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2024 PR6

Defining Protective Resilience: The 85% Threshold for Personality Development and Mental Health Risk Reduction

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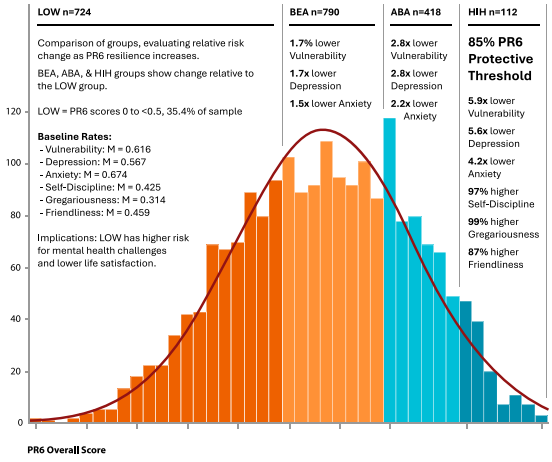
KEY TAKEAWAYS

This study investigates the relationship between resilience, measured by the Predictive 6 Factor Resilience Model (PR6), and the Big Five personality traits, assessed using the IPIP-NEO-120. The research involved 2,044 participants and found significant correlations between resilience and personality traits, particularly Neuroticism, Conscientiousness, and Extraversion. The study identifies a critical PR6 resilience threshold of 85%, beyond which individuals experience marked improvements in personality traits and mental health protection. These findings suggest that resilience training could be an effective approach for personality development and mental health prevention, especially in high-stress environments.

1. **Higher resilience scores are strongly associated with beneficial personality traits.** The study found that increased resilience correlates with a 2.9-fold reduction in Neuroticism, a 52% increase in Conscientiousness, and a 65% increase in Extraversion. Notably, higher resilience is linked to substantial reductions in measures for depression (5.6-fold), anxiety (4.2-fold), and overall vulnerability (5.9-fold). These findings highlight the potential of resilience training as a preventative pathway for protecting mental health and well-being.

2. **85% is a critical PR6 resilience threshold**, which represents a tipping point for significant improvements in personality traits and mental health protection. Individuals reaching this level of resilience exhibit dramatically enhanced buffering against key risk factors for mental illness and more positive responses to life events. This threshold provides a clear, quantifiable goal for resilience interventions in various settings.

3. **Targeted interventions through PR6 resilience domains to impact personality sub-factors are identified**. For instance, the Vision domain strongly correlates with Self-Discipline, while Composure is linked to reduced Vulnerability and Anxiety. These detailed correlations provide a foundation for developing precise, personalized resilience training programs aimed at specific personality improvements or mental health outcomes. This can provide further confidence for individuals undergoing resilience training in the efficacy of their efforts.



	Low to High Resilience Change
Neuroticism	**2.9x***
Vulnerability	**5.9x**
Depression	**5.6x**
Anxiety	**4.2x**
Self-Consciousness	**2.4x**
Immoderation	**1.9x**
Anger	**1.8x**

**Neuroticism x values indicate*

	Resilience Intervention
Neuroticism	Composure, Reasoning, Tenacity
Vulnerability	Composure, Reasoning, Tenacity
Depression	Vision, Reasoning, Tenacity
Anxiety	Composure, Reasoning, Tenacity
Self-Consciousness	Collaboration, Reasoning, Vision
Immoderation	Health, Vision, Tenacity
Anger	Composure, Reasoning, Tenacity

	Low to High Resilience Change
Conscientiousness	**52%**
Self-Discipline	**97%**
Orderliness	**59%**
Self-Efficacy	**56%**
Cautiousness	**50%**
Achievement Striving	**44%**
Dutifulness	**26%**

CONCLUSION

This research demonstrates strong relationships between resilience and personality traits, particularly in reducing Neuroticism and increasing Conscientiousness and Extraversion. The identification of an 85% PR6 resilience threshold offers a tangible target for resilience training programs.

Given the modifiable nature of resilience, these findings suggest that targeted resilience interventions could be a viable approach for personality development and mental health prevention. The study's results have significant implications for developing effective strategies to enhance psychological well-being, particularly in high-stress professions. Targeted resilience training using this methodology can assist with practical precision interventions to protect mental health.

Explore the PR6 - **driv.ai/pr6**

Crisis Support:
Australia - Lifeline: 13 11 14
United States - Lifeline: 988

Defining Protective Resilience: The 85% Threshold for Personality Development and Mental Health Risk Reduction

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Abstract

Background: Effective primary prevention strategies can help mitigate rising global suicide rates. This study investigates the relationship between resilience, measured by the Predictive 6 Factor Resilience Model (PR6), and the Big Five personality traits, measured by the IPIP-NEO-120, to identify how resilience training can benefit mental health and personality development.

Method: The study involved n = 2044 participants (61.1% female) who completed PR6 and IPIP-NEO-120 assessments. The PR6 assesses six domains of resilience, while the IPIP-NEO-120 measures the Big Five personality traits and 30 sub-factors. Data were analyzed using regression analysis, correlation, and effect size determination.

Results: Significant correlations were found between PR6 resilience and the Big Five personality traits. Higher resilience scores were associated with a 2.9-fold reduction in Neuroticism, 52% higher Conscientiousness and 65% higher Extraversion. Notably, increases in resilience were linked to a 5.6-fold reduction in depression, a 4.2-fold reduction in anxiety, and a 5.9-fold reduction in emotional vulnerability. A PR6 score threshold of 85% was identified where participants exhibited marked improvements in personality traits and mental health protection, providing a practical target for protective resilience.

Conclusion: Higher resilience is found to have significant positive relationships with personality traits, reducing Neuroticism and increasing Conscientiousness and Extraversion. Given a modern understanding of personality traits as changeable, this suggests resilience training could be a viable approach for mental health prevention and personality development, with substantial preventative implications for depression, anxiety, vulnerability, and improving overall well-being, particularly at PR6 = 85%.

Keywords: resilience, personality, big 5, suicide prevention, primary prevention, mental wellness, strength-based

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Introduction

The unique approach individuals take to navigate minor through to major adversities in life is broadly influenced by personality factors (Alonso-Tapia, Rodríguez-Rey, Garrido-Hernansaiz, Ruiz, & Nieto, 2019). However, while personality provides a broad framework, resilience offers a more precise measure of how people handle adversity (Herrman, et al., 2011; Troy, et al., 2023). Defined as the ability to 'advance despite adversity', resilience can be assessed through specific functional domains, such as those outlined in the Predictive 6 Factor Resilience (PR6) model (Rossouw & Rossouw, 2016). This model provides assessment of individual capacity to manage and overcome life's difficulties.

The global impact of mental illness and rising suicide rates (CDC, 2024; AIHW, 2024) highlight the need for better prevention approaches and prediction of risk to reduce current trends (Xinlu, Zhongqiu, & Chaoqun, 2022). A valuable aspect of resilience is evidence of resilience domains being modifiable through interventions (Rossouw, Erieau, & Beeson, 2019; Rossouw & Ruberto, 2024). This paper explores the relationship of resilience to personality traits, considering resilience training as a pathway to personality augmentation.

