

High-dimensionality structure in English-language personality type-nouns

Vinita Vader  | Gerard Saucier 

Department of Psychology, University of Oregon, Eugene, Oregon, USA

Correspondence

Vinita Vader, Department of Psychology, University of Oregon, 1227 University of Oregon, Eugene, OR 97403, USA.
Email: vvader@uoregon.edu

Abstract

Objective: Past applications of the lexical approach to type-noun personality structures have yielded different results compared with those generated for adjectival personality structures, since then new methods have arisen for identifying robust higher-dimensionality structure in data. This research aims to identify an optimal taxonomy of English language type-nouns.

Method: Current study reanalyzed 372 type-nouns from a previous study emphasizing robustness across methodological variations (original vs. ipsatized data, oblique vs. orthogonal rotations, convergence between male and female target ratings) to determine a replicable but more comprehensive model of personality type-noun structure.

Results: A 13-factor original-data oblimin-rotated solution was determined to be the most robust model, except for a one-factor model that was far less comprehensive and informative; an original-data 32-factor oblimin-rotated solution was also fairly robust. Although each of the Big Five adjectival markers indicated a large correlation with one or more type-noun factors; nearly half of the 13 type-noun factors lacked such large correlations with the Big Five.

Conclusions: A high-dimensionality approach thus indicated that type-nouns capture substantial content beyond the Big Five. A comparison with the character-types described by an ancient philosopher (Theophrastus) signified that some granular type-noun dimensions may have stability across multiple millennia.

KEYWORDS

high-dimensionality, personality, Theophrastus, type-nouns

1 | INTRODUCTION

The lexical approach to the study of personality structure, drawing on how words important to person-description sediment in a lexicon (Goldberg, 1990), has much enhanced understanding of personality variation. It was the main route to identifying the popular Big Five model. But the lexical approach can be utilized to find replicable structures well beyond the Big Five, capturing more sources of variance, enabling more predictive capacity.

This study examines the structure underlying a major part of the personality lexicon—type-nouns—going beyond conventional assumptions that only a few (e.g., five or six) replicable factors can be identified.

Are typologies of personality naturally parsimonious or complex? It is an ancient question. Galen of Pergamon, building on Hippocrates' medical conception of humors, posited four temperaments based on four humors—sanguine, phlegmatic, choleric, and melancholic (for a modern review, see Stelmack & Stalikas, 1991). Contrastingly,

Theophrastus (Diggle, 2004)—living just after Hippocrates and well before Galen—created around 300 BCE a typology of 30 character-types. The dominant trend in modern personality psychology has been, like Galen, toward parsimony but, as in the ancient world, alternatives deserve consideration.

Majority of lexical personality studies have focused on adjectives. While adjectives are the medium for largest proportion of person-description in many languages, not so for some non-European languages (Dixon, 1977). And, in any language, exclusive reliance on adjectives limits comprehensiveness in capturing individual differences and could limit cross-cultural generalizability of personality-structures. Type-nouns are critical additional sources of person-description (Saucier, 2003); compared to adjectives, they are likely to (1) reflect more colloquial or informal instances of character descriptions (Goldberg, 1982), (2) be perceived as more enduring/stable, (3) include a high frequency of pathology-related words, and (4) include social-grouping variables relevant to the process of stereotyping.

Unfortunately, only a few type-noun-specific language structures have been studied so far, in Dutch (De Raad & Hoskens, 1990), German (Henss, 1998), and English (Saucier, 2003). Each study focused on relatively few factors. De Raad and Hoskens (1990) analyzed factor structure of self and partner ratings for Dutch and Dutch-speaking Belgian subjects, emphasizing varimax-rotated solutions with seven factors for each of the four datasets. None of the solutions explained more than 37% of variance in the variables, and it is unclear how the researchers made the decision to settle on seven factors. In the German study, Henss (1998) derived seven factors for male and six for female targets. Replicability of the structure was evaluated only for four- to eight-factor solutions. The female-target solution accounted for almost 51% of the variance in the data, but it is somewhat unclear how number-of-factors decisions were made. (For further detail on Dutch and German findings, see Saucier (2003) and this study's [supplementary material](#).)

Like most studies of adjectives, previous studies of type-nouns, have heavily relied on parsimony which has contrasting benefits compared to comprehensiveness. Parsimony would reduce great variation to a few basics—a simple classification—whereas comprehensiveness would retain all meaningful, replicable distinctions, to capture as much information as possible. Fewer dimensions are easier to remember and might be measured more briefly and can show signs of impressive replicability across method (e.g., across rotations; Goldberg, 1990).

But these parsimonious structures come with marked difficulties. Content in broad factors is heterogeneous, collage-like; considerable fuzziness inheres in their

interpretation, and when one compares the “collage” generated in one language with that in another (or even two datasets in one language) often only part of the collage is reproduced. This renders decisive replication of broad (e.g., Big Five) structures across very different cultural-linguistic contexts. Broad factor structures also compromise comprehensiveness and predictive capacity; Saucier and Iurino (2020) noted that lexical five-factor structures typically only account for roughly 25% of the variance, and when more factors are introduced, the predictive capacity tends to increase roughly as the percent-of-variance accounted for (the comprehensiveness) increases, unsurprising as the more specific unique variance sources are captured by predictors, the higher tends to be the variance-accounted-for by the predictors (Mershon & Gorsuch, 1988). Finally, recent studies (beginning with Saucier & Iurino, 2020) indicate that by one criterion—comparing results from original and from ipsatized (row-standardized) data—structures of two to six factors replicate poorly. As lexical studies have emphasized ipsatized data but assessments commonly compute scores from original data responses, the divergence is problematic.

A “comprehensive taxonomy” of personality cannot be claimed based on identifying only five or six locally salient factors, without digging below the superficial few-factor level. Recent studies delving further into high-dimensionality structure (Saucier & Iurino, 2020; Saucier et al., 2020, Study 1; Thalmayer et al., 2020, 2021) make clear that languages reveal more than just five or six useful, independent dimensions of personality.

These few-factor structures are characteristically derived from application of the classic scree test, a visual examination of eigenvalue-magnitudes that involves some subjectivity. There is less subjectivity in a method that tends to suggest more factors such as PA (Horn, 1965). In PA, eigenvalues obtained from the correlation matrix before rotation are compared to those from a random matrix, having the same value of k variables and a sample size of n as in the dataset. The number of eigenvalues in actual data exceeding the eigenvalues from the random are recommended for retention. Strikingly, lexical studies before 2020 did not apply PA. But in recent years a more neutral, data-driven approach to number-of-factors determination has gained traction, emphasizing not only PA but also structural replicability across methods (e.g., Saucier & Iurino, 2020). Saucier (2022) has suggested that robust structures may exist beyond the threshold set by PA, enhancing comprehensiveness and better allowing for culture-specific factors to emerge.

So, what should personality researchers strive for when determining optimal structure within a personality lexicon? Replicability of structural models of

personality can rely on multiple criteria—not just the across-rotation-method criterion impressively applied by Goldberg (1990). Factors meeting baseline criteria—being sufficiently sized and meaningfully interpretable—can be tested for resiliency across variant methods: differing rotation algorithms, use of self versus peer ratings, use of original versus ipsatized data, and reproducibility across meaningful subpopulations (e.g., women vs. men). And eventually optimal structures from one cultural-linguistic context can be tested for reproducibility across diverse cultural-linguistic contexts, for status as a universal structural model.

Current study revisits the English language type-noun data from Saucier's (2003) study to test robustness criteria not originally applied in the earlier study. Robustness of a model is here defined as the ability of a model to replicate across data types, rotation methods, and type of description targets. Such method variations are presumed to provide rigorous tests allowing only an optimal structure to survive. To clarify methodological underpinnings of the current study, we next review these criteria individually.

One can derive structures using either original or ipsatized data types, in each case using one or another rotation method (e.g., orthogonal and oblique). Then one can test robustness across these very variations, on the assumption that an ideal model would emerge as the same regardless of which method variation one employs.

Ipsatization of data is a procedure that involves transforming an individual participant's rating relative to their average response, resulting in the same mean and variance of scores for each participant. The scores then become deviations from a person's average (Wiggins et al., 1981). Ipsatization effectively eliminates individual differences in response-scale usage, usually leading to more bipolar factors which are often thought to enhance clarity of results. Nonetheless, actual assessments developed downstream of lexical studies will tend to use original, not ipsatized, data. Comparing ipsatized data with original data results can isolate the effect of individual differences in response-scale usage (Zhou et al., 2009), but also helps ensure that structures derived in ipsatized data have considerable generality to original data assessment uses.

When it comes to rotation methods, it is important to give a more detailed explanation of its theoretical implications. To put it simply, principal component analysis (PCA) is a technique that transforms the original input space (e.g., all loadings matrix \mathbf{X} of all variables/items in a scale) into a lower dimensional space (e.g., latent components/factors forming matrix \mathbf{Y}), whereby the dimensions are linear combinations of the original features (e.g., variables/items). Rotation procedures aim to determine a transformation matrix \mathbf{A} when multiplied to loadings matrix \mathbf{X} , produces the rotated-factor structure matrix \mathbf{Y}

($\mathbf{AX}=\mathbf{Y}$). Personality researchers typically prefer rotated matrices over unrotated ones due to their capacity to generate simple structures. Rotations can be broadly divided into two types—orthogonal (factors are constrained to be unrelated to each other) and oblique (factors are allowed to correlate). Varimax is an orthogonal factor rotation method most frequently chosen in personality research (see Cheung et al., 2003, 2008; Costa & McCrae, 1992; Henson & Roberts, 2006), and has been the norm in lexical studies. It maximizes large loadings and minimizes low loadings in each component; factors are prone to vary greatly in their size, though less than in unrotated solutions. Beyond varimax, another orthogonal rotation is equamax, that tends to distribute the variance across multiple components of relatively equal size, making it suitable for identifying high-dimensionality structures (Saucier & Iurino, 2020). Equamax aims to distribute variables with high loadings more evenly across components and thus is predisposed to not producing a large general factor, unlike varimax. Oblique rotations considered to generate simple-structure solutions (Condon & Mroczek, 2016), though orthogonal rotations—with dimensions at right angles to each other (as in cartography)—are more useful for mapping functions (e.g., projection onto bivariate plots).

Rotational convergence between models is computed by correlating factor scores (the estimated score of each participant on the latent construct) between orthogonal and oblique rotations for each candidate model. Thus, for oblimin-derived models, robustness is tested by holding factor-number constant but forcing factors to be uncorrelated (via varimax or equamax). For five factors, Goldberg (1990) observed little difference between orthogonal and oblique solutions, but these rotation methods may converge as well at some different number of factors.

Another criterion for assessing replicability is based on possible differences between females and males, as arguably an optimum model could be applied well to either gender category. Although Henss (1998) noticed that some type-nouns are applied mainly to one gender-category, all else equal a model applicable to everyone is most desirable.

We assess overall robustness as a model's ability to maintain constant structure, across these method variations. Then we compare, for robustness, candidate models derived by a high-dimensionality approach with currently more familiar few-factor structures—structures of one to six factors. Following lexical study method norms existing since the 1990s, these few-factor structures preferentially draw on ipsatized self-rating data, and varimax-rotated principal components (PCs).

