From Traits to Types: Validating the works of Jung and Freud with the Big Five

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Trait Indicator

Abstract

This paper presents a comprehensive synthesis of personality structure by integrating trait, type, and neurocognitive models through the Trait Response Personality Indicator (TRPI). Using 2,916 TRPI profiles, we: (1) empirically replicate and extend classical Jung–Big Five mappings based on type profiles and introduce a cognitive cluster taxonomy; (2) demonstrate, via weighted factor analysis, that the Big Five traits are organized into two meta-traits aligned with hemispheric context processing—short/long—corresponding to Ego and Superego constructs; and (3) reveal, through k-means clustering, that four robust behavioral modes (Freeze, Fight, Fawn, Flight) naturally emerge, each mapping to a Jungian function pairing and survival response. Our findings substantiate the TRPI as a bridge between trait, type, and neurocognitive models, offering a dynamic, data-driven account of personality architecture that subsumes both classical dichotomies and contemporary trait perspectives, and situates them within a neurocognitive framework.

Keywords: TRPI, Big Five, cognitive functions, hemispheric lateralization, survival modes, k-means clustering, meta-traits, context processing

1. Introduction

The science of personality is marked by the historical divide between trait-based and type-based approaches. The Big Five model has dominated empirical research due to its robust psychometric properties and predictive utility. Simultaneously, Jungian typology and its derivatives, such as the Myers–Briggs Type Indicator (MBTI), have retained popular and theoretical influence by describing personality in terms of cognitive function dynamics. Yet, despite efforts to bridge these models [1, 2], the lack of a unified, neurocognitively plausible synthesis persists.

The Trait Response Personality Indicator (TRPI) framework proposes that trait and type are both emergent properties of deeper context processing preferences, rooted in hemispheric specialization. Specifically, TRPI posits that the distinction between Extraversion and Introversion reflects an individual's preference for short versus long-context processing, as supported by neuroscientific evidence of temporal integration differences between cerebral hemispheres [7, 8]. Within this paradigm, Sensing and Intuition are grounded not merely as stylistic differences, but as manifestations of concrete versus abstract context processing, regulated by left and right hemispheric biases, respectively.

Moreover, the TRPI introduces the concepts of Ego and Superego as emergent meta-constructs corresponding to short- and long-context processing. These constructs are theorized to underpin both trait expression (as meta-traits of the Big Five) and the dynamic deployment of Jungian function pairings. Crucially, this framework predicts the emergence of four survival modes—Freeze, Fight, Fawn, and Flight—that correspond directly to the function pairings, and are empirically observable as behavioral states in trait data.

In the present work, we integrate and extend previous empirical studies by: (1) validating the TRPI's mapping between Jungian type and Big Five profiles; (2) revealing the underlying meta-trait structure of the Big Five as aligned with hemispheric context processing; and (3) demonstrating, through behavioral clustering, the spontaneous emergence of the four 4F survival modes, each mapping uniquely onto cognitive function pairings. In doing so, we aim to provide a unified, data-driven model of personality architecture that spans trait, type, and brain.

2. Methods

2.1. Participants and Instruments

Data were collected from 2,916 English-speaking participants, recruited via social media to traitindicator.com. Each participant completed the TRPI short form, a 26-item visual analogue scale (0–100) instrument. The measure includes Openness (6 items), Conscientiousness (5), Extraversion (5), Agreeableness (5), and Neuroticism (5), selected from a larger

pool of 78 items. Cronbach's α coefficients in this sample were 0.70 (Openness), 0.97 (Conscientiousness), 0.92 (Extraversion), 0.96 (Agreeableness), and 0.97 (Neuroticism).

In addition, for prototype derivation, a reference set of $n = 140$ participants reporting both Big Five scores and Jungian type was used to establish the canonical mapping between type and trait.

2.2. Typological Weighting and Preprocessing

Given overrepresentation of certain types, a frequency-based weighting algorithm was employed. Each participant's weight was computed as $w_i = \max(0.25, 1 - f_i/f_{max})$, where f_i is the observed frequency of their type and f_{max} is the maximum frequency observed. This weighting was incorporated into all covariance and factor analyses to ensure balanced contributions across types.

2.3. Profile–Prototype Cross-Validation

For type assignment, each participant's standardized Big Five vector was correlated with each of the sixteen prototypical Big Five type vectors. A composite similarity score—defined as the Fisher-z transform of r minus a scaled Euclidean distance—was used to determine the best-fitting type label. Tenfold stratified cross-validation was used to preserve type proportions. For each fold, type-mean profiles were computed on the training set; test participants were assigned via best profile match, and per-fold correlations aggregated by Fisher transformation. Permutation benchmarking (50,000 shuffles) provided null fit distributions.

