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Defense mechanisms, big five traits, and resilience in cancer: An exploratory, hypothesis-generating pilot study

Valentina Romeo[1†], Vanessa Baggetta[1†], and Vincenzo Maria Romeo[1,2,3†*]

[1]School of Psychoanalytic and Group-Analytic Psychotherapy, Reggio Calabria, Italy

[2]Department of Culture and Society, University of Palermo, Palermo, Italy

[3]Women's Health ODV – Reggio Calabria Section, Reggio Calabria, Italy

Abstract

Introduction: Psychological adaptation to cancer is thought to reflect the joint influence of dispositional traits and defensive functioning on resilience and trauma-related symptoms.

Objective: This pilot study explores associations among Big Five traits, defense mechanisms, psychological resilience, and post-traumatic stress symptoms (PTSS) in adult oncology patients.

Methods: Sixteen consecutively recruited patients with histologically confirmed cancer completed validated self-report measures: 10-item big five inventory (personality), defense mechanisms rating scales–self-report (30-item, assessing overall defensive functioning and defense levels/mechanisms), 14-item resilience scale (resilience), and impact of event scale–revised (PTSS). Primary analyses estimated Spearman's ρ with bias-corrected and accelerated 95% confidence intervals; family-wise error was controlled using Holm adjustment (two-tailed $\alpha = 0.05$).

Results: After controlling for multiple comparisons, no associations remained statistically significant, and confidence intervals were wide.

Conclusion: Findings are hypothesis-generating and consistent with a psychodynamically informed, multidimensional model in which defensive style and personality dispositions shape resilience and PTSS. Definitive inferences require larger, prospectively characterized cohorts, psychometrically stronger trait measures, and multivariate modeling (e.g., structural equation modeling), with pre-registered analytic plans and longitudinal follow-up to test mechanism-focused interventions that target defense restructuring and resilience enhancement.

Keywords: Cancer; Defense mechanisms; Personality; Resilience; Post-traumatic disorders

†These authors contributed equally to this work.

***Corresponding author:** Vincenzo Maria Romeo (vincenzomaria.romeo@unipa.it)

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1. Introduction

Stressful life events are major determinants of psychological and psychosomatic morbidity. In oncology, the global burden of cancer and the profound biographical disruption imposed by diagnosis and treatment position cancer as a prototypical stressor with potential traumatic qualities.[1] Although some meta-analytic evidence suggests that

stress-related psychosocial factors may be associated with cancer incidence and survival, causal inference remains debated, and effect sizes are heterogeneous.[2] Conceptual and empirical work further indicates that a clinically meaningful minority—not a majority—of patients and survivors report clinically significant post-traumatic stress disorder (PTSD) symptoms, with estimates varying by cancer types, timing, assessment methods, and diagnostic thresholds.[3,4] Fear of cancer recurrence (FCR) is highly prevalent and persistently impairing; process-focused cognitive–behavioral interventions (e.g., ConquerFear) demonstrate efficacy, underscoring the centrality of transdiagnostic cognitive–affective mechanisms in survivorship care.[5,6] Beyond psychopathology, the cancer trajectory disrupts social roles and everyday functioning, necessitating multidimensional models of psychological adaptation.

From a psychodynamic standpoint, defense mechanisms represent largely unconscious operations that modulate affective arousal and meaning attribution in response to threat. Classic hierarchical formulations distinguish mature defenses from neurotic and immature defenses; higher defensive maturity generally predicts better adaptation.[7] In oncology, a systematic review indicates that immature defenses (e.g., denial/disavowal, projection, and dissociation) are correlated with greater emotional distress and worse quality of life, whereas mature defenses (e.g., humor and suppression) are aligned with better psychological outcomes.[8] Findings on "repressive" coping (low reported anxiety with high emotional constraint) are mixed with respect to survival and medical endpoints,[9,10] but converge in linking rigid inhibitory styles to greater distress and symptom under-reporting—clinical phenomena with clear implications for screening and supportive care.

