

STATISTICAL AUDIT · EXPLORATORY RESEARCH

Psychological Survey Dataset

Comprehensive Statistical Analysis

SPSS source: فایل خام.sav

Date: 12 October 2026

240 recorded rows · 89 original fields · 2 coded groups

RESEARCH INTEGRITY ALERT: 119 of 120 aligned questionnaire pairs have identical responses on all 76 items. Group p-values do not meet defensible independent-observation assumptions.

Publication note: The SPSS variable-name compatibility fix has been inserted into the appendix. The latest standalone analysis script is included separately; its R execution is still unverified.

Purpose: explain every construct, quantify quality problems, document diagnostic statistics, and describe what must be validated before scientific claims.

Executive summary / key findings

- The file contains 240 rows and 89 variables; group `fire` and group `non` each have 120 recorded rows. The literal meaning of those codes is not provided.
- There are 76 questionnaire item variables: 13 ambiguity-tolerance (A), 33 emotion self-regulation (EM), 15 mentalization (H), and 15 death-anxiety (D), plus demographics and stored scale/subscale scores.
- Only 86 different 76-item response patterns exist across 240 rows. In all, 239 rows share a questionnaire pattern with another row. This could be repeated forms, pairing, data copying or a processing fault; provenance must be established.
- Exactly 119 of 120 same-position pairs from `fire` and `non` are identical on all 76 questionnaire item answers. Age-band and education distributions are exactly the same in both groups.
- No SPSS system-missing values were found. However, 31 values in D1–D15 are outside the permitted codes 1 or 2, affecting five case rows.
- Stored TOTALA, TOTALEM and MZQ disagree with their simple raw item sums in 84, 32 and 26 rows respectively. Differences are not necessarily wrong until official reverse-scoring rules are checked.
- Stored ambiguity-tolerance TOTALA differs by 4.63 points between groups (40.45 versus 35.83), yet the direct item sum differs by only 0.08; this is the central sensitivity finding.
- P-values, confidence intervals and effect sizes are calculated transparently but labeled diagnostic only. No evidence supports an independent-groups causal claim or a reliable death-anxiety total score.

What this dataset can and cannot answer

Can answer: what variables exist, category frequencies, observed score distributions, exact profile overlap, problematic cases, and mathematical sensitivity to score definitions. Cannot yet answer: whether fire/non are psychologically different populations; whether stored totals implement correct scoring; or how death anxiety relates to other validated constructs.

Variable dictionary and what the constructs mean

SPSS contains labels for constructs and response options, but ****not the wording of the individual psychological questions****. Therefore we can describe the general domains, not infer the exact thought or symptom each item measures. Several SPSS item measurement settings say “scale” even when a single five-category Likert response is substantively ordinal.

Code	Accessible meaning	Type	Interpretation / limitation
GROUP	Group code	Nominal/binary	1=fire, 2=non; group meaning unknown
NUMBER	Original case number	Identifier	121 distinct across 240; repeated across groups
AGE	Age band	Ordinal	4 categories; source labels 1:<30, 2:30–40, 3:40–50, 4:50–60
AGEE	Age in years	Scale	Observed 22–58 years
MARRIAGE	Marital status	Nominal	1=single, 2=married; 3=divorced is labeled but not observed
EDUCATIO	Education level	Ordinal	1 diploma, 2 associate, 3 bachelor, 4 master, 5 doctorate

Code	Accessible meaning	Type	Interpretation / limitation
A1–A13	Ambiguity tolerance items	Ordinal 1–5	Five-level agree/disagree options; item wording unavailable
EM1–EM33	Emotion self-regulation items	Ordinal 1–5	Five-level truthfulness response options; individual questions unavailable
H1–H15	Mentalization items	Ordinal 1–5	Five-level agreement scale; reverse coding unknown
D1–D15	Death anxiety items	Binary 1/2	1=true, 2=false; 31 codes violate allowed values
TOTALA	Stored A total	Scale (unverified)	84 mismatches with direct A sum
TOTALEM	Stored EM total	Scale (unverified)	32 mismatches with direct EM sum
OPTIMISM	Optimism score	Scale (unverified)	Potential emotional subscale; scoring manual absent
EVALUATI	Emotion appraisal score	Scale (unverified)	Subscale; overlap with overall emotion score possible
SOCIALSK	Social skills score	Scale (unverified)	Subscale; component–total correlations not independent
EMOTIONA	Emotion utilization score	Scale (unverified)	Subscale; direction unverified
MZQ	Stored mentalization total	Scale (unverified)	26 mismatches with direct H sum

Plain-language psychological interpretation

Ambiguity tolerance — How comfortable someone feels when there is no certain answer; the raw A response choices concern agreement with statements, but item texts and score direction are unknown.

Emotional self-regulation — Skills or tendencies involved in handling feelings, reacting to emotional situations, and staying effective under emotional demands; no clinical diagnosis follows from this score.

Mentalization — Thinking about one’s own and other people’s thoughts, intentions and feelings; the total alone cannot establish whether someone has a clinical mentalizing difficulty.

Death anxiety — Agreement/disagreement with death-related statements. D-items must first be verified; a total must not be invented from invalid and potentially reversely keyed responses.

Emotional subdomains — Optimism, emotion appraisal, social skills and emotion utilization are separately stored, but may share items with the overall emotion score; their correlations can be partly a mathematical consequence of overlap.

Methods and analysis plan

Design and objective

No research question, study protocol, primary endpoint or sampling design is given. The work is a comprehensive exploratory audit. ‘fire’ and ‘non’ are preserved as literal source codes; their substantive meaning cannot be assumed.

Import and preservation

The `.sav` file was read from its SPSS binary structures and labels into Python for numerical validation. The companion R script uses `haven::read_sav()` to reproduce import from the original file. Raw values are preserved separately; code-invalid D answers are flagged rather than silently assigned a score.

Data completeness and range checking

All 89 original fields were checked for system missing, allowed response categories, constant columns, duplicated IDs and repeated 76-item response profiles. `NUMBER` is only unique *within* dataset group; 121 distinct `NUMBER` values occur in 240 rows.

Description and assumptions

Categorical counts, numerical score distributions, median, skewness, IQR outliers, Shapiro–Wilk, Brown–Forsythe, score-profile overlap and provisional scale reliability were examined. The independence assumption is not supported, overriding other inference diagnostics.

Group comparisons

As transparent diagnostics, Welch independent-sample t-tests, Mann–Whitney rank tests, Hedges g with bootstrap intervals, rank-biserial effects and BH q-values were computed for seven stored scores. The tests are displayed specifically to reveal their fragility, not to accept the independent-sample model as true.

Association and regression

Spearman/Pearson correlations were screened on full rows and a one-per-unique-item-profile sensitivity view; 21 score pairs were corrected with BH separately. Descriptive HC3-variance regressions related each score to group, age, marriage and education; residual shape, Breusch–Pagan, VIF, fit and AIC/BIC were recorded.

Excluded analyses

No validated death-anxiety total exists; logistic modeling would lack a justified binary endpoint; there are only two coded main groups, so an ANOVA/post-hoc family adds no scientific value. Confirmatory testing awaits corrected source data and a real design.

Results — direct audit findings

Audit metric	Observed value
Recorded rows	240
Original variables	89
Rows in each group	120 / 120
System missing cells	0
Unique complete item-response patterns	86
Rows in repeated complete patterns	239
Identical matched 76-item pairs across groups	119 / 120
Distinct case numbers	121
Invalid D item cells	31

Audit metric	Observed value
Rows with invalid D	5
TOTALA vs raw A-sum mismatch	84
TOTALEM vs raw EM-sum mismatch	32
MZQ vs raw H-sum mismatch	26

A mismatch with the arithmetic sum is a check, not proof that the stored total is incorrect; item reversal could be legitimate. Conversely, identical item responses plus different stored totals make unverified group comparisons vulnerable to scoring or data-assembly differences.