2.4. Factor Analysis (Meta-Trait Structure)

Principal axis factor analysis with Varimax rotation was performed on the weighted covariance matrix of Big Five scores. Factors were retained based on eigenvalues > 1 and scree plot inspection. Trait loadings $|0.40|$ and above were considered salient for interpretation.

2.5. Behavioral Clustering: k-Means Analysis

To examine the emergence of survival modes, k-means clustering ($k = 4$) was applied to participant trait vectors consisting of Conscientiousness, Extraversion, Agreeableness, and Neuroticism (z-standardized). Openness was excluded to isolate the clustering to trait dimensions directly linked to the judging functions (Te/Ti/Fe/Fi). K-means++ seeding and a fixed random seed ensured reproducibility; assignment stability was confirmed via 30 bootstrap replicates (mean ARI = .58). Permutation χ^2 tests (50,000 shuffles) assessed cluster independence from both dominant trait and Jungian type.

3. Results

3.1. Profile–Prototype Validation

The cross-validated profile–prototype fit across all 2,916 hold-out cases yielded a grand-mean Fisher-r of 0.833 (range 0.598–0.913 across types; see Table 1). No permutation exceeded the observed fit ($p < 2 \times 10^{-5}$). This result is comparable to, or exceeds, the meta-analytic reliability of full-length personality inventories.

Table 1: Ten-fold cross-validated agreement by Jungian type.

Type	n	Mean r	Perm. p
ENTP	301	0.897	$< 2 \times 10^{-5}$
INFJ	382	0.800	$< 2 \times 10^{-5}$
ISTP	93	0.671	$< 2 \times 10^{-5}$
INTP	187	0.837	$< 2 \times 10^{-5}$
ENTJ	145	0.913	$< 2 \times 10^{-5}$
INTJ	229	0.863	$< 2 \times 10^{-5}$
ESFP	157	0.598	$< 2 \times 10^{-5}$
ENFP	299	0.803	$< 2 \times 10^{-5}$
ISFP	222	0.826	$< 2 \times 10^{-5}$
INFP	239	0.889	$< 2 \times 10^{-5}$
ESFJ	85	0.804	$< 2 \times 10^{-5}$
ESTP	97	0.789	$< 2 \times 10^{-5}$
ISFJ	174	0.843	$< 2 \times 10^{-5}$
ISTJ	94	0.784	$< 2 \times 10^{-5}$
ENFJ	176	0.847	$< 2 \times 10^{-5}$
ESTJ	36	0.845	$< 2 \times 10^{-5}$

Replication of classic dichotomy effects was robust: Intuition exceeded Sensing by 0.24 SD in Openness; Judging outscored Perceiving by 0.21 SD in Conscientiousness; Thinkers displayed 0.29 SD lower Agreeableness and 0.24 SD lower Neuroticism than Feelers; Extraverts surpassed Introverts by 0.23 SD in Extraversion (see Table 5).

Table 2: Trait means by cognitive cluster.

Cluster	O	C	E	A	N
SF/NTs	0.657	0.579	0.571	0.551	0.577
FS/TNs	0.604	0.603	0.543	0.487	0.439
ST/NFs	0.667	0.586	0.557	0.530	0.614
TS/FNs	0.570	0.609	0.606	0.523	0.556

Aggregating types into four cognitive clusters—SF/NTs, FS/TNs, ST/NFs, TS/FNs—revealed distinct trait profiles, suggesting finer affective stratification (Table 2).

3.2. Meta-Trait Factor Structure

Scree plot and eigenvalue analysis supported a two-factor solution (see Table 3):

Factor 1: Strong positive loading on Neuroticism (0.7528), strong negative loading on Extraversion (−0.5068)—interpreted as a Neuroticism–Extraversion (N–E) axis indicative of short-context processing (Ego).
Factor 2: Anchored by strong negative loading on Agreeableness (−0.6369) and moderate negative loadings on Conscientiousness—interpreted as an Agreeableness–Conscientiousness (A–C) axis reflective of long-context processing (Superego).
Openness loaded negatively on both, but most on Factor 2, underscoring its alignment with abstract, Intuitive processing.

Table 3: Rotated factor loadings of the Big Five traits.

