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Relations Between Resilience, Positive and Negative Emotionality, and Symptoms of Anxiety and Depression

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Abstract

Although research concerning the effects of traumatic and stressful life events on an individual's mental health has been plentiful in the past several decades, research aimed at understanding the nature of resilience and its role in this process has been less plentiful. The present study examined the relationship between a commonly used measure of resilience, the Connor-Davidson Resilience Scale (CD-RISC), facets of personality, and symptoms of psychopathology—specifically, posttraumatic symptomatology—in a sample of college students. We found that the CD-RISC was most strongly linked with the personality facet of positive emotionality rather than the expected facet of negative emotionality. With regard to psychopathology, the CD-RISC displayed the largest relationship to a measure of anhedonic depression rather than a measure of posttraumatic stress. Lastly, the CD-RISC added little in predicting symptoms of posttraumatic stress above and beyond negative emotionality, a personality facet that has previously shown robust relationships with posttraumatic stress. These results suggest that the CD-RISC is most strongly predictive of positive emotionality and thus may be most useful in predicting resilience for disorders characterized by disruptions in positive affect.

Keywords

resilience; personality; trauma; PTSD; well-being

The term resilience connotes strength, flexibility, a capacity for mastery, and resumption of normal functioning after excessive stress that challenges coping skills (Lazarus & Folkman, 1984; Richardson, 2002). In relation to trauma, resilience has typically been defined as the ability to overcome especially stressful and traumatic events while maintaining psychological well-being in terms of absence of psychopathology (Bonanno, 2004; Harel,

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Kahana, & Kahana, 1993; Yehuda, 1998). Currently, the field of resilience has entered a phase in which researchers are attempting to reliably measure resilience as a construct (e.g., Connor & Davidson, 2003; Wagnild & Young, 1993), although, as will be discussed later, there is still much to learn about what exactly is being assessed by these resilience measures.

Early work in the area of resilience was done by researchers such as Rutter (1985) and Werner and Smith (1982), who conducted longitudinal studies on at-risk populations thought to be particularly vulnerable to the development of psychopathology. Through these studies, the researchers found that many individuals adapted well despite adverse conditions experienced, and that they seemed to share certain characteristics. Rutter (1979) found that these resilient children shared the qualities of self-mastery, self-efficacy, easy temperament, and a positive relationship with an adult. Similarly, Werner and Smith (1982) further identified the traits of social responsibility, adaptability, orientation toward achievement, and self-esteem. This early research in the area of resilience provided the foundation for the identification of resilient qualities that enabled individuals to remain psychologically healthy in the face of a variety of stressors, and the subsequent attempts to accurately and reliably measure resilience as a construct.

A number of scales to measure the construct of resilience have been developed (Bartone, Ursano, Wright, & Ingraham, 1989; Hull, Van Treuren, & Virnelli, 1987; Kobasa, 1979; Wagnild & Young, 1993), but these measures have not been widely used or gained broad acceptance in subsequent studies measuring resilience. This may be due to the heterogeneity of characteristics that researchers believe constitute the construct of resilience, or because some of the scales are specific to only a certain characteristic of resilience. Due to this lack of a widely used scale to measure the construct of resiliency, Connor and Davidson (2003) created the Connor-Davidson Resiliency Scale (CD-RISC) in an attempt to comprehensively measure resiliency by including dimensions of the construct previously reported to be associated with resilient outcomes in the face of trauma and stress (Kobasa, 1979; Lyons, 1991; Rutter, 1985). The CD-RISC was validated using both general population and clinical samples, including posttraumatic stress disorder (PTSD) patients (Connor & Davidson, 2003). In that validation study, the CD-RISC was positively correlated with high levels of hardiness and low levels of perceived stress and vulnerability. In the same study, the PTSD patients also showed a significant increase in CD-RISC scores from pre- to posttreatment as their symptoms ameliorated. In another community sample, high scores on the CD-RISC were linked to fewer PTSD symptoms and more positive outcomes in the form of participants' current physical and mental health status (Connor, Davidson, & Lee, 2003).

Taking into account the fact that the CD-RISC has since been used in many subsequent studies, it is important to further explore the construct validity of this resilience scale. Considering the use of PTSD patient samples within the validation study, it would be advantageous to identify whether or not the CD-RISC overlaps with personality dimensions that have been previously established to be robust predictors of psychopathology, and of posttraumatic stress in particular. Specifically, is the CD-RISC largely tapping broad personality traits or other factors above and beyond these broad traits?