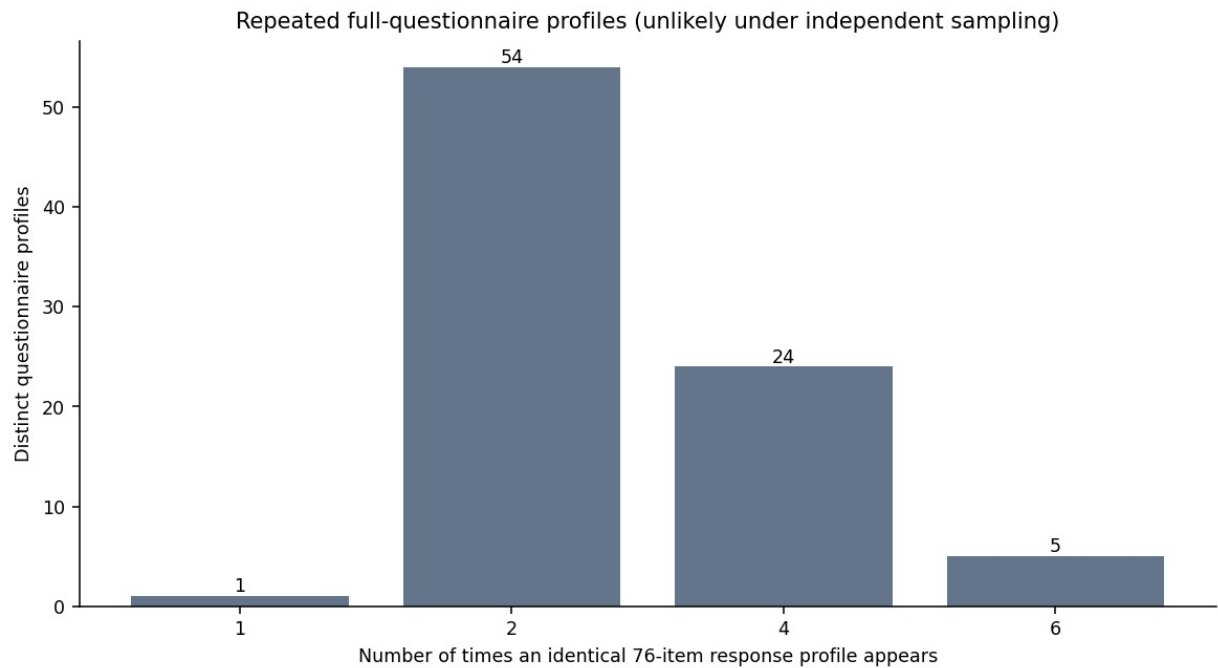


Figure 1. Repeated questionnaire profiles (76 items): only 86 unique profiles remain.

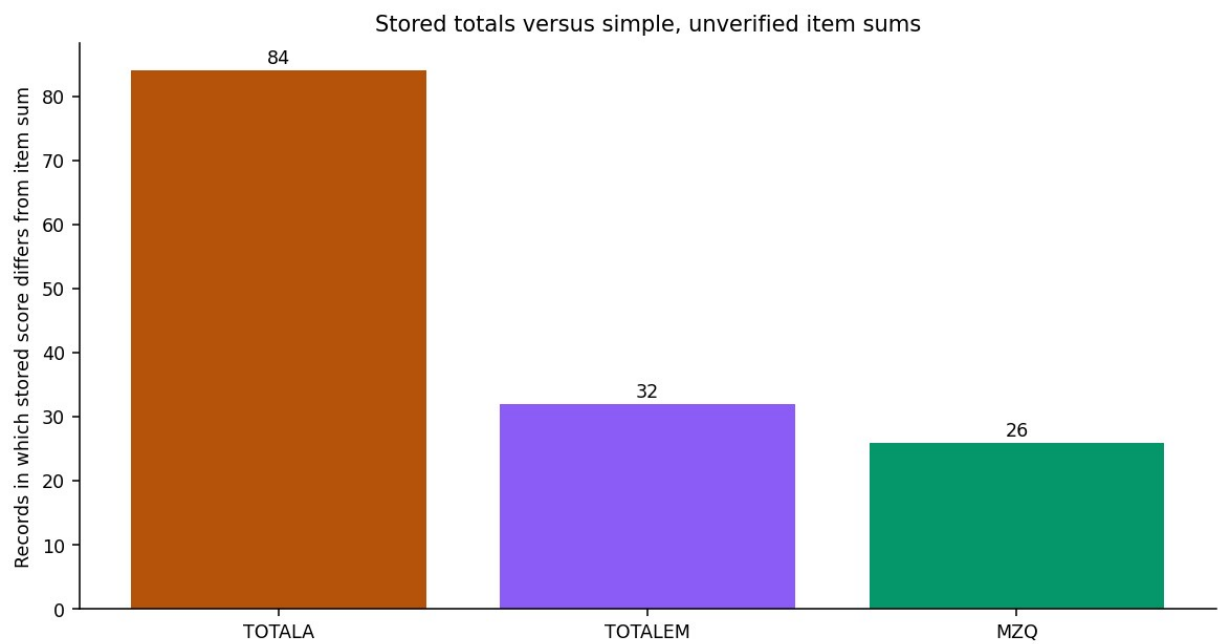


Figure 2. Number of source scores differing from unadjusted item sums.

Demographic structure

Category	fire	non
Under 30 / کمتر از ۳۰	10	10
30–40 / تا ۳۰ تا ۴۰	62	62
40–50 / تا ۴۰ تا ۵۰	41	41
50–60 / تا ۵۰ تا ۶۰	7	7
Single / مجرد	26	25
Married / متأهل	94	95
Diploma / دیپلم	15	15
Associate / فوق دیپلم	26	26
Bachelor / کارشناسی	63	63
Master / ارشد	15	15
Doctorate / دکتری	1	1

Age bands and education categories are numerically identical across groups; marital counts differ by one. Mean recorded exact age is 40.38 in fire and 38.44 in non. This apparent balancing cannot be interpreted as successful study matching until the repeated questionnaire responses and respondent identifiers are explained.

Observed stored-score distributions

Stored score	Mean fire	Mean non	Difference	Hedges g	Welch p*
TOTALA	40.45	35.83	4.62	0.74	2.75e-08
TOTALEM	109.10	105.75	3.35	0.15	0.2555
MZQ	41.08	40.13	0.95	0.12	0.3514
OPTIMISM	43.30	42.88	0.42	0.04	0.7530
EVALUATI	29.88	29.65	0.23	0.04	0.7815
SOCIALSK	36.17	35.87	0.30	0.03	0.7955
EMOTIONA	19.65	19.36	0.29	0.06	0.6460

*Calculated p-values and g are shown only to diagnose inconsistency. Independent-sample assumptions and scoring rules are unverified. Example: TOTALA gives Welch $p \approx 2.75 \times 10^{-8}$ and Hedges $g \approx 0.74$; these are NOT valid grounds for claiming a genuine psychological group difference.

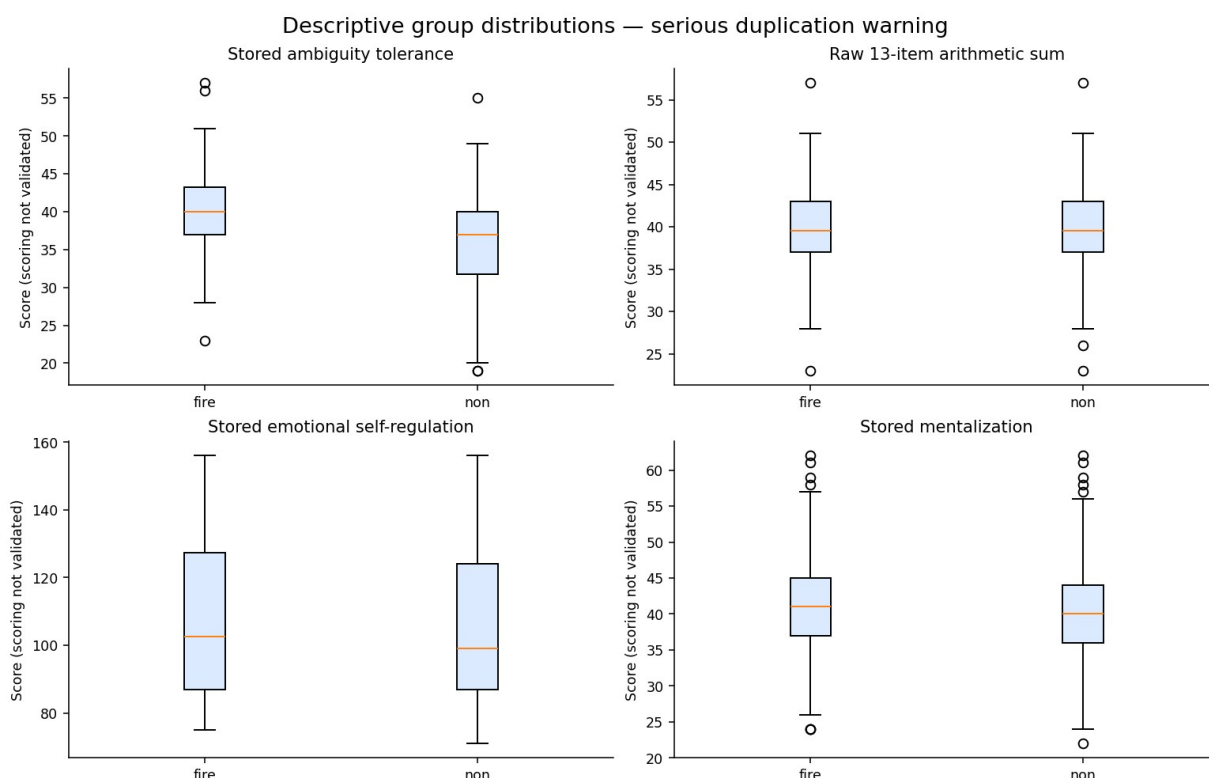


Figure 3. Recorded score distributions by group; diagnostic only.

