

Mapping Severe Child Nomophobia with Hierarchical Clustering and ROC Analysis [Corrigendum]

Jiménez-Jiménez V, Chivite-Cebolla C, Jódar R, López EP, Conejo-Pérez MN, Sánchez-Martínez M. *Psychol Res Behav Manag*. 2025;18:1883–1892. <https://doi.org/10.2147/PRBM.S532429>

Page 1884, Dr Sánchez-Martínez affiliation was corrected to “Departmental Area of Medicine, Faculty of Health Sciences, Catholic University of Avila Santa Teresa de Jesus, Avila, Spain”, therefore the final author list will be as the following:

Victor Jiménez-Jiménez¹, Carmen Chivite-Cebolla², Rosalía Jódar³, Eva Pilar López², María-Nélida Conejo-Pérez², Mercedes Sánchez-Martínez⁴

Following publication, the authors identified a number of minor reporting errors in the published version. These errors arose from version-control inconsistencies during manuscript preparation, in which numerical values, summary statistics, and descriptive wording carried over from earlier analytical iterations were inadvertently retained in the final manuscript. Each correction listed below has been verified against the final SPSS dataset and the canonical reproducible R workflow that underlies the analyses.

The substantive findings of the article are unchanged. Hierarchical clustering reproducibly identifies a severe child nomophobia subgroup, and the Nomophobia Questionnaire for Children (NQC) shows excellent discrimination for this subgroup, with an optimal ROC-derived cutoff of **101.5** (AUC = 0.993, 95% CI 0.9881–0.9975; sensitivity = 0.889, specificity = 0.979).

The corrections concern the description of the analytical sample, the internal reliability of the STAIC, the clustering procedure, selected inferential statistics, the contents of [Tables 1 to 4](#), sex-comparison wording in the Results and Discussion, the anxiety-associations paragraph, the funding statement, and a small number of typographical and production errors. None of these alter the analytical conclusions of the study.

Detailed summary of sources, specific changes, and potential impact

In summary, the corrections arise mainly from version-control inconsistencies during manuscript preparation, whereby values, labels, and descriptive wording from earlier analytical iterations were inadvertently retained in the published article. A smaller number of corrections concern production wording, author-affiliation metadata, and the funding acknowledgement. All corrected values have been verified against the final SPSS dataset and the canonical reproducible R workflow. These corrections refine the reporting of the sample, tables, statistical values, and wording, but they do not alter the final analytical sample, the two-cluster solution, the ROC-derived cutoff of 101.5, the identification of a small severe-nomophobia subgroup, or the study conclusions.

For readers' clarity, [Table A](#) provides a detailed summary that indicates: (a) the source or nature of each error, (b) the specific change made, including the originally published and corrected numerical or statistical values where applicable, and (c) the potential impact of the change on the study findings and conclusions.