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Personality and PTSD: Identifying Characteristics of Resilience

Since the inclusion of PTSD into the framework of modern mental health (American Psychiatric Association, 1980), many studies have examined personality traits associated with individuals who develop PTSD. In one such study, Quirk, Christiansen, Wagner, and McNulty (2003) examined the ability to predict subsequent psychopathology using the five-factor model (Costa & McRae, 1992). They found that PTSD patients tended to have high levels of neuroticism and low levels of agreeableness, openness, extraversion, and conscientiousness. Several other studies have also used the five-factor model to examine populations ranging from Vietnam veterans (Hyer et al., 1994; Talbert, Braswell, Albrecht, & Hyer, 1993) to motor vehicle accident survivors (Nightingale & Williams, 2000) and college students (Lauterbach & Vrana, 2001). All of these studies found a positive relationship between PTSD and the personality facet of neuroticism. A negative relationship between PTSD and measures of extraversion and conscientiousness was also seen in the Nightingale and Williams study; however, these personality facets show a less robust relationship with PTSD across studies. The relationship between PTSD and stable personality characteristics suggests that the development of PTSD is influenced in part by individual differences and not merely the traumatic event itself.

Miller, Grief, and Smith (2003) also examined trauma and personality correlates in a sample of combat veterans using a three-factor model of personality assessed with the Multidimensional Personality Questionnaire (MPQ; Tellegen, 1982). In this study, veterans with a diagnosis of PTSD scored significantly higher on the negative emotionality (NEM) dimensions of the scale and significantly lower on the positive emotionality (PEM) and constraint (CON) dimensions of the MPQ than veterans with no PTSD diagnosis. Reviewing both pre- and posttrauma studies on personality and trauma exposure, Miller (2003) concluded that high NEM has consistently been shown to be the most robust personality variable predictive of the development of PTSD as well as expression of the disorder when both variables are measured concurrently.

Several other factors have also been examined in relation to personality and adaptation to stressful or traumatic events. One such factor is that of hardiness (Kobasa, 1979; Kobasa, Maddi, & Khan, 1982), which has been conceptualized as a form or synonym of resilience itself. High levels of hardiness have been shown to be associated with lower levels of PTSD in a veteran sample (King, King, Fairbank, Keane, & Adams, 1998) and have also been shown to be negatively associated with neuroticism and negative affect (Eschleman, Bowling, & Alarcon, 2010). Additionally, other factors, such as trait self-enhancement, have been shown to be related to concepts of resilience and adaptation, and are related to positive emotionality (Gupta & Bonanno, 2010) as well as lower depression, less anxiety, and low neuroticism (Taylor & Brown, 1988; Taylor, Lerner, Sherman, Sage, & McDowell, 2003).

These stable personality traits and other factors may represent important aspects of resiliency and help form a more complete picture of the overall composition of the resilient individual. In turn, these personality and psychological well-being factors may help elucidate factors which confer resilience in the face of trauma. Specifically, we would expect that resilience would show significant relationships with NEM, considering that it has been

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shown to be perhaps the most robust predictor of the development and maintenance of various forms of psychopathology as discussed earlier.

Personality Variables and the CD-RISC

Considering the wider use of the CD-RISC to measure resilience—in particular, as it applies to stressful and traumatic life events—it is important to understand the relationship that this scale has with broad factors of personality that have been identified as robust predictors of posttraumatic stress and PTSD. Recently, using a small sample of undergraduates Campbell-Sills, Cohan, and Stein (2006) examined associations between personality characteristics and the CD-RISC. With regard to the personality variables, the researchers found that the trait of neuroticism showed the strongest relationship with the CD-RISC, with extra-version displaying a slightly smaller relationship. Resilience ratings also moderated the relationship between current experience of psychiatric symptoms and retrospective reports trauma. More specifically, those with significant endorsement of childhood trauma experienced high levels of current psychiatric symptoms, but only if the individuals also endorsed low scores on the resilience measure.

Although this study offered an initial exploration into the construct validity of the CD-RISC as it relates to personality factors, further research is needed to determine just what is being measured when conceptualizing resilience with the CD-RISC.