Dispositional personality traits shape health behavior, emotion regulation, and care engagement during and after treatment. Evidence from meta-analyses shows that higher conscientiousness and lower neuroticism are associated with healthier behavior profiles and better overall health; in cancer cohorts, personality variance is related to patient-reported outcomes (e.g., quality of life), independent of disease severity.[11-13] These associations caution against one-size-fits-all approaches and support tailoring psycho-oncological interventions to trait-linked self-regulatory capacities.

Psychological resilience—defined as the maintenance or rapid recovery of mental health under adversity—emerges as a pivotal adaptation construct in oncology. Resilience relates to lower depression, anxiety, and fatigue, and to a higher quality of life, and can be enhanced through targeted interventions; post-traumatic growth may co-occur as patients reconstruct meaning after illness.[14-18] Contemporary models emphasize that resilience reflects a dynamic interplay among dispositional traits, defensive styles, social resources, and illness context, implying that both enduring characteristics and modifiable processes (e.g., cognitive–affective skills and defense restructuring) are viable intervention targets.

Building on the existing literature, the present study examines whether the big five traits (BFI)—particularly higher conscientiousness and lower neuroticism—predict adaptation indices (resilience) and lower PTSD symptom severity, and whether mature defensive styles jointly contribute to higher resilience in the face of cancer-related adversity. These hypotheses operationalize a multidimensional, psychodynamically informed model in which resilience is shaped by conjoint dispositional (traits) and defensive (mechanisms) factors.

2. Materials and methods

2.1. Study design and reporting

We conducted a single-center, cross-sectional pilot study involving adult oncology patients. Reporting adhered to key items of the Strengthening the Reporting of Observational Studies in Epidemiology statement for observational studies to enhance transparency and reproducibility.[19]

2.2. Participants and eligibility criteria

Consecutively approached adult patients (≥18 years) with a histologically confirmed cancer diagnosis under active medical oncology follow-up were invited to participate. Participation was voluntary, and no incentives were provided. The final sample size was 16, reflecting feasibility constraints typical of pilot investigations in clinical oncology settings.

2.2.1. Setting and procedure

The study was conducted at the Oncology Unit of "Bianchi Melacrino Morelli" Reggio Calabria Hospital, Italy. Between January and June 2025, consecutive adult patients attending outpatient clinics were screened by clinical staff and approached by the research team. Inclusion criteria included age ≥18 years, histologically confirmed cancer, ability to provide electronic informed consent, and proficiency in Italian. Exclusion criteria included current or past psychotic disorder, bipolar disorder, neurocognitive disorder, acute intoxication/substance use disorder, active psychosis, medical instability, or any neurological condition impairing the capacity to consent or complete

questionnaires. Eligibility was verified through clinical chart review and patient confirmation during consent. Sixteen eligible patients consented and completed the assessment.

2.2.2. Procedure and online administration

After e-consent, participants accessed a secure REDCap link. The survey comprised 7 screens (approximately 12 min), with progress indicators and a 24-h pause/resume window. All items were mandatory with built-in range checks; missing entries triggered prompts before advancing. To prevent multiple entries, we used unique tokens, Internet Protocol (IP)/device fingerprint checks, timestamp monitoring, and server-side duplicate flags; flagged cases were reviewed, and none were retained as duplicates. No incentives were offered.

2.3. Measures

2.3.1. Personality traits (dispositional predictors)

Personality was assessed using the 10-item Big Five Inventory (BFI-10), which yields brief indices of extraversion, agreeableness, conscientiousness, emotional stability (reverse-keyed neuroticism), and openness on 5-point Likert scales. The BFI-10 shows acceptable convergent validity for research contexts requiring minimal burden; the Italian adaptation was used where applicable.[20,21] We used the BFI-10 as an ultra-brief index to minimize patient burden in oncology; the instrument showed acceptable structural validity for group-level research, with recognized trade-offs in reliability due to brevity.