Scoring sensitivity: the central contradiction

Score definition	fire mean	non mean	Difference
TOTALA stored	40.45	35.83	4.62
A1–A13 raw sum	39.74	39.67	0.07
TOTALEM stored	109.10	105.75	3.35
EM1–EM33 raw sum	109.10	109.00	0.10
MZQ stored	41.08	40.13	0.95
H1–H15 raw sum	41.08	41.08	0.00

Because virtually all aligned item vectors across groups coincide, a statistical comparison based on the raw A item sum is near zero, whereas the stored source TOTALA shows a substantial contrast. The possible explanations include legitimate reverse scoring, changed source scores, import/alignment error, or processing errors. **Without the questionnaire scoring manual, the correct explanation is unknown.**

Reliability diagnostics and detailed psychometric caveat

Construct	Items	Raw alpha	Bootstrap interval*
Ambiguity tolerance / تحمل ابهام	13	0.328	0.152–0.455
Emotion self-regulation / خودگردانی	33	0.926	0.914–0.935

Construct	Items	Raw alpha	Bootstrap interval*
Mentalization / ذهنی سازی	15	0.660	0.573–0.728

The raw A alpha of 0.328 is low, EM 0.926 is high, and H 0.660 is intermediate. These are *not validated reliability estimates* because item direction, source independence and instrument scoring remain unresolved. An impressive total–subscale correlation can also be tautological if item content is shared.

Correlation screening

Score A	Score B	Spearman ρ	Bootstrapped interval	BH q^*
TOTALEM	SOCIALSK	0.922	0.875 to 0.949	4.98e-35
TOTALEM	OPTIMISM	0.915	0.847 to 0.954	6.99e-34
TOTALEM	EVALUATI	0.876	0.804 to 0.918	1.68e-27
OPTIMISM	EMOTIONA	0.860	0.777 to 0.907	1.17e-25
TOTALEM	EMOTIONA	0.860	0.782 to 0.902	1.17e-25
OPTIMISM	SOCIALSK	0.817	0.709 to 0.875	2.92e-21
EVALUATI	EMOTIONA	0.784	0.709 to 0.853	1.26e-18
SOCIALSK	EMOTIONA	0.759	0.657 to 0.825	6.44e-17
OPTIMISM	EVALUATI	0.752	0.633 to 0.839	1.63e-16
EVALUATI	SOCIALSK	0.737	0.620 to 0.822	1.23e-15
OPTIMISM	MZQ	0.312	0.090 to 0.536	0.0065
TOTALEM	MZQ	0.295	0.057 to 0.504	0.0103

The `TOTALEM`–`SOCIALSK` Spearman coefficient is about +0.922 on a one-per-unique-profile sensitivity view. The extremely high correlation likely reflects related emotional-domain measurements and possible component/total overlap; it is not proof that social skills cause self-regulation. Treat 86 patterns as distinct *answer vectors*, not 86 certified people.

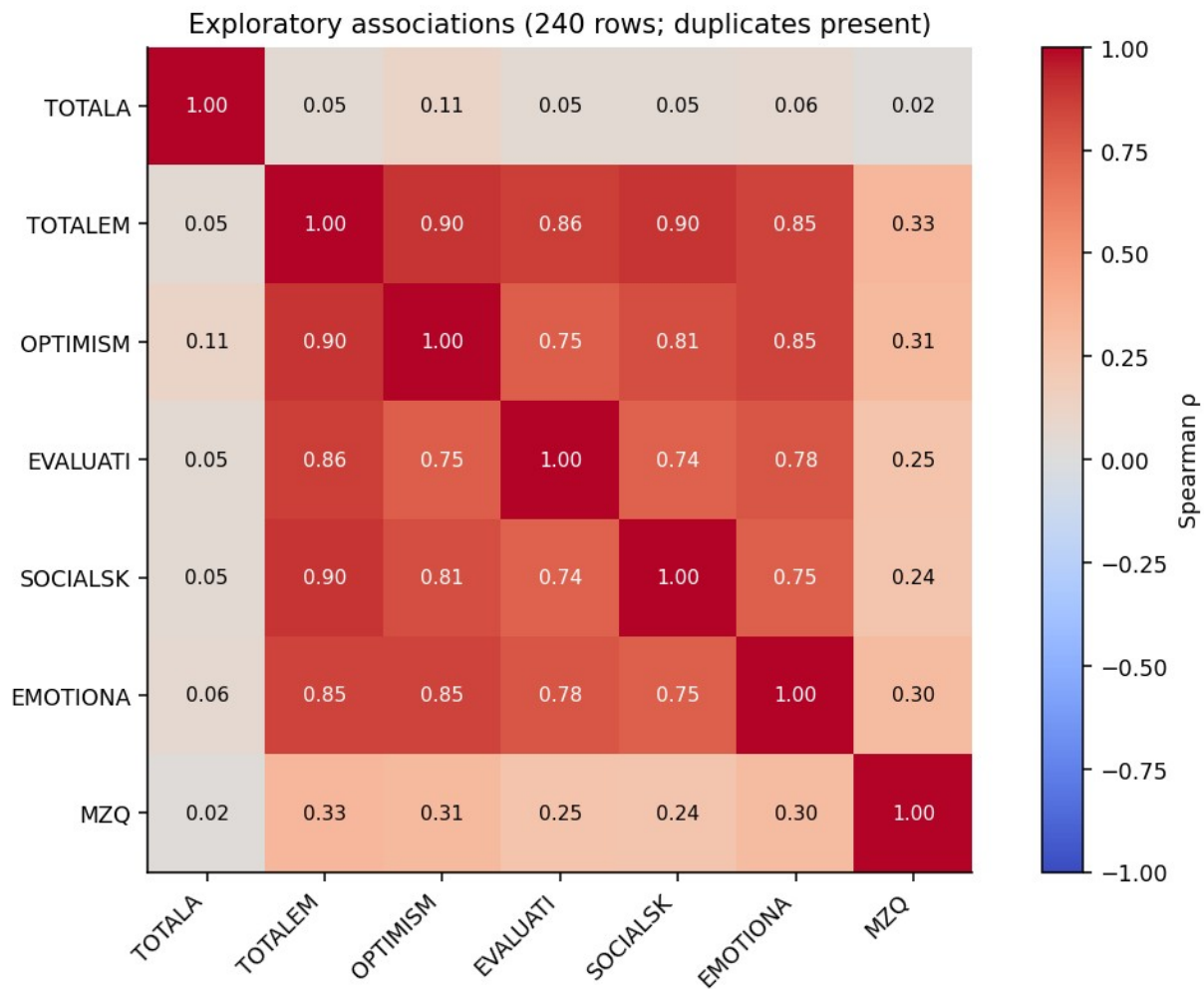


Figure 4. Correlations among stored scores; repeated cases and shared components can inflate apparent precision.

Model diagnostics and why robustness is not enough

Outcome	Group coefficient (HC3)	95% interval*	R ²	Diagnostic p
TOTALA	4.80	3.22 – 6.39	0.144	3.00e-09
TOTALEM	3.65	-2.10 – 9.40	0.104	0.2130
OPTIMISM	0.56	-2.05 – 3.17	0.103	0.6726
EVALUATI	0.15	-1.40 – 1.70	0.128	0.8500
SOCIALSK	0.70	-1.55 – 2.94	0.099	0.5447
EMOTIONA	0.30	-0.94 – 1.55	0.073	0.6317
MZQ	0.99	-0.98 – 2.97	0.097	0.3240

The HC3-adjusted group coefficient on `TOTALA` is about +4.80, controlling recorded age, marital status and education; 95% diagnostic interval 3.22–6.39. Breusch–Pagan tests detect heteroscedasticity in several outcomes, and adjusted predictor VIF is approximately 1.63. HC3 corrects variance-model sensitivity, ****not duplication, data provenance, invalid scoring or unmeasured confounding****.

Discussion: what these findings mean

What we can say confidently

The file demonstrably contains two blocks of 120 labeled records and a highly repeated set of questionnaire answers. We can characterize the distribution of recorded responses and identify exact arithmetic/range mismatches. That is an important, substantive finding about *the dataset*.

