improvement in fit by comparing a hypothesized model with a more restricted baseline model. The CFI index ranges from 0 (absolute lack of fit) to 1 (perfect fit). It is generally accepted that in these goodness-of-fit indexes values equal to or more than 0.90 indicate well-fitting models.

Twelve observable variables or indicators of the latent variables were used. Four latent variables (resilience, emotional dysregulation, PTSD symptoms, and physical and

psychological well-being) were associated in the hypothesized structural equation model. To reduce the number of variables in the analysis, perceived health (as measured using the SF-12) and psychological well-being (as measured using the GHQ-12) were constructed as a single variable named physical and psychological well-being. So, resilience was specified by two subscales of the Resilience Scale, namely personal competence and acceptance of self and life. Emotional dysregulation was specified by five subscales of the Difficulties in Emotional Regulation Scale, namely lack of emotional control, life interference, emotional inattention, emotional confusion and emotional rejection. PTSD symptoms were specified by three subscales of the Posttraumatic Stress Disorder Checklist-Civilian Version, namely re-experiencing, avoidance and hyperarousal. One loading for each latent variable was fixed at 1.0 for setting the metric of the latent construct.

Results

Preliminary analyses

Based on the results of the preliminary analysis, the following participants were excluded from data analyses: a) 98 women who had never been exposed to traumatic situations; b) 119 woman who reported having been exposed to one event but who did not specify the type of trauma; and c) 3 participants who were multivariate outliers (Mahalanobis distance $p < .001$; Tabachnick & Fidell, 2007). The assumptions of normality and homoscedasticity were confirmed. Correlations between variables did not indicate any associations greater than .90, a Durbin Watson statistic greater than 4, or other problems associated with multicollinearity or homoscedasticity.

The final sample comprised 533 female university students. The mean age was 21.9 years (*SD* = 4.5). Regarding marital status, 93% of the women were unmarried, 6.6% were married or partnered, and 0.5% were separated or divorced.

The most common traumatic events were: a very close person experiencing a life-threatening event (63.8 %), death of a very close person due to accident, homicide, or suicide (42.6%), witness to violence (25.1%), physical abuse (23.8%), and sexual abuse (17.3%). The average number of traumatic situations experienced by the participants was 3.4 (SD = 2.2) (see Table 1 for additional information).

- Please insert Table 1 here -

Bivariate analyses

We calculated bivariate correlations between resilience, emotional dysregulation, PTSD symptoms, and physical and psychological wellbeing. Table 2 shows the descriptive statistics (means and standard deviations) and correlations of the measures used in the structural equation analysis.

-Please insert Table 2 here-

All the correlations between the variables (see Table 2) were significant ($p < 0.001$) and were in the expected direction.

Structural Equation Model

The overall pattern of results broadly supported the hypothetical model. Moreover, the assessment of the model indicated a good fit to the data. The relative chi-square for the model was suitable [χ^2 (df = 2, N = 533) = 5.191, p =.158], the RMSEA was .04, and the CFI, GFI, and AGFI values were all equal to .99. Figure 1 shows the final model with standardized coefficients and R^2 values.

- Please insert Figure 1 here -

According to the results, resilience yielded 2 statistically significant path coefficients. The first was to physical and psychological well-being: higher levels of resilience were associated with higher levels of physical and psychological well-being. The second was to emotional dysregulation (explaining 29% of the variance of this variable): women who reported higher levels of resilience also reported lower levels of emotional dysregulation. Emotional dysregulation yielded a statistically significant path coefficient to PTSD symptoms (explaining 28% of the variance of this variable). The results suggest an association between higher emotional dysregulation and higher levels of PTSD symptoms. PTSD symptoms yielded a statistically significant path coefficient to physical and psychological well-being. The results suggest an association between higher levels of PTSD symptoms and lower levels of physical and psychological well-being. Therefore, the variance of physical and psychological well-being (38% of the explained variance) was dependent on the combined effects of PTSD symptoms — which were negatively associated with physical and psychological well-being — and resilience, which was positively associated with aforementioned variable.

Discussion

This study tested a hypothetical model of the contribution of resilience, emotional dysregulation, and PTSD symptoms to physical and psychological well-being in a large sample of trauma-exposed women. As far as we know, this is the first study to test the association between all these variables.

We predicted that, after a traumatic experience, there would be a direct and indirect association (through emotional dysregulation and PTSD symptoms) between resilience and physical and psychological well-being, and a negative association between resilience and emotional dysregulation. We also predicted that there would be a

positive association between emotional dysregulation and posttraumatic stress symptoms, and a negative association between PTSD symptoms and physical and psychological well-being. The findings provide empirical support for these hypotheses.