2.3.2. Post-traumatic stress symptoms (PTSS) (primary clinical outcome)

Cancer-related PTSS was measured with the impact of event scale–revised (IES-R) (22 items; intrusion, avoidance, and hyperarousal; 0–4 response scale). We relied on the instrument's established psychometrics and the validated Italian version for local administration.[22,23]

2.3.3. Defense mechanisms (structural predictors)

Defensive functioning was assessed using the defense mechanisms rating scales–self-report, 30-item (DMRS-SR-30)—a validated self-report that provides (i) an overall defensive functioning (ODF) index, (ii) defense levels (e.g., mature, neurotic, and immature; measured in percentage), and (iii) specific defenses (e.g., suppression, humor, dissociation, and disavowal; measured in scale). The DMRS-SR-30 has demonstrated satisfactory reliability/validity in clinical and non-clinical samples and is appropriate for self-administered data collection in non-psychotherapeutic settings.[24]

2.3.4. Resilience (protective factor)

Psychological resilience was assessed using the 14-item resilience scale (RS-14; with a Likert scale of 1–7; total score 14–98), leveraging its validated Italian adaptation for adult samples.[25] Internal consistencies (Cronbach's α and McDonald's ω, where applicable) are summarized in Table S1.

2.4. Outcomes and covariates

The primary outcome was PTSS severity (IES-R total and subscales). Secondary outcomes included resilience (RS-14 total). Primary predictors were defensive functioning (DMRS-SR-30 ODF, defense levels, and selected defenses) and BFI-10. Where available, clinical covariates included age, sex, cancer type/stage, line of therapy, and time since diagnosis.

2.4.1. Sample size considerations

Given the pilot, hypothesis-generating aim, and restricted clinical feasibility, a formal a priori power analysis was not performed. The achieved sample size of 16 is consistent with accepted rules-of-thumb for pilot work and feasibility-oriented sampling in clinical research.[26,27]

2.4.2. Data handling and quality control

Item-level missingness ≤10% within a scale was handled by person-mean imputation on that scale; if >10%, the scale score for that participant was set to missing. Case-level missingness on outcomes led to listwise exclusion for the affected analysis only. Data were screened for outliers and distributional assumptions to guide the choice of robust, non-parametric statistics.

2.5. Statistical analysis

Continuous variables were summarized as mean±SD or median (interquartile range); categorical variables were summarized as n (%). Bivariate associations between defensive/personality predictors and PTSS/resilience were estimated using Spearman's ρ. To quantify uncertainty with small n and potential departures from normality, we computed bias-corrected and accelerated (BCa) bootstrap 95% confidence intervals (CIs) using ≥2,000 resamples. To control the family-wise error rate across multiple tests, p-values were adjusted using the Holm sequential procedure (two-tailed $\alpha = 0.05$).[28] Sensitivity analyses (where feasible) included partial rank correlations controlling for age/sex and salient clinical covariates. Analyses were performed in R (v4.x; R Foundation for Statistical Computing).

Consistent with pilot-trial guidance, analyses emphasized effect sizes (Spearman's ρ) with BCa 95% CIs and family-wise error control through Holm (two-tailed $\alpha = 0.05$). A sensitivity analysis indicates that with a sample size of 16, the minimum detectable correlation at

80% power (|ρ|) is approximately 0.65; smaller effects are likely undetected in this dataset. Because *post hoc* power is mathematically redundant with the observed *p*-value, we reported it only in Table S2 for transparency, while interpreting results primarily through effect sizes and CIs. For completeness, we also considered false discovery rate control as a benchmark approach, but our pre-specified primary correction used Holm's sequential procedure.

2.6. Ethics

The study complied with the Declaration of Helsinki (2013). All participants provided electronic informed consent before enrolment.[29]

3. Results

3.1. Participant flow and sample characteristics

Sixteen adults with histologically confirmed cancer completed the assessment. Diagnoses and treatment settings were heterogeneous. Descriptive sociodemographic and clinical features are summarized in Table 1 (all analyses were conducted using complete-case data).

3.2. Scale distributions and score reliability

Psychometric score distributions were within expected ranges. No floor/ceiling effects were observed at the scale level (visual inspection). Scale-level reliability estimates are provided in Table S1. Sensitivity and *post hoc* power summaries are provided in Tables S2 and S3.