Big 5 Personality

The Big Five personality traits, also known as the Five Factor Model (FFM), are a widely recognized framework for understanding human personality. The initial groundwork for the Big Five was laid by psychologists such as Gordon Allport and Henry Odbert in the 1930s, later refined by Raymond Cattell in the 1940s and 1950s, who identified 16 primary factors using factor analysis (Allport & Odbert, 1936; Cattell, 1943). In the 1980s and 1990s the Big Five model was solidified by researchers such as Paul Costa and Robert McCrae, and later, Lewis Goldberg, who provided comprehensive empirical support for the model (McCrae & Costa, 1987; Goldberg, 1993). The five factors and subfactors of the IPIP-NEO-120 used for this research are (Johnson, 2014):

- **Openness** - Imagination, Artistic Interests, Emotionality, Adventurousness, Intellect, Liberalism
- **Agreeableness** - Trust, Morality, Altruism, Cooperation, Modesty, Sympathy

- **Conscientiousness** - Self-Efficacy, Orderliness, Dutifulness, Achievement-Striving, Self-Discipline, Cautiousness
- **Extraversion** - Friendliness, Gregariousness, Assertiveness, Activity Level, Excitement-Seeking, Cheerfulness
- **Neuroticism (referred to in reverse as Stability)** – Anxiety (Calmness), Anger (Patience), Depression (Enjoyment), Self-Consciousness (Self-Assuredness), Immoderation (Moderation), Vulnerability (Steadfastness) Note: The Anxiety and Depression sub-factors do not necessarily represent diagnoses of mental illness.

Longitudinal research on personality trait stability indicates that there is significant room for traits to vary over time. A 63-year study of personality stability found no significant stability of personality factors over the measured period (Harris, Brett, Johnson, & Deary, 2016). Another 40-year study found correlations in Extraversion (0.30) and Conscientiousness (0.25), with low correlations in other factors to initial assessments (Edmonds, Goldberg, Hampson, & Barckley, 2013). These highlight the potential for significant life events and deliberate interventions to contribute to targeted personality augmentation, particularly as improvements in resilience can enable advantageous responses to significant life events, leading to opportunities for positive personality development.

PR6 Resilience

The PR6 is a mind-body model of resilience consisting of six domains of resilience. These are:

- **Vision** - Sense of purpose and clarity of personal goals
- **Composure** - Capacity to handle stress and regulate emotional responses (limbic brain downregulation)
- **Reasoning** - Skills in problem-solving, resourcefulness, and preparing for potential future challenges
- **Tenacity** - Ability to persist, maintain realistic optimism, and recover from setbacks
- **Collaboration** - Development and maintenance of support networks and interpersonal connections
- **Health** - Physical well-being, including proper nutrition, quality sleep, and consistent physical activity

The PR6 model provides a comprehensive psychometric measurement of various factors that contribute to an overall capacity to be resilient, encompassing the domains of various other resilience scales, as well as the addition of the Health domain (Rossouw & Rossouw, 2016).

Additionally, the PR6 provides the foundation of various resilience interventions, including the peer-support focused Resilience First Aid (Rossouw & Ruberto, 2024), High Adversity Resilience Training for emergency services and high-challenge occupations (Rossouw, Herlofson, Geldenhuys, & Erieau, 2024), and the Driven Resilience App as a digital resilience intervention (Rossouw, Erieau, & Beeson, 2019). The evaluation of these previous programs provides evidence of PR6 resilience as being modifiable through these targeted interventions.

Through investigating the relationship between resilience and personality factors, pathways can be identified through which resilience skills training can augment personality factors that may negatively influence a person's experience of life. This includes identifying resilience domains and skills that can contribute to specific personality factors and sub-factors, providing a tangible intervention for psychologists and coaches to implement (Hudson, Fraley, Chopik, & Briley, 2020).

Beyond value for treatment of mental illness, this provides a meaningful pathway towards mental health primary prevention through identifying risks and enabling primary preventative interventions through resilience training to avoid the onset of mental illness (de Pablo, et al., 2021).

Method

Participants

The study sample includes n = 2044 participants (61.1% female, 29.7% male, 9.1% other or not specified) who completed both the PR6 and IPIP-NEO-120 assessments. A total of n = 2233 responses were received, following which duplicates and incomplete responses were removed, leaving a total of n = 2044 valid responses. Participants represented a broad cross-section of countries, with highest participation from Australia (30.9%) and the United States (30.4%). Occupational participation was diverse (Table 1).

TABLE 1: Demographics

Gender		
Female	1249	61.1%
Male	608	29.7%
Other / Not Specified	187	9.1%
Total	2044	100%
Country		
Australia	632	30.9%
United States	622	30.4%
United Kingdom	138	6.8%
Canada	99	4.8%
Singapore	80	3.9%
New Zealand	53	2.6%
Not Specified	420	20.5%
Total	2044	100%
Industry		
Healthcare	159	7.8%
Education & Training	137	6.7%
Student	103	5.0%
Emergency Services & Defence	94	4.6%
Professional Services	59	2.9%
Government	41	2.0%
Construction & Transportation	37	1.8%
Manufacturing	34	1.7%
Technology	29	1.4%
Other	1351	66.1%
Total	2044	100%

Measures

To assess the relationship between resilience and personality factors, two assessments were used. For personality assessment, the IPIP-NEO-120 was used, assessing the big five factors, as well as six sub-factors for each factor, consisting of 120 items on a 5-point Likert scale, with strong internal consistency (Johnson, 2014).

Participants also completed the Predictive 6 Factor Resilience (PR6) Scale, measuring six domains of resilience as well as a forward-looking Momentum domain through 16 items also on a 5-point Likert scale (Rossouw & Rossouw, 2016).

The PR6 has a strong internal consistency, with Cronbach's alpha = 0.8398 (Rossouw J. G., Rossouw, Paynter, Ward, & Khnana, 2017). Optional demographic details were also requested, with participant information anonymized before analysis. Participants found the survey online on the hellodriven.com website with no active recruitment conducted.

Analysis

Responses were analyzed to determine the relationship between resilience domains and personality factors. This included regression analysis, correlation, and determining effect sizes on personality factors for changes in resilience.