What we cannot say

We cannot yet say whether a member of one independent population truly has higher ambiguity tolerance, emotional regulation or mentalization than someone in the other. The numerical difference in stored TOTALA is sharply contradicted by the near-identical raw A item response sums. The direction of individual questionnaire items and actual population composition are unverified.

Why several strong correlations are not independent discoveries

Optimism, emotion appraisal, social skills and emotion utilization likely measure interrelated aspects of emotional functioning. If these subscales contribute to TOTALEM, correlating the total and a component is partly circular. Structural duplication may also make intervals and p-values artificially precise.

Unexpected pattern in demographics

Both groups have 10 people below 30, 62 in the second age band, 41 in the third and seven in the fourth; education counts are also exactly the same category by category. In isolation that could reflect matching, but together with 119 identical questionnaires it needs source validation.

Research limitations

Unknown research objectives; unknown sampling and subject identifiers; missing item wording/manuals; no verified death-anxiety score; possible copying/matching ambiguity; self-report measurement; unknown representativeness; no dates/time variables; and no independent external validation.

Practical implications

Treat the current work as a quality audit and descriptive exploration. The most valuable next research step is to reconcile records and rescoring rules—not to seek more sophisticated significance tests. The bilingual dashboard makes the audit accessible to nontechnical stakeholders.

Verification checklist before a thesis/article

- Confirm the intended research question, hypothesis, target outcome(s), study population, recruitment and analysis unit.
- Explain exactly what `fire` and `non` represent, and whether rows form real matched pairs, repeated measures or independent subjects.
- Match questionnaire rows and original participant IDs against paper/online forms and the data-export history. Resolve the 119 identical cross-group forms.
- Obtain all 76 item wordings and official scale manuals, including reverse-scoring and subscale composition; recompute and independently audit totals.
- Verify and correct the five rows with invalid D answers against source forms; never impute 1/2 by guesswork.

- Distinguish corrected score variables from originals and retain an immutable audit trail and restricted-access source file.
- Prespecify a primary analysis, sample unit, assumptions, effect sizes and multiple-testing plan; rerun robust/paired/clustered methods only if the design justifies them.
- Present the current descriptive dashboard with a permanent “unverified / exploratory” caption; do not circulate participant-level records publicly.

Interpretation of reported statistical quantities

A p-value depends on a correct null model and independent sampling; g is a standardized descriptive difference; Spearman ρ is a monotonic association; alpha is raw-item internal consistency; R^2 measures variance explained *in these rows*; and HC3 is robust against variance heterogeneity, not against duplicated respondents. Confidence intervals throughout are nominal and diagnostic, not validated coverage statements for an unknown population.

Appendix A — all 89 original SPSS variables

Every original SPSS field is listed below with its actual Persian label and measurement level. The detailed CSV additionally preserves response codes, range and quality flags.

Original variable	English description	Original Persian label
GROUP	Group (fire/non; meaning unverified)	گروه
NUMBER	Original case number (not globally unique)	شماره افراد
AGE	Age category	سن افراد
MARRIAGE	Marital status	تأهل
AGEE	Age in years	سن افراد
EDUCATIO	Education level	میزان تحصیلات
A1	Ambiguity-tolerance item	تحمل ابهام
A2	Ambiguity-tolerance item	تحمل ابهام
A3	Ambiguity-tolerance item	تحمل ابهام
A4	Ambiguity-tolerance item	تحمل ابهام
A5	Ambiguity-tolerance item	تحمل ابهام
A6	Ambiguity-tolerance item	تحمل ابهام
A7	Ambiguity-tolerance item	تحمل ابهام
A8	Ambiguity-tolerance item	تحمل ابهام
A9	Ambiguity-tolerance item	تحمل ابهام
A10	Ambiguity-tolerance item	تحمل ابهام
A11	Ambiguity-tolerance item	تحمل ابهام
A12	Ambiguity-tolerance item	تحمل ابهام
A13	Ambiguity-tolerance item	تحمل ابهام
EM1	Emotional-self-regulation item	خودگردانی هیجانی
EM2	Emotional-self-regulation item	خودگردانی هیجانی
EM3	Emotional-self-regulation item	خودگردانی هیجانی
EM4	Emotional-self-regulation item	خودگردانی هیجانی
EM5	Emotional-self-regulation item	خودگردانی هیجانی
EM6	Emotional-self-regulation item	خودگردانی هیجانی
EM7	Emotional-self-regulation item	خودگردانی هیجانی
EM8	Emotional-self-regulation item	خودگردانی هیجانی
EM9	Emotional-self-regulation item	خودگردانی هیجانی
EM10	Emotional-self-regulation item	خودگردانی هیجانی

Original variable	English description	Original Persian label
EM11	Emotional-self-regulation item	خودگردانی هیجانی
EM12	Emotional-self-regulation item	خودگردانی هیجانی
EM13	Emotional-self-regulation item	خودگردانی هیجانی
EM14	Emotional-self-regulation item	خودگردانی هیجانی
EM15	Emotional-self-regulation item	خودگردانی هیجانی
EM16	Emotional-self-regulation item	خودگردانی هیجانی
EM17	Emotional-self-regulation item	خودگردانی هیجانی
EM18	Emotional-self-regulation item	خودگردانی هیجانی
EM19	Emotional-self-regulation item	خودگردانی هیجانی
EM20	Emotional-self-regulation item	خودگردانی هیجانی
EM21	Emotional-self-regulation item	خودگردانی هیجانی
EM22	Emotional-self-regulation item	خودگردانی هیجانی
EM23	Emotional-self-regulation item	خودگردانی هیجانی
EM24	Emotional-self-regulation item	خودگردانی هیجانی
EM25	Emotional-self-regulation item	خودگردانی هیجانی
EM26	Emotional-self-regulation item	خودگردانی هیجانی
EM27	Emotional-self-regulation item	خودگردانی هیجانی
EM28	Emotional-self-regulation item	خودگردانی هیجانی
EM29	Emotional-self-regulation item	خودگردانی هیجانی
EM30	Emotional-self-regulation item	خودگردانی هیجانی
EM31	Emotional-self-regulation item	خودگردانی هیجانی
EM32	Emotional-self-regulation item	خودگردانی هیجانی
EM33	Emotional-self-regulation item	خودگردانی هیجانی
H1	Mentalization item	ذهنی سازی
H2	Mentalization item	ذهنی سازی
H3	Mentalization item	ذهنی سازی
H4	Mentalization item	ذهنی سازی
H5	Mentalization item	ذهنی سازی
H6	Mentalization item	ذهنی سازی
H7	Mentalization item	ذهنی سازی
H8	Mentalization item	ذهنی سازی
H9	Mentalization item	ذهنی سازی

Original variable	English description	Original Persian label
H10	Mentalization item	ذهنی سازی
H11	Mentalization item	ذهنی سازی
H12	Mentalization item	ذهنی سازی
H13	Mentalization item	ذهنی سازی
H14	Mentalization item	ذهنی سازی
H15	Mentalization item	ذهنی سازی
D1	Death-anxiety item	اضطراب مرگ
D2	Death-anxiety item	اضطراب مرگ
D3	Death-anxiety item	اضطراب مرگ
D4	Death-anxiety item	اضطراب مرگ
D5	Death-anxiety item	اضطراب مرگ
D6	Death-anxiety item	اضطراب مرگ
D7	Death-anxiety item	اضطراب مرگ
D8	Death-anxiety item	اضطراب مرگ
D9	Death-anxiety item	اضطراب مرگ
D10	Death-anxiety item	اضطراب مرگ
D11	Death-anxiety item	اضطراب مرگ
D12	Death-anxiety item	اضطراب مرگ
D13	Death-anxiety item	اضطراب مرگ
D14	Death-anxiety item	اضطراب مرگ
D15	Death-anxiety item	اضطراب مرگ
TOTALA	Ambiguity tolerance (stored total)	نمره کلی تحمل ابهام
TOTALEM	Emotional self-regulation (stored total)	نمره کل خودگردانی
OPTIMISM	Optimism subscale (stored)	خوشبینی
EVALUATI	Emotion appraisal subscale (stored)	ارزیابی هیجانات
SOCIALSK	Social skills subscale (stored)	مهارت اجتماعی
EMOTIONA	Emotion utilization subscale (stored)	کاربرد هیجانات
MZQ	Mentalization (stored total)	ذهنی سازی