Beyond those few-factor levels, a set of high-dimensionality structures is identified using PA to determine a ceiling on the number of factors. A candidate

	Self	Liked other		Disliked other		Total
		Female target	Male target	Female target	Male target	
Female rater	146	68	62	67	64	407
Male rater	54	34	34	27	37	186
Total	200	102	96	94	101	593

Note: Out of 607 total participants, 593 provided responses which could be cross-tabulated. One-third of total participants were randomly assigned to different conditions wherein they either described *Self*, a *Liked other* person or *Disliked other* person. In the latter two conditions, half the participants described a *female target* and the other half a *male target*.

TABLE 1 Cross-tabulation table for participants.

Dataset variant	Parallel analysis	Solutions having most factors of sufficient size		
		Varimax	Equamax	Oblimin
Original	15	11	15	13
Ipsatized	19	12	19	18

Note: $N = 607$. Oblimin ($\delta = 0$).

TABLE 2 Number of factors recommended by parallel analysis and candidate models derived from each dataset variant.

TABLE 3 Number of factors needed to account for more than 50% of variance.

Dataset variant	No. to account for >50% variance	Solutions having most factors of sufficient size		Solutions where all factors were interpretable	
		Equamax	Oblimin	Equamax	Oblimin
Original	19	41	45	29	30
Ipsatized	33	37	52	37	32

Note: $N = 607$. Oblimin ($\delta = 0$).

structure is identified for each combination of data type (ipsatized or original data) and three rotation methods; this defines six “lanes” in which one structural model is identified for comparison. In addition to the PA method, in this study we added a second alternative approach, after Merenda (1997), seeking a structure accounting for at least 50% of the variance; this adds several additional “lanes” for identifying a candidate model.

To summarize, this approach assesses relative robustness of *emic* candidate models—those emerging in the given dataset—based on structural invariance across data types, rotation methods, and descriptive target category. One can then go on to compare the most robust model(s) with imported *etic* candidate models characterized in the current data.

2 | METHOD

Data from a major previous study on English language type-nouns (Saucier, 2003) was utilized. Galvin (1993) obtained frequency-of-use ratings on a list of 1947 type-nouns

identified by Goldberg (1980, 1982), yielding an initial list of 600 high-frequency terms. Saucier further reduced this list to 372 terms, removing terms if they were (a) about sexual orientation, (b) expletives, (c) primarily adjectival in usage (e.g., stupid and precious), (d) role-nouns (e.g., student and parent) rather than indicative of an attribute (e.g., bigot and flirt), or (e) awkward for description of a person. Additionally, 54 type-nouns were included as markers for factors from Dutch and German studies, along with 75 Big Five adjective markers.

2.1 | Participants

There were 607 participants (University of Oregon undergraduates, 187 males, 410 females). By random assignment, one-third of participants were assigned to do (a) self-descriptions, or (b) descriptions of a liked-other person, or (c) descriptions of a disliked-other person. Among those providing descriptions of another person, half were randomly assigned to describe a female target, and the other half a male target. This ensured that even though the

TABLE 4 Robustness indices for all etic (1- to 8-factor varimax-rotated solutions) and emic (candidate models in this data) solutions.

Candidate model	Number of factors	Average squared correlation with other rotation	Average correlation between factor scores across original versus ipsatized data	Average congruence between male and female targets	Average robustness/replicability
1 factor, Unroted., Orig	1	1.00	0.921	0.96	0.960
2 factors, Vx., Orig	2	1.00	0.571	0.95	0.840
3 factors, Vx., Orig	3	0.98	0.563	0.69	0.744
4 factors, Vx., Orig	4	0.91	0.566	0.72	0.734
5 factors, Vx., Orig	5	0.97	0.730	0.79	0.831
6 factors, Vx., Orig	6	0.93	0.700	0.76	0.797
7 factors, Vx., Orig	7	0.84	0.812	0.68	0.779
8 factors, Vx., Orig	8	0.73	0.823	0.74	0.765
11 factors, Vx., Orig	11	0.59	0.727	0.61	0.642
12 factors, Vx., Ips	12	0.85	0.792	0.55	0.730
13 factors, Obl., Orig	13	0.92	0.769	0.81	0.833
15 factors, Eqx., Orig	15	0.86	0.777	0.71	0.782
18 factors, Obl., Ips	18	0.70	0.771	0.70	0.725
19 factors, Eqx., Ips	19	0.76	0.748	0.61	0.705
29 factors, Eqx., Orig	29	0.87	0.704	0.69	0.755
30 factors, Obl., Orig	30	0.69	0.765	0.78	0.745
32 factors, Obl., Ips	32	0.87	0.770	0.67	0.770
37 factors, Eqx., Ips	37	0.87	0.715	0.57	0.718

Note: $N = 607$. Vx = varimax; Eqx = equamax; oblimin ($\Delta = 0$); Orig = original; Ips = ipsatize.

sample of raters was largely female, there was a sufficient sample of male as well as female targets-of-description. Ratings of these various targets were combined, helping ensure a sufficient sample size. This combined dataset consisted of 343 female-target and 251 male-target ratings. Table 1 cross-tabulates how gender of raters was distributed across self, disliked-male, disliked-female, liked-male, and liked-female targets.

2.2 | Analyses

The following a priori procedure was preregistered prior to any analyses of the data. Addendums to the original pre-registration are specified in the relevant sections below.

1. For the 372-PTN (personality type-noun) set, with original (raw) data and separately with ipsatized data, we applied PA.
2. Beginning with the PA-set “ceiling” number of factors as a maximum, we ran varimax, equamax, and oblimin rotations for various numbers of factors (separately within original and ipsatized data). Previous work

(Saucier et al., 2020; Saucier & Iurino, 2020) indicates the latter two methods are best for identifying high-dimensionality structures, but varimax was included because it has been the typical rotation method in influential lexical studies.

3. We discarded solutions containing any insufficiently sized factors, by a preset “sufficient size” minimum of two salient terms with a loading >0.300 in absolute magnitude, including at least one with a loading >0.400 in absolute magnitude.
4. For the non-discarded solutions, we examined whether all factors were interpretable. Factors were eliminated if judged by both the investigators as impossible to interpret substantively.
5. For each of the *data type-X-rotation-method* combinations, the maximum number-of-factors (that are sufficiently sized and interpretable) were adopted as one candidate structure. These were then compared across datasets, to find out which structure had best relative convergence across methods. Convergence was assessed across: (a) use of ipsatized versus original data type while holding rotation method constant, (b) use of orthogonal versus oblique rotation while holding

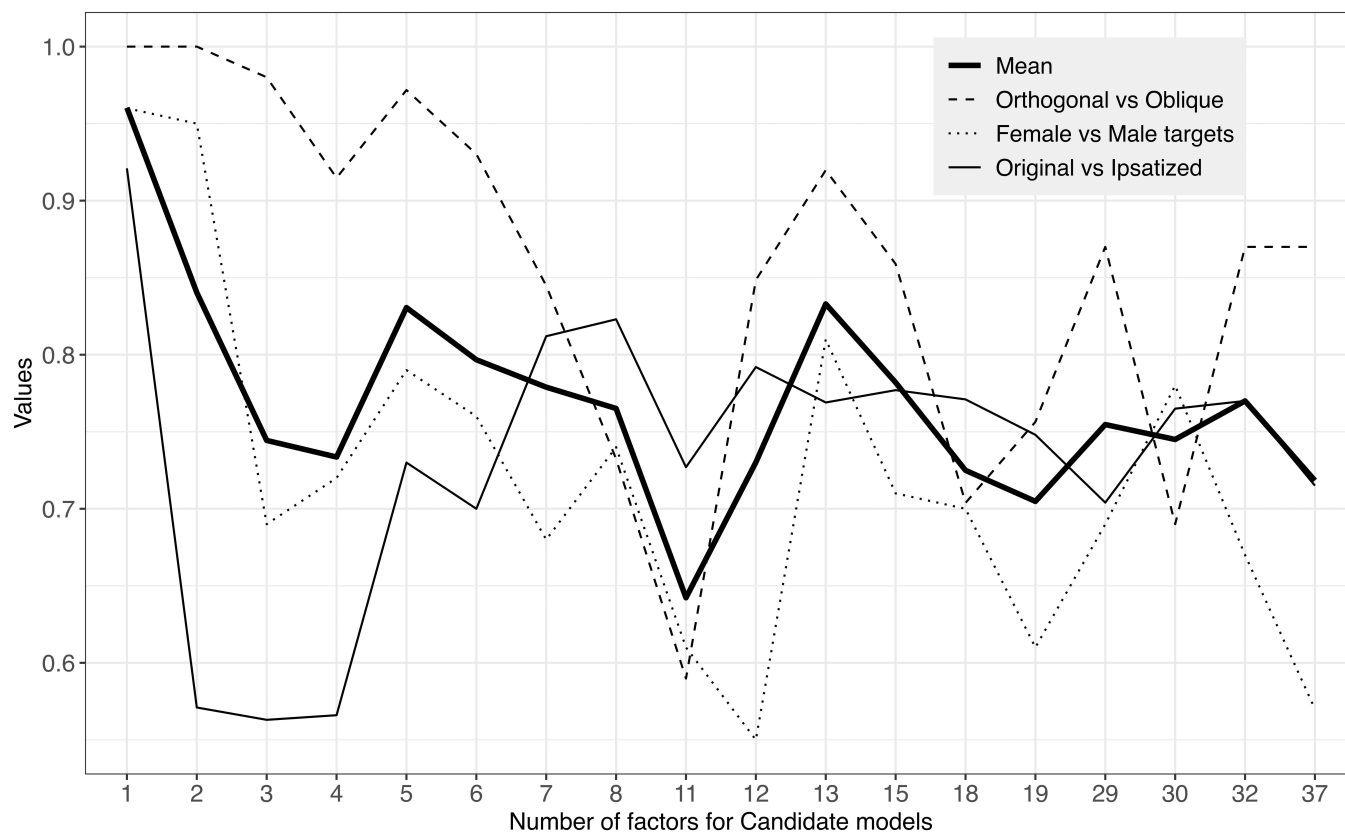


FIGURE 1 Robustness indices for candidate models.

data type constant, and (as in Saucier, 2003) (c) use of female-target versus male-target data while holding both rotation method and data type constant.

These five steps were oriented toward identifying the optimal “emic maximum” model. Step 6 pertained to various “etic” models also examined.

6. To the extent that models identified by the above procedure did not include solutions at the one- to eight-factor level, we added these, with comparison on the same three robustness indices. The one-factor level was indexed by first unrotated PC. Two- through eight-factor levels were indexed by varimax-rotated components, consistent with methods used in previous literature.

Following details about the analysis steps were also preregistered: (i) Comparisons of oblique with orthogonal rotations were oblimin versus varimax for one- to eight-factor solutions and for the emic-maximum varimax model. For all other comparisons, these were oblimin versus equamax comparisons, as equamax can produce more sufficiently sized, interpretable factors than varimax (Saucier & Iurino, 2020). (ii) The methods for examining robustness in Step 5 varied according to the comparison: Convergence was assessed by the average

best match correlation between factor scores for both (a) and (b) comparisons,¹ and Tucker coefficients of factor congruence for (c) comparisons. (iii) In this study, one- to eight-factor models were examined only to compare their robustness with high-dimensionality models; eight-factor models were included because Saucier’s (2003) analyses favored an eight-factor structure.

7. An addendum preregistration involved a pertinent analysis earlier omitted: examining correlations with the Dutch and the German type-noun factors, the Big Five, Big Three, Big Two, and Big One structures and the Multi-Language Seven set.