TABLE 2: Characteristics of All Responses and Gender Differences

	All, n = 2044		Female, n = 1249		Male, n = 608		Other or N/A, n = 187	
	Mean	**StDev**	**Mean**	**StDev**	**Mean**	**StDev**	**Mean**	**StDev**
PR6	**0.570**	**0.180**	**0.561**	**0.177**	**0.597**	**0.180**	**0.542**	**0.188**
Vision	0.556	0.250	0.549	0.251	0.577	0.247	0.537	0.250
Composure	0.553	0.246	0.541	0.243	0.594	0.244	0.503	0.249
Reasoning	0.573	0.236	0.558	0.236	0.618	0.231	0.528	0.235
Health	0.595	0.220	0.581	0.218	0.632	0.214	0.569	0.237
Tenacity	0.570	0.244	0.566	0.246	0.588	0.239	0.537	0.249
Collaboration	0.566	0.262	0.566	0.261	0.573	0.256	0.545	0.281
Momentum	0.577	0.241	0.566	0.243	0.599	0.239	0.575	0.239
Conscientiousness	**0.670**	**0.159**	**0.674**	**0.156**	**0.672**	**0.156**	**0.639**	**0.183**
Achievement Striving	0.753	0.203	0.764	0.199	0.744	0.206	0.712	0.211
Cautiousness	0.619	0.238	0.618	0.235	0.635	0.233	0.576	0.267
Dutifulness	0.756	0.168	0.760	0.168	0.753	0.164	0.735	0.182
Self-Discipline	0.594	0.219	0.594	0.217	0.600	0.215	0.568	0.246
Self-Efficacy	0.696	0.186	0.699	0.183	0.704	0.182	0.654	0.210
Orderliness	0.602	0.269	0.606	0.271	0.599	0.261	0.587	0.289
Extraversion	**0.548**	**0.150**	**0.548**	**0.149**	**0.553**	**0.154**	**0.530**	**0.149**
Excitement Seeking	0.476	0.194	0.465	0.194	0.496	0.189	0.490	0.200
Friendliness	0.617	0.240	0.623	0.240	0.610	0.241	0.601	0.236
Gregariousness	0.428	0.232	0.429	0.231	0.432	0.239	0.412	0.219
Cheerfulness	0.614	0.218	0.616	0.217	0.619	0.218	0.587	0.219
Assertiveness	0.618	0.225	0.618	0.225	0.627	0.222	0.589	0.231
Activity Level	0.534	0.200	0.540	0.201	0.533	0.197	0.502	0.206
Openness	**0.631**	**0.122**	**0.637**	**0.121**	**0.619**	**0.124**	**0.630**	**0.122**
Imagination	0.615	0.227	0.605	0.227	0.639	0.222	0.604	0.244
Intellect	0.679	0.207	0.674	0.206	0.692	0.209	0.669	0.208
Liberalism	0.530	0.204	0.543	0.200	0.501	0.208	0.539	0.204
Emotionality	0.729	0.182	0.755	0.175	0.676	0.185	0.727	0.181
Adventurousness	0.547	0.201	0.542	0.201	0.555	0.200	0.548	0.204
Artistic Interests	0.685	0.210	0.701	0.204	0.650	0.221	0.695	0.198
Agreeableness	**0.703**	**0.115**	**0.717**	**0.111**	**0.678**	**0.118**	**0.689**	**0.113**
Modesty	0.586	0.191	0.605	0.187	0.544	0.196	0.596	0.182
Morality	0.836	0.169	0.853	0.161	0.813	0.173	0.805	0.193
Cooperation	0.717	0.193	0.734	0.193	0.685	0.190	0.707	0.183
Altruism	0.778	0.161	0.797	0.155	0.745	0.162	0.757	0.176
Sympathy	0.730	0.180	0.749	0.175	0.700	0.184	0.705	0.185
Trust	0.570	0.216	0.566	0.218	0.581	0.208	0.567	0.225
Neuroticism	**0.462**	**0.177**	**0.471**	**0.176**	**0.435**	**0.175**	**0.487**	**0.185**
Anxiety	0.514	0.267	0.533	0.263	0.464	0.268	0.545	0.266
Depression	0.396	0.254	0.403	0.252	0.374	0.251	0.422	0.272
Immoderation	0.515	0.216	0.522	0.213	0.499	0.214	0.520	0.239
Anger	0.422	0.171	0.419	0.172	0.421	0.166	0.447	0.177
Self-Consciousness	0.518	0.230	0.527	0.228	0.494	0.230	0.536	0.235
Vulnerability	0.406	0.243	0.423	0.241	0.356	0.240	0.450	0.249

Note: Measurements completed with the Predictive 6 Factor Resilience Scale (PR6), and IPIP-NEO-120 item personality scale.

To determine effect sizes of changes in resilience scores, participants were divided into four groups based on resilience scores. This is calculated from the average scores of the 2016 PR6 research, with groups ranging from LOW (Low scores, PR6 = 0 to < 0.5, n = 724), BEA (Below average scores, PR6 = 0.5 to < 0.7, n = 790), ABA (Above average scores, PR6 = 0.7 to < 0.85, n = 418), HIH (High scores, PR6 = 0.85 to 1, n = 112). See Table 3 for group characteristics.

PR6 grouping enables insight into the potential of increasing resilience scores through interventions to observe potential changes in personality factors, drawing on historical PR6 grouping observations (Rossouw J. G., 2022).

Results

Descriptive statistics for both the PR6 and the IPIP-NEO-120 assessments are presented in Table 2 alongside gender differences. The mean PR6 score for the 2044 participants was 0.570 (SD = 0.180), indicating a moderate level of overall resilience within the sample. The mean scores for the six PR6 domains varied, with Health having the highest mean score (M = 0.595, SD = 0.220) and Composure the lowest (M = 0.553, SD = 0.246). For the IPIP-NEO-120 Conscientiousness had the highest mean score among the Big Five personality traits (M = 0.670, SD = 0.159), while Neuroticism had the lowest mean score (M = 0.462, SD = 0.177). The sub-factors of these traits also displayed variability, with Achievement Striving (M = 0.753, SD = 0.203) and Morality (M = 0.836, SD = 0.169) scoring notably higher than others.

Correlation Analysis

Correlation analysis revealed significant relationships between PR6 resilience domains and Big Five personality traits (see Table 5). Strong positive correlations were observed between PR6 overall and Conscientiousness (r = 0.65), Extraversion (r = 0.67), and moderate correlation to Agreeableness (r = 0.26). A very strong negative correlation was noted between PR6 overall and Neuroticism (r = -0.79). Correlations have been noted in other research with respect to resilience and Neuroticism, Extraversion, and Conscientiousness (Das & Arora, 2020), as well as Agreeableness in recent research (Atsushi, Kanako, Mari, & Gul, 2018; Nieto, Visier, Silvestre, Navarro, & Martínez-Vizcaíno, 2022).

Specific resilience domains demonstrated significant correlations with personality traits. For example, Vision showed strong correlations with Self-Discipline (r = 0.65) and Depression (r = -0.57). Composure was strongly correlated with lower levels of Vulnerability (r = -0.69) and Anxiety (r = -0.61). Collaboration correlated highly with Friendliness (r = 0.71) and Gregariousness (r = 0.57).

Regression Analysis

Regression analysis indicated that changes in resilience scores significantly predicted changes in personality factors. Participants with higher resilience scores (PR6) exhibited increased levels of Conscientiousness, Extraversion, and lower levels of Neuroticism. Specifically, increases in PR6 scores explained 42% of the variance in Conscientiousness ($R^2 = 0.42$, $p < 0.001$), 45% of the variance in Extraversion ($R^2 = 0.45$, $p < 0.001$), and 62% of the variance in Neuroticism ($R^2 = 0.62$, $p < 0.001$).

Group Comparisons

Group comparisons showed significant differences in personality traits across these groups. For example, the HIH group (High scores) had significantly higher Conscientiousness (M = 0.846, SD = 0.11) compared to the LOW group (M = 0.555, SD = 0.146), representing a 52% increase. Similarly, Extraversion scores were higher in the HIH group (M = 0.721, SD = 0.114) than in the LOW group (M = 0.437, SD = 0.128), an 65% increase. Notably, Neuroticism showed the most dramatic change, with the HIH group scoring substantially lower (M = 0.211, SD = 0.089) than the LOW group (M = 0.619, SD = 0.129), a 2.9-fold reduction. These differences highlight the potential impact of resilience on key personality traits associated with mental well-being and life satisfaction (Olaru, van Scheppingen, Bleidorn, & Denissen, 2023). The BEA and ABA groups showed intermediate values, suggesting a gradual shift in personality traits as resilience increases (Table 4, Figure 1).

