Common Statistical Symbols and Greek letters in APA 7th

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C. Common Statistical Symbols (Greek letters)

Greek letters (pronunciation)	Definition
α (alpha)	• In statistical hypothesis testing, the probability of making a Type I error • Cronbach's index of internal consistency (a form of reliability)
ß (beta)	• In statistical hypothesis testing, the probability of making a Type II error (1 – ß denotes statistical power) • Population values of regression coefficients (with appropriate subscripts as needed)
B (capital beta)	In SEM, matrix of regression coefficients among dependent constructs
Γ (capital gamma)	Goodman-Kruskal's index of relationship
Γ	Matrix of regression coefficients between independent and dependent constructs in SEM
δ (delta)	• Population value of Cohen's effect size • Noncentrality parameter in hypothesis testing and noncentral distributions
Δ (capital delta)	Increment of change
ε^2 (epsilon-squared)	Measure of strength of relationship in analysis of variance
η^2 (eta-squared)	Measure of strength of relationship
θ_k (theta k)	Generic effect size in meta-analysis
Θ (capital theta)	Roy's multivariate test criterion
Θ	Matrix of covariances among measurement errors in SEM
κ (kappa)	Cohen's measure of agreement corrected for chance agreement
λ (lambda)	• Element of a factor loading matrix • Goodman-Kruskal measure of predictability
Λ (capital lambda)	Wilk's multivariate test criterion
Λ	Matrix of factor loadings in SEM

Note. It is acceptable to use the form est(θ) or $\hat{\theta}$ to indicate an estimator or estimate of the parameter θ.

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Greek letters (pronunciation)	Definition
μ (mu)	• Population mean • Expected value
ν (nu)	Degrees of freedom
ρ (rho)	Population product-moment correlation
ρ_I (rho I)	Population interclass correlation
σ (sigma)	Population standard deviation
σ^2 (sigma-squared)	Population variance
Σ (capital sigma)	Population variance-covariance matrix
τ (tau)	• Kendal's rank-order correlation coefficient • Hotelling's multivariate trace criterion
ϕ (phi)	Standard normal probability density function
Φ (capital phi)	• Measure of association in contingency tables • Standard normal cumulative distribution function
$\mathbf{\Phi}$	Matrix of covariances among independent constructs in SEM
χ^2 (chi-squared)	• The chi-square distribution • A statistical test based on the chi-square distribution • The sample value of the chi-square test statistic
Ψ (capital psi)	In statistical hypothesis testing, a statistical contrast
$\mathbf{\Psi}$	Matrix of covariances among prediction errors in SEM
ω^2 (omega-squared)	Strength of a statistical relationship

Mathematical symbols	Definition
$\lvert a \rvert$	Absolute value of a
Σ (capital sigma)	Summation

Note. Adapted from Publication Manual of the American Psychological Association (7th ed.), 2020, p. 185-186. Copyright 2020 by American Psychological Association.

References

American Psychological Association. (2020). *Publication manual of the American Psychological Association* (7th ed.). American Psychological Association. https://apastyle.apa.org/products/publication-manual-7th-edition