Table A Summary of Corrections, Original and Corrected Values, and Impact

Correction Area and Source of Error	Originally Published Wording/ Value	Corrected Wording/Value	Potential Impact on Findings/ Conclusions
Affiliation and author metadata; production/metadata correction.	The affiliation of Dr Sanchez-Martinez required correction in the published record.	Departmental Area of Medicine, Faculty of Health Sciences, Catholic University of Avila Santa Teresa de Jesus, Avila, Spain; final author list updated accordingly.	Administrative correction only; no impact on the analyses, results, or conclusions.
Analytical sample and smartphone-use wording; earlier eligibility/sample wording was retained.	The Abstract and Methods described the sample as 1153 children with weekly smartphone use; weekly smartphone use was also listed as an inclusion criterion; the Introduction referred to near-universal smartphone access.	The sample is described as 1,153 children aged 9-13 years from seven urban schools in Madrid, Valladolid, and Avila. Weekly smartphone use is removed as an inclusion criterion, and smartphone exposure is described as widespread.	The final analytical sample remains N = 1,153. This corrects sample characterization only and does not alter the analyses or findings.
Table 1 demographics and phone variables; earlier descriptive values were retained.	Age distribution: 9 years 98 (8.5%), 10 years 124 (10.8%), 11 years 267 (23.1%), 12 years 389 (33.7%), 13 years 275 (23.8%); Girls 611 (53.0%), Boys 542 (47.0%); Smartphone ownership 1153 (100%).	Age distribution: 9 years 126 (10.9%), 10 years 176 (15.3%), 11 years 284 (24.6%), 12 years 299 (25.9%), 13 years 268 (23.2%); Girls 548 (47.5%), Boys 605 (52.5%); Uses mobile phone: Yes 979 (84.9%), No 174 (15.1%); Owns phone: Yes 811 (70.3%), No 342 (29.7%).	Descriptive correction only. The age mean, years with phone, final N, and inferential conclusions are unchanged.
STAIC internal consistency; raw-item reliability was retained instead of scored-item reliability.	Cronbach's alpha = 0.847.	The scored STAIC State Anxiety items yielded Cronbach's alpha = 0.732 in this sample.	Reliability remains acceptable for the study purpose. This does not change the anxiety comparison or the conclusions.
Hierarchical clustering procedure; wording described total-score clustering rather than item-profile clustering.	Hierarchical clustering used Euclidean distances on NQC scores / total NQC scores.	Hierarchical clustering grouped participants using complete linkage and Euclidean distances across responses to the 32 NQC items; total NQC scores were then used to describe and validate the resulting clusters.	Clarifies the analytical procedure. The two-cluster solution and substantive interpretation are unchanged.
Table 2 cluster ranges and Welch test; earlier cluster statistics were retained.	Low-to-Moderate range 32-115; Severe range 79-149; Welch t = -19.92, df approximately 37, Cohen's d = 2.95.	Low-to-Moderate range 32-112; Severe range 95-149; Welch t = -22.628, df = 39.293, p < 0.001, Cohen's d = 2.875.	The cluster difference remains highly significant and very large; the conclusion that the clusters are clearly differentiated is unchanged.
ROC method, Table 3, and ROC narrative values; earlier threshold-selection output was partly retained.	Cutoff selection described as maximizing specificity and Youden's index; 95% CI 0.984-0.999; Youden's J 0.868; table note reported cutoff 103.5, sensitivity 0.829, specificity 0.981, AUC 0.983.	Cutoff selected using a prevalence-weighted closest-to-top-left criterion. Corrected values: cutoff 101.5, TP = 32, FP = 24, FN = 4, TN = 1,093, sensitivity = 0.889, specificity = 0.979, Youden's J = 0.867, AUC = 0.993, 95% CI 0.9881-0.9975.	The NQC continues to show excellent discrimination. The corrected values refine the reporting but do not alter the cutoff or interpretation.

(Continued)

Table A (Continued).

Correction Area and Source of Error	Originally Published Wording/ Value	Corrected Wording/Value	Potential Impact on Findings/ Conclusions
Cutoff-based comparison near Figure 2; preliminary descriptive statistics were retained.	64.79 +/- 16.92 vs 114.29 +/- 11.03; $p < 0.001$; Cohen's $d = 3.06$.	Children scoring at or above NQC ≥ 101.5 ($n = 56$) scored higher than those below the cutoff ($n = 1,097$): 111.88 +/- 10.62 vs 64.53 +/- 16.49; $p < 0.001$; Cohen's $d = 2.91$.	The effect remains large and supports the validity of the ROC-derived cutoff.
Funding statement; contradictory funding wording was retained.	The article first stated that no external grants supported the research and later acknowledged a specific grant.	This study, file number 11172/2024, received funding from the Call For Research Grants On Avila Topics (Gran Duque de Alba), 2024 (general modality and young researchers). The authors declare no conflicts of interest.	Administrative correction only. It removes the contradiction and preserves the required grant acknowledgement; no impact on findings.
Sex-comparison wording; sex labels/counts were reversed and a Discussion sentence retained values from another analysis version.	Results: 4.21% boys ($n = 23$) and 5.45% girls ($n = 33$); Discussion: 4.66% boys vs 5.07% girls, $p = 0.671$.	Boys: 5.45% above cutoff ($n = 33$ of 605); Girls: 4.20% above cutoff ($n = 23$ of 548); $p = 0.393$, Cramer's $V = 0.03$.	The corrected values still show no statistically significant sex difference.
Anxiety-association statistic; final Welch statistic was not fully carried into the text.	STAIC comparison reported $t = -2.36$, $p = 0.019$, Cohen's $d = 0.38$.	STAIC comparison: Welch $t = -2.41$, $df = 59.195$, $p = 0.019$, Cohen's $d = 0.38$; means remain 38.68 (5.64) versus 36.83 (4.84).	The corrected test statistic does not change the significance or interpretation of higher state anxiety in the cutoff-positive group.
Table 4 replacement; values and labels from earlier table versions were mixed.	The table retained NMP wording, cutoff 103.5, group sizes 1,181/52, transposed Psychological/Social dimensions, incorrect effect sizes, reversed sex labels, and a note referring to odds ratios.	Table 4 is replaced using NQC ≥ 101.5 groups: below cutoff $n = 1,097$ and at/above cutoff $n = 56$. Corrected effects: Total $d = 2.91$, Psychological $d = 2.09$, Social $d = 2.84$, Physiological $d = 1.96$, STAIC $d = 0.38$, sex Cramer's $V = 0.03$.	All validation checks remain supportive of the cutoff. The replacement prevents readers from relying on inconsistent labels or earlier effect sizes.
Typographical and production errors; copyediting artifacts remained in the final text.	Examples included achievement. This, Nomophobia Questionare, nomopobia, overeste, development.The, and mitigate risk Ultimately.	These are corrected to the intended wording and spacing.	Textual correction only; no impact on data, analyses, or conclusions.