8. Hierarchical regression assessed the degree to which selected high-dimensionality models produced gain in comprehensiveness over lower dimensionality models. Each external/etic variable was predicted with available demographic variables at Block/Step 1.

9. Reflecting innovations arrived at after the original preregistration, a second addendum suggested going beyond the models specified by PA.

a. For the 372-noun set, we determined what number of factors must be extracted to account for >50% of the variance for both original and ipsatized data. This set a start point.

TABLE 5 Type-nouns with highest loadings on each factor in the 13-factor original data type oblimin-rotated solution.

Factor-1		Factor-2		Factor-3		Factor-4		Factor-5		
0.760	Two-timer	0.702	Genius	−0.691	Gentleman	0.585	Critic	0.589	Redneck	
0.751	Phony	0.660	Brain	−0.690	Ladies' man	0.583	Eavesdropper	0.527	Cow	
0.751	Liar	0.644	Expert	−0.657	Hunk	0.563	Cynic	0.523	Brute	
0.740	Fake	0.644	Intellectual	−0.615	Romeo	0.552	Snoop	0.505	Scrooge	
0.730	Deceiver	0.616	Thinker	−0.599	Dude	0.548	Skeptic	0.501	Hick	
0.725	User	0.593	Professional	−0.598	Stud	0.506	Nag	0.496	Tattletale	
0.698	Faker	0.579	Whiz-kid	−0.588	Lady killer	0.499	Grump	0.461	Savage	
0.694	Slut	0.565	Innovator	−0.535	Sportsman	0.493	Crab	0.445	Stinker	
0.689	Traitor	0.563	Smarty	−0.527	Playboy	0.486	Hardnose	0.437	Slavedriver	
0.679	Trash	0.558	Philosopher	−0.525	Womanizer	0.480	Grouch	0.429	Racist	
0.677	Jerk	0.554	Mastermind	−0.492	Jock	0.453	Stickler	0.426	Pig	
0.667	Rat	0.523	Master	−0.457	Wise guy	0.439	Speculator	0.396	Party pooper	
0.663	Cheater	0.510	Bookworm	0.453	Party girl	0.435	Know-it-all	0.394	Militant	
0.661	Tramp	0.490	Authoritarian	−0.427	Showman	0.432	Paranoid	0.386	Giant	
0.660	Snake	0.475	Hero	−0.420	Machine	0.430	Smart-aleck	0.344	Communist	
0.654	Scum	0.472	Artist	0.397	Feminist	0.423	Worrywart	0.285	Tomboy	
Factor-6		Factor-7		Factor-8		Factor-9		Factor-10		
0.788	Babe	0.628	Talker	0.733	Delinquent	−0.617	Wimp	−0.716	Psychotic	
0.753	Beauty	0.584	Chatterbox	0.710	Alcoholic	−0.589	Sissy	−0.691	Maniac	
0.735	Cutie	0.569	Joker	0.709	Drunkard	0.588	Adventurer	−0.680	Freak	
0.675	Knockout	0.564	Clown	0.698	Lawbreaker	−0.583	Coward	−0.648	Lunatic	
0.671	Doll	0.550	Goof	0.678	Drunk	−0.554	Chicken	−0.643	Psychopath	
0.654	Fox	0.549	Loudmouth	0.670	Addict	−0.550	Baby	−0.626	Weirdo	
0.653	Darling	0.547	Comic	0.665	Pothead	−0.535	Crybaby	−0.587	Nut	
0.635	Honey	0.542	Rowdy	0.636	Hoodlum	−0.534	Weakling	−0.585	Madman	
0.621	Sweetie	0.529	Extrovert	0.623	Vandal	0.514	Winner	−0.584	Misfit	
0.582	Love	0.497	Comedian	0.609	Junkie	0.509	Tough	−0.546	Neurotic	
0.565	Charmer	0.472	Mouth	0.604	Slacker	−0.506	Whiner	−0.536	Outcast	
0.527	Playmate	0.472	Storyteller	0.585	Deadbeat	0.502	Leader	−0.530	Wreck	
0.520	Star	0.466	Character	0.580	Troublemaker	−0.491	Scaredy-cat	−0.507	Terror	
0.455	Heartbreaker	0.465	Practical joker	0.557	Bum	0.483	Daredevil	−0.506	Extremist	
0.448	Sexpot	0.449	Flirt	0.536	Punk	−0.478	Quitter	−0.506	Outsider	
0.414	Plaything	0.436	Screwball	0.519	Failure	−0.475	Loser	−0.501	Unfortunate	
Factor-11				Factor-12		Factor-13				
−0.665		Republican		−0.658		Dreamer		−0.627		Quack
−0.639		Conservative		−0.619		Comforter		−0.620		Dingbat
0.534		Liberal		−0.607		Daydream		−0.607		Dunce
0.514		Democrat		−0.603		Sentimentalist		−0.601		Boob
−0.474		Right-winger		−0.603		Romantic		−0.582		Twit
−0.472		Ultraconservative		−0.595		Sympathizer		−0.573		Blockhead
−0.464		Bigot		−0.593		Hopeful		−0.556		Dummy
0.410		Left-winger		−0.591		Peacemaker		−0.555		Runt
−0.405		Traditionalist		−0.584		Sweetheart		−0.543		Butterfingers

(Continues)

TABLE 5 (Continued)

Factor-11		Factor-12		Factor-13	
−0.404	Disciplinarian	−0.574	Believer	−0.542	Incompetent
−0.355	Christian	−0.540	Good Samaritan	−0.542	Dumbbell
0.348	Hippie	−0.517	Samaritan	−0.538	Sucker
0.321	Vegetarian	−0.508	Humanitarian	−0.537	Twerp
		−0.503	True-believer	−0.531	Bonehead
		−0.481	Angel	−0.529	Dope
		−0.462	Protector	−0.514	Slouch

Note: Numbers before nouns indicate loadings. Sixteen highest loadings are retained for every factor except for factors with <16 terms.

- b. Beginning with that “start-point” number of factors and going *upward*, we ran equamax and oblimin rotations for various numbers of factors (within each data type, original or ipsatized data). Discarding solutions that had any insufficiently sized factors, by the same preset “sufficient size” minimum employed before, if 10 consecutive solutions, proceeding upward in order, do not meet the criterion, the upward search was abandoned.
- c. If the procedure detailed just above failed to find any admissible solution above the 50%-of-variance start point, we went *downward* from that same start point stopping at the first admissible solution (i.e., the solution for that rotation and data type) that had all factors sufficiently sized and interpretable (by criteria described earlier). Then, methods as above were applied to examine convergence-across-methods (described in the original analysis plan), and to take the best-supported candidate models from those analyses and examine them in relation to previous structures.

Analyses were preferentially run using R-code (4.2.0), relying on SPSS version 26 for analyses where suitable R-code was unavailable. This was fundamentally exploratory research on personality structure, not mainly hypothesis-driven. It reanalyzes a previous dataset and so does not conduct a separate power analysis. Because of the large number of effect-size coefficients to report, it will be impractical to include confidence intervals for each.

3 | RESULTS

Table 2 indicates number of factors recommended by PA for each data type (original and ipsatized). Table 3 shows the same when proceeding from the 50%-of-variance start point. These tables also specify candidate models retained—maximum number of factors with all sufficiently-sized and interpretable—for each combination of data type and rotation method (varimax, equamax, oblimin).

We refer to these as *emic* models they are newly identified in this dataset. One- to eight-factor solutions were varimax-rotated and retained as *etic* candidate models. Table 4 indicates robustness for 18 candidate models—10 emic plus eight (one-to-eight-factor) etic models—arranged in an ascending order of the number of factors. Figure 1 plots these robustness indices; the especially informative dark/bold line indicates mean robustness.

Table 4 indicates that across-rotation-methods convergence was best for 1- to 6- and 13-factor structures, while convergence across target type (female vs. male targets) was highest for 1-, 2-, 5-, 13-, and 30- factor models. Convergence across (original vs. ipsatized) data type was highest for 1-, 8-, 7-, 12-, and 15-factor models. Considering mean robustness across method-variations, the 13-factor model was the most replicable, followed by the 5- and 6-factor models. Other than the arguably overly parsimonious 1-factor and 2-factor structures, the most robust overall was the 13-factor solution (average robustness=0.833). Accordingly, the relatively high-robustness solutions used for comparison have 1-, 5-, 8-, 13-, and 32- factor models. Note, however, that given similar levels of robustness, one would prefer a model of 13 or 32 distinct sources of variance to one identifying just one or five, based on greater informativeness, comprehensiveness, and (likely) predictive capacity. In other words, what is important is not sheer magnitude of robustness, but how robust a structure is given how (desirably) high-dimensional and thus comprehensive it is.

3.1 | Characterization of 13-factor solution

Table 5 details the 13-factor original data type oblimin-rotated solution, with highest loading type-nouns for each factor. Variables with highest loadings on a given factor and smallest cross-loadings were judged to best capture the essence of each factor. Based on close examination of type-noun factors, we generated a meaningful label capturing the essence of each factor (see Table 6).

TABLE 6 Depiction of 13-factor original data oblimin-rotated solution.

Factor no.	Label	Highest loading terms	Description
1	Immoral behavior	Two-timer, phony, liar, fake, deceiver, user	Moralistic evaluation and ethical judgment; lack of character, worthlessness, harmful unproductive behavior, unwarranted superiority, or incapability
2	Exceptional Intellect	Genius, brain, expert, intellectual, thinker, professional	Intellectual competence and original thinking
3	Virility	Gentleman, ladies' man, hunk, Romeo, dude, stud	Males perceived as attractive or someone pursuing or "chasing" females; masculinity restricted to promiscuous aspects of sexual behavior
4	Negativity	Critic, eavesdropper, cynic, snoop, skeptic, nag	An annoying social irritant with a negative interpersonal attitude
5	Rusticity	Redneck, cow, brute, scrooge, hick, tattletale	Mindsets about urban versus rural people
6	Attractiveness	Babe, beauty, cutie, knockout, doll, fox	A fond object of others; typically used for females
7	Talkativeness	Talker, chatterbox, joker, clown, goof, loudmouth	Correspondence with the Big Five extraversion factor; stronger emphasis on sense of humor
8	Deviance	Delinquent, alcoholic, drunkard, lawbreaker, drunk, addict	Externalizing disorders of psychopathology, or those having legal consequences
9	Cowardice	Wimp, sissy, adventurer, coward, chicken, baby	Extreme assertiveness, courage, and bravery versus lack of courage
10	Derangement	Psychotic, maniac, freak, lunatic, psychopath, weirdo	Problems arising due to internalization of dysfunctional ideas; layperson perceptions of psychopathology, that may involve overgeneralizing/stigmatizing tendencies
11	Conservatism	Republican, conservative, ~liberal, ~Democrat, right-winger, ultraconservative	Belief systems/principles that govern mindsets, opinions, attitudes, and actions; greater emphasis on the more right leaning views
12	Soft-heartedness	Dreamer, comforter, daydream, sentimentalist, romantic, sympathizer	Reflecting qualities evoking imagination, optimism, and gentleness
13	Incompetence	Quack, dingbat, dunce, boob, twit, blockhead	Inability and ineptitude; unreliability when it comes to counting on someone

Note: "~" indicates that the term is at the opposite pole of the factor from the other terms.

3.2 | Characterization of 32-factor solution

Table 7 outlines the 32-factor ipsatized data type oblimin-rotated solution, with the highest loading type-nouns for every factor. Explanation for every factor label is mentioned in Table 8.