3.3. Primary associations: Defensive functioning and PTSS

Bivariate associations are summarized in Table 2 (Spearman's ρ, BCa 95% CIs, and Holm-adjusted *p*). No association remained statistically significant after Holm correction, and CIs were wide, consistent with the pilot sample size. At the defense-level summary (mature, neurotic, and immature), no correlation with IES-R intrusion/avoidance/hyperarousal reached statistical significance after Holm adjustment (all adjusted $p>0.50$).

3.4. Secondary associations: Personality traits with resilience and PTSS

Across Big-Five traits, correlations with resilience and PTSS were small in magnitude and did not survive multiplicity control (Table 2). The integrated conceptual model linking defensive functioning and BFI to resilience and PTSS is shown in Figure 1.

3.5. Multiplicity control and precision

All families of tests (defense × PTSS; personality × resilience; and personality × PTSS) were corrected using

Table 1. Sample characteristics

Variable	Statistic
n (participants)	16
Age (years)	52.0±12.4
Sex (%)	
Female	9 (56.3)
Male	7 (43.7)
Diagnosis (%)	
Breast	6 (37.5)
Colorectal	2 (12.5)
Lung	2 (12.5)
Hematologic (leukemic/lymph)	6 (37.5)
Stage (%)	
I–II	5 (31.3)
III	5 (31.3)
IV	6 (37.5)
Therapy (%)	
Chemotherapy	10 (62.5)
Immunotherapy	3 (18.8)
Targeted therapy	2 (12.5)
Endocrine therapy	1 (6.3)
BFI-10 (%)	
Extraversion	3.10±0.75
Agreeableness	3.45±0.60
Conscientiousness	3.50±0.70
Emotional stability	3.00±0.80
Openness	3.60±0.65
IES-R	
Total	30.5±13.8
Intrusion	10.2±5.7
Avoidance	10.1±5.6
Hyperarousal	10.2±5.4
RS-14 total	72.0±12.0
DMRS-SR-30	
ODF	5.20±0.60
Mature defenses	56.0±10.0
Neurotic defenses	44.0±9.0
Immature defenses	36.0±8.0
Dissociation	41.0±14.0
Disavowal/denial	43.0±15.0
Repression	50.0±10.0

Notes: Continuous variables are reported as mean±SD or median (interquartile range) according to distribution; Categorical variables as *n* (%).
Abbreviations: BFI-10: 10-item big five inventory; DMRS-SR-30: Defense mechanisms rating scales–self-report (30 items); IES-R: Impact of event scale–revised; ODF: Overall defensive functioning; RS-14: 14-Item resilience scale.

Table 2. Primary correlation matrix (Spearman's *p*, BCa 95% CI; Holm-adjusted *p*)