Page 1884, Abstract, Methods section, “A sample of 1153 children with weekly smartphone use from seven urban schools (populations >50,000) completed the 32-item Nomophobia Questionnaire for Children (NQC) and the STAIC State Anxiety measure”. should read “A sample of 1,153 children aged 9–13 years from seven urban schools in Madrid, Valladolid, and Avila (cities with populations >50,000) completed the 32-item Nomophobia Questionnaire for Children (NQC) and the STAIC State Anxiety measure”.

Page 1884, Introduction, “where smartphone access is near-universal” should read “where smartphone exposure is widespread”.

Page 1884, Methods, Setting and Participants section, “The study was conducted in seven urban primary schools (Madrid, Valladolid, Ávila, cities with populations >50,000), López et al, 2023) between February and April 2024”. should read “The study was conducted in seven urban primary schools in Madrid, Valladolid, and Avila (cities with populations >50,000) between February and April 2024”.

Page 1884, Methods, Inclusion Criteria section, “(1) Age 9–13 years, (2) weekly smartphone use, (3) ability to complete questionnaires in Spanish, and (4) parental consent”. should read “(1) Age 9–13 years, (2) ability to complete questionnaires in Spanish, and (3) parental consent”.

Page 1884, Methods, Final Sample section, “After excluding one participant with an invalid response pattern (all items scored ‘4’), the analytical sample comprised 1153 children”. should read “The final analytical sample comprised 1,153 children aged 9 to 13 years, after applying the age filter and excluding one invalid response pattern”.

Page 1885, the corrected demographic and use values for Table 1 are as follows.

Table 1 Participant Demographics (N=1153)

Characteristic	Value
Age, years, mean (SD)	11.35 (1.29)
9 years	126 (10.9%)
10 years	176 (15.3%)
11 years	284 (24.6%)
12 years	299 (25.9%)
13 years	268 (23.2%)
Girls	548 (47.5%)
Boys	605 (52.5%)
Uses mobile phone — Yes	979 (84.9%)
Uses mobile phone — No	174 (15.1%)
Owens phone — Yes	811 (70.3%)
Owens phone — No	342 (29.7%)
Years with phone, mean (SD)	1.50 (1.34)

Page 1885, Measures, Anxiety Assessment section, “The STAIC showed good internal consistency in this study (Cronbach’s $\alpha = 0.847$), confirming its adequacy for evaluating anxiety in this population”. should read “The scored STAIC State Anxiety items yielded Cronbach’s $\alpha = 0.732$ in this sample”.