Aims

The current study sought to further explore the construct of resilience as measured by the CD-RISC and its relationship to facets of personality that have shown significant relationships with psychopathology. In addition, we also examined the role that the CD-RISC plays in the expression of self-reported symptoms of posttraumatic stress. More specifically, we tested the following hypotheses and exploratory aims: (a) similar to earlier research, we believe that a significant amount of variance in the CD-RISC would be accounted for by the personality dimension of NEM; (b) replicating previous work, the CD-RISC will be significantly inversely related to symptoms of posttraumatic stress; (c) in an exploratory vein, we will also examine whether the CD-RISC will be related to other forms of affect-related psychopathology, and (d) if the CD-RISC will add a significant level of incremental validity to the prediction of posttraumatic symptomatology over and above personality variables.

Method

Participants and Design

The participants in this study were selected from among 916 young adults, aged 18 to 26 years, recruited through the Michigan State University Human Participant in Research (HPR) subject pool. Individuals were selected for inclusion in the study if they reported experiencing a traumatic or negative stressful life event in the past year. Individuals were excluded from analysis if they were missing more than 5% of data from any of the study measures. Fifty-one participants were excluded due to missing data due to a technical issue.

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The remaining 510 excluded participants did not endorse having experienced a traumatic event either consistent with the A1 criterion of PTSD or occurring within the past year, yielding a final study sample comprised of 355 participants (175 men, 180 women). The sample ethnicity was predominantly Caucasian (87.3%).

After consenting to participate in the experiment, participants completed a series of questionnaires anonymously through the HPR website. The battery of questionnaires included measures of trauma and stress exposure, posttraumatic stress symptoms, personality, resilience, and symptoms of anxiety and depression.

Measures

Traumatic Event Scale—To assess the occurrence of events that would be considered traumatic by the *Diagnostic and Statistical Manual of Mental Disorders* (4th ed., text rev.; *DSM–IV–TR*; American Psychiatric Association, 2000) standards, the Traumatic Events Screening Inventory (TESI; Ribbe, 1996) was used. This questionnaire inquires about a variety of traumatic stressors that may be encountered throughout an individual's life (e.g., death of a loved one, witnessing an assault, life-threatening illness, sexual assault) and when such events occurred. See Table 1 for a summary of these results.

Psychopathology measures—The PTSD-Checklist Civilian version (PCL-C; Weathers, Litz, Herman, Huska, & Keane, 1993) is a 17-item inventory that assesses the symptoms of PTSD. Subscales for each type of symptom (Reexperiencing, Avoidance, and Hyperarousal) are calculated along with an overall score for PTSD symptomatology (Cronbach's alpha = .93 for total score). Participants are asked to rate how much they have been bothered by particular symptoms in the past week. Participants in the study were instructed to answer the PCLC with the life event they considered most traumatic in mind. For both types of events, analyses were confined to individuals who had experienced either type of event within the past year.

To assess anxiety and depression, the Mood and Anxiety Symptom Questionnaire (MASQ; Watson et al., 1995) was used. The MASQ is a 62-item questionnaire that includes subscales for symptoms specific to anxiety and specific to depression, and two subscales that measure general negative affect, which is common to both areas. In its validation study, the MASQ displayed good reliability (all subscale αs > .77) and validity (Watson et al., 1995).

Personality measure—To evaluate personality, the Multidimensional Personality Questionnaire (MPQ; Tellegen, 1982) was administered. The MPQ is a 300-item personality measure that measures 12 separate personality facets. The MPQ subscales can also be used to form composite scores representing three overarching personality facets: Negative Emotionality, Positive Emotionality, and Constraint. Coefficient alphas for the MPQ subscales range from 0.81 to 0.91 (Patrick, Curtin, & Tellegen, 2002).

Resilience measure—The Connor-Davidson Resiliency Scale (CD-RISC; Connor & Davidson, 2003) was used to measure resilience. It is comprised of 25 statements that measure characteristics of resiliency. Each statement is rated on the extent that each

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statement applies to the individual over the past month. Reliability for this scale in a general population sample was .89 (Connor & Davidson, 2003).

Results

Relations Between Personality and PTSD Symptoms

Replicating previous findings, we correlated the higher order factors of the MPQ with the symptoms of posttraumatic stress as measured by the PCLC. Consistent with previous findings, the PCLC total score showed the largest relationships with NEM (r= .57, p < .001; see Table 2). There was no significant relationship between PEM and scores on the PCLC.

Relations Between the CD-RISC and Personality Variables

To assess the simple relationship between the CD-RISC and personality as measured by the MPQ, bivariate correlations were calculated. These results are presented in Table 2. Of particular interest are the results showing that the greatest relationship exists between the CD-RISC and the personality variable of PEM (r= .57, p < .001, respectively).

To further test this relationship, a simultaneous multiple regression was calculated with the CD-RISC composite score as the dependent variable and the MPQ higher order traits (NEM, PEM, CON) entered as predictor variables. The R for the regression was significant, F(3, 352) = 81.92, p < .001. Once again PEM had the strongest relationship with the CD-RISC (β =.585, p < .001), with NEM (β = −.281, p < .001) and CON (β =.124, p < .05) displaying significant, weaker relationships with the CD-RISC. These results are presented in Table 3.

To examine the relationship between personality dimensions and the CD-RISC at a more detailed level, we conducted the same simultaneous regression using the MPQ subscales instead of the higher order factors. The R for the regression was significant, F(11, 344) = 25.56, p < .001. In this regression, the personality variables that were significant predictors for the CD-RISC were the PEM facets of Well-Being (β =.187, p < .001), Social Potency (β = .143, p < .05), and Achievement (β = .322, p < .001), and the NEM facet of Stress Reaction (β = −.253, p < .001). These results are presented in Table 4.

The CD-RISC and Its Relationship to Psychopathology

Following our analyses exploring the relationship of the CD-RISC to personality and confirming prior observations of the association between personality and PTSD symptoms, we conducted a set of analyses examining relationships between the CD-RISC symptoms of PTSD (see Table 5). Significant negative correlations were found between the CD-RISC and the PCLC, as well as anxiety and depression as measured by the MASQ. The strongest relationship was between the CD-RISC and anhedonic depression (r= −.54, p < .001). The relationship between the CD-RISC and other measures of psychopathology were significant, but not nearly as strong as those for anhedonic depression.

To determine whether the somewhat modest correlations between the CD-RISC and symptoms of posttraumatic stress were due to the inclusion of individuals with low levels of current PTSD symptoms, we calculated the correlations between the CD-RISC and psychopathology using individuals endorsing a high level of posttraumatic symptomatology

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(PCLC total score 45 or greater, N= 58). This cutoff has been used in previous studies examining PTSD in civilian populations (Blanchard, Jones-Alexander, Buckley, & Forneris, 1996). These results are also presented in Table 6. Similar to the results for the overall sample, the CD-RISC displayed a significant relationships with a measure of anhedonic depression (r= −.32, p < .05, respectively). The CD-RISC did not show a significant relationship to PCLC scores in this sample.

Predicting Posttraumatic Stress With the CD-RISC and Personality

Next, we examined the incremental predictive value of the CD-RISC over and above personality facets with regard to post-traumatic stress. To do this, we used a simultaneous regression with PCLC total score as the dependent variable, and the CD-RISC and MPQ higher order scores as predictor variables. These results are displayed in Table 6. The R for the regression was significant, $F(4, 351) = 43.64$, $p < .001$. As expected, NEM displayed the largest relationship with symptoms of posttraumatic stress ($\beta = .560$, $p < .001$); the CD-RISC did not reach significance ($\beta = -.040$, p= .79). PEM approached significance ($\beta = -.097$, p= .078) in the analysis.

Discussion

The purpose of this study was to explicitly examine how the CD-RISC, a widely used resilience measure, is related to personality characteristics, and how both CD-RISC-assessed resilience and personality are linked with symptoms of posttraumatic stress. Although a previous study found the strongest relationships between the CD-RISC and the personality facet of neuroticism (Campbell-Sills et al., 2006), in the current study, PEM accounted for the greatest degree of variance in CD-RISC resilience. Previous research has shown that NEM or neuroticism is the most robust personality predictor of the development and maintenance of PTSD (see Miller, 2003, for a review). These data are important because the CD-RISC was validated in part using a clinical PTSD sample (Connor & Davidson, 2003) and has been found to be associated with resilience in other trauma-exposed populations (e.g., Campbell-Sills et al., 2006; Connor, Davidson, Weisler, Zhang, & Abraham, 2006). Considering the robust link between the personality characteristic of NEM and PTSD, coupled with the aforementioned research that has shown the CD-RISC to be sensitive to changes in levels of posttraumatic symptomatology, we would expect that the CD-RISC would also show a robust inverse relationship with NEM.

These results showing that the variance in the CD-RISC can be largely accounted for by positive emotionality contrast somewhat with the findings of Campbell-Sills and colleagues (2006). This could possibly be due to a relationship of the CD-RISC with a subfactor of neuroticism within the NEO, as we did find a significant relationship between resilience and stress reaction. However, our results are more consistent with that of Benetti and Kambouropolous (2006), who found significant relationships between the CD-RISC and positive affect, but not negative affect, in a study of resilience and self-esteem in sample of young adults.

Given that our results indicate that the CD-RISC may be strongly related to PEM or positive affect, we sought to further examine its relationship to multiple types of affective

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psychopathology that are thought to be affected by positive and negative emotionality—specifically, symptomatology of anxiety and depression. Here we found that the CD-RISC is less related to symptoms of psychopathology that are strongly related to negative emotionality and affect (e.g., general anxiety and posttraumatic stress) but shows a stronger relationship with anhedonic depression. This finding was somewhat unexpected, given our original hypothesis that the CD-RISC and NEM would show a strong relationship, and that symptoms of PTSD are more strongly related to NEM. However, the stronger relationship between positive-affect-related psychopathology and the CD-RISC is consistent with our finding that the CD-RISC is more strongly associated with PEM than NEM.

These results may also not be as surprising considering the early research on resilience on which the CD-RISC is based. Early research in resilience identified protective factors that helped individuals maintain a high level of functioning despite adverse life conditions (Rutter, 1985; Werner & Smith, 1982). The protective factors identified in these studies (self-mastery, self-efficacy, adaptability, orientation toward achievement, and self-esteem) are related to positive affect, emotionality, and the concept of well-being in particular (Ryff, 1995). Similarly, the CD-RISC was developed with this research in mind, and drew from these studies as a basis for item selection. These observations may have implications for understanding previous research on the link between the CD-RISC and PTSD. These studies have primarily demonstrated this association through the finding that CD-RISC scores increase as PTSD symptoms decrease. Our findings that the CD-RISC primarily indexes positive emotionality may indicate that the link between symptom amelioration and increased CD-RISC scores largely reflects increased well-being. It should also be considered that the CD-RISC could possibly be tapping into the construct of posttraumatic growth. Posttraumatic growth, or the ability to find something positive in the wake of a particularly stressful or traumatic life event, has been shown in individuals following many types of such events (Helgeson, Reynolds, & Tomich, 2006).

Taken together, these data suggest that resilience as measured by the CD-RISC is largely tapping into the construct or positive emotionality. This has important implications for its use in the study of traumatic stress. Although PEM has shown significant relationships in the prediction of the development and maintenance of PTSD (Miller, 2003), the personality dimension of NEM and related constructs have shown the most robust relationships in this area. Considering these relationships, it appears that the CD-RISC may be better at predicting resilience to psychopathology in which anhedonia, or problems with experiencing positive emotions, is implicated, rather than psychopathology, in which excessive negative emotionality is especially implicated. Additionally, more research needs to be conducted to account for positive growth in the wake of traumatic events and its relationship to constructs of resilience.

The current study has some limitations to acknowledge. First, similar to the study by Campbell-Sills and colleagues (2006), we used a college undergraduate population, which may limit generalizability of the data to other demographically different populations. In contrast, this also made it easy to directly compare these studies. We also only examined events that had transpired within the past year, meaning that it is possible that some individuals may be experiencing pathologic symptomatology arising from a distal life event

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that had occurred before our measurement time frame. Another limitation of the study was that the data were collected using self-report. Ideally, some information, such as the symptoms of traumatic stress, would be collected using trained interviewers, so that overlap with other disorders that may better account for the symptoms could be more fully assessed. Lastly, the data was collected and analyzed using cross-sectional methodology. To make stronger assertions regarding the construct validity of the CD-RISC, it would be helpful to more closely examine scores on the CD-RISC in a longitudinal manner, before the experience of a traumatic event, as well as several time points afterward, to assess whether the CD-RISC predicts future symptoms.

In summary, these data suggest that more work is needed to more accurately conceptualize resilience as measured by the CD-RISC. Considering that the CD-RISC is being used relatively frequently in studies examining posttraumatic stress, it is beneficial to know to what extent it is related to other well-validated predictors of the development and maintenance of symptoms of posttraumatic stress. Our data suggest that the CD-RISC is largely a measure of positive emotionality, rather than the personality dimension of negative emotionality, which shows more robust relationships with PTSD. Based on these findings, it appears that the CD-RISC may be better at predicting resilience to forms of psychopathology marked by deficits in the ability to experience positive emotions, as was evidenced by our findings between the CD-RISC and symptoms of anhedonic depression.

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Table 1

Frequency of Traumatic Event Exposure

Event type	*n* (%)
Traumatic events	
Life-threatening accident	104 (29.3)
Physical assault	31 (8.7)
Sexual assault	41 (11.5)
Witness life-threatening accident	100 (28.2)
Experience domestic violence	28 (7.9)
Witness violence (nonfamily)	79 (22.2)
Unexpected death of loved one	99 (27.9)

Note. $N = 355$.

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Table 2

Correlations Between CD-RISC, Personality Variables, and Symptoms of Posttraumatic Stress

	CD-RISC	PEM	NEM	CON	PCLC
CD-RISC	—	.57*	−.25*	.09	−.23*
PEM		—	.05	−.03	−.08
NEM			—	.04	.57*
CON				—	−.02

Note. N = 355. CD-RISC = Connor-Davidson Resilience Scale; CON = Constraint; NEM = Negative Emotionality; PCLC = PTSD-Checklist Civilian; PEM = Positive Emotionality.

* $p < .001$.

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Table 3

Regression Predicting CD-RISC Scores Using Higher Order Personality Variables of the MPQ

	B	*SE* B	β	Sr^2
PEM	.549	.039	.585**	.368
NEM	−.205	.030	−.281**	.118
CON	.099	.033	.124*	.025

Note. N= 355. CON = Constraint; NEM = Negative Emotionality; PEM = Positive Emotionality.

* $p < .05$.

** $p < .001$.

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Table 4

Regression Predicting CD-RISC Scores Using Subscales of the MPQ

	B	*SE* B	β	Sr^2
PEM scales				
Well-Being	.426	.124	.187**	.033
Social Potency	.287	.100	.143*	.023
Achievement	.801	.120	.322**	.116
Social Closeness	.226	.129	.085	<.01
NEM scales				
Alienation	−.122	.144	−.046	<.01
Aggression	−.121	.131	−.047	<.01
Stress Reaction	−.440	.093	−.253**	.062
CON scales				
Harm Avoidance	.021	.100	.010	<.01
Traditionalism	.186	.109	.074	<.01
Control	.093	.108	.043	<.01
Absorption	.118	.073	.075	<.01

Note. N= 355.

* $p < .05$.

** $p < .001$.

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Table 5

Correlations Between CD-RISC and Symptoms of Psychopathology

	Whole sample	PCLC > 44
Anxiety	−.22**	−.01
Depression	−.34**	−.10
Anxious arousal	−.18**	−.06
Anhedonic depression	−.54**	−.32*
PCLC	−.23**	−.05

Note. Whole sample, *N*= 355; PCLC > 44, *N*= 58. Anhedonic Depression = MASQ Anhedonic Depression Scale; Anxiety = MASQ – General Distress: Anxiety Scale; Anxious Arousal = MASQ Anxious Arousal Scale; Depression = MASQ General Distress: Depression scale; PCLC = PTSD-Checklist Civilian.

* $p < .05$.

** $p < .001$.

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Table 6

Regression Predicting PCLC Scores Using Higher Order Personality Variables of the MPQ and The CD-RISC

	B	*SE* B	β	Sr^2
CD-RISC	−.039	.056	−.040	<.01
PEM	−.090	.051	−.097	<.01
NEM	.399	.033	.560*	.292
CON	−.004	.035	−.006	<.01

Note. N= 355. CON = Constraint; NEM = Negative Emotionality; PEM = Positive Emotionality.

*$p < .001$.