TABLE 3: Characteristics of PR6 Groups

Group	N	Mean	SE-Mean	SD	Minimum	Q1	Median	Q3	Maximum
LOW	724	0.374	0.003	0.093	0.000	0.319	0.391	0.448	0.500
BEA	790	0.600	0.002	0.059	0.500	0.551	0.599	0.652	0.700
ABA	418	0.765	0.002	0.042	0.700	0.729	0.761	0.799	0.850
HIH	112	0.894	0.004	0.039	0.850	0.866	0.878	0.918	1.000

Note: PR6 = Predictive 6 Factor Resilience Scale, LOW = Low resilience group, BEA = Below Average resilience group, ABA = Above Average resilience group, HIH = High resilience group, SE-MEAN = Standard Error Mean, SD = Standard Deviation.

TABLE 4: Characteristics of PR6 Groups to Personality Factors

	LOW		BEA		ABA		HIH	
Factor	Mean	SD	Mean	SD	Mean	SD	Mean	SD
PR6	0.374	0.093	0.600	0.059	0.765	0.042	0.894	0.039
Neuroticism	0.619	0.129	0.430	0.120	0.317	0.112	0.211	0.089
Extraversion	0.437	0.128	0.572	0.117	0.650	0.109	0.721	0.114
Conscientiousness	0.555	0.146	0.697	0.126	0.771	0.105	0.846	0.110
Agreeableness	0.668	0.119	0.712	0.109	0.733	0.100	0.756	0.111
Openness	0.612	0.125	0.633	0.122	0.651	0.116	0.657	0.111

Note: PR6 = Predictive 6 Factor Resilience Scale, LOW = Low resilience group, BEA = Below Average resilience group, ABA = Above Average resilience group, HIH = High resilience group, SD = Standard Deviation.

FIGURE 1: Big 5 Factors Mediated by PR6 Resilience

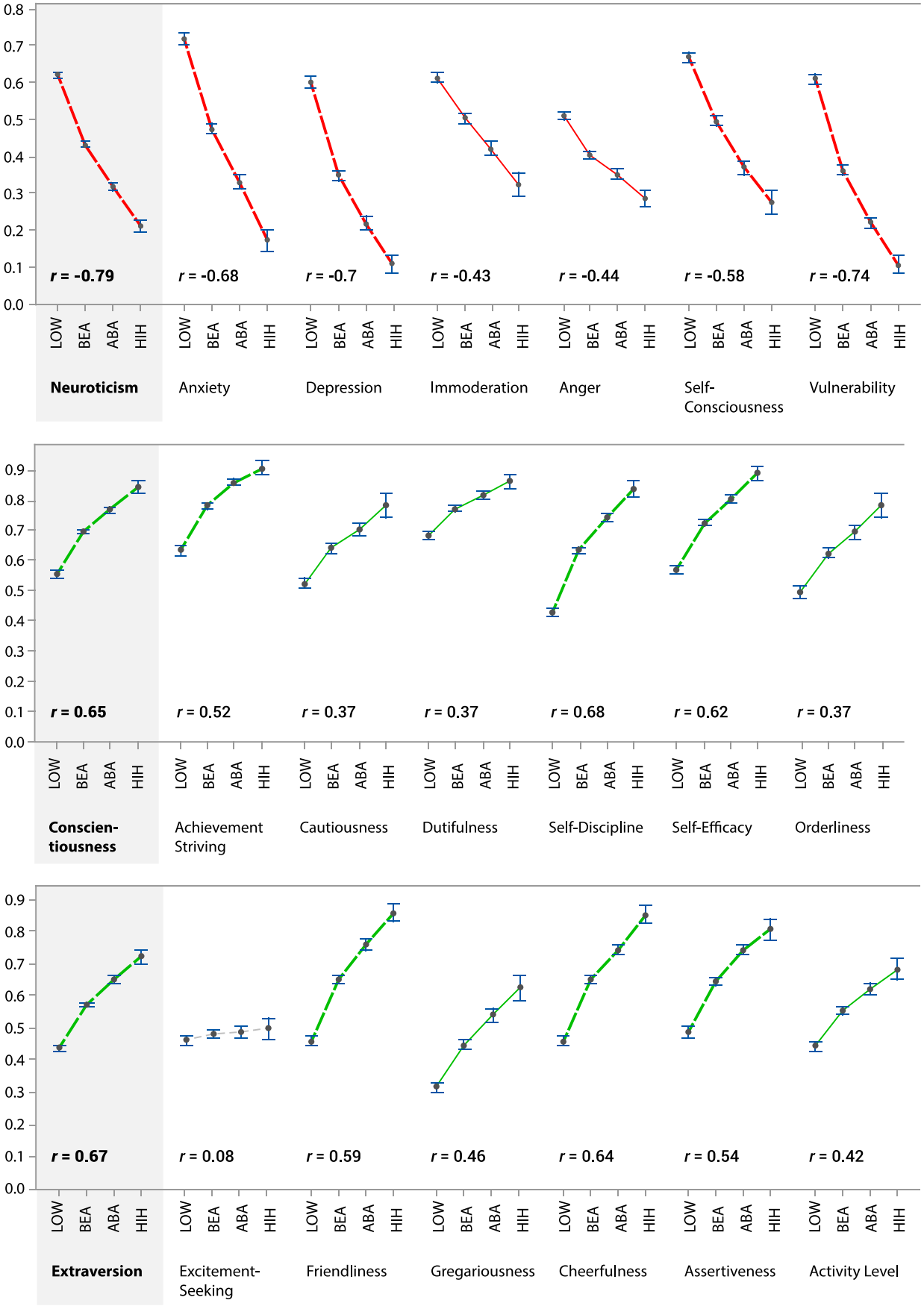
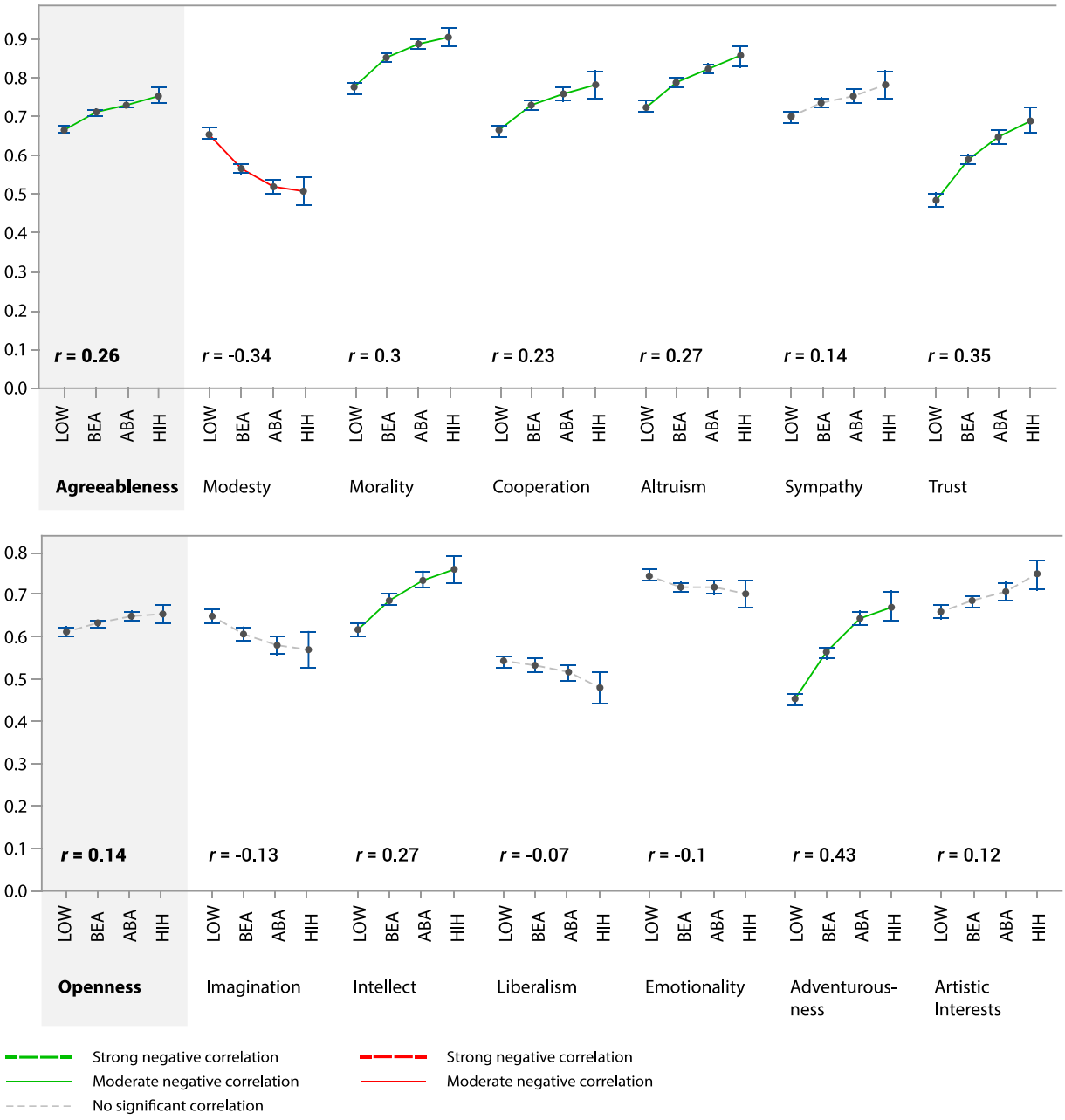