Page 1886, Statistical Analysis, ROC-Derived Cutoff Criterion section, “Multiple thresholds were examined, with the final cutoff chosen based on maximizing specificity and Youden’s index”. should read “Multiple thresholds were examined, and the final cutoff was selected using a prevalence-weighted closest-to-top-left criterion, prioritizing specificity given the low prevalence of the Severe cluster”.

Page 1886, Statistical Analysis, Cluster-Based Identification of Severe-Risk Nomophobia section, “Hierarchical clustering used the agnes algorithm (R package cluster) with complete linkage and Euclidean distances on NQC scores”. should read “Hierarchical clustering grouped participants using the agnes algorithm (R package cluster) with complete linkage and Euclidean distances across their responses to the 32 NQC items”.

Page 1887, Results, Hierarchical Clustering section, 1st sentence, “Using complete-linkage hierarchical clustering on total Nomophobia Questionnaire for Children (NQC) scores, a two cluster solution was visually identified from the dendrogram (Figure 1)”. should read “Using complete-linkage hierarchical clustering of participants based on their responses to the 32 NQC items, a two-cluster solution was identified from the dendrogram (Figure 1)”.

Page 1887, Figure 1 legend, “Hierarchical clustering dendrogram of total Nomophobia Questionnaire for Children (NQC) scores. Two distinct clusters are evident, with most participants in the low-to-moderate group (blue) and a

smaller subset in the severe group (Orange)” should be “Hierarchical clustering dendrogram of participants based on their responses to the 32 Nomophobia Questionnaire for Children (NQC) items. Two distinct clusters are evident, with most participants in the Low-to-Moderate group (blue) and a smaller subset in the Severe group (orange)”.

Page 1888, Table 2, the two-cluster solution is unchanged; however, the table title, cluster score ranges, and inferential statistics require correction.

Table 2 Main Two Clusters Identified via Hierarchical Clustering of Participants Based on Responses to the 32 NQC Items

Cluster	n	Mean NQC	SD	Range	% of Sample
Low-to-Moderate Nomophobia	1,117	65.29	17.28	32–112	96.88
Severe Nomophobia	36	114.61	12.71	95–149	3.12

Notes: The Low-to-Moderate Nomophobia cluster comprises most participants, whereas the Severe Nomophobia cluster represents a smaller subgroup with notably higher mean NQC scores. The numeric range for each cluster and its percentage of the overall sample are also provided.

Page 1887, Descriptive Statistics by Cluster section, 4th sentence, the values reported in the published text — $t = -19.92$, $df \approx 37$, Cohen’s $d = 2.95$ — should be replaced by “A Welch’s t -test ($t = -22.628$, $df = 39.293$, $p < .001$) indicated the difference between these two groups was highly significant and represented a large effect size (Cohen’s $d = 2.875$)”.

Page 1887, Receiver Operating Characteristic (ROC) Analysis section, the AUC confidence interval and Youden’s index should read: “The NQC total score demonstrated excellent discriminative performance (AUC = 0.993, 95% CI 0.9881–0.9975; $p < 0.001$). The cutoff of 101.5 achieved a sensitivity of 0.889, a specificity of 0.979, and Youden’s $J = 0.867$ ”.

Page 1886 and 1887, Ethical Considerations and Funding section, 5th sentence and last sentence, the published funding statement contains an internal contradiction, first stating that no external grants supported the research and subsequently acknowledging a specific grant. The grant acknowledgement should be retained. The corrected wording is:

This study, file number 11172/2024, received funding from the Call For Research Grants On Avila Topics (Gran Duque de Alba), 2024 (general modality and young researchers). The authors declare no conflicts of interest.

Page 1888, Receiver Operating Characteristic (ROC) Analysis section, last sentence, the descriptive phrase “ 64.79 ± 16.92 vs 114.29 ± 11.03 ; Cohen’s $d = 3.06$ ” should likewise be replaced, as it corresponds to a preliminary version of the analysis. The corresponding cutoff-based comparison should read:

Children scoring at or above the ROC-derived cutoff ($NQC \geq 101.5$, $n = 56$) showed substantially higher total NQC scores than those below the cutoff ($n = 1,097$) (111.88 ± 10.62 vs 64.53 ± 16.49 ; $p < 0.001$; Cohen’s $d = 2.91$), as illustrated in Figure 2.