Appendix B — full self-contained R code

The exact companion `full_reproducible_analysis.R` is reproduced below. Run Rscript `full_reproducible_analysis.R "فایل خام.sav" "r_results"` on a computer with R and the listed packages. This environment does not contain an R runtime, so the R script has not been executed here; Python calculated the accompanying CSV results independently.

```
#!/usr/bin/env Rscript
# SPSS PSYCHOLOGICAL DATA – full reproducible exploratory audit, diagnostics, and exports
# Input: "فایل خام.sav" (or pass its path as the first command-line argument).
# Run: Rscript full_reproducible_analysis.R "فایل خام.sav" "r_results"
# R >=4.2; no variables are anonymized or silently dropped.
# IMPORTANT: A=13, EM=33, H=15, D=15 items. No questionnaire scoring manuals provided.
# IMPORTANT: Nearly all records duplicate another complete questionnaire response profile.
# Consequently, p-values from group-comparison models are NOT valid inferential evidence.

options(stringsAsFactors = FALSE)
args <- commandArgs(trailingOnly = TRUE)

input <- if (length(args) >= 1) args[1] else "فایل خام.sav"
out_dir <- if (length(args) >= 2) args[2] else "r_results"
if (!file.exists(input)) stop("SPSS input file not found: ", input)
dir.create(out_dir, recursive = TRUE, showWarnings = FALSE)
packages <- c("haven", "ggplot2", "sandwich", "lmtest", "car")
missing_packages <- packages[!vapply(packages, requireNamespace, logical(1), quietly = TRUE)]
if (length(missing_packages)) {
  message("Install with: install.packages(c(\"", paste(sprintf('%s', missing_packages), collapse=" ", ")))")
  stop("Missing required R packages. Install them once, then run again.")
}
set.seed(20261012)

# 1. Read the SAV; retain exact short variable names, data codes and value labels.
spss <- haven::read_sav(input, user_na = TRUE)
names(spss) <- toupper(names(spss))
for (old in c("EDUCATION", "EVALUATION", "SOCIALSKILLS", "EMOTIONAP")) {
  new <- c(EDUCATION="EDUCATIO", EVALUATION="EVALUATI",
    SOCIALSKILLS="SOCIALSK", EMOTIONAP="EMOTIONA")[[old]]
  names(spss)[names(spss) == old] <- new
}
raw <- as.data.frame(lapply(spss, as.numeric), check.names = FALSE)
names(raw) <- names(spss)
A <- paste0("A", 1:13)
EM <- paste0("EM", 1:33)
H <- paste0("H", 1:15)
D <- paste0("D", 1:15)
ITEMS <- c(A, EM, H, D)
SCORES <- c("TOTALA", "TOTALEM", "OPTIMISM", "EVALUATI", "SOCIALSK", "EMOTIONA", "MZQ")
required <- c("GROUP", "NUMBER", "AGE", "AGEE", "MARRIAGE", "EDUCATIO", ITEMS, SCORES)
stopifnot(all(required %in% names(raw)))
stopifnot(nrow(raw) == 240L, ncol(raw) == 89L, all(raw$GROUP %in% c(1,2)))

# 2. Labels, category validation, IDs, exact questionnaire-profile duplication.
data <- raw
data$CASE_ID <- seq_len(nrow(data)) # always unique; NUMBER repeats between groups

data$GROUP_LABEL <- factor(data$GROUP, levels=c(1,2), labels=c("fire","non"))
data$AGE_LABEL <- factor(data$AGE, levels=1:4,
  labels=c("Under 30","30-39","40-49","50-59"), ordered=TRUE)
data$MARRIAGE_LABEL <- factor(data$MARRIAGE, levels=1:3,
  labels=c("single","married","divorced"))
data$EDUCATION_LABEL <- factor(data$EDUCATIO, levels=1:5,
  labels=c("Diploma","Associate","Bachelor","Master","Doctorate"), ordered=TRUE)
data$EDUC_BAND <- factor(ifelse(data$EDUCATIO >= 4, "Postgraduate",
  c("Diploma","Associate","Bachelor")[pmin(data$EDUCATIO,3)]),
  levels=c("Bachelor","Associate","Diploma","Postgraduate"))
profile_key <- do.call(paste, c(as.list(raw[,ITEMS,drop=FALSE]), sep="|"))
data$QUESTIONNAIRE_PROFILE_ID <- match(profile_key,unique(profile_key))
data$PROFILE_REPEAT_COUNT <- as.integer(table(data$QUESTIONNAIRE_PROFILE_ID)[
  as.character(data$QUESTIONNAIRE_PROFILE_ID)])
data$PROFILE_IS_REPEATED <- as.integer(data$PROFILE_REPEAT_COUNT > 1)
for (i in 1:15) {
  col <- D[i]
  invalid <- !is.na(raw[[col]]) & !(raw[[col]] %in% c(1,2))
  data[[col]][invalid] <- NA_real_ # do NOT overwrite raw saved separately
}
data$D_INVALID_COUNT <- rowSums(sapply(D, function(n) {
  !is.na(raw[[n]]) & !(raw[[n]] %in% c(1,2))
}))
data$FLAG_ANY_D_INVALID <- as.integer(data$D_INVALID_COUNT > 0)

for (z in list(c("A","TOTALA"), c("EM","TOTALEM"), c("H","MZQ"))) {
  EXPLORATORY • NOT VERIFIED
```

```

prefix <- z[1]; total <- z[2]
items <- switch(prefix, A=A, EM=EM, H=H)
raw_sum <- rowSums(raw[,items,drop=FALSE],na.rm=FALSE)
data[[paste0(prefix,"_ITEM_SUM_RAW")]] <- raw_sum
data[[paste0("FLAG_",total,"_DISAGREE")]] <- as.integer(raw_sum != raw[[total]])
data[[paste0(total,"_MINUS_RAW_SUM")]] <- raw[[total]] - raw_sum
}
# Original scores are preserved, but are NOT labeled 'corrected'.
write.csv(raw,file.path(out_dir,"raw_numeric.csv"),row.names=FALSE,fileEncoding="UTF-8")
write.csv(data,file.path(out_dir,"cleaned_powerbi.csv"),row.names=FALSE,na="",fileEncoding="UTF-8")

# 3. Variable dictionary: exact Persian SPSS labels and response-category mappings.
classification <- function(n) {
  if (n == "NUMBER") return("identifier (not globally unique)")
  if (n == "GROUP") return("nominal/binary")
  if (n %in% c("AGE","EDUCATIO")) return("ordinal")
  if (n == "MARRIAGE") return("nominal")
  if (n == "AGEE" || n %in% SCORES) return("scale")
  if (n %in% D) return("binary response item")
  if (n %in% c(A,EM,H)) return("ordinal Likert item")
  return("unspecified")
}
plain <- c(GROUP="Group (fire versus non; semantics unknown)",
  NUMBER="Original case number; not unique across groups",AGE="Age band",
  MARRIAGE="Marital status",AGEE="Exact age in years",EDUCATIO="Education",
  TOTALA="Ambiguity tolerance score (stored)",
  TOTALEM="Emotional self-regulation score (stored)",
  OPTIMISM="Optimism subscale (stored)",EVALUATI="Emotional appraisal (stored)",
  SOCIALSK="Social skills (stored)",EMOTIONA="Use of emotions (stored)",
  MZQ="Mentalization score (stored)")
variable_dictionary <- do.call(rbind,lapply(names(raw),function(n) {
  lab <- attr(spss[[n]],"label")
  codes <- attr(spss[[n]],"labels")
  codes_text <- if(is.null(codes)) "" else paste(paste0(as.numeric(codes),"=",names(codes)),collapse="; ")
  English <- if(n %in% names(plain)) plain[n] else if(n %in% A) "Ambiguity-tolerance questionnaire item" else if(n %in% EM)
"Emotional-self-regulation questionnaire item" else if(n %in% H) "Mentalization questionnaire item" else "Death-anxiety
questionnaire item"
  issues <- c()
  if(n %in% D && any(!raw[[n]] %in% c(1,2))) issues <- c(issues,"Unlabelled invalid response codes")
  if(n %in% SCORES) issues <- c(issues,"Stored score; original scoring rules not supplied")
  if(n %in% c(A,EM,H,D)) issues <- c(issues,"Actual individual question text not contained in SAV labels")
  if(n == "NUMBER") issues <- c(issues,"Repeated case numbers")
  data.frame(variable=n,spss_label=persian(if(length(lab)) lab else "",
    plain_english=as.character(English),substantive_type=classification(n),
    value_labels=codes_text,distinct_values=length(unique(raw[[n]][!is.na(raw[[n]])])),
    missing_system=sum(is.na(raw[[n]])), min=min(raw[[n]],na.rm=TRUE),
    max=max(raw[[n]],na.rm=TRUE),issue=paste(issues,collapse="; "))
}))
write.csv(variable_dictionary,file.path(out_dir,"variable_dictionary.csv"),row.names=FALSE,fileEncoding="UTF-8")

# 4. Full audit: category violations, exact profile matches and 120+120 row structure.
stopifnot(sum(raw$GROUP==1)==120, sum(raw$GROUP==2)==120)
fire <- raw[raw$GROUP==1,drop=FALSE]
non <- raw[raw$GROUP==2,drop=FALSE]
stopifnot(nrow(fire)==nrow(non))
pair_audit <- data.frame(row_in_each_group=1:120,
  fire_number=fire$NUMBER,non_number=non$NUMBER,
  identical_76_items=vapply(1:120,function(i) identical(unlist(unlist(fire[i,ITEMS])),unlist(unlist(non[i,ITEMS]))),
logical(1)),
  identical_AGE=fire$AGE==non$AGE,
  identical_EDUCATIO=fire$EDUCATIO==non$EDUCATIO,
  identical_MARRIAGE=fire$MARRIAGE==non$MARRIAGE)
for (s in SCORES) pair_audit[[paste0(s,"_fire_minus_non")]] <- fire[[s]]-non[[s]]
write.csv(pair_audit,file.path(out_dir,"cross_group_pair_audit.csv"),row.names=FALSE)
audit <- data.frame(metric=c("rows","raw_columns","groups_fire","groups_non",
  "system_missing_cells","entire_row_duplicates_including_group_and_number",
  "unique_questionnaire_profiles","rows_belonging_to_repeated_profiles",
  "identical_76_item_pairs_in_aligned_group_rows","unique_original_case_numbers",
  "out_of_range_D_cells","rows_with_bad_D_values","TOTALA_vs_raw_sum_disagreements",
  "TOTALEM_vs_raw_sum_disagreements","MZQ_vs_raw_sum_disagreements"),
  value=c(nrow(raw),ncol(raw),sum(raw$GROUP==1),sum(raw$GROUP==2),
  sum(is.na(raw)),sum(duplicated(raw)),length(unique(profile_key)),sum(data$PROFILE_IS_REPEATED),
  sum(pair_audit$identical_76_items),length(unique(raw$NUMBER)),sum(data$D_INVALID_COUNT),
  sum(data$FLAG_ANY_D_INVALID),sum(data$FLAG_TOTALA_DISAGREE),
  sum(data$FLAG_TOTALEM_DISAGREE),sum(data$FLAG_MZQ_DISAGREE)))
write.csv(audit,file.path(out_dir,"audit_summary.csv"),row.names=FALSE)
write.csv(data[,c("CASE_ID","GROUP","NUMBER","QUESTIONNAIRE_PROFILE_ID",
  "PROFILE_REPEAT_COUNT","PROFILE_IS_REPEATED","FLAG_ANY_D_INVALID","D_INVALID_COUNT",
  "FLAG_TOTALA_DISAGREE","FLAG_TOTALEM_DISAGREE","FLAG_MZQ_DISAGREE")],
  file.path(out_dir,"case_level_quality_flags.csv"),row.names=FALSE)

# 5. Frequencies (coded respondent answers; not seven competing tests per item).
frequencies <- do.call(rbind,lapply(c("GROUP","AGE","MARRIAGE","EDUCATIO",ITEMS), function(n) {
  vals <- sort(unique(raw[[n]])); t <- table(raw[[n]])
  data.frame(variable=n,code=as.numeric(names(t)),n=as.integer(t),pct=100*as.integer(t)/nrow(raw))
}))
write.csv(frequencies,file.path(out_dir,"frequencies_all_categorical_items.csv"),row.names=FALSE)

# 6. Score summary with normality checks, skewness, outlier counts.
skew <- function(v) {
  v <- v[is.finite(v)]; n <- length(v); if(n<3||sd(v)==0) return(NA_real_)
  n/((n-1)*(n-2))*sum(((v-mean(v))/sd(v))^3)
}
desc <- function(v) {