FIGURE 1 (cont.): Big 5 Factors Mediated by PR6 Resilience



Note: Grouped charts with confidence intervals and correlations ('r =') for personality factors and sub-factors, LOW = Low resilience group, BEA = Below Average resilience group, ABA = Above Average resilience group, HIH = High resilience group, Green dotted line = Strong positive correlation, Green solid line = Moderate positive correlation, Grey dotted line = no significant correlation, Red dotted line = Strong negative correlation, Red solid line = Moderate negative correlation, r = correlation value and direction

TABLE 5: Correlation of Resilience Domains to Personality Factors

	PR6	Vision	Compos.	Reas.	Health	Tenacity	Collab.	Mome.
Conscientiousness	**0.65**	0.61	0.40	0.51	0.49	0.58	0.30	0.48
Self-Discipline	**0.68**	0.65	0.40	0.52	0.49	0.60	0.36	0.52
Self-Efficacy	**0.62**	0.53	0.41	0.53	0.40	0.55	0.30	0.48
Achievement Striving	**0.52**	0.50	0.29	0.38	0.32	0.52	0.28	0.43
Dutifulness	**0.37**	0.34	0.23	0.29	0.30	0.33	0.18	0.27
Cautiousness	**0.37**	0.35	0.29	0.35	0.29	0.34	0.12	0.20
Orderliness	**0.37**	0.36	0.20	0.26	0.37	0.30	0.15	0.27
Extraversion	**0.67**	0.49	0.40	0.44	0.41	0.49	0.63	0.61
Cheerfulness	**0.64**	0.48	0.44	0.44	0.45	0.48	0.48	0.51
Friendliness	0.59	0.40	0.34	0.35	0.33	0.37	**0.71**	0.52
Assertiveness	**0.54**	0.44	0.34	0.45	0.28	0.45	0.34	0.50
Gregariousness	0.46	0.30	0.25	0.26	0.26	0.28	**0.57**	0.42
Activity Level	**0.42**	0.42	0.21	0.26	0.31	0.39	0.25	0.36
Excitement Seeking	0.08	*-0.03**	*0.02**	*0.01**	*0.02**	*0.03**	0.16	0.19
Openness	0.14	0.06	0.10	0.11	0.037*	0.11	0.17	0.15
Adventurous	**0.43**	0.28	0.32	0.35	0.23	0.33	0.33	0.39
Intellect	**0.27**	0.18	0.20	0.26	0.12	0.24	0.18	0.21
Artistic Interests	0.12	0.06	0.08	0.09	*0.04**	0.12	0.11	0.10
Liberalism	-0.07	-0.08	*-0.02**	*-0.04**	*-0.03**	-0.08	*-0.04**	-0.08
Emotionality	-0.10	-0.04	-0.17	-0.17	-0.11	-0.08	0.09	*-0.03**
Imagination	-0.13	-0.15	-0.07	-0.10	-0.11	-0.13	-0.06	-0.07
Agreeableness	**0.26**	0.19	0.20	0.16	0.14	0.21	0.25	0.18
Trust	**0.35**	0.26	0.25	0.22	0.26	0.22	0.34	0.27
Morality	**0.30**	0.25	0.21	0.25	0.20	0.28	0.17	0.22
Altruism	0.27	0.20	0.17	0.16	0.10	0.22	**0.31**	0.23
Cooperation	**0.23**	0.18	0.23	0.18	0.19	0.17	0.16	0.12
Sympathy	0.14	0.09	0.07	0.09	*0.022**	0.13	0.17	0.13
Modesty	**-0.34**	-0.27	-0.21	-0.28	-0.25	-0.23	-0.24	-0.29
Neuroticism	**-0.79**	-0.59	-0.66	-0.64	-0.54	-0.61	-0.49	-0.58
Vulnerability	**-0.74**	-0.54	-0.69	-0.66	-0.45	-0.59	-0.39	-0.55
Depression	**-0.70**	-0.57	-0.53	-0.55	-0.53	-0.54	-0.41	-0.51
Anxiety	**-0.68**	-0.49	-0.61	-0.59	-0.43	-0.53	-0.38	-0.49
Self-Consciousness	-0.58	-0.40	-0.38	-0.40	-0.31	-0.39	**-0.61**	-0.51
Anger	-0.44	-0.33	**-0.45**	-0.37	-0.28	-0.35	-0.24	-0.28
Immoderation	**-0.43**	-0.36	-0.33	-0.33	-0.43	-0.35	-0.17	-0.28

Note: PR6 = Predictive 6 Factor Resilience Scale, *Compos. = Composure, Reas. = Reasoning, Collab. = Collaboration, Mome. = Momentum,* Bold factor names indicate factors with significant correlations (r equal to or beyond ± 0.2). Bold correlation numbers indicate factors with strongest correlation. *Indicates low significance ($p > 0.05$), all other values are $p < 0.05$. Green = positive correlation, red = negative correlation, white = no significant correlation.