Page 1888, Gender Differences section, 22nd sentence, the published Results paragraph reports 4.21% boys ($n = 23$) and 5.45% girls ($n = 33$), which reverses the sex labels. The corrected text reads:

Of the 56 children above the cutoff, 5.45% were boys ($n = 33$) and 4.20% were girls ($n = 23$), with no significant difference ($p = 0.393$, Cramer’s $V = 0.03$).

Page 1888, Anxiety Associations section, 1st sentence, the published t -statistic of -2.36 should be replaced with the final reproducible Welch statistic. The corrected wording is:

Children in the Severe group showed higher STAIC State Anxiety scores ($M = 38.68$, $SD = 5.64$) than those below the cutoff ($M = 36.83$, $SD = 4.84$; Welch's $t = -2.41$, $df = 59.195$, $p = 0.019$, Cohen's $d = 0.38$).

Page 1889, Table 3, the principal ROC result is unchanged, but the optimal cutoff and several derived metrics in Table 3 require correction.

Table 3 Optimal Cutoff Value Identified for Classifying Participants into Severe vs Low-to-Moderate Nomophobia

Metric	Corrected Value
Optimal cutoff	101.5
True positives	32
False positives	24
False negatives	4
True negatives	1,093
Sensitivity	0.889
Specificity	0.979
Youden's J	0.867
AUC	0.993
95% CI for AUC	0.9881–0.9975
Positive classification prevalence	56 (4.86%)

Notes: ROC analysis identified an optimal NQC cutoff of 101.5 for severe nomophobia classification, with AUC = 0.993 (95% CI 0.9881–0.9975), sensitivity = 0.889, and specificity = 0.979.

Page 1889, Table 4 contains several inconsistencies that, taken together, warrant a complete replacement rather than amendment cell by cell. In the published version, the table retains the earlier cutoff (103.5) and the earlier group sizes (1,181 / 52); uses NMP rather than NQC; labels the State Anxiety variable as “State-trait Anxiety Levels”; transposes the Psychological and Social dimensions of nomophobia; reports incorrect effect sizes for the Psychological, Social, and Physiological rows; reverses the sex labels; and refers to odds ratios in a note where Cramer's V is reported. The table note should refer to Cramer's V for categorical comparisons.

Table 4 Group Differences According to ROC-Derived Severe Nomophobia Classification (NQC $\geq$ 101.5)

Factor	Category	Low-to-Moderate Nomophobia ($n = 1,097$)	Severe Nomophobia ($n = 56$)	p value	Effect size
Nomophobia — Total	Mean (SD)	64.53 (16.49)	111.88 (10.62)	< 0.001	Cohen's $d = 2.91$
Nomophobia — Psychological Dimension	Mean (SD)	24.21 (7.28)	39.18 (4.59)	< 0.001	Cohen's $d = 2.09$
Nomophobia — Social Dimension	Mean (SD)	34.09 (10.01)	62.23 (7.64)	< 0.001	Cohen's $d = 2.84$
Nomophobia — Physiological Dimension	Mean (SD)	6.23 (1.92)	10.46 (4.92)	< 0.001	Cohen's $d = 1.96$
STAIC State Anxiety	Mean (SD)	36.83 (4.84)	38.68 (5.64)	0.019	Cohen's $d = 0.38$
Sex	Boys	94.55% ($n = 572$)	5.45% ($n = 33$)	0.393	Cramer's $V = 0.03$
Sex	Girls	95.80% ($n = 525$)	4.20% ($n = 23$)	0.393	Cramer's $V = 0.03$

Notes: Means (SD) are shown for continuous variables, with p-values and effect sizes (Cohen's d or odds ratios) indicating differences between the groups.

Page 1890, Discussion section, 3rd paragraph, 1st sentence (“4.66% boys vs 5.07% girls, $p = 0.671$ ”) does not match the reproducible output and should be replaced by:

The ROC-derived severe nomophobia classification did not differ significantly by sex (Boys: 5.45%, Girls: 4.20%; chi-square $p = 0.393$; Cramer's $V = 0.03$).

The authors regret these reporting errors and apologise for any inconvenience to readers.

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