3.3 | Assessing comprehensiveness of models

An R^2 change test assessed relative comprehensiveness of models and proportion of variance explained. Hierarchical regression examined the prediction of all Big Five dimensions from respective factor scores for each of five candidate models. Change-in-F from adding factor scores of every model at each step can be found in Table 9. Emotional

Stability and Intellect dimensions had the highest jump in variance explained after adding 13- and 32-factor models; Agreeableness showed least increase in explained variance. The 32-factor structure explained more than 50% variance in each of the Big Five dimensions, ranging from Agreeableness ($R^2=78$) down to Emotional Stability ($R^2=54\%$). Thus, in Figure 2 Agreeableness line is at the top, as it was predicted fairly well even by few-factor type-noun models.

Table 10 provides correlations between 13-factor model (factor scores) and Big Five adjective markers. Each Big Five factor had at least one correlation $\geq |0.40|$ with one of the 13 factors. *Immoral behavior* had the highest correlation of all, with Agreeableness ($r=-0.653$). In contrast, *Virility*, *Rusticity*, *Soft-heartedness*, and *Derangement* type-noun factors were poorly captured by Big Five markers.

Table 11 indicates that only eight of the 32 dimensions had sizeable correlations ($r \geq |0.40|$) with the Big-Five. Clearly, many unique sources of variances in the 32-factor

TABLE 7 Type-nouns with highest loadings on each factor in the 32-factor ipsatized data-type oblimin-rotated solution.

Factor-1	
0.52	Sexist
0.461	Bastard
0.442	Jerk
0.438	Tormentor
0.419	Success
0.408	Chauvinist
0.307	Pervert
Factor-2	
−0.757	Ladies-man
−0.668	Lady killer
−0.662	Gentleman
−0.658	Romeo
−0.652	Hunk
−0.59	Playboy
−0.589	Stud
−0.582	Womanizer
−0.512	Dude
0.436	Party-girl
0.417	Feminist
0.330	Longhair
−0.309	Machine
Factor-3	
−0.581	Extrovert
0.542	Loner
0.522	Outcast
0.503	Outsider
0.396	Recluse
0.357	Drifter
0.350	Misfit
0.344	Enthusiast
0.342	Victim
0.313	Black sheep
0.297	Scapegoat
0.246	Pushover
Factor-4	
0.709	Republican
0.679	Conservative
−0.597	Liberal
−0.58	Democrat
0.526	Ultraconservative
0.483	Rightwing
0.476	Christian
−0.453	Left wing
0.384	Traditional

TABLE 7 (Continued)

0.321	Disciplinarian
−0.308	Atheist
Factor-5	
0.681	Bonehead
0.628	Blockhead
0.626	Knucklehead
0.59	Dummy
0.566	Idiot
0.549	Dumbbell
0.537	Twerp
0.524	Moron
0.507	Dunce
0.503	Dingbat
0.502	Dope
0.492	Stinker
0.484	Boob
0.478	Twit
0.441	Jackass
0.392	Weasel
Factor-6	
−0.716	Clown
−0.711	Joker
−0.686	Goof
−0.685	Comic
−0.642	Comedian
−0.539	Practical-joker
−0.474	Screwball
−0.459	Character
−0.450	Riot
0.350	Witch
−0.347	Wise-guy
0.334	Bore
−0.283	Ham
Factor-7	
0.718	Psychotic
0.717	Lunatic
0.681	Maniac
0.585	Psychopath
0.569	Freak
0.479	Madman
0.464	Loony
0.442	Weirdo
0.355	Nut
−0.327	Realist
0.288	Obsessive

TABLE 7 (Continued)

Factor-8	
−0.483	Sneak
−0.431	Snoop
−0.368	Eavesdropper
−0.310	Stickler
Factor-9	
0.655	Wimp
0.635	Weakling
0.628	Chicken
0.614	Sissy
0.583	Scaredy-cat
0.509	Coward
−0.465	Tough
−0.428	Daredevil
−0.407	Adventurer
−0.366	Rowdy
0.362	Cry-baby
0.337	Shrimp
−0.299	Fighter
0.266	Paranoid
Factor-10	
−0.542	Stuffed-shirt
−0.393	Wino
−0.341	Invalid
−0.333	Butterfingers
−0.310	Sitting-duck
−0.288	Militant
−0.260	So-and-so
−0.241	Square
Factor 11	
0.662	Grouch
0.623	Grump
0.525	Crab
0.429	Pessimist
−0.421	Optimist
0.406	Hardnose
0.393	Snot
0.373	Nag
0.372	Hardhead
0.371	Brat
0.368	Spoilsport
0.367	Stick-in-the-mud
0.333	Antagonist
0.327	Snob
0.321	Critic

TABLE 7 (Continued)

Factor-12	
0.810	Drunkard
0.791	Drunk
0.769	Alcoholic
0.604	Lawbreaker
0.576	Addict
0.562	Pothead
0.546	Delinquent
−0.503	Goody-goody
0.450	Troublemaker
0.421	Gambler
−0.413	Innocent
0.412	Lush
0.363	Junkie
0.332	Sinner
−0.301	Party-pooper
Factor-13	
0.572	Degenerate
0.446	Deviate
0.436	Heathen
0.432	Menace
0.408	Savage
0.387	Predator
−0.377	Humanitarian
0.357	Culprit
−0.355	Saint
0.348	Adulterer
0.307	Devil
−0.301	Virgin
Factor-14	
0.587	Sentimentalist
0.574	Dreamer
0.574	Romantic
0.510	Daydream
0.503	Comforter
0.484	Sweetie
0.476	Love
0.465	Believer
0.451	Hopeful
0.444	True-believer
0.424	Poet
−0.398	Bully
−0.380	Snake
0.377	Peacemaker

(Continues)

TABLE 7 (Continued)

0.376	Idealist
−0.347	Monster
Factor-15	
0.537	Radical
0.433	Extremist
0.408	Hippie
0.353	Rebel
0.343	Communist
0.321	Vegetarian
Factor-16	
−0.635	Pro
−0.607	Master
−0.532	Expert
−0.473	Professional
−0.454	Victor
−0.445	Hero
−0.427	Authoritarian
−0.366	Star
−0.348	Savior
−0.346	Innovator
0.34	Punk
0.293	Geek
Factor-17	
−0.669	Loudmouth
−0.665	Blabbermouth
−0.598	Chatterbox
−0.587	Mouth
−0.486	Gossip
0.408	Introvert
−0.407	Talker
−0.403	Tattletale
−0.326	Tattler
−0.317	Storyteller
Factor-18	
0.500	Traveler
0.491	World-trotter
0.343	Homemaker
−0.322	Cynic
0.302	Opportunist
−0.231	Compulsive
Factor-19	
0.601	Tightwad
0.592	Cheapskate
0.412	Scrooge
0.403	Moocher
−0.342	Plaything

TABLE 7 (Continued)

−0.333	Gourmet
−0.320	Sensationalist
−0.282	Patriot
−0.258	Pleasure-seeker
Factor-20	
−0.655	Tease
−0.607	Teaser
−0.552	Flirt
−0.406	Heartbreaker
0.295	Runt
Factor-21	
0.671	Redneck
0.661	Hick
0.483	Bigot
0.408	Racist
0.367	Bum
−0.300	City-slicker
0.298	Granny
0.272	Geezer
Factor-22	
0.605	Heavyweight
0.545	Giant
−0.468	Lightweight
0.372	Cow
0.345	Terror
0.300	Animal
0.287	Brute
Factor-23	
0.723	Babe
0.670	Knockout
0.646	Beauty
0.641	Fox
0.63	Cutie
0.623	Doll
0.573	Honey
0.546	Darling
0.448	Playmate
0.446	Lady-bountiful
0.425	Sexpot
0.374	Charmer
Factor-24	
0.684	Slacker
0.643	Lazybones
0.552	Slug
0.545	Slob

TABLE 7 (Continued)

0.509	Slouch
−0.484	Early-bird
−0.480	Go-getter
0.453	Sleepyhead
0.425	Slowpoke
−0.424	Perfectionist
0.274	Night-owl
0.273	Klutz
−0.271	Busybody
0.240	Vegetable
Factor-25	
0.607	Brain
0.586	Genius
0.579	Whiz-kid
0.565	Smarty
0.552	Intellectual
0.470	Thinker
0.449	Mastermind
0.418	Bookworm
0.417	Know-t-all
0.266	Smart-aleck
Factor-26	
0.574	Amateur
0.556	Beginner
0.554	Novice
0.351	Mortal
0.295	Protagonist
0.283	Capitalist
Factor-27	
−0.632	Child
−0.593	Baby
−0.436	Creep
−0.412	Faker
−0.402	Pig
−0.387	Fool
0.380	Skeptic
−0.310	Wreck
−0.255	Fruit
Factor-28	
−0.578	Gangster
−0.516	Crook
−0.471	Hoodlum
−0.444	Vandal
−0.434	Thief
−0.384	Scoundrel
0.307	Backseat

TABLE 7 (Continued)

0.275	Scatterbrained
−0.248	Lefty
Factor-29	
−0.656	Conformist
−0.598	Follower
0.593	Nonconformist
−0.581	Copycat
0.548	Individualist
0.490	Individual
−0.463	Phony
−0.457	Stereotype
−0.440	Fake
0.401	Philosopher
−0.390	Hypocrite
0.376	Leader
0.364	Pioneer
0.364	Psychic
0.341	Eccentric
−0.338	Whiner
Factor-30	
−0.727	Sport
−0.663	Sportsman
−0.657	Jock
−0.549	Sportswoman
−0.477	Champion
−0.273	Tomboy
Factor-31	
−0.496	Show-off
0.451	Protector
0.450	Sweetheart
0.444	Sympathizer
−0.433	Hotshot
0.432	Angel
−0.430	Showman
−0.424	Player
0.424	Good-samaritan
−0.412	Primadonna
−0.403	User
0.397	Homebody
−0.393	Two-timer
0.376	Samaritan
−0.374	Bigshot
−0.363	Actor
Factor-32	
0.612	Failure

(Continues)

TABLE 7 (Continued)

0.604	Trash
0.512	Nobody
0.500	Loser
0.457	Rat
0.453	Scum
0.452	Tramp
−0.451	Winner
−0.444	Buddy
−0.441	Friend
0.440	Deadbeat
0.437	Worm
0.414	Traitor
0.413	Quitter
0.408	Liar
0.398	Incompetent

Note: Numbers before nouns indicate loadings. Sixteen highest loadings are retained for every factor except for factors with <16 terms.

type-noun model are left out of the less differentiated Big Five model. This 32-factor structure captured 50% or more variance in each of the Big Five, with the highest variance accounted for Agreeableness ($R^2=0.75$) and the lowest for Emotional Stability ($R^2=0.50$).

Big Five markers failed to capture a majority of the variance in any type-noun factor, the highest being for Talkativeness ($R^2=0.36$). The Big Five accounted for over 20% of the variance in only a quarter of the 32 factors and failed to account for even 10% of the variance in another quarter of the 32 factors. Again, the Big Five fails to account for well-differentiated type-noun factors.