The results of the present study are partially in line with those obtained in previous studies (e.g. Scali et al., 2012; Poole, Dobson, & Push, 2017), and show that resilience is a relevant psychological strength for physical and psychological well-being in trauma-exposed women. Specifically, the present study suggests that resilience has a direct effect on physical and psychological well-being. This finding offers empirical support to the concept of resilience, also in trauma-exposed women, as a stable trajectory of healthy functioning (Bonanno, 2012). Moreover, resilience yielded a second path coefficient to emotional dysregulation, explaining 29% of the total variance of this variable: women who reported higher levels of resilience also reported lower levels of emotional dysregulation. This finding is similar to the results a study conducted by Poole, Dobson, and Push (2017) using a sample of adults (women and men) with adverse childhood experiences. Our findings reinforce the opinion offered by authors such as Burton, Cooper, Feeny, and Zoellner (2015), who suggested that resilience is more than just the absence of PTSD symptoms or the experience of post-traumatic growth; rather, it reflects an ability to bounce back from the impact of traumatic experience and return to functioning.

Emotional dysregulation yielded a positive path to PTSD symptoms, explaining 28% of the total variance of this variable. Thus, an association was found between higher levels of emotional dysregulation and higher levels of PTSD symptoms. This result is in line with the recent postulates of several authors who have highlighted emotional dysregulation as a mediating variable between trauma and PTSD (Mandavia et al., 2016; Pat-Horenczyk et al., 2015). We also found a negative association between

PTSD symptoms and physical and psychological well-being. This result is in line with numerous studies that have found an association between PTSD and poor physical and mental health (e.g. López-Martínez et al., 2018; Polusny, Dickinson, Murdoch, & Thuras, 2007; Westfall & Nemeroff, 2015).

The present results should be considered in the light of several methodological limitations. Firstly, this study used a cross-sectional design and thus the correlational nature of the data cannot rule out alternative hypotheses regarding these variables. Nevertheless, future studies using prospective longitudinal designs would provide further insight into the causal nature of the associations found in the present study to determine the extent to which these factors may be modified by clinical interventions. Secondly, the study is limited by its exclusive reliance on self-report measures, which may be susceptible to reporting bias. The use of more rigorous methodologies (e.g., structured interviews to assess posttraumatic stress symptoms, laboratory-based observational measures to measure emotion dysregulation) has the potential to improve and extend the present results. Thirdly, PTSD symptoms were assessed using a measure based on DSM-IV criteria for PTSD. However, only the global score of the questionnaire was used: thus, the basic results concerning PTSD symptoms were not affected. Fourthly, the sample exclusively comprised undergraduate students, and may therefore not represent the general population. Finally, the analyses did not control for other comorbid physical or mental health conditions. Thus, future studies should assess comorbid health conditions in the context of those explored in the present study.

Implications for Practice and/or Policy

This study identified resilience and emotional dysregulation as key psychological variables for understanding variance in health-related quality of life in

trauma-exposed women. The results may help guide the development of interventions and prevention programs that could enhance resilience and emotional regulation in the context of trauma. Based on the results, we suggest that an effective therapeutic intervention could combine some aspects of Tailored Cognitive Behavioral Resilience Training (TCBRT; Zalta et al., 2016) and Greenberg's Emotion-Focused Therapy (2004). The TCBRT is a brief flexible intervention that includes five weekly sessions during which individuals can select the areas in which they want to build resilience. It also identifies existing strengths with the goal of leveraging these strengths to help build new skills based on cognitive-behavioral change principles. Greenberg's Emotion-Focused Therapy (2004) has three main goals: 1) to increase women's ability to identify and name their emotions; 2) to enhance emotional regulation (i.e. enhancing the ability to control the intensity and duration of negative emotions as well as increase the experience of positive emotions); and 3) to transform emotions into more positive feelings. Therefore, a combined intervention, such as the one proposed, could prevent or minimize PTSD symptoms and promote physical and psychological well-being in trauma-exposed women traumatic experiences.

Conclusions

This is the first study to test a hypothetical model of the contribution of resilience, emotional dysregulation, and PTSD symptoms to physical and psychological well-being in a large sample of trauma-exposed women. The results of this study suggest that resilience plays a relevant role in psychological strength. In addition, this study offers such women a key to improved well-being because both emotion dysregulation and psychological resilience can be altered through therapeutic

intervention (e.g., Berking et al., 2008; Zalta et al., 2016). Therefore, these findings are relevant to promoting health and well-being in women with PTSD symptoms.

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Data Available Statement

The data that support the findings of this study are available from the corresponding author (gtruizparraga@uma.es) upon reasonable request.

Table 1

Demographic and clinical characteristics of the participants

	Women (n = 533)	
	Mean/n	SD/%
Age	21.9	4.5
Marital status		
Never married	501	93.9
Married or partnered	29	5.5
Divorced or separated	3	0.6
Traumatic Events		
Life-threatening illness	67	12.6
Life-threatening accident	116	21.8
Being threatened with a weapon	40	7.5
Robbery with physical force	31	5.8
Life-threat to a very close person	340	63.8
Death of a very close person	227	42.6
Physical abuse	127	23.8
Sexual abuse	92	17.3
Witness to violence	134	25.1
War or terrorist attacks or similar	2	0.4
Earthquake or flood or similar	7	1.3
Miscarriage or abortion	21	4.0
Other	76	14.3
Number of traumatic experiences	3.4	2.2

Table 2

Descriptive statistics (means and standard deviation) and bivariate correlations of the measures used in