Trait	Factor 1	Factor 2
Openness	−0.2604	−0.4728
Conscientiousness	−0.2432	−0.3039
Extraversion	−0.5068	−0.4008
Agreeableness	0.2226	−0.6369
Neuroticism	0.7528	−0.3432

3.3. Behavioral Clustering: Emergence of Survival Modes

K-means ($k = 4$) clustering of [C, E, A, N] vectors produced four robust clusters (see Table 4), each corresponding to a hypothesized survival mode: high C (Freeze), high E (Fight), high A (Fawn), and high N (Flight).

Table 4: Cluster centroids in z-units and theoretical labels.

Cluster	C	E	A	N	Label
0	1.34	–0.15	–0.12	–0.08	Freeze
1	–0.05	1.21	0.03	–0.14	Fight
2	–0.11	–0.04	1.28	–0.09	Fawn
3	–0.17	–0.18	–0.13	1.37	Flight

Permutation χ^2 tests demonstrated non-random alignment of clusters with both dominant trait and Jungian type (all $p_{\text{perm}} = .00002$). Conscientiousness-dominant profiles were concentrated in Freeze, Extraversion in Fight, Agreeableness in Fawn, and Neuroticism in Flight. Jungian type distributions mirrored their hypothesized survival modes (e.g., 76% of INTJs in Freeze; 68% of ESFPs in Flight).

4. Discussion

The present synthesis provides convergent, multimethod evidence for a unified model of personality grounded in context processing preferences, as predicted by the TRPI framework. First, we demonstrated that the mapping between Jungian type and Big Five profile can be robustly replicated using a short-form, IP-IP-300 instrument. The pattern of classic dichotomy effects—Intuition with Openness, Judging with Conscientiousness, etc.—was not only preserved but enhanced by aggregating profiles into types, suggesting that traits capture meaningful affective variance beyond classical dichotomies.

Second, weighted factor analysis revealed that the Big Five are organized into two distinct meta-traits: a Neuroticism–Extraversion axis, reflecting short-context, reactive engagement (Ego), and an Agreeableness–Conscientiousness axis, reflecting long-context, regulated integration (Superego). These meta-traits map directly onto established neuroscientific models of hemispheric specialization for context length, supporting the claim that personality is fundamentally organized by temporal context processing [7, 8].

Third, unsupervised k-means clustering of the trait data yielded four behavioral clusters, each corresponding to a survival mode (Freeze, Fight, Fawn, Flight) predicted by the TRPI and theoretically mapped to dominant traits and function pairings. This finding empirically grounds the concept of function-driven personality states, demonstrating that such modes are not mere theoretical abstractions but emerge spontaneously in trait data. Importantly, cluster membership is non-random by both trait and Jungian type, validating the predictive power of TRPI's function-pairing model.

Taken together, these results advance personality science by demonstrating that trait and type can be understood as two perspectives on a deeper, neurocognitively instantiated personality architecture. The TRPI model offers a compact, psychometrically robust, and empirically validated bridge, subsuming classic MBTI, Big Five, and survival-mode theories into a single explanatory framework.

5. Limitations

Despite these strengths, several limitations should be acknowledged. First, the cross-sectional nature of the data precludes analysis of the longitudinal stability of survival modes and potential transitions between them. Second, while k-means provides a clear clustering solution, its assumption of spherical clusters may obscure more nuanced subtypes detectable by other algorithms. Third, the exclusion of Openness from the clustering analysis—while theoretically justified—limits assessment of the role of perceiving-function moderation in survival mode activation.

6. Conclusion

We have provided a unified, empirically grounded model of personality organization, integrating trait, type, and behavioral data with contemporary neuroscientific theory. The TRPI framework, by situating

the Big Five, Jungian cognitive functions, and survival modes within a context processing paradigm rooted in hemispheric specialization, bridges classical and modern models of personality. This synthesis not only accounts for observed trait and type variation but also reveals the existence of dynamic, data-driven behavioral states, offering a platform for future research in personality assessment, neuroscience, and clinical psychology.

7. Appendix

Table 5: Mean Big Five scores (0-1 scaled) by Briggs-Myers dichotomy.

Trait	E	I	S	N	T	F	J	P
Openness	0.669	0.580	0.503	0.746	0.619	0.630	0.602	0.646
Conscientiousness	0.633	0.556	0.589	0.600	0.631	0.557	0.700	0.489
Extraversion	0.683	0.456	0.546	0.592	0.615	0.523	0.564	0.575
Agreeableness	0.551	0.494	0.496	0.549	0.379	0.666	0.564	0.482
Neuroticism	0.483	0.610	0.569	0.525	0.427	0.667	0.495	0.598

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