Effect Sizes

The effect sizes for the differences in the five personality factors between the LOW and HIH resilience groups were calculated using Cohen's d. The effect sizes indicate the magnitude of the differences observed, providing insight into the practical significance of the relationships between resilience levels and personality traits. Findings for each personality factor are as follows:

- **Neuroticism** - Effect size for Neuroticism was d = -3.67, suggesting a substantial impact of increased resilience on reducing Neuroticism levels. Participants in the HIH (High resilience) group exhibited significantly lower levels of Neuroticism compared to those in the LOW resilience group. This large effect size indicates that higher resilience is strongly associated with lower emotional instability and fewer negative emotional responses
- **Extraversion** - The effect size was d = 2.34, showing a significant increase in Extraversion levels among those with high resilience
- **Conscientiousness** - The effect size was d = =2.25, demonstrating a considerable increase in Conscientiousness with higher resilience
- **Agreeableness** - The effect size was d = 0.76, indicating a moderate increase in Agreeableness among highly resilient individuals
- **Openness** - The effect size was d = 0.38, suggesting a small but positive effect of resilience on Openness

Figure 1 visualizes the change in domains, noting dramatic decreases in risk in Neuroticism factors and major increases in most Extraversion and Conscientiousness factors except for Excitement-Seeking which sees no significant change. There are some minor impacts visible on Agreeableness, with Modesty interestingly having a moderate negative correlation to resilience. Openness overall does not have a significant correlation with resilience, apart from Intellect and Adventurousness which have a moderate positive relationship.

Gender Differences

ANOVA conducted on PR6 scores revealed a found a significant difference between genders. Males exhibited the highest mean PR6 score (M = 0.597, SD = 0.180), followed by females (M = 0.561, SD = 0.177) and the N/A group (M = 0.542, SD = 0.188). However, the effect size is minimal, as gender accounts for only 1.05% of the variance in PR6 scores (R^2 = 1.05%). These findings suggest that while there are statistically significant differences in resilience scores between genders, the practical significance is limited due to the small proportion of variance explained.

Direction of change across genders remained consistent for LOW to HIH resilience change in meaningfully correlated personality factors, highlighting a general consistency in resilience domains across genders.

Discussion

Very strong relationships between the PR6 resilience domains and the five personality factors were found through this cross-section of global participants. Compared to other resilience scales previously measured alongside personality factors, the PR6 shows the strongest negative correlation of any resilience measure in relation to Neuroticism, and the strongest positive correlations with Extraversion and Conscientiousness, outside of a small study focusing on amputees in Pakistan, the (Atsushi, Kanako, Mari, & Gul, 2018).

This finding highlights a stronger potential for resilience domains to be used as interventions for personality development, particularly where these domains have stronger effects on sub-factors. To expand on the concept of targeted personality development, Table 6 indicates the impact of resilience on personality when shifting from LOW to HIH, or from LOW to ABA, the value of increasing from ABA to HIH, and the resilience domains with the strongest effects as potential interventions.

Cohen's d effect sizes highlight the significant differences in personality traits between individuals with low and high resilience. Higher resilience is associated with beneficial personality developments, including lower Neuroticism, higher Extraversion, greater Conscientiousness, and, to a lesser extent, higher Agreeableness. These findings underscore the potential of resilience interventions to positively influence personality traits and contribute to better psychological well-being.

Recent research support the concept of personality change to occur over time, often in response to major life changes (Bühler, et al., 2023), or through targeted interventions (Olaru, et al., 2022; Hudson, Fraley, Chopik, & Briley, 2020). This recent understanding of the potential for intentional personality development provides greater confidence in utilising highly correlated intervention programs such as noted with the PR6 domain in relation to big five factors and sub-factors.

Protective Value in Neuroticism

The data in Table 6 provides valuable insights into quantifying resilience, particularly highlighting the significance of reaching a PR6 score of 85% or higher. This threshold appears to demarcate a critical point at which individuals experience substantially enhanced protection against major mental health challenges and exhibit markedly improved personality traits associated with well-being and life satisfaction (Olaru, van Scheppingen, Bleidorn, & Denissen, 2023).

When examining the protective effects against Neuroticism and its subfactors, we observe a notable step-change at the 85% threshold. For instance, while moving from low resilience to above average (70% to <85%) participants experienced a 2.8-fold reduction in Depression, while reaching high resilience (85%+) this reduction doubles to 5.6-fold.

This pattern is mirrored in Vulnerability, where the protective effect more than doubles from 2.8-fold to 5.9-fold when crossing the 85% threshold. Similarly, protection against Anxiety increases from 2.2-fold to 4.2-fold. These findings suggest that the 85% mark represents a tipping point where resilience begins to offer dramatically enhanced buffering against key risk factors for mental illness and positive responding to life events.

Concurrently, substantial positive impacts were observed on Extraversion and Conscientiousness as individuals reach this 85% resilience threshold. For example, Gregariousness shows a 99% increase from low to high resilience levels, with 72% of this gain achieved by reaching above average resilience, and the remaining 27% increase occurring as individuals cross into the high resilience category. This pattern of accelerated improvement beyond the 85% mark is consistent across multiple personality subfactors, including Self-Discipline (97% total increase, with 22% occurring in the final step to high resilience) and Friendliness (87% total increase, with 21% in the final step).

TABLE 6: Correlation of Resilience to Personality Factors

	LOW-HIH	LOW-ABA	ABA-HIH	R	Resilience Intervention
Neuroticism	**2.9x***	2x	**45%**	**-0.79**	Composure, Reasoning, Tenacity
Vulnerability	**5.9x**	2.8x	**111%**	**-0.74**	Composure, Reasoning, Tenacity
Depression	**5.6x**	2.8x	**100%**	**-0.70**	Vision, Reasoning, Tenacity
Anxiety	**4.2x**	2.2x	**91%**	**-0.68**	Composure, Reasoning, Tenacity
Self-Consciousness	**2.4x**	1.8x	**33%**	**-0.58**	Collaboration, Reasoning, Vision
Immoderation	**1.9x**	1.5x	**27%**	**-0.43**	Health, Vision, Tenacity
Anger	**1.8x**	1.5x	**20%**	**-0.44**	Composure, Reasoning, Tenacity
Conscientiousness	**52%**	39%	33%	**0.65**	Vision, Tenacity, Reasoning
Self-Discipline	**97%**	75%	29%	**0.68**	Vision, Tenacity, Reasoning
Orderliness	**59%**	41%	44%	**0.37**	Health, Vision, Tenacity
Self-Efficacy	**56%**	41%	37%	**0.62**	Tenacity, Vision, Reasoning
Cautiousness	**50%**	34%	47%	**0.37**	Vision, Reasoning, Tenacity
Achievement Striving	**44%**	36%	22%	**0.52**	Tenacity, Vision, Reasoning
Dutifulness	**26%**	20%	30%	**0.37**	Vision, Tenacity, Health
Extraversion	**65%**	49%	33%	**0.67**	Collaboration, Vision, Tenacity
Gregariousness	**99%**	72%	38%	**0.46**	Collaboration, Vision, Tenacity
Friendliness	**87%**	66%	32%	**0.59**	Collaboration, Vision, Tenacity
Cheerfulness	**86%**	62%	39%	**0.64**	Vision, Collaboration, Tenacity
Assertiveness	**66%**	53%	25%	**0.54**	Tenacity, Reasoning, Vision
Activity Level	**55%**	41%	34%	**0.42**	Vision, Tenacity, Health
Excitement Seeking	8%	6%	-	0.08	
Agreeableness	**13%**	10%	30%	**0.26**	Collaboration, Tenacity, Composure
Trust	**43%**	34%	26%	**0.35**	Collaboration, Health, Vision
Cooperation	**18%**	14%	29%	**0.23**	Composure
Altruism	**18%**	13%	38%	**0.27**	Collaboration, Tenacity, Vision
Morality	**17%**	15%	13%	**0.30**	Tenacity, Vision, Reasoning
Sympathy	12%	8%	-	0.14	
Modesty	**-22%**	-21%	5%	**-0.34**	Reasoning, Vision, Health
Openness	7%	6%	-	0.14	
Adventurous	**49%**	43%	14%	**0.43**	Reasoning, Tenacity, Collaboration
Intellect	**23%**	19%	21%	**0.27**	Reasoning, Tenacity, Composure
Artistic Interest	13%	7%	-	0.12	
Emotionality	-6%	-4%	-	-0.10	
Liberalism	-11%	-5%	-	-0.07	
Imagination	-12%	-11%	-	-0.13	

**Neuroticism x values indicate multiplicative protective value as resilience increases*

Note: LOW = Low resilience group, ABA = Above Average resilience group, HIH = High resilience group, LOW-HIH = Change when resilience increases from low to high PR6 overall. LOW-ABA = Change when resilience increases from low to above average PR6 overall. ABA-HIH = Additional value of moving from above average to high PR6 overall. R = Correlation between PR6 and factor, all values $p < 0.05$, significant correlations bolded.