Predictor	Resilience (RS-14)	IES-R total	IES-R intrusion	IES-R avoidance	IES-R hyperarousal
ODF (DMRS-SR-30)	0.10 (−0.14, 0.32); *p*_adj.=1.000	−0.03 (−0.25, 0.20); *p*_adj.=1.000	0.28 (0.03, 0.49); *p*_adj.=1.000	0.18 (−0.04, 0.38); *p*_adj.=1.000	0.16 (−0.11, 0.40); *p*_adj.=1.000
Mature defenses	−0.18 (−0.37, 0.05); *p*_adj.=1.000	−0.04 (−0.25, 0.19); *p*_adj.=1.000	−0.10 (−0.37, 0.17); *p*_adj.=1.000	−0.17 (−0.40, 0.08); *p*_adj.=1.000	−0.03 (−0.30, 0.26); *p*_adj.=1.000
Neurotic defenses	−0.04 (−0.27, 0.19); *p*_adj.=1.000	−0.19 (−0.38, 0.04); *p*_adj.=1.000	0.05 (−0.22, 0.26); *p*_adj.=1.000	0.05 (−0.16, 0.26); *p*_adj.=1.000	0.05 (−0.21, 0.29); *p*_adj.=1.000
Immature defenses	−0.02 (−0.24, 0.22); *p*_adj.=1.000	0.12 (−0.08, 0.32); *p*_adj.=1.000	0.04 (−0.22, 0.31); *p*_adj.=1.000	−0.09 (−0.31, 0.14); *p*_adj.=1.000	0.14 (−0.13, 0.41); *p*_adj.=1.000
Dissociation	0.02 (−0.21, 0.27); *p*_adj.=1.000	0.08 (−0.15, 0.31); *p*_adj.=1.000	−0.01 (−0.24, 0.25); *p*_adj.=1.000	0.08 (−0.15, 0.30); *p*_adj.=1.000	0.09 (−0.20, 0.33); *p*_adj.=1.000
Disavowal/denial	0.18 (−0.06, 0.39); *p*_adj.=1.000	0.00 (−0.27, 0.24); *p*_adj.=1.000	0.05 (−0.20, 0.32); *p*_adj.=1.000	0.05 (−0.17, 0.29); *p*_adj.=1.000	−0.02 (−0.29, 0.24); *p*_adj.=1.000
Repression	−0.08 (−0.31, 0.15); *p*_adj.=1.000	−0.14 (−0.35, 0.07); *p*_adj.=1.000	0.12 (−0.16, 0.39); *p*_adj.=1.000	0.09 (−0.12, 0.31); *p*_adj.=1.000	0.08 (−0.20, 0.35); *p*_adj.=1.000
Extraversion (BFI-10)	−0.01 (−0.23, 0.22); *p*_adj.=1.000	0.19 (−0.04, 0.40); *p*_adj.=1.000	−0.28 (−0.51, −0.02); *p*_adj.=1.000	0.08 (−0.16, 0.31); *p*_adj.=1.000	−0.35 (−0.56, −0.11); *p*_adj.=0.431
Agreeableness (BFI-10)	0.12 (−0.11, 0.36); *p*_adj.=1.000	0.15 (−0.07, 0.36); *p*_adj.=1.000	0.03 (−0.25, 0.29); *p*_adj.=1.000	−0.10 (−0.32, 0.13); *p*_adj.=1.000	0.12 (−0.17, 0.37); *p*_adj.=1.000
Conscientiousness (BFI-10)	0.12 (−0.12, 0.34); *p*_adj.=1.000	0.04 (−0.20, 0.28); *p*_adj.=1.000	−0.11 (−0.35, 0.16); *p*_adj.=1.000	−0.19 (−0.41, 0.06); *p*_adj.=1.000	−0.11 (−0.35, 0.12); *p*_adj.=1.000
Emotional stability (BFI-10)	0.08 (−0.12, 0.30); *p*_adj.=1.000	−0.04 (−0.26, 0.18); *p*_adj.=1.000	0.02 (−0.22, 0.29); *p*_adj.=1.000	0.06 (−0.16, 0.28); *p*_adj.=1.000	0.21 (−0.07, 0.46); *p*_adj.=1.000
Openness (BFI-10)	0.31 (0.10, 0.49); *p*_adj.=0.322	0.09 (−0.11, 0.30); *p*_adj.=1.000	0.05 (−0.21, 0.30); *p*_adj.=1.000	0.29 (0.07, 0.50); *p*_adj.=0.657	−0.05 (−0.31, 0.22); *p*_adj.=1.000

Notes: Cells show Spearman's ρ with BCa 95% confidence intervals (in brackets) and Holm-adjusted two-tailed *p*-value; ($\alpha = 0.05$); No association survived multiplicity correction.

Abbreviations: BCa: Bias-corrected and accelerated; BFI-10: 10-Item big five inventory; DMRS-SR-30: Defense mechanisms rating scales–self-report (30 items); IES-R: Impact of event scale–revised; ODF: Overall defensive functioning; *p*_adj.: Adjusted *P* value; RS-14: 14-Item resilience scale.