For comparison, Table 12 displays correlations between factor scores of 1-, 5-, and 8-factor solutions with Big Five markers. Of note especially, the first unrotated component is most highly correlated with Agreeableness, followed by Conscientiousness; the combination of Agreeableness and Conscientiousness is found in a higher order factor from the Big Five (“Alpha” per Digman [1997]; “Stability” per DeYoung [2006]), consistent with Big-Two “Social Self-Regulation” (Saucier et al., 2014). Here, type-noun and adjective structures are similar with respect to morally evaluative first unrotated factor (Saucier & Goldberg, 2001). After conducting other planned analyses, a lingering additional question became salient: How much are scores (e.g., on the primary 13 factors) affected by demographic features, and by whether the assigned target was liked or disliked, or male versus female.² Exploratory analyses on this issue are documented in detail in Supplementary Materials. The most substantial difference involved an interaction: Ratings by females on the Immoral-behavior dimension were more strongly

related to whether the target was liked or disliked, suggesting that among female raters liking (or disliking) is more strongly related to the perceived morality (or immorality) of the target.

Supplementary material also includes other analyses stipulated within the preregistration including correlations of the 1-, 5-, 8-, 13-, and 32-factor solutions with the Big-1 and Big-2 personality models, the German and Dutch personality type-noun marker scales and the Multi-Language Seven marker scales analyzed by Saucier (2003). We also provide reliability computed with the original (non-ipsatized) data for 13- and 32-factor structures (Supplementary Tables 6.1 and 6.2) and their correlations with the Big Five marker scales (Supplementary Tables 7.1 and 7.2). These analyses demonstrate superior comprehensiveness of the highly differentiated 32-factor model.

3.4 | Comparison with an ancient typology

At the outset of this report, we mentioned the 30 character types of the ancient philosopher Theophrastus. Unfortunately, we found it unfeasible to translate Theophrastus' descriptions into noun- or adjective marker items, due to their extreme concreteness, with heavy reference to no-longer-applicable aspects of life in the ancient Mediterranean. But we did find it useful to compare informally the simple labels of the 30 types, present in the chapter headings and elaborated somewhat in the first sentence of each chapter, with the 32-factor structure, as these could be of similar granularity.

As Table 13 documents, we found four quite precise one-to-one matchups, as both structures had singular personological constructs for the show-off, the coward, the faultfinder, and the boor/rustic. Both had constructs also for the talkative and the miserly person, though Theophrastus divided each of these into two subtypes, and for incompetence, though the Theophrastus content also subsumed aspects of laziness, which was a separate factor in current data. There was also observable although partial overlap in identifying constructs related to criminality, social deviance, and substance abuse, as well as solitariness and humor though these last two were represented only in a very negative light by Theophrastus. Thus overall, about 13 constructs in each structure had correspondence, indicating about 40% overlap. However, this may underestimate how enduring characterological types are across some 2300 years, because Theophrastus' characters do not address individual differences in physique, attractiveness, sexual and romantic behavior, conformity, political ideology, degree of experience, and behavioral lifestyles (like proclivity to sports or travel), all of which have emphasis in the current data. The non-overlap could partly stem from comparing Theophrastus' narrow variable selection with the wider variable selection in the current data.

TABLE 8 Depiction of 32-factor ipsatized data oblimin-rotated solution.

Factor no.	Label	Highest loading terms	Description
1	Toxic masculinity	Sexist, bastard, jerk, tormentor, success, chauvinist	Negative, harmful traits associated with masculinity
2	Seducer	Ladies' man, lady killer, gentleman, Romeo, hunk, playboy	Male who is romantically interested in females; attractive male who can seduce a female
3	Solitariness	Extrovert, loner, outcast, outsider, recluse, drifter	Distancing from society or people around one
4	Conservatism	Republican, conservative, ~liberal, ~Democrat, ultraconservative, rightwing	Conventional political and religious ideologies
5	Incompetence	Bonehead, blockhead, knucklehead, dummy, idiot, dumbbell	Lack of competence, foolishness
6	Humorist	Clown, joker, goof, comic, comedian, practical joker	Entertainer invoking fun, laughter, and amusement
7	Derangement	Psychotic, lunatic, maniac, psychopath, freak, madman	Disorderliness that could be pathological
8	Nosiness	Sneak, snoop, eavesdropper, stickler	Inquisitive about or monitoring others in an intrusive, demanding way
9	Cowardice	Wimp, weakling, chicken, sissy, scaredy-cat, coward	Derogatory terms for someone perceived as afraid or fainthearted
10	Ineffectualness	Stuffed shirt, wino, invalid, butterfingers, sitting-duck, militant	Perceived as inadequate, incapable
11	Faultfinding	Grouch, grump, crab, pessimist, ~optimist, hardnose	Tendency to complain, gripe; holding feelings of irritation, peevisishness
12	Substance abuse	Drunkard, drunk, alcoholic, lawbreaker, addict, pothead	Alcoholism and substance use
13	Social deviance	Degenerate, deviate, heathen, menace, savage, predator	Socially contemptible versus socially respectable descriptors; social repugnance
14	Sentimentality	Sentimentalist, dreamer, romantic, daydream, comforter, sweetie	Positive emotionality marked by idealism; utopian world
15	Rebelliousness	Radical, extremist, hippie, rebel, communist, vegetarian	Disregard for conventional norms; strong need to overthrow the established normative order in the society
16	Expertise	Pro, master, expert, professional, victor, hero	Authority over a skill, task, subject, or profession; high level of proficiency and adeptness
17	Talkativeness	Loudmouth, blabbermouth, chatterbox, mouth, gossip, ~introvert	Correspondence to Big Five extraversion dimension; focus on aspects of chattiness only
18	Travel proneness	Traveler, world-trotter, homemaker, ~cynic, opportunist, ~compulsive	Inclination to journey and explore world beyond one's immediate surroundings
19	Miserliness	Tightwad, cheapskate, scrooge, moocher, ~plaything, ~gourmet	Extreme frugality versus indulgence
20	Teaser/Flirt	Tease, teaser, flirt, heartbreaker, runt	Making advances without an intent for commitment
21	Rusticity	Redneck, hick, bigot, racist, bum, ~city-slicker	Rural, countryside versus pretentious, city-person
22	Size	Heavyweight, giant, ~lightweight, cow, terror, animal	Physical attributes; information about a person's importance

(Continues)

TABLE 8 (Continued)

Factor no.	Label	Highest loading terms	Description
23	Beauty	Babe, knockout, beauty, fox, cutie, doll	Attractive, beautiful; typically used for females
24	Laziness	Slacker, lazybones, slug, slob, slouch, ~early-bird	Lethargy, indolence versus early rising and determination
25	Extreme Intellect	Brain, genius, whiz-kid, smarty, intellectual, thinker	Academic scholar; intellectual pursuits; exceptional mental abilities
26	Neophyte	Amateur, beginner, novice, mortal, protagonist, capitalist	Newcomer, fledgling; someone yet to establish themselves
27	Childishness	Child, baby, creep, faker, pig, fool	Socially undesirable immature and childish behavior
28	Criminality	Gangster, crook, hoodlum, vandal, thief, scoundrel	Social infractions; wrongdoings of an illicit kind
29	Conformity	Conformist, follower, ~nonconformist, copycat, ~individualist, ~individual	Adherence versus nonadherence to norms and expectations of society
30	Sportspersons	Sport, sportsman, jock, sportswoman, champion, tomboy	Involvement in sports and athletic activities
31	Egotism	Show-off, ~protector, ~sweetheart, ~sympathizer, hotshot, ~angel	Self-involved, self-promoting versus generous and benevolent behaviors
32	Inferiority	Failure, trash, nobody, loser, rat, scum	Inadequacy, weakness versus socially acceptable achievement; deficiency that could lead to distress and dejection

Note: '~' indicates that the term is at the opposite pole of the factor from the other terms.

Clearly there is some, perhaps substantial, endurance in observed character types across multiple millennia. These correspondences, surviving a severe test of time, suggest possible personological universals at a fine-grained level. And such correspondences only become evident when applying a high-dimensionality approach that identifies fine-grained components. This approach also enables identification of culture specific (here, historically specific) components, for example: (a) the “late-learner” type reflecting ancient ridicule of older people pursuing learning in contrast to modern society, and (b) the “toxic masculinity” concept in modern society, of a kind that one might be hard-pressed to find among ancient peoples, often patriarchal and militaristic.

4 | DISCUSSION

In several ways, the current study stands out from previous studies in personality structure. Though one of many emic lexical studies of personality, where a structure is allowed to emerge rather than being imposed based on prior studies, this study distinctively addressed type-nouns while utilizing a high-dimensionality approach. A variety of relatively comprehensive models were subjected to rigorous tests for determining the most robust. A similar approach was recently applied to adjectives (Saucier et al., 2020; Saucier & Iurino, 2020), but an outstanding feature of the type-noun results is that here a

high-dimensionality structure (13 factors) was more replicable than structures in the range (two to six factors) where personality psychologists have come habitually to look for structure.

The current study relied on PA as an anchoring mechanism for determining contending models for modeling the type-noun terms. As in previous high-dimensionality lexical studies, PA indicated well more than five or six. But here, for the first time, we identify relatively robust structures with far more factors than PA indicated could be identified, pointing to limitations of PA.

And our identification of a rather robust 32-factor structure points to how personality scientists may have misread the ancient history of their field. In this regard, Galen's humor theory of four basic types is often cited. But our results suggest Theophrastus (rarely cited in this field) was perhaps more on the mark with his far more numerous (30) character types.

Results pointed toward five tiers of emic personality structure in the lexicon, involving 1, 5, 8, 13, and 32 factors, respectively (see Figure 3). Analyses demonstrated some hierarchical relations between these tiers of structure, but much of the relation among these tiers is nonhierarchical; more complex and differentiated tiers pull in much content poorly accounted for at the simpler tiers. It may be surprising to some that the complex/differentiated tiers involve factors that have at most quiet modest levels of intercorrelation.

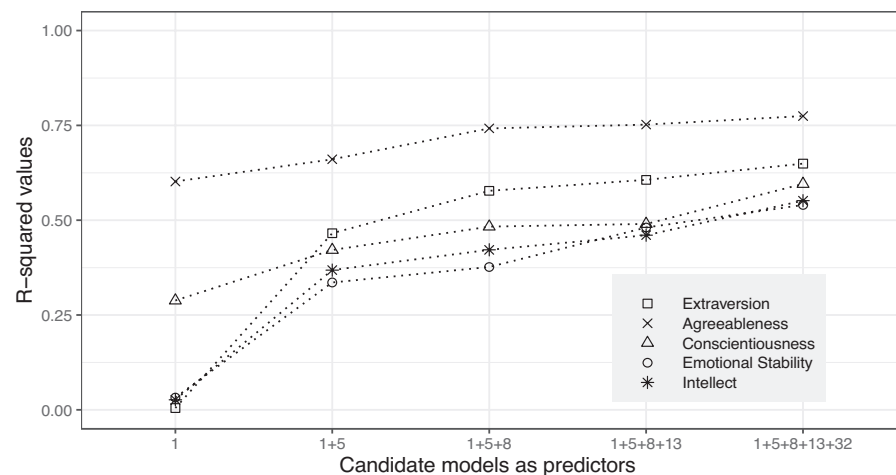
TABLE 9 R-squared change test to assess model comprehensiveness.