Quantifying What it Means to be 'Resilient'

These findings help to clarify the elusive question of when someone can be considered truly resilient. The data suggests that a PR6 score of 85% or higher represents a meaningful benchmark for defining resilience. It is at this level where individuals reach a far higher level of protection against mental health challenges, enabling a much stronger ability to deal with major life adversities. This level of resilience contributes to a greater enjoyment of life and enhanced self-esteem through significant developments in other personality factors associated with positive life outcomes (Olaru, van Scheppingen, Bleidorn, & Denissen, 2023).

From a practical perspective, this 85% threshold could serve as a valuable target for resilience interventions in both clinical and non-clinical settings. Mental health professionals and resilience trainers could use this benchmark to set clear, quantifiable goals for their clients or patients. Reaching this level of resilience could be viewed as achieving a state of psychological "fitness" that provides robust protection against life's challenges while promoting positive personality traits conducive to life satisfaction and personal success.

However, it's important to note that resilience is not a static trait and maintaining a score above 85% requires ongoing effort and skill development across the various PR6 domains. Future

research could explore the stability of this threshold over time and across different life circumstances, as well as investigate whether certain PR6 domains are more critical than others in achieving and maintaining this high level of resilience.

The 85% PR6 score threshold offers a clear, quantifiable definition of what it means to be resilient. This benchmark provides a tangible goal for individuals seeking to enhance their mental well-being and a valuable metric for professionals designing and implementing resilience interventions.

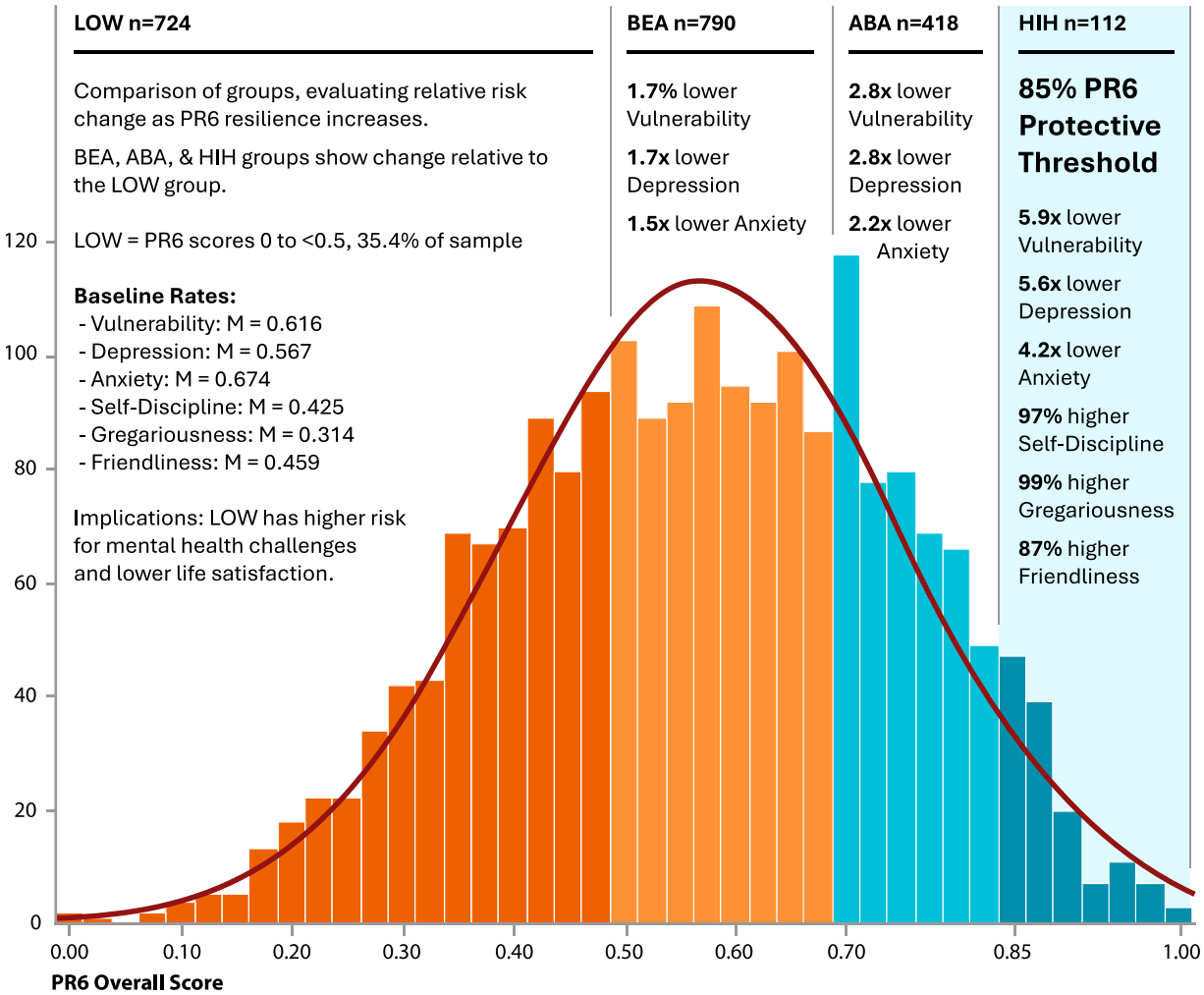
Modesty

An intriguing finding in this study is the negative correlation between resilience and Modesty (r = -0.34). As resilience increases, we observe a 22% decrease in Modesty scores, with most of this change (21%) occurring between low and above-average resilience levels. This suggests that highly resilient individuals tend to be less modest, possibly reflecting higher levels of self-confidence or willingness to assert their capabilities. This aligns with the definition and components of modesty provided by Gregg et al. (2008), who describe it as a combination of humility, shyness, and a lack of boastfulness, but also highlight the positive self-concept associated with lower modesty levels.

While modesty is often viewed as a positive trait, these findings indicate that excessive modesty might be detrimental to resilience. Gregg et al. (2008) also note that modesty is perceived positively but can include traits like shyness and social reticence, which could hinder resilience. It's possible that the self-assurance and positive self-concept associated with lower modesty contribute to an individual's ability to face and overcome challenges.