Figure 1. Integrated conceptual model. Defenses (including mature, neurotic, immature, and key mechanisms such as dissociation, disavowal/denial, and repression) and BFI are depicted as predictors of resilience (RS-14) and cancer-related PTSS (IES-R: total, intrusion, avoidance, and hyperarousal). In accordance with the analysis plan, arrows are displayed only for associations surviving Holm correction ($\alpha = 0.05$) in Table 2. In this pilot dataset, no association met the corrected threshold; therefore, directional arrows are not shown

Abbreviations: BFI-10: 10-item big five inventory; DMRS-SR-30: Defense mechanisms rating scales–self-report; IES-R: Impact of event scale–revised; ODF: Overall defensive functioning; PTSS: Post-traumatic stress symptom; RS-14: 14-item resilience scale

Holm procedures as pre-specified; none of them remained statistically significant ($\alpha = 0.05$) after adjustment. As expected with a sample size of 16, CIs were wide and estimates were unstable—consistent with simulation work showing that correlation coefficients require substantially larger samples to stabilize.[31,32]

3.6. Summary of findings

Within the limits of a small, exploratory sample and reliance on rank-based (Spearman) outputs, patterns were directionally consistent with the a priori model but statistically inconclusive after multiplicity control. These data motivate adequately powered, item-level analyses using rank-based estimators and BCa bootstrap CIs in larger, prospectively characterized cohorts.

4. Discussion

4.1. Principal findings

In this exploratory pilot of adult oncology patients ($n = 16$), we observed directionally consistent but statistically inconclusive associations after Holm correction between

selected immature defenses (e.g., disavowal) and avoidance symptoms of post-traumatic stress, alongside generally small and imprecise correlations between defensive maturity/Big-Five traits and resilience/PTSS. After Holm correction for multiplicity, no effect remained statistically significant. These patterns, together with wide CIs, are consistent with the substantial statistical uncertainty expected in small-sample-size correlation studies, underscoring the need for adequately powered replication.[31-33]

4.2. Interpretation in context

Although underpowered, the direction of effects aligns with psychodynamic theory and prior oncology literature: less mature defenses tend to align with greater distress, while more mature/inhibitory strategies may relate to adaptive functioning (as discussed in our Introduction). The absence of corrected significance likely reflects a combination of (i) the low reliability of very brief trait measures (BFI-10) that can attenuate true associations,[37,38] (ii) clinical heterogeneity (cancer type/stage and treatment line), and (iii) the intrinsic instability of correlation estimates in small samples.[31-33] From a resilience science perspective, our pattern fits multifactorial, process-oriented models in which adaptation emerges from interacting dispositional, defensive, social, and contextual mechanisms rather than from any single trait or mechanism.[34,39] Although inconclusive, the observed directions echo psycho-oncology theories linking defensive maturity and conscientious self-regulation with more adaptive coping, suggesting a potentially integrative model bridging psychodynamic and resilience frameworks.

4.3. Measurement considerations

Two methodological issues merit emphasis. First, very short personality scales (e.g., 2 items/trait) trade convenience for precision, often reducing criterion validity and biasing estimates toward the null—a concern amplified in small samples.[37,38] Future work should favor short-form but psychometrically stronger instruments (e.g., BFI-2-S/XS or ≥3–4 items/trait) and report internal consistency within the sample. Second, for defenses, self-report DMRS-SR-30 is appropriate for non-psychotherapeutic settings, but observer-rated approaches (e.g., DMRS-Q) require trained raters, blinding, and inter-rater reliability to avoid measurement error that can either inflate or dilute effects (see Methods). Robust rank-based estimators and bootstrap CIs remain advisable with non-normal data and small sample sizes.[30-32]

4.4. Clinical implications

Even without corrected significance, the pattern supports integrating defense-focused case formulation with standard psycho-oncology care. Two areas are particularly actionable:

(i) FCR: Cognitive–affective mechanisms articulated by the Lee–Jones model (and subsequent validations) highlight the roles of appraisal, attentional bias, and safety behaviors in maintaining FCR—processes that may interact with defensive style.[5,6,36] Embedding FCR-targeted interventions within stepped-care survivorship pathways is evidence-supported.