```

```

q <- quantile(v,c(.25,.75),na.rm=TRUE); b <- 1.5*(q[2]-q[1]);
data.frame(n=sum(!is.na(v)),mean=mean(v,na.rm=TRUE),sd=sd(v,na.rm=TRUE),
median=median(v,na.rm=TRUE),min=min(v,na.rm=TRUE),max=max(v,na.rm=TRUE),
skewness=skew(v),iqr_outliers=sum(v<q[1]-b|v>q[2]+b,na.rm=TRUE),
shapiro_p=if(length(v)>=3 && length(v)<=5000) shapiro.test(v)$p.value else NA_real_)
}
score_descriptives <- do.call(rbind,lapply(SCORES,function(s) {
do.call(rbind,lapply(c("all","fire","non"),function(k) {
v <- if(k=="all") raw[[s]] else raw[raw$GROUP==if(k=="fire") 1 else 2,s]
data.frame(score=s,group=k,desc(v))
}))
}))
write.csv(score_descriptives,file.path(out_dir,"score_descriptives.csv"),row.names=FALSE)
descriptive_all <- do.call(rbind,lapply(names(raw),function(s) {
data.frame(variable=s,desc(raw[[s]]))
}))
write.csv(descriptive_all,file.path(out_dir,"descriptive_all_variables.csv"),row.names=FALSE)

# 7. Internal consistency on RAW item coding only (not validated scoring).
cronbach_alpha <- function(x) {
x <- as.matrix(x); k <- ncol(x); total <- rowSums(x)
if(k<=1 || var(total)==0) return(NA_real_)
k/(k-1)*(1-sum(apply(x,2,var))/var(total))
}
alpha_rows <- list(); item_rows <- list()
for (name in c("A","EM","H")) {
cols <- switch(name,A=A,EM=EM,H=H); x <- raw[,cols,drop=FALSE]
bs <- replicate(400,cronbach_alpha(x[sample(nrow(x),replace=TRUE)],,drop=FALSE))
ci <- quantile(bs,c(.025,.975),na.rm=TRUE)
alpha_rows[[name]] <- data.frame(construct=name,n_items=ncol(x),alpha_raw=cronbach_alpha(x),
ci_low=ci[1],ci_high=ci[2],note="Raw coding only; unknown reverse-key directions; repeated records")
for (s in cols) item_rows[[s]] <- data.frame(construct=name,item=s,
corrected_item_total_r=cor(raw[[s]],rowSums(x)-raw[[s]]),
alpha_if_deleted=cronbach_alpha(x[,setdiff(cols,s),drop=FALSE]))
}
write.csv(do.call(rbind,alpha_rows),file.path(out_dir,"reliability_raw_provisional.csv"),row.names=FALSE)
write.csv(do.call(rbind,item_rows),file.path(out_dir,"item_reliability_diagnostics.csv"),row.names=FALSE)

# 8. Diagnostic independent-sample contrasts: calculation shown despite broken independence.
hedges_g <- function(x,y) {
nx<-length(x); ny<-length(y)
sp <- sqrt(((nx-1)*var(x)+(ny-1)*var(y))/(nx+ny-2))
(mean(x)-mean(y))/sp*(1-3/(4*(nx+ny)-9))
}
welch_row <- function(s) {
x <- data[data$GROUP==1,s]; y <- data[data$GROUP==2,s]
tt <- t.test(x,y,var.equal=FALSE)
# 600-iteration bootstrap CI for standardized difference is descriptive only.
bs <- replicate(600,hedges_g(sample(x,replace=TRUE),sample(y,replace=TRUE)))
u <- suppressWarnings(wilcox.test(x,y,exact=FALSE))
# rank-biserial correlation uses U statistic, not W directly; ties use average ranks.
nx <- length(x); ny <- length(y)
ranks <- rank(c(x,y),ties.method="average")
U <- sum(ranks[seq_along(x)]) - nx*(nx+1)/2
data.frame(score=s,fire_mean=mean(x),non_mean=mean(y),
mean_difference_fire_minus_non=mean(x)-mean(y),
welch_t=tt$statistic,welch_df=tt$parameter,welch_p=tt$p.value,
diff_ci_low=tt$conf.int[1],diff_ci_high=tt$conf.int[2],hedges_g=hedges_g(x,y),
g_boot_ci_low=quantile(bs,.025),g_boot_ci_high=quantile(bs,.975),
brown_forsythe_p=car::leveneTest(c(x,y), factor(rep(c("fire","non"),c(nx,ny))),center=median)[1,"Pr(>F)"],
shapiro_fire_p=shapiro.test(x)$p.value,shapiro_non_p=shapiro.test(y)$p.value,
mann_whitney_p=u$p.value,rank_biserial=(2*U/(nx*ny)-1))
}
contrasts <- do.call(rbind,lapply(c(SCORES,"A_ITEM_SUM_RAW","EM_ITEM_SUM_RAW","H_ITEM_SUM_RAW"),welch_row))
contrasts$welch_BH_q <- NA_real_
idx <- which(contrasts$score %in% SCORES)
contrasts$welch_BH_q[idx] <- p.adjust(contrasts$welch_p[idx],"BH")
contrasts$interpretation <- "DIAGNOSTIC ONLY; extreme overlap/duplication breaks independent-case inference"
write.csv(contrasts,file.path(out_dir,"group_differences_unreliable_diagnostic.csv"),row.names=FALSE)

# 9. Group-demographic association diagnostics (independence is violated).
demo_tests <- do.call(rbind,lapply(c("AGE","MARRIAGE","EDUCATIO"),function(s){
tab <- table(raw$GROUP,raw[[s]])
chi <- suppressWarnings(chisq.test(tab,correct=FALSE))
n <- sum(tab); v <- sqrt(as.numeric(chi$statistic)/(n*min(dim(tab)-1)))
p <- if(any(chi$expected<5)) suppressWarnings(chisq.test(tab,simulate.p.value=TRUE,B=4999)$p.value) else chi$p.value
data.frame(variable=s,chi2=unname(chi$statistic),p=p,dof=unname(chi$parameter),
cramers_v=v,min_expected=min(chi$expected),p_method=if(any(chi$expected<5)) "permutation under independent rows" else
"asymptotic chi-square")
}))
write.csv(demo_tests,file.path(out_dir,"demographic_group_associations_diagnostic.csv"),row.names=FALSE)

# 10. Exploratory correlations with both 240 rows and 1 row per unique 76-item pattern.
# Neither automatically recovers true independent respondents; unique-case reduction is sensitivity only.
cor_rows <- list()
for (sample_name in c("full_240","unique_profiles")) {
ix <- if (sample_name=="full_240") seq_len(nrow(data)) else !duplicated(data$QUESTIONNAIRE_PROFILE_ID)
sub <- data[ix,,drop=FALSE]
pairs <- combn(SCORES,2,simplify=FALSE)
for (k in seq_along(pairs)) {
pair <- pairs[[k]]; x<-sub[[pair[1]]];y<-sub[[pair[2]]]
rho <- suppressWarnings(cor.test(x,y,method="spearman",exact=FALSE))
pearson <- cor.test(x,y,method="pearson")
# Fisher transform interval for Pearson r, bootstrap for Spearman rho.