However, it's important to note that this doesn't imply arrogance is beneficial; rather, it suggests that a balanced and realistic self-assessment, including recognition of one's strengths, may be a component of high resilience. Future research could explore the optimal balance between modesty and self-assurance in the context of resilience and investigate how this relationship might vary across different cultural contexts where modesty may be valued differently (Gregg, Hart, Sedikides, & Kumashiro, 2008).

FIGURE 2: PR6 Distribution of Participants with Selected Effect Comparisons



Note: PR6 = Predictive 6 Factor Resilience Scale, LOW = Low resilience group, BEA = Below Average resilience group, ABA = Above Average resilience group, HIH = High resilience group.

Vulnerability Reduction and PTSD Prevention

The substantial decrease in Neuroticism, and particularly in Vulnerability, as resilience increases presents a promising pathway for trauma prevention and PTSD reduction, especially in high-risk professions such as emergency services and defence (Ponder, et al., 2023). The data shows a remarkable 5.9-fold reduction in Vulnerability when moving from low to high resilience levels, with a 2.8-fold reduction achieved even at above-average resilience. This dramatic decrease suggests that resilience training could serve as a practical preventative measure against trauma-related disorders, aligning with previous research (Bisson, et al., 2021).

For first responders and military personnel, who are routinely exposed to potentially traumatic events, this finding is particularly significant, providing a practical resilience target to reach at an individual level. High resilience, characterized by lower Vulnerability scores, may act as a psychological buffer, potentially reducing the risk of developing PTSD or other trauma-related conditions following exposure to high-stress situations. This aligns with previous research on resilience in high-adversity environments (Rossouw, Herlofson, Geldenhuys, & Erieau, 2024), discussing the effectiveness of targeted resilience training for these audiences.

The current findings provide further evidence for the value of implementing comprehensive resilience programs in these sectors. By focusing on boosting resilience to the 85%+ level, these workplaces could potentially significantly reduce the psychological vulnerability of their personnel, leading to improved mental health outcomes and enhanced operational readiness, a key component of prevention (Al Jowf, et al., 2022). Future research could explore the long-term effects of such resilience training on PTSD rates among high-risk professionals, potentially revolutionizing approaches to mental health protection in these demanding fields.

Factors and Resilience

Resilience has a broad positive correlation with personality development. While previous research found similar correlations, most primarily considered correlations to the five main factors (Atsushi, Kanako, Mari, & Gul, 2018). This research on the PR6 and personality provides additional detail on correlation with the 30 sub-factors, providing additional insight beneficial for more targeted individual intervention through resilience training.

Table 6 indicates a potential approach to use the most highly correlated resilience domains as targeted personality development interventions for specific personal challenges or desired growth areas. This allows an expansion on findings of previous research that suggest resilience as a mediator for personal challenges (McDonnell & Semkovska, 2020). While mental illnesses have various proven interventions, this research indicates further value of resilience as a preventative intervention, alongside more exact pathways for overcoming individual development areas through targeted resilience training.

While there are broad correlations across Neuroticism, Conscientiousness and Extraversion, there are some personality sub-factors found to not have significant relationships. These include Excitement-Seeking, Artistic Interests, Liberalism, Emotionality, and Sympathy. These sub-factors may generally indicate personal preferences that have less impact on resilience through adversity, and thereby are not areas that necessarily need to be 'developed' as such, particularly when compared to sub-factors in Neuroticism, Conscientiousness and Extraversion, where development can provide an improved experience of life and protection to mental illness.

Conclusion

This study explored the relationship between resilience, as measured by the Predictive 6 Factor Resilience Scale (PR6), and personality traits defined by the Big Five model using the IPIP-NEO-120 scale. The findings reveal significant correlations, particularly highlighting a negative relationship between resilience and Neuroticism and positive relationships with Conscientiousness and Extraversion. Given the capacity of resilience to be developed (Rossouw & Ruberto, 2024; Rossouw, Erieau, & Beeson, 2019), these correlations suggest that enhancing resilience could be a promising pathway for personality development, with substantial implications for mental health and well-being.

The strong negative correlation between PR6 and Neuroticism indicates that individuals with higher resilience levels are likely to experience lower levels of emotional instability, vulnerability, anxiety, and depression. This indicates the potential of targeted resilience interventions to mitigate risk factors associated with mental health disorders, particularly in high-stress environments such as emergency services and defense. The positive correlations with Conscientiousness and Extraversion further suggest that resilience training can enhance traits associated with goal-oriented behavior, social engagement, and overall life satisfaction (Olaru, van Scheppingen, Bleidorn, & Denissen, 2023).

The study identifies a critical resilience threshold at a PR6 score of 85%, beyond which individuals experience marked improvements in personality traits and protection against mental health challenges. This threshold offers a clear, actionable target for resilience training programs, providing a measurable benchmark for assessing and enhancing resilience. The value of a clear benchmark is useful, as the concept of when an individual can be considered 'resilient' still proves elusive in psychology (Troy, et al., 2023).

PR6-based resilience training programs such as Resilience First Aid (Rossouw & Ruberto, 2024), High Adversity Resilience Training (Rossouw, Herlofson, Geldenhuys, & Erieau, 2024), and the Driven Resilience App (Rossouw, Erieau, & Beeson, 2019) provide previously accredited and research-based options towards achieving this type of personality development and protecting mental health as a primary prevention approach.

Given the distribution of participants across groups (Figure 2), it is clear that only a smaller proportion of the study population in HIH (5.5% of participants) enjoy the protective benefits of high resilience, with more in ABA (20% of participants). It's noted that in this research average resilience levels were lower than historical PR6 benchmarks in 2016 (Rossouw & Rossouw, 2016), which follows the trend of more recent resilience levels to generally be lower since the COVID-19 pandemic (Rossouw J. G., 2022). Interestingly, this indicates that few people tend to overestimate their resilience levels, highlighting the value of assessing resilience as a starting point to building resilience skills through training and reassessment.

The findings also highlight gender differences in resilience, with males exhibiting slightly higher resilience scores than females and non-specified individuals, however overall finding that gender generally has a minor impact on differences in scores.

Regardless, further investigation can provide pathways for gender-sensitive approaches in designing and implementing resilience interventions to address the unique needs and stressors faced by different genders.

Limitations

Several limitations should be considered when interpreting the findings of this study. Firstly, the cross-sectional design precludes any causal inferences about the relationship between resilience and personality traits. Longitudinal studies are needed to determine whether increases in resilience lead to changes in personality traits over time.

The findings primarily consider resilience as an approach to prevent mental illness through proactive training. Therefore, this does not imply an approach to treat mental illness. The value in resilience lies rather in the ability to protect against mental illness through strength-based development.

Implications for Future Research

Future research can include longitudinal studies to explore the causal pathways between resilience and personality traits, examining how changes in resilience over time impact personality development. Such studies can provide more accurate insights into the mechanisms through which resilience influences personality and identify critical periods for intervention.

Additionally, there is a need to examine the effectiveness of resilience training programs across different cultural and demographic contexts. Understanding how cultural factors influence resilience and its relationship with personality traits can help tailor interventions to be more effective in diverse populations. Research should also explore the long-term impacts of resilience training on mental health outcomes, particularly in high-risk professions, to develop comprehensive prevention strategies for trauma and stress-related disorders.

Finally, investigating the role of specific resilience domains in supporting beneficial personality traits can provide targeted approaches for personal development. By identifying which resilience skills are most effective in enhancing particular personality traits, interventions can be designed to address individual needs more precisely, ultimately leading to improved mental health and life satisfaction.

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