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| Effect size | Applicable designs | Formula | Synonyms | Description | Assumptions |
| [1] Cohen’s *d* | Independent groups, dependent groups |  | *d*s (Cohen, 1988); Cohen's *d*p (Goulet-Pelletier & Cousineau, 2018); *g*’ (Hedges, 1981); *g* (Hedges & Olkin, 1985) | The difference in means of two groups standardized by their pooled standard deviations. It estimates how many common standard deviation units the mean of one group is removed from the mean of the other. | Normality, equality of variances, independence of groups *a* and *b* (for the independent groups design) |
| [2] Hedges *g* | Independent groups, dependent groups |  | *g*U (Hedges, 1981); *d* (Hedges & Olkin, 1985) | The bias corrected version of Cohen's *d*. It estimates the same population effect as *d*. | Normality, equality of variances, independence of groups *a* and *b* (for the independent groups design) |
| [3] Cohen’s *d*RM | Dependent |  |  | The difference in means of two groups standardized by the standard deviation of difference scores transformed into the scale of the standard deviation of the raw scores of the dependent variable. It estimates the same population effect as *d*. | Normality, equality of variances |
| [4] Hedges *g*RM | Dependent |  |  | The bias corrected version of *d*RM. It estimates the same population effect as *d*. | Normality, equality of variances |
| [5] Glass *d*G | Independent groups, dependent groups |  | (Glass et al., 1981); *g* (Hedges, 1981); *g’* (Hedges & Olkin, 1985) | The difference in means of two groups standardized by the standard deviation of the baseline group, which could be either of the two. It estimates how many baseline standard deviation units the mean of one group is removed from the mean of the other group. | Normality, independence of groups *a* and *b* (for the independent groups design) |
| [6] Hedges *g*G | Independent groups, dependent groups |  | *g*U (Hedges, 1981) | The bias corrected version of Glass *d*G. It estimates the same population effect as *d*G. | Normality, independence of groups *a* and *b* (for the independent groups design) |
| [7] Cohen’s *d’* | Independent groups, dependent groups |  |  | The difference in means of two groups standardized by the root mean square of the group’s variances. For the dependent groups design *d’* coincides with *d* since sample sizes are identical—i.e., *na* = *nb* = *n*. This ES estimates how many root mean square of the population variances the mean of one group is removed from the mean of the other group. | Normality, independence of groups *a* and *b* (for the independent groups design) |
| [8] Hedges *g’* | Independent groups |  |  | The bias corrected version of Cohen's *d’*. It estimates the same population effect as *d’*. | Normality, independence of groups *a* and *b* (for the independent groups design) |
| [9] *d’*corr | Dependent groups |  |  | A bias corrected version of Cohen's *d’* unique to the dependent groups design. It estimates the same population effect as *d’*. | Normality |
| [10] Kulinskaya-Staudte’s *d2*KS | Independent groups |  |  | The squared difference in means of two groups standardized by the sample size weighted average of the group variances. It estimates the squared difference in populations means standardized by the sample size weighted average of the population variances. | Normality, independence of groups *a* and *b* |
| [11] Cohen’s *d*z | Dependent groups |  |  | The mean of difference scores () standardized by the standard deviation of difference scores. It estimates how many difference score standard deviations the population mean of difference scores is removed from 0. | Normality |
| [12] Hedges *g*z | Dependent groups |  |  | The bias corrected version of *dz*. It estimates the same population effect as *dz*. | Normality |
| [13] *d*R (robust Cohen’s *d*) | Independent groups, dependent groups |  |  | The difference in 20% trimmed means of two groups standardized by their pooled 20% winsorized standard deviations. It estimates how many common 20% winsorized standard deviation units the 20% trimmed mean of one group is removed from the 20% trimmed mean of the other—scaled by a factor of 0.642. | Equality of winsorized variances, independence of groups *a* and *b* (for the independent groups design) |
| [14] *d*R, *j* (robust Glass *d*G) | Independent groups, dependent groups |  |  | The difference in 20% trimmed means of two groups standardized by the 20% winsorized standard deviation of the baseline group, which could be either of the two. It estimates how many baseline 20% winsorized standard deviation units the 20% trimmed mean of one group is removed from the 20% trimmed mean of the other—scaled by a factor of 0.642. | Independence of groups *a* and *b* (for the independent groups design) |
| [15] *d’*R (robust Cohen’s *d’*) | Independent groups, dependent groups |  |  | The difference in 20% trimmed means of two groups standardized by the root mean square of the group’s 20% winsorized variances. It estimates how many root mean square of the population 20% winsorized variances the 20% trimmed mean of one group is removed from the 20% trimmed mean of the other—scaled by a factor of 0.642. | Independence of groups *a* and *b* (for the independent groups design) |
| [16] *d*Rz (robust Cohen’s *d*z) | Dependent |  |  | The 20% trimmed mean of difference scores ()standardized by the 20% winsorized standard deviation of the difference scores. It estimates how many 20% winsorized standard deviation units the 20% trimmed mean of the population difference scores is removed from 0—scaled by a factor of 0.642. |  |
| [17] Overlapping coefficient (*OVL*) | Independent groups, dependent groups |  |  | It estimates the common area under two probability densities—i.e., the proportion of overlap between the two distributions/populations | Normality, equality of variances, independence of groups *a* and *b* (for the independent groups design) |
| [18] Overlapping coefficient two () | Independent groups, dependent groups |  |  | It estimates the proportion of overlap relative to the joint distribution of two contrasted populations, which is the amount of combined area shared by the two populations | Normality, equality of variances, independence of groups *a* and *b* (for the independent groups design) |
| [19] Probability of correct classification (*PCC*) | Independent groups |  |  | It estimates the probability of correctly determining the group membership of a randomly picked individual. | Normality, equality of variances, independence of groups *a* and *b*, equal population sizes |
| [20] Common language effect size (*CLES*) | Independent groups, dependent groups |  |  | It estimates the probability that a randomly selected score from one population exceeds a randomly selected score from the other population. | Normality, equality of variances, independence of groups *a* and *b* (for the independent groups design) |
| [21] Common language effect size (*CLES*) | Independent Groups | (= when *na* = *nb*) |  | It estimates the probability that a randomly selected score from one population exceeds a randomly selected score from the other population. | Normality, independence of groups *a* and *b* |
| [22] Common language effect size (*CLES*) | Dependent Groups |  |  | It estimates the probability that a randomly sampled difference score () is positive. This is the probability that within a randomly sampled pair of dependent observations, the observation obtained under one measurