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Resilience Predicts Better Mental Health Outcomes: A Pooled Sample Study

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Introduction

Resilience, broadly, refers to the capacity to cope successfully in the face of stressors or adversity. Successful coping entails both the restoration of healthy functioning after encountering stressors (i.e., 'bouncing back') and the resultant enhancement of the resources with which to deal with future stressors (i.e., 'bouncing forward'). Given this definition, it is not surprising that there is a **long-standing empirical relationship** between psychological resilience and mental health. More specifically, higher resilience has been associated with better mental health outcomes.

At Neurozone®, we have been studying psychological resilience, as well as its relationship with mental health outcomes, since 2018. Our research has led to the development of the Neurozone® Resilience Index which we **published** in the International Journal of Testing. Since the inception of our resilience research, we have successfully characterized resilience in socio-demographically diverse populations across the lifespan in a pooled sample of 2793 participants across 5 research studies.

Interestingly, a consistent finding across different populations is that an increase in resilience significantly predicts a decrease in the severity of common psychiatric disorders. These disorders include depression, anxiety, sleep disruption, and burnout. Importantly, we have noticed that this significant predictive relationship remains remarkably stable across different populations, with only slight variations in the magnitude of the predictive effect of resilience on mental health outcomes.

Given that we have quantified the magnitude of resilience's predictive effect on mental health outcomes in individual studies and populations, we endeavored to do the same in a pooled sample containing adult participants across our research studies who meet the minimum inclusion criterion. *This will enable us to quantify resilience's predictive effect on mental health outcomes on a 'Neurozone® population level'.*

The Study

We set out to study resilience in relation to 5 mental health outcomes: depression, anxiety, sleep disruption, burnout, and posttraumatic stress disorder (PTSD). Over the past 7 years we have used different measures to characterize depression, anxiety, sleep disruption, burnout, and PTSD. This is because we sought to validate the Neurozone® Resilience Index against a variety of existing, well-validated psychiatric measures to demonstrate its utility and generalizability. For the current study, we sampled participants from our previous research studies that included students, employed adults, unemployed adults, and working professionals.

Methods

We used the following well-validated measures in relation to the respective mental health outcomes: Patient Health Questionnaire – Depression Module (PHQ-9; to measure depression), the Generalized Anxiety Disorder (7) scale (to measure anxiety), the Neurozone® Sleep Status Index (NSSI; to measure sleep disruption), the Neurozone® Burnout Index (NBI; to measure the presence of burnout indicators), and the Primary Care PTSD Scale (PC-PTSD; to measure posttraumatic stress symptoms).

We created separate datasets for each of the 5 mental health outcomes. Participants were included in each of the respective datasets if they had completed both the Neurozone® Resilience Index and the applicable psychiatric measure at the same point in time.

Participants

Below we present the sample sizes and demographics for each of the mental health outcome datasets:

Outcome	Sample Size	Average Age	Age Range	Women	Men	Non-Binary	Gender Unknown
Depression	1357	42.40	18-83	51.95%	44.36%	0.22%	3.46%
Anxiety	1049	48.52	21-83	46.99%	52.65%	0.19%	0.19%
Sleep	1055	48.59	21-83	47.01%	52.70%	0.19%	0.009%
Burnout	2027	42.70	18-86	52.93%	45.78%	0.25%	1.08%
PTSD	455	25.47	18-83	68.79%	29.89%	1.31%	0%

Data Analysis

We verified whether all the assumptions necessary to run linear regression for all 5 datasets were met. Four of the datasets (depression, anxiety, sleep disturbance, burnout) met the necessary assumptions, where the PTSD dataset did not, despite attempted corrections and transformations. Therefore, we decided to run non-parametric correlational analyses on the PTSD data. For the other four datasets, we ran simple linear regression with resilience as the predictor variable and each of the four mental health conditions as the respective outcomes. All data from the different psychiatric questionnaires were normalized in order to be comparable and interpreted on an equivalent scale.

Results

Simple Linear Regression & Correlation Analysis

Results show that resilience, as measured by the Neurozone® Resilience Index, significantly predicts all four mental health outcomes included in analyses. In addition, we were able to quantify the magnitude of resilience's predictive effect on depression, anxiety, sleep disturbance and burnout. More specifically, our results show that a 1 unit increase in resilience significantly predicts the following:

- a 0.96 unit decrease in depression severity
- a 1.12 unit decrease in anxiety severity

- a 0.87 unit decrease in sleep disturbance severity
- a 1.24 unit decrease in burnout indicators

In order to contextualize these findings better, we can also present the results in the following manner: A 10% increase in resilience significantly predicts the following:

- a 9.60% decrease in depression severity
- an 11.20% decrease in anxiety severity
- an 8.70% decrease in sleep disturbance severity
- a 12.40% decrease in burnout indicators

In addition, results from correlational analyses showed that there is a significant medium-sized negative correlation between resilience and the severity of posttraumatic stress symptoms. Put differently, higher resilience is significantly associated with less severe posttraumatic stress symptoms.

Discussion

There are two overarching themes emerging from our findings: Firstly, on a 'Neurozone® Population Level', which includes participants who met the minimum criterion for inclusion across our research studies, an increase in resilience significantly predicts a decrease in depression, anxiety, sleep disturbance, and burnout severity. Secondly, and moreover, the magnitude of resilience's predictive effect on the different mental health outcomes is large: a one unit *increase* in resilience significantly predicts, on average, just over a one unit *decrease* in severity across the different mental health outcomes. Importantly, these findings remain remarkably stable across research studies and populations, and serve as additional, replicable evidence of the possible protective effect of psychological resilience against common mental health conditions. Put differently, enhancing resilience could be one accessible and scalable non-clinical intervention to protect against common clinical conditions, especially in contexts where individuals face a barrier to psychotherapeutic interventions.

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