Big Five dimensions	Step no.	Models added at every step	All models at every step	R-squared values	R-squared change	(df)	F-change
Extraversion	1	1-orig-unrt	1	0.005	–	(1605)	2.93
	2	5-orig-var	1 + 5	0.466	0.46	(4601)	129.60*
	3	8-orig-var	1 + 5 + 8	0.577	0.11	(3598)	52.71*
	4	13-orig-ob	1 + 5 + 8 + 13	0.606	0.03	(5593)	8.73*
	5	32-ips-ob	1 + 5 + 8 + 13 + 32	0.649	0.04	(32,561)	2.14*
Agreeableness	1	1-orig-unrt	1	0.602	–	(1605)	915.24*
	2	5-orig-var	1 + 5	0.661	0.06	(4601)	25.89*
	3	8-orig-var	1 + 5 + 8	0.742	0.08	(3598)	62.98*
	4	13-orig-ob	1 + 5 + 8 + 13	0.752	0.01	(5593)	4.77*
	5	32-ips-ob	1 + 5 + 8 + 13 + 32	0.775	0.02	(32,561)	1.76*
Conscientiousness	1	1-orig-unrt	1	0.288	–	(1605)	245.15*
	2	5-orig-var	1 + 5	0.422	0.13	(4601)	34.58*
	3	8-orig-var	1 + 5 + 8	0.483	0.06	(3598)	23.71*
	4	13-orig-ob	1 + 5 + 8 + 13	0.490	0.01	(5593)	1.66
	5	32-ips-ob	1 + 5 + 8 + 13 + 32	0.596	0.11	(32,561)	4.57*
Emotional stability	1	1-orig-unrt	1	0.032	–	(1605)	20.29*
	2	5-orig-var	1 + 5	0.336	0.30	(4601)	68.64*
	3	8-orig-var	1 + 5 + 8	0.377	0.04	(3598)	13.05*
	4	13-orig-ob	1 + 5 + 8 + 13	0.481	0.10	(5593)	23.78*
	5	32-ips-ob	1 + 5 + 8 + 13 + 32	0.540	0.06	(32,561)	2.27*
Intellect	1	1-orig-unrt	1	0.027	–	(1605)	16.58*
	2	5-orig-var	1 + 5	0.369	0.34	(4601)	81.33*
	3	8-orig-var	1 + 5 + 8	0.422	0.05	(3598)	18.41*
	4	13-orig-ob	1 + 5 + 8 + 13	0.460	0.04	(5593)	8.47*
	5	32-ips-ob	1 + 5 + 8 + 13 + 32	0.551	0.09	(32,561)	3.56*

Note: 1- orig-unrt = 1-factor original data unrotated solution, 5-orig-var = 5-factor original data varimax-rotated solution, 8-orig-var = 8-factor original data varimax-rotated solution, 13-orig-ob = 13-factor original data oblimin-rotated solution, 32-ips-ob = 32-factor ipsatized data oblimin-rotated solution.

* $p < 0.01$.

FIGURE 2 R^2 values across hierarchical regression steps with Big Five dimensions as dependent variables. On the x-axis, 1 = 1-factor original data unrotated solution, 5 = 5-factor original data varimax rotated solution, 8 = 8-factor original data varimax-rotated solution, 13 = 13-factor original data oblimin-rotated solution, 32 = 32-factor ipsatized data oblimin-rotated solution.



The 13- and 32-factor type-noun structures get at aspects of personality that the Big Five barely manages to capture. Several dimensions of variation evident in

type-nouns (Rusticity, Attractiveness, and Virility) are very poorly captured by the Big Five, and several others are in only small fraction captured (Cowardice, Derangement,

TABLE 10 Correlation between 13-factor original data oblimin-rotated solution and the Big Five markers.

Factor labels	Highest loading type-nouns	E	A	C	ES	I(O)
Talkativeness	Talker—chatterbox	0.62	−0.09	−0.11	−0.13	0.02
Immoral behavior	Two timer—phony	0.15	−0.65	−0.33	−0.19	−0.11
Soft-heartedness	Dreamer—comforter	−0.21	0.52	0.21	−0.26	0.18
Deviance	Delinquent—alcoholic	0.03	−0.38	−0.47	−0.01	0.12
Exceptional intellect	Genius—brain	0.03	0.18	0.43	−0.02	0.24
Negativity	Critic—eavesdropper	−0.09	−0.38	−0.13	−0.43	0.00
Conservatism	Republican—conservative	−0.01	−0.33	0.04	−0.13	−0.54
Virility	Gentleman—ladies' man	−0.03	−0.09	0.02	0.27	−0.08
Rusticity	Redneck—cow	−0.08	−0.39	−0.14	−0.05	−0.16
Attractiveness	Babe—beauty	0.21	0.27	0.15	−0.22	0.05
Cowardice	Wimp—sissy	−0.34	−0.27	−0.29	−0.26	−0.12
Derangement	Psychotic—maniac	−0.10	−0.38	−0.27	−0.23	0.25
Incompetence	Quack—dingbat	−0.20	−0.22	−0.35	−0.05	−0.19

Note: Correlations $\geq |0.40|$ are in bold. Original signs of correlation coefficients are sometimes reflected to make them conform with factor labels. Highest loading terms on each factor: E = extraversion—*bold, talkative, sociable* versus *bashful, shy, timid*; A = Agreeableness—*warm, tolerant, lenient* versus *harsh, stern, cruel, sly*; C = conscientiousness—*organized, logical, firm* versus *disorganized, unsystematic, scatterbrained*; ES = Emotional Stability—*anxious, fearful, emotional, jealous*; I(O) = intellect (openness to experience)—*philosophical, complex, clever, unconventional* versus *conventional, traditional, unreflective*.

Deviance, and Exceptional Intellect). Some of these might be traced to a tendency for type-nouns (more than adjectives) to reference character types directly connected to social structure, in a manner consistent with a sociological theory (e.g., Merton, 1957). For example, they contrast rustic and sophisticated people, also nondeviant and deviant/delinquent people, and reference behavior patterns connected to gendered roles (e.g., “ladies' man”). One sees also a tendency for type-nouns to reference extremes (e.g., not just intellect but exceptional intellect; not just neurotic tendencies but “lunacy” and psychopathy); such extremes may link to social roles.

There is great value in studying type-noun structures and seeking a more comprehensive approach, leading to more meaningful understanding of how people describe each other, considering the rather stark and dramatic characterizations type-nouns afford. One cannot reduce type-noun description to the highly evaluative moralizing type-nouns associated with their first unrotated factor (e.g., *jerk and liar*), as the 13-factor structure indicates another dozen lines of variation, and the 32-factor structure adds 19 more. Nonetheless, despite its limited informativeness and predictive capacity, one must acknowledge that a general evaluative factor of personality as found here is general in another way—something similar to it is found consistently among adjectives as well and apparently so across languages (Saucier & Goldberg, 2001), perhaps because moral evaluation is a core component of culture as well as personality (Saucier, 2017). But Figure 3 demonstrates how, in higher dimensionality structures,

the moral dimension gets decomposed into more fine-grained components.

What enabled the present findings is an innovative methodology, first developed by Saucier and Iurino (2020) and applied here to type-nouns. The method identifies and assesses multiple candidate models across variations in data handling and rotation methods in order to determine the most robust model. No such approach was used in those lexical studies that discovered and have later confirmed the Big Five model (and six-factor models as well). Thus, these previous studies presented insufficient evidence that five (or six) factors truly yield the most robust model of personality, or that they will demonstrate higher robustness than alternatives that would be far more comprehensive.

An important question with respect to methodological foundations of the structure of personality concerns the need for an anchor for determining the number of factors, or in other words, where can one start looking for a comprehensive, well-defined, and reliable personality structure? The search for a coherent structure well above the number of factors that PA recommends may easily be a fruitful search. This might seem puzzling given that presumably factor structures with more factors than PA recommends, will include some factors of a size no different than what would arise in randomly generated data. However, it may be that many meaningful and interpretable factors are no larger in size than typical random factors. Moreover, PA is run on unrotated factors that are characteristically more likely to be difficult

TABLE 11 Correlation between 32-factor ipsatized data oblimin-rotated solution and the Big Five markers.

Factor labels	Highest loading type-nouns	E	A	C	ES	I(O)	R ² values
Solitariness	Loner—extrovert	−0.48	−0.07	−0.10	−0.10	0.09	0.26
Talkativeness	Loudmouth—blabbermouth	0.46	−0.21	−0.23	−0.22	−0.13	0.36
Toxic masculinity	Sexist—bastard	0.03	−0.45	−0.15	−0.12	0.04	0.22
Sentimentality	Sentimentalist—dreamer	−0.05	0.42	0.19	−0.26	0.20	0.30
Egotism versus Altruism	Show-off—protector	0.20	−0.41	−0.31	−0.06	0.02	0.24
Laziness	Slacker—lazybones	−0.18	−0.05	−0.50	0.02	0.06	0.29
Conservatism	Republican—conservative	−0.01	−0.10	0.13	0.04	−0.45	0.22
Conformity	Conformist—follower	−0.16	−0.22	−0.19	−0.17	−0.48	0.33
Seducer	Ladies' man—lady killer	−0.07	0.01	−0.03	−0.25	0.08	0.07
Incompetence	Bonehead—blockhead	0.01	−0.25	−0.31	0.18	−0.23	0.20
Humorist	Clown—joker	0.24	0.24	0.08	0.15	0.08	0.14
Derangement	Psychotic—lunatic	−0.08	−0.29	−0.29	−0.13	0.12	0.17
Nosiness	Sneek—snoop	−0.06	−0.37	−0.10	−0.26	−0.04	0.19
Cowardice	Wimp—weakling	−0.27	−0.04	−0.11	−0.18	−0.06	0.12
Ineffectualness	Stuffed shirt—wino	−0.11	−0.07	−0.05	0.08	−0.18	0.06
Faultfinding	Grouch—grump	−0.16	−0.38	−0.05	−0.13	−0.16	0.20
Substance abuse ^a	Drunkard—drunk	0.17	−0.24	−0.30	0.08	0.09	0.17
Social deviance	Degenerate—deviate	0.06	−0.31	−0.22	0.06	−0.12	0.13
Rebelliousness	Radical—extremist	−0.10	−0.10	−0.16	0.09	0.10	0.06
Expertise	Pro—master	0.15	0.14	0.28	0.08	0.04	0.11
Travel-proneness	Traveler—world-trotter	0.04	0.19	0.20	0.21	−0.06	0.10
Miserliness	Tightwad—cheapskate	−0.04	−0.38	−0.14	0.03	−0.12	0.16
Teaser/flirt	Tease—teaser	0.29	−0.22	−0.13	−0.10	0.00	0.14
Rusticity	Redneck—hick	−0.11	−0.16	−0.14	0.10	−0.13	0.07
Size ^b	Heavyweight—giant	0.04	−0.20	−0.03	0.11	−0.06	0.06
Beauty	Babe—knockout	0.06	0.28	0.08	−0.03	0.04	0.09
Extreme intellect	Brain—genius	0.00	0.06	0.20	0.24	0.17	0.13
Neophyte	Amateur—beginner	−0.15	0.27	0.05	0.04	0.11	0.10
Childishness	Child—baby	0.01	−0.32	−0.25	−0.08	−0.11	0.14
Criminality	Gangster—crook	−0.01	−0.15	−0.09	0.21	−0.00	0.08
Sportspersons	Sport—sportsman	0.10	0.28	0.20	0.12	−0.08	0.13
Inferiority	Failure—trash	−0.04	−0.31	−0.28	0.06	−0.10	0.15
R ² values		0.62	0.75	0.58	0.49	0.53	

Note: Correlations ≥ 0.40 are in bold. Original signs of correlation coefficients are sometimes reflected to make them conform with factor labels. Complete labels for the factors ^aSubstance abuse/addiction proneness and ^bsize (or importance). Highest loading terms on each factor: E = extraversion—*bold, talkative, sociable* versus *bashful, shy, timid*; A = Agreeableness—*warm, tolerant, lenient* versus *harsh, stern, cruel, sly*; C = conscientiousness—*organized, logical, firm* versus *disorganized, unsystematic, scatterbrained*; ES = Emotional Stability—*anxious, fearful, emotional, jealous*; I(O) = intellect (openness to experience)—*philosophical, complex, clever, unconventional* versus *conventional, traditional, unreflective*.

to interpret than rotated factors, and after the first few large unrotated factors, the remaining unrotated factors tend to be smaller than the rotated variants. Thus, it may be that for all its strengths in identifying informative structures with many relatively well-differentiated factors, well beyond the “Big Few” that the last four decades of personality research have emphasized, the structure

PA identifies tend to be at an intermediate and not at the most fine-grained level of personality attribute structure. Given present results, we suggest that meaningful fine-grained structures can be found accounting for 50%–60% of the variance (as anticipated by Merenda, 1997); and it seems fruitful to look for factors there rather than relying solely on PA.