Measure	Mean (SD)	1	2	3	4	5
1. Resilience	116.9 (16.9)	1				
2. Emotional dysregulation	33.7 (8.8)	-.19*	1			
3. Posttraumatic stress symptoms	29.4 (13.1)	-.30*	.44*	1		
4. Perceived health	13.66 (1.8)	.24*	-.22*	-.32*	1	
5. Psychological wellbeing	15.2 (3.3)	.56*	-.36*	-.50*	.44*	1

Structural Equation Modelling (N = 533)

*Significance level $P < 0.01$

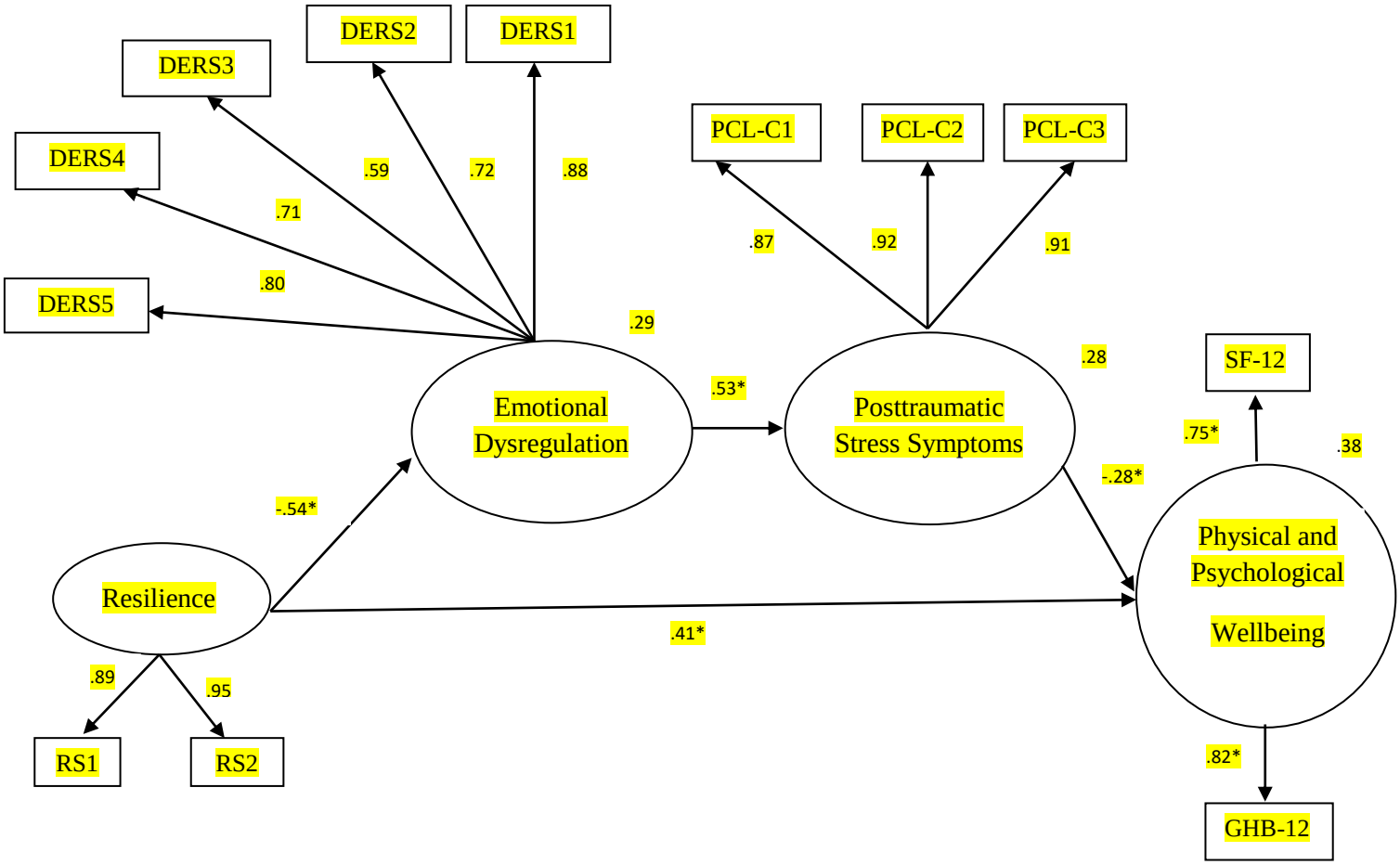

Figure 1. Empirical model. Observed variables (Factors/Scales) are represented by squares and latent variables by circles. Abbreviations: RS1= Personal Competence; RS2= Acceptance of Self and Life Personal; DERS1= Lack of Emotional Control; DERS2= Life Interference; DERS3= Emotional Inattention; DERS4= Emotional Confusion; DERS5= Emotional Rejection; PCL-C1= Re-experiencing; PCL-C2= Avoidance; PCL-C3= Hiperarousal; SF-12 = 12-Item Short Form Health Survey; GHB-12 = 12-Item General Health Questionnaire.

* $p \leq .01$.