```

```

n<-length(x);z<-atanh(unnname(pearson$estimate));ci<-tanh(z+c(-1,1)*qnorm(.975)/sqrt(n-3))
boot <- replicate(300,{j<-sample.int(n,n,replace=TRUE);cor(x[j],y[j],method="spearman")})
cor_rows[[paste0(sample_name,"_",k)]] <- data.frame(sample=sample_name,x=pair[1],y=pair[2],n=n,
  spearman_rho=unnname(rho$estimate),spearman_p=rho$p.value,
  spearman_ci_low=quantile(boot,.025),spearman_ci_high=quantile(boot,.975),
  pearson_r=unnname(pearson$estimate),pearson_p=pearson$p.value,
  pearson_fisher_ci_low=ci[1],pearson_fisher_ci_high=ci[2])
}
}
correlations <- do.call(rbind,cor_rows)
correlations$spearman_BH_q <- ave(correlations$spearman_p,correlations$sample,
FUN=function(p) p.adjust(p,"BH"))
write.csv(correlations,file.path(out_dir,"score_correlations_exploratory.csv"),row.names=FALSE)

# 11. HC3 OLS regressions for education/marriage/age-adjusted DESCRIPTIVE diagnostics.
model_results <- list(); diagnostics <- list()
for (s in SCORES) {
  dd <- data; dd$FIRE <- as.integer(dd$GROUP==1)
  dd$MARRIAGE_F <- as.integer(dd$MARRIAGE==2)
  fit <- lm(reformulate(c("FIRE","AGEE","MARRIAGE_F","EDUC_BAND"),response=s),data=dd)
  vv <- sandwich::vcovHC(fit,type="HC3"); cc <- coef(fit); ss <- sqrt(diag(vv));
  residual_p <- shapiro.test(resid(fit))$p.value
  bp_p <- lmtest::bptest(fit)$p.value
  vif_obj <- car::vif(fit)
  max_vif <- if(is.matrix(vif_obj)) max(vif_obj[, "GVIF"]^(1/(2*vif_obj[, "Df"]))) else max(vif_obj)
  diagnostics[[s]] <- data.frame(score=s,n=nobs(fit),r2=summary(fit)$r.squared,
    adjusted_r2=summary(fit)$adj.r.squared,AIC=AIC(fit),BIC=BIC(fit),
    residual_shapiro_p=residual_p,breusch_pagan_p=bp_p,max_vif=max_vif)
  for (term in c("FIRE","AGEE","MARRIAGE_F")) {
    val <- cc[term];se <- ss[term];p <- 2*pnorm(-abs(val/se))
    model_results[[paste(s,term)]] <- data.frame(score=s,term=term,coef=unnname(val),
      se_HC3=unnname(se),ci_low=unnname(val-1.96*se),ci_high=unnname(val+1.96*se),
      p=unnname(p),r2=summary(fit)$r.squared,adjusted_r2=summary(fit)$adj.r.squared,
      AIC=AIC(fit),BIC=BIC(fit),residual_shapiro_p=residual_p,
      breusch_pagan_p=bp_p,max_vif=max_vif)
  }
}
models <- do.call(rbind,model_results)
models$group_term_BH_q <- NA_real_
sel <- models$term == "FIRE";models$group_term_BH_q[sel] <- p.adjust(models$p[sel],method="BH")
models$interpretation <- "Diagnostic only: robust SE does not cure replicated cases"
write.csv(models,file.path(out_dir,"adjusted_regressions_unreliable_diagnostic.csv"),row.names=FALSE)
write.csv(do.call(rbind,diagnostics),file.path(out_dir,"model_diagnostics.csv"),row.names=FALSE)

# 12. Reproducible figures: all titles explicitly warn against inferential use.
p <- ggplot2::ggplot(data,ggplot2::aes(x=GROUP_LABEL,y=TOTALA,fill=GROUP_LABEL))+
  ggplot2::geom_boxplot(width=.55,alpha=.65,outlier.size=1)+
  ggplot2::labs(title="Stored ambiguity-tolerance score by dataset group (UNVERIFIED)",
    subtitle="119/120 aligned pairs have identical original questionnaire responses",
    x="SPSS group code",y="Stored TOTALA score")+ggplot2::theme_minimal()+
  ggplot2::theme(legend.position="none")
ggplot2::ggsave(file.path(out_dir,"stored_TOTALA_group.png"),p,width=8,height=5,dpi=180)
p <- ggplot2::ggplot(data,ggplot2::aes(x=GROUP_LABEL,y=A_ITEM_SUM_RAW,fill=GROUP_LABEL))+
  ggplot2::geom_boxplot(width=.55,alpha=.65,outlier.size=1)+
  ggplot2::labs(title="Simple arithmetic sum of A1-A13 (NOT a validated scale score)",
    x="SPSS group code",y="Unreversed/raw item sum")+ggplot2::theme_minimal()+
  ggplot2::theme(legend.position="none")
ggplot2::ggsave(file.path(out_dir,"raw_A_item_sum_group.png"),p,width=8,height=5,dpi=180)
m <- cor(data[,SCORES],method="spearman",use="pairwise.complete.obs")
cor_plot <- as.data.frame(as.table(m));names(cor_plot) <- c("Var1","Var2","rho")
p <- ggplot2::ggplot(cor_plot,ggplot2::aes(x=Var1,y=Var2,fill=rho))+
  ggplot2::geom_tile(color="white")+
  ggplot2::geom_text(ggplot2::aes(label=sprintf("%.2f",rho)),size=3)+
  ggplot2::scale_fill_gradient2(low="#2563eb",mid="#ffffff",high="#dc2626",midpoint=0,limits=c(-1,1))+
  ggplot2::labs(title="Exploratory score correlations - repeated records present",x="",y="")+
  ggplot2::theme_minimal()+ggplot2::theme(axis.text.x=ggplot2::element_text(angle=45,hjust=1))
ggplot2::ggsave(file.path(out_dir,"score_correlation_heatmap.png"),p,width=9,height=7,dpi=180)
plot_profiles <- as.data.frame(table(data$PROFILE_REPEAT_COUNT))
names(plot_profiles) <- c("repeats","num_rows")
p <- ggplot2::ggplot(plot_profiles,ggplot2::aes(x=repeats,y=num_rows))+
  ggplot2::geom_col(fill="#475569")+
  ggplot2::labs(title="How many rows share an identical 76-item questionnaire profile?",
    x="Times a profile repeats",y="Rows associated with repeat count")+ggplot2::theme_minimal()
ggplot2::ggsave(file.path(out_dir,"questionnaire_duplication.png"),p,width=8,height=5,dpi=180)

# 13. Bilingual Power BI case export – readable English + Persian dimension captions.
# This file retains case-level rows; protect it and never publish it publicly by default.
data$GROUP_EN <- ifelse(data$GROUP==1,"fire","non")
data$GROUP_FA <- ifelse(data$GROUP==1,"گروه آتش", "گروه نون")
data$AGE_BAND_EN <- c("Under 30","30-40 (SPSS code)","40-50 (SPSS code)","50-60 (SPSS code)")[data$AGE]
data$AGE_BAND_FA <- c("کمتر از ۳۰ سال","۳۰ تا ۴۰ سال","۴۰ تا ۵۰ سال","۵۰ تا ۶۰ سال")[data$AGE]
data$MARRIAGE_EN <- c("Single","Married","Divorced")[data$MARRIAGE]
data$MARRIAGE_FA <- c("متاهل","متأهل","مجرد")[data$MARRIAGE]