TABLE 12 Correlation between 1-, 5-, and 8-factor original data varimax-rotated solutions and the Big Five markers.

Model	Factor labels	Highest loading type-nouns	E	A	C	ES	I(O)
One-factor unrotated	Social desirability	Jerk—weasel	−0.07	−0.78	−0.54	−0.18	−0.16
Five-factor varimax rotated	Liveliness	Chatterbox—flirt	0.60	−0.15	−0.15	−0.27	−0.04
	Social Unacceptability	Weasel—rat	−0.21	−0.66	−0.40	−0.29	−0.20
	Soft-hearted	Sympathizer—thinker	−0.09	0.41	0.34	−0.25	0.21
	Rebelliousness	Rebel—lawbreaker	0.08	−0.04	−0.32	0.05	0.51
	Masculinity	Ladies' man—hunk	0.21	−0.16	0.15	0.34	−0.15
Eight-factor varimax rotated	Liveliness	Talker—joker	0.59	0.00	−0.11	−0.04	0.04
	Social Unacceptability	Trash—dummy	−0.12	−0.66	−0.48	−0.13	−0.18
	Egocentrism	Critic—know-it-all	0.06	−0.41	0.03	−0.38	0.01
	Delinquency	Lawbreaker versus good-goody	0.10	−0.13	−0.31	0.08	0.45
	Autonomous Intellect	Philosopher—genius	−0.04	0.20	0.31	−0.12	0.38
	Masculinity	Ladies' man—gentleman	0.06	−0.06	0.13	0.28	−0.18
	Attractiveness	Babe—beauty	0.23	0.07	−0.04	−0.26	−0.05
	Disorientation	Sleepyhead—klutz	−0.38	0.27	−0.17	−0.23	0.06

Note: Correlations $\geq|0.40|$ are in bold. Original signs of correlation coefficients are sometimes reflected to make them conform with factor labels. Highest loading terms on each factor: E = extraversion—*bold, talkative, sociable* versus *bashful, shy, timid*; A = Agreeableness—*warm, tolerant, lenient* versus *harsh, stern, cruel, sly*; C = conscientiousness—*organized, logical, firm* versus *disorganized, unsystematic, scatterbrained*; ES = Emotional Stability—*anxious, fearful, emotional, jealous*; I(O) = intellect (openness to experience)—*philosophical, complex, clever, unconventional* versus *conventional, traditional, unreflective*.

There are some limitations of this study with regards to sampling. Present study involves as raters only undergrad-uate college students in North America, not a represen-tative sample from the language. Second, the sample size while large cannot be considered large enough to guaran-tee entirely firm conclusions.

Conceivably, one could also object that inclusion of disliked targets is a problem. The data included in this study use varying targets (self vs. other, or other either liked or disliked) for personality evaluations. Studies in the past have utilized this method of personality assess-ment (Goldberg, 1990) wherein self and other ratings, and both liked and disliked targets of description, are judged to be relevant to personality assessment. As there were 200 or lesser participants in each of the three groups (self, liked other and disliked other), we were hesitant to run a separate structural analysis for each data type. A post hoc analysis was conducted for assessing the robustness of models across these conditions. A correlation analysis (CA) between factor scores (liked vs. all targets, disliked vs. all targets, self vs. all targets) along with a congru-ence coefficient analysis (CCA) (liked targets vs. disliked targets, self as targets vs. liked targets, self as targets vs. disliked targets) were carried out for identifying how well the candidate models hold up across group comparisons. Comparing the overall ($N = 607$) structure to structure ob-tained from the three subsamples, the overall structure most closely resembled that in the liked-other subsample. Structures similar to the overall structure, however, were

obtained in each of the subsamples, particularly strongly for the 1-factor structure, rather strongly for the 5- and 13-factor structures. Thus, inclusion of disliked targets seems relatively inconsequential.

Because the data came from a 2003 study before the identification of any high-dimensionality adjective struc-tures for personality, the variables do not enable a com-parison with lexical study-derived high-dimensionality adjective models such as the Lex-20 (Saucier & Iurino, 2020). It would helpful going forward to clarify the relationship between personality structures across word classes in English language; when one takes a high-dimensionality approach, there are several dimensions among type-nouns (e.g., incompetence, deviance, de-rangement, and attractiveness) that appear to be poorly represented in adjective structures like the Lex-20. It appears that type-nouns tend to emphasize extremes of traits, and in some domains of variation it may be socially important to distinguish such extremes from rest of the continuum. Possibly this is because individuals at these extremes (e.g., *two-timers, delinquents, jokers, and experts*) play an outsize role in social structure or just in person memory of personality perceivers.

As is typical of lexical studies, the present study relied on use of PCA, an extraction method that handles situa-tions with a higher number of variables than cases (as is found in many lexical studies, including the analysis here of one-gender targets specifically). PCA moreover is ad-vantageous where one is relying heavily (as here) on factor

TABLE 13 Matching and unmatched content, Theophrastus characters versus 32-factor ipsatized data oblimin-rotated solution.

Aggregated labels from translations of Theophrastus characters	Current data, factor labels (32-factor solution)
Show-off, boastful, boaster, braggart, ostentation (23)	Egotism versus altruism [31]
Coward, cowardice (25)	Cowardice [9]
Faultfinder, ungrateful, grumbler, thankless, discontented temper (17)	Faultfinding [11]
Boor, country bumpkin, rustic, rusticity (4)	Rusticity [21]
Garrulous, chatterbox, chatterer, impertinence in discourse (3)	Talkativeness [17]
Talkative, talker, loquacious, bore, chatty, loquacity (7)	
Penny-pincher, penurious, mean, sordid avarice (10)	Miserliness [19]
Stingy, illiberal, mean, penurious, mean, niggardly temper (22)	
Absent-minded, obtuse, stupid, absent (14)	Incompetence [5] ? Laziness [24]
Lover of bad company, friend of villains, friend of the rabble, vicious, patron of rascals (29)	? Criminality [13] ? Substance abuse [12]
Without moral feeling, has lost all sense, reckless, cynic, rough, profligate or shameless (6)	? Social deviance [28]
Unsociable, self-centered, surly, brutality (15)	? Solitariness [3]
Offensive, repulsive, gross, impudent, shameless [with especially references to jesting behavior, etc.] (11)	? Humorist [6]
<i>Unmatched types</i>	<i>Unmatched factors</i>
Insincere, dissembler, dissimulator, dissembling, ironical, dissimulation (1). Flatterer, toady, flattery (2). Complaisant, obsequious, affable, false complaisance (5). Fabricator, rumor-monger, newsmonger, gossip (8). Shamelessly greedy, shameless, unscrupulous, impudence as it proceeds for covetousness (9). Hapless, tactless, unseasonable, absurd or unreasonable behavior (12). Officious, overzealous, over-officiousness (13). Superstitious, superstition (16). Suspicious, distrustful (18). Repulsive, offensive, gross, sloven[ly] (19). Unpleasant, disagreeable, troublesome (20). Petty ambition, vain, exquisite, vain-glory (21). Arrogant, pompousness, pride (24). Oligarchical, oligarchic, oligarch, oligarchist (26). Late learner, superannuated scholar (27). Slanderer, backbiter, evil-speaker, detraction (28). Basely covetous, shabby profiteer, avaricious (30)	Toxic masculinity [1], Romeo [2], conservatism (political ideology) [4], derangement [7], nosiness [8], ineffectualness [10], sentimentality [14], rebelliousness [15], expertise [16], travel-proneness [18], teaser/flirt [20], size (or importance) [22], beauty [23], extreme intellect [25], neophyte [26], childishness [27], conformity [29], sportsperson [30], inferiority [32]

Note: “?” indicates the correspondence with Character on the left is taken to be only partial. Numbers are character numbers in parentheses (Theophrastus) or current-data factor numbers in brackets. Aggregated labels from translations are drawn from six sources (Theophrastus, 1718, 1870, 1902, 1924, 1970, 2004), each a differing English translation of the same ancient text.

scores as component scores that PCA generates, identify exact scores rather than estimates of factor scores. PCA is appropriate for matrices with a zero determinant, common in lexical studies where the number of variables exceeds the number of subjects.

As is observable even in the ancient typological sketches of Theophrastus (see Table 13, left column), type-noun distinctions tend to emphasize undesirable characteristics. Because of this emphasis, it is possible that type-noun factors (especially relatively specific factors as examined here) are more directly related to aspects of personality-disorders and other psychopathology than is true for factors derived from adjectives. Moreover, type-nouns seem to represent more prominently aspects of mating, sexual, and romantic behavior—rendering them

of potential interest to evolutionary psychology where such aspects are a central focus. Of interest would be further studies in these directions, for example whether the resort to type-nouns for such attributes is widely distributed cross-culturally. Specific type-noun factors here also, more than factor in studies of adjectives, highlight nuanced aspects of competence and ability, and of physical and partially demographic (i.e., Rusticity) features, but such differences may arise because adjectival studies have usually excluded these types of attributes. It may be the case, however, that people tend to resort to the rather more evaluative option of type-noun descriptions for such attributes because of their social importance and thus their strong evaluative valence. Future studies might investigate to what extent this is the case.