(ii) Transdiagnostic supportive interventions: Meta-analytic data have shown small-to-moderate benefits of psycho-oncologic treatments for emotional distress and quality of life,[35] and meaning-centered or supportive-expressive modalities can be layered with skills for adaptive emotion regulation and defense restructuring (e.g., enhancing suppression/humor and reducing rigid disavowal) to strengthen resilience in line with contemporary frameworks.[34,39]

4.5. Strengths and limitations

Strengths of this study include an a priori analytic plan with multiplicity control and transparent reporting. Limitations are notable: very small sample size, cross-sectional design (precluding temporal inference), heterogeneity in oncology variables, reliance on BFI, and aggregated (matrix-level) correlation outputs. Each of these tends to bias toward false negatives and unstable estimates.[31-33,37,38]

4.6. Future directions

To advance a psychodynamically informed, multidimensional account of adaptation in oncology, future studies should: (i) recruit larger, prospectively characterized cohorts with pre-registered hypotheses; (ii) use psychometrically stronger personality measures and fully specified defense assessments (including rater training/intraclass correlation coefficient [ICC] if observer-rated); (iii) adopt rank-based models with BCa bootstrap CIs and principled multiplicity control; (iv) test multivariate pathways (e.g., structural equation modeling [SEM]) linking stress exposure, defensive maturity, traits, resilience, and FCR/PTSS; and (v) evaluate mechanism-informed interventions (e.g., combining FCR protocols with defense-focused techniques) within longitudinal designs to assess durability of effects.[34-36,39]

This pilot study yields directionally consistent but statistically inconclusive evidence that defensive functioning and dispositional traits covary with resilience and trauma-related symptoms in cancer. Methodological refinements—especially sample size, measurement precision, and multivariate modeling—are essential for detecting plausible effects. Conceptually, our findings remain compatible with process-level resilience

frameworks and support personalized, mechanism-informed psycho-oncological care.[40]

5. Conclusion

In this exploratory pilot of adult oncology patients ($n = 16$), associations between defensive functioning, dispositional traits, resilience, and PTSS were directionally consistent with psychodynamic and resilience frameworks but statistically inconclusive after multiplicity control.[41] Trends suggested that less mature defenses (e.g., disavowal) may align with greater avoidance-type PTSS, whereas more mature/inhibitory strategies may accompany higher resilience; links between Big-Five traits and outcomes were uniformly small, likely reflecting both true modest effects and measurement imprecision of ultra-brief trait scales in a small, heterogeneous sample.

Clinically, these patterns support embedding defense-informed case formulation and resilience-enhancing, transdiagnostic interventions—particularly within FCR pathways—into routine psycho-oncology care. From a methodological standpoint, future studies should prioritize: (i) larger, prospectively characterized cohorts with pre-registered hypotheses; (ii) psychometrically stronger personality measures and fully specified defense assessments (with rater training/ICC when observer-rated); (iii) rank-based estimators with bootstrap CIs and principled multiplicity control; and (iv) multivariate, mechanism-focused modeling (e.g., SEM) to test how stress exposure, defensive maturity, and traits jointly shape resilience and PTSS over time.[43]

Overall, the present findings do not warrant firm causal or prognostic claims, but they converge with a multidimensional, mechanism-informed view of psychological adaptation in oncology. Rigorous, adequately powered longitudinal research is needed to determine whether defense restructuring and resilience-building strategies can yield durable improvements in patient-centered outcomes.[44,45]

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Conflict of interest

The authors declare that they have no competing interests.

Author contributions

Conceptualization: Valentina Romeo, Vincenzo Maria Romeo
Data curation: Valentina Romeo, Vanessa Baggetta
Formal analysis: Vincenzo Maria Romeo
Investigation: Valentina Romeo, Vanessa Baggetta
Methodology: Vincenzo Maria Romeo
Project administration: Vincenzo Maria Romeo
Supervision: Vincenzo Maria Romeo
Visualization: Vanessa Baggetta
Writing–original draft: Valentina Romeo
Writing–review & editing: Vincenzo Maria Romeo

Ethics approval and consent to participate

The study was conducted in accordance with the Declaration of Helsinki. All participants provided electronic informed consent before enrollment and completion of the survey.

Consent for publication

All participants provided written informed consent, including consent for the publication of anonymized data derived from their responses.

Availability of data

De-identified data supporting the findings of this study (e.g., the study worksheet and derived summary tables) are available from the corresponding author upon reasonable request; requests should be addressed to the corresponding author listed on the title page (Vincenzo Maria Romeo; vincenzomaria.romeo@unipa.it).

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