data$EDUCATION_EN <- c("High-school diploma","Associate degree","Bachelor degree","Master degree","Doctorate")[data$EDUCATIO]
data$EDUCATION_FA <- c("دپلم","فوقدپلم","کارشناسی","کارشناسی ارشد","دکتری")[data$EDUCATIO]
data$IS_FIRE <- as.integer(data$GROUP==1)
data$IS_REPEATED_PROFILE <- as.integer(data$PROFILE_REPEAT_COUNT>1)
data$IS_D_INVALID <- data$FLAG_ANY_D_INVALID
data$IS_TOTALA_MISMATCH_RAW <- data$FLAG_TOTALA_DISAGREE
data$IS_TOTALEM_MISMATCH_RAW <- data$FLAG_TOTALEM_DISAGREE

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data$IS_MZQ_MISMATCH_RAW <- data$FLAG_MZQ_DISAGREE
data$IS_PROFILE_FIRST <- as.integer(!duplicated(data$QUESTIONNAIRE_PROFILE_ID))
# Aliases matching the original bilingual Power BI export and DAX field names.
data$A_RAW_SUM <- data$A_ITEM_SUM_RAW
data$EM_RAW_SUM <- data$EM_ITEM_SUM_RAW
data$H_RAW_SUM <- data$H_ITEM_SUM_RAW
data$A_SUM_DISCREPANCY <- data$TOTALA_MINUS_RAW_SUM
data$EM_SUM_DISCREPANCY <- data$TOTALA_MINUS_RAW_SUM
data$H_SUM_DISCREPANCY <- data$MZQ_MINUS_RAW_SUM
data$D_INVALID_ITEM_COUNT <- data$D_INVALID_COUNT
data$PROFILE_MULTPLICITY <- data$PROFILE_REPEAT_COUNT
data$IS_FIRST_PROFILE_OCCURRENCE <- data$IS_PROFILE_FIRST
# Original D codes are preserved separately; use validated D columns for careful item analysis.
for (c in D) data[[paste0(c, "_VALIDATED")]] <- data[[c]]
for (c in D) data[[c]] <- raw[[c]]
# D1:D15 original columns contain raw data for audit; Dn_VALIDATED invalid items are NA.
data$D_INVALID_STATUS_EN <- ifelse(data$IS_D_INVALID==1,"Out-of-range responses","All D responses valid")
data$D_INVALID_STATUS_FA <- ifelse(data$IS_D_INVALID==1,"پاسخ نامعتبر در سؤال‌های اضطراب",
"مرگ", "پاسخ‌های اضطراب مرگ معتبر")
write.csv(data, file.path(out_dir, "powerbi_cases_bilingual_INTERNAL.csv"), row.names=FALSE,
fileEncoding="UTF-8", na="")
score_names_en <- c("Stored ambiguity-tolerance score", "Stored emotion self-regulation score",
"Stored mentalization score", "Optimism", "Emotional appraisal", "Social skills",
"Emotion utilization", "Arithmetic A sum (not validated)", "Arithmetic EM sum (not validated)",
"Arithmetic H sum (not validated)")
score_names_fa <- c("نمره ثبت‌شده تحمل ابهام", "نمره ثبت‌شده خودگردانی هیجانی",
"نمره ثبت‌شده ذهنی‌سازی", "خوش‌بینی", "ارزیابی هیجانات", "مهارت اجتماعی",
"نمره ثبت‌شده EM جمع حسابی", "تأیید نشده A کاربرد هیجانات", "جمع حسابی",
"تأیید نشده H جمع حسابی")
score_codes <- c(SCORES, "A_ITEM_SUM_RAW", "EM_ITEM_SUM_RAW", "H_ITEM_SUM_RAW")
summary_rows <- list()
for (i in seq_along(score_codes)) for (g in c(1,2)) {
x <- data[data$GROUP==g, score_codes[i]]
summary_rows[[length(summary_rows)+1]] <- data.frame(
Score_code=score_codes[i], Score_EN=score_names_en[i], Score_FA=score_names_fa[i],
Group_EN=if(g==1) "fire" else "non", Group_FA=if(g==1) "گروه fire" else "گروه non",
N=sum(!is.na(x)), Mean=mean(x, na.rm=TRUE), SD=sd(x, na.rm=TRUE),
Median=median(x, na.rm=TRUE), Minimum=min(x, na.rm=TRUE), Maximum=max(x, na.rm=TRUE),
Evidence_status_EN="Unverified score / diagnostic only",
Evidence_status_FA="نمره تأیید نشده / صرفاً تشخیصی")
}
write.csv(do.call(rbind, summary_rows), file.path(out_dir, "powerbi_group_summary_bilingual.csv"),
row.names=FALSE, fileEncoding="UTF-8")

# 14. Diagnostic bootstrap intervals for two-group rank and contingency effect sizes.
# These intervals assume the observed rows are independent. This assumption is NOT established;
# record them only as nominal computational/sensitivity outputs, not valid population coverage.
rank_biserial_fun <- function(x,y) {
n <- length(x); m <- length(y)
U <- sum(rank(c(x,y), ties.method="average")[seq_len(n)]) - n*(n+1)/2
2*U/(n*m) - 1
}
cramers_fun <- function(g, catval) {
tab <- table(g, catval)
if(min(dim(tab))<2) return(0)
z <- suppressWarnings(chisq.test(tab, correct=FALSE)$statistic)
sqrt(as.numeric(z)/(sum(tab)*min(dim(tab)-1)))
}
extra_effects <- list()
for (s in c(SCORES, "A_ITEM_SUM_RAW", "EM_ITEM_SUM_RAW", "H_ITEM_SUM_RAW")) {
x <- data[data$GROUP==1, s]; y <- data[data$GROUP==2, s]
bs <- replicate(600, rank_biserial_fun(sample(x, replace=TRUE), sample(y, replace=TRUE)))
extra_effects[[length(extra_effects)+1]] <- data.frame(test="Mann-Whitney", variable=s,
effect="Rank-biserial", effect_estimate=rank_biserial_fun(x,y),
bootstrap_ci_low=unname(quantile(bs, .025)), bootstrap_ci_high=unname(quantile(bs, .975)),
interval_coverage_warning="Diagnostic only: respondent independence unknown")
}
for (s in c("AGE", "MARRIAGE", "EDUCATIO")) {
x <- data[data$GROUP==1, s]; y <- data[data$GROUP==2, s]
bs <- replicate(600, {xx <- sample(x, replace=TRUE); yy <- sample(y, replace=TRUE);
cramers_fun(c(rep(1, length(xx)), rep(2, length(yy))), c(xx, yy))})
extra_effects[[length(extra_effects)+1]] <- data.frame(test="Chi-square diagnostic", variable=s,
effect="Cramer V", effect_estimate=cramers_fun(data$GROUP, data[[s]]),
bootstrap_ci_low=unname(quantile(bs, .025)), bootstrap_ci_high=unname(quantile(bs, .975)),
interval_coverage_warning="Diagnostic only: independence unverified; bias near V=0")
}
write.csv(do.call(rbind, extra_effects), file.path(out_dir, "additional_effect_size_CIs_DIAGNOSTIC.csv"),
row.names=FALSE, fileEncoding="UTF-8")

writeLines(capture.output(sessionInfo()), file.path(out_dir, "R_session_info.txt"))
cat("Completed exports at:", normalizePath(out_dir), "\n")
cat("CRITICAL: 119/120 aligned cross-group questionnaires identical; only",
length(unique(profile_key)), "unique full questionnaire profiles across", nrow(raw), "rows.\n")
cat("Interpret any inferential p-values as diagnostic calculations only.\n")

```