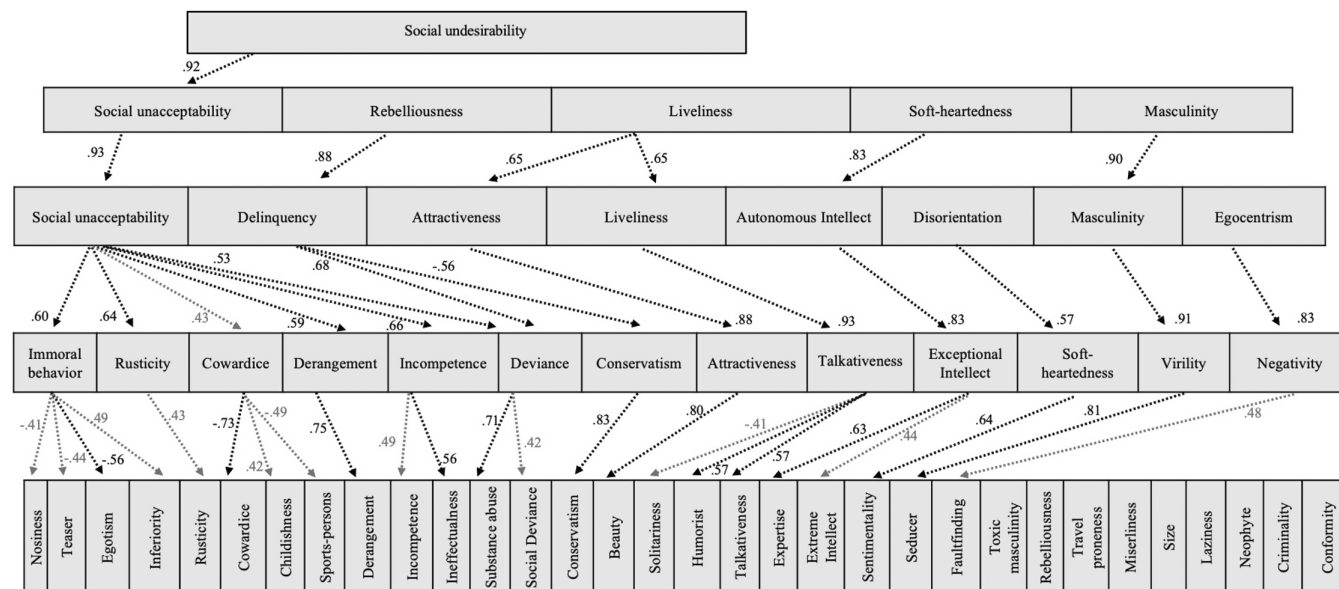


FIGURE 3 Correlation between factor scores of 1-factor original data unrotated solution, 5-factor original data varimax-rotated solution, 8-factor original data varimax-rotated solution, 13-factor original data oblimin-rotated solution and 32-factor ipsatized data oblimin-rotated solution. Correlation values $\geq|0.50|$ are in black and $\geq|0.40|$ are in gray. Original signs on correlation coefficients are sometimes reflected to make them conform with factor labels.

The study materials, data, and analysis scripts used for this article can be accessed at <https://figshare.com/s/c98546bdb3632ff6cf70>; <https://figshare.com/s/a5f52166f25b70346cc1>; <https://figshare.com/s/2aa9894ad17f866764b2>.

5 | CONCLUSIONS

This study makes an unprecedentedly in-depth examination of the lexical personality structure of type-nouns (in English), using a robustness criterion, with full allowance for a high-dimensionality structure to emerge. Relative convergence of results across data type, descriptive-target-type, and factor-rotation method provided indices for robustness. Solutions of 1, 5, 8, 13, and 32 factors were found to be relatively high on robustness. Among these, 13-factor oblimin-rotated original data followed by 32-factor oblimin-rotated ipsatized data solutions were found to be most comprehensive, interpretable, and robust, and the ones providing most informative sources of variation in the given data. Correlations between 13- and 32-factor solutions and Big Five adjective markers revealed a few substantial associations but indicate numerous sources of variation that are not identified well enough by models based on early lexical studies focusing on adjectives.

AUTHOR CONTRIBUTIONS

Vinita Vader: Formal analysis; investigation; methodology; writing—original draft; writing—review and editing.

Gerard Saucier: Conceptualization; methodology; analysis; data curation; project administration; supervision; writing—original draft; writing—review and editing.

ACKNOWLEDGMENTS

We would like to thank University of Oregon, for providing the resources for data analysis.

CONFLICT OF INTEREST STATEMENT

The authors have no conflicts of interest to declare.

ETHICS STATEMENT

This study consisted of a secondary data analysis. At the time of the original data collection, the ethics approval was provided by the Institutional Review Board at University of Oregon.

ORCID

Vinita Vader  <https://orcid.org/0000-0003-1004-6718>

Gerard Saucier  <https://orcid.org/0000-0003-3262-0469>

ENDNOTES

¹ Use of average best match correlations for comparing original and ipsatized data solutions in this study came at the suggestion of a reviewer. Previous high-dimensionality studies (Saucier et al., 2020; Saucier & Iurino, 2020) utilized instead proportion of variance shared between variable sets (from canonical correlation analysis) for this comparison. For sake of completeness we include the alternative calculation via proportion of variance shared—for the table and the associated figure—in [supplementary materials](#).

²To examine whether results were influenced by categorization effects due to instructions or demographics, we ran models predicting the endorsement of factors in the 13-factor model. Rater's age, sex (male vs. female), target's sex (male vs. female), and target of description (self vs. liked other or disliked other) served as predictors. Female ratings on *Immoral-behavior* were more likely to be influenced by likeability of target. Males were more likely to evaluate liked females highly on immorality. *Virility*, *Deviance*, *Soft-heartedness*, *Attractiveness*, and to some extent *Joviality*, had pronounced differences in ratings between males and females. Older disliked targets were likely to be rated higher on *Rusticity* than younger disliked targets. Disliked others were more likely to be perceived as conservative and right-wing. Negative relationship was found between *Exceptional Intellect* and age, in the disliked-other-targets condition only.

REFERENCES

- Cheung, F., Cheung, S., Leung, K., Ward, C., & Leong, F. (2003). The English version of the Chinese personality inventory. *Journal of Cross-Cultural Psychology*, 34, 433–452.
- Cheung, F., Cheung, S., Zhang, J., Leung, K., Leong, F., & Yeh, K. H. (2008). Relevance of openness as a personality dimension in Chinese culture: Aspects of its cultural relevance. *Journal of Cross-Cultural Psychology*, 39, 81–108.
- Condon, D. M., & Mroczek, D. K. (2016). Time to move beyond the Big Five? *European Journal of Personality*, 30(4), 311.
- Costa, P. T., & McCrae, R. R. (1992). *NEO-PI-R professional manual*. Psychological Assessment Resources.
- De Raad, B., & Hoskens, M. (1990). Personality-descriptive nouns. *European Journal of Personality*, 4, 131–146.
- DeYoung, C. G. (2006). Higher-order factors of the Big Five in a multi-informant sample. *Journal of Personality and Social Psychology*, 91, 1138–1151.
- Diggle, J. (2004). *Theophrastus. Characters (Cambridge classical texts and commentaries 43)*. Cambridge University Press.
- Digman, J. M. (1997). Higher-order factors of the Big Five. *Journal of Personality and Social Psychology*, 73(6), 1246–1256. <https://doi.org/10.1037/0022-3514.73.6.1246>
- Dixon, R. M. W. (1977). Where have all the adjectives gone? *Studies in Language*, 1, 19–80.
- Galvin, A. (1993). *Factor scores for 1947 nouns and their variants rated for usefulness*. Unpublished research report, University of Colorado at Colorado Springs.
- Goldberg, L. R. (1980). *A catalogue of 1947 nouns that can be used to describe personality and a taxonomy of 1342 nouns that are typically so used*. Unpublished research report.
- Goldberg, L. R. (1982). From Ace to Zombie: Some explorations in the language of personality. *Advances in Personality Assessment*, 1, 203–234.
- Goldberg, L. R. (1990). An alternative “description of personality”: The Big-Five factor structure. *Journal of Personality and Social Psychology*, 59(6), 1216–1229.
- Henson, R. K., & Roberts, J. K. (2006). Use of EFA in published research: Common errors and some comment on improved practice. *Educational and Psychological Measurement*, 66, 393–416.
- Henss, R. (1998). Type nouns and the five factor model of personality description. *European Journal of Personality*, 12, 57–71.
- Horn, J. L. (1965). A rationale and test for the number of factors in factor analysis. *Psychometrika*, 30(2), 179–185.
- Merenda, P. F. (1997). A guide to the proper use of factor analysis in the conduct and reporting of research: Pitfalls to avoid. *Measurement and Evaluation in Counseling and Development*, 30, 156–164.
- Merton, R. K. (1957). *Social theory and social structure*. Free Press.
- Mershon, B., & Gorsuch, R. L. (1988). Number of factors in the personality sphere: Does increase in factors increase predictability of real-life criteria? *Journal of Personality and Social Psychology*, 55(4), 675.
- Saucier, G. (2003). Factor structure of English-language personality type-nouns. *Journal of Personality and Social Psychology*, 85(4), 695–708.
- Saucier, G., Thalmayer, A. G., Payne, D. L., Carlson, R., Sanogo, L., Ole-Kotikash, L., Church, A. T., Katigbak, M. S., Somer, O., Szarota, P., Szirmák, Z., & Zhou, X. (2014). A basic bivariate structure of personality attributes evident across nine languages. *Journal of Personality*, 82(1), 1–14.
- Saucier, G. (2017). Personality, character, and cultural differences: Distinguishing enduring-order versus evolving-order cultures. In A. T. Church (Ed.), *The Praeger handbook of personality across cultures: Evolutionary, ecological, and cultural contexts of personality* (pp. 265–295). Praeger.
- Saucier, G., & Goldberg, L. R. (2001). Lexical studies of indigenous personality factors: Premises, products, and prospects. *Journal of Personality*, 69(6), 847–879.
- Saucier, G., & Iurino, K. (2020). High-dimensionality personality structure in the natural language: Further analyses of classic sets of English-language trait-adjectives. *Journal of Personality and Social Psychology*, 119(5), 1188–1219.
- Saucier, G., Iurino, K., & Thalmayer, A. (2020). Comparing predictive validity in a community sample: High-dimensionality and traditional domain-and-facet structures of personality variation. *European Journal of Personality*, 34, 1120–1137.
- Saucier, G. (2022). *Culture, personality, and the psychology of religion*. Brill. <https://brill.com/display/title/63275>
- Stelmack, R. M., & Stalikas, A. (1991). Galen and the humour theory of temperament. *Personality and Individual Differences*, 12(3), 255–263.
- Thalmayer, A. G., Saucier, G., Ole-Kotikash, L., & Payne, D. (2020). Personality structure in east and west Africa: Lexical studies of personality in Maa and Supyire-Senufo. *Journal of Personality and Social Psychology*, 119(5), 1132.
- Thalmayer, A. G., Job, S., Shino, E. N., Robinson, S. L., & Saucier, G. (2021). #Üsigu: A mixed-method lexical study of character description in Khoekhoegowab. *Journal of Personality and Social Psychology*, 121(6), 1258.
- Theophrastus. (1718). *The moral characters of Theophrastus* (3rd ed.) (E. Budgell, Trans.). Jacob Tonson.
- Theophrastus. (1870). *The characters of Theophrastus* (R. C. Jebb, Trans.). MacMillan and Co.
- Theophrastus. (1902). *The characters of Theophrastus* (C. E. Bennett & W. A. Hammond, Trans.). Longmans, Green, and Co.
- Theophrastus. (1924). *A book of 'characters' from Theophrastus* (R. Aldington, Trans.). George Routledge and Sons.
- Theophrastus. (1970). *Theophrastus: The character sketches* (W. Anderson, Trans.). Kent State University Press.

- Theophrastus. (2004). *Characters* (J. Diggle, Trans.). Cambridge University Press.
- Wiggins, J. S., Steiger, J. H., & Gaelick, L. (1981). Evaluating circumplexity in personality data. *Multivariate Behavioral Research*, 16, 263–289.
- Zhou, X., Saucier, G., Gao, D., & Liu, J. (2009). The factor structure of Chinese personality terms. *Journal of Personality*, 77(2), 363–400.

SUPPORTING INFORMATION

Additional supporting information can be found online in the Supporting Information section at the end of this article.

How to cite this article: Vader, V., & Saucier, G. (2024). High-dimensionality structure in English-language personality type-nouns. *Journal of Personality*, 00, 1–24. <https://doi.org/10.1111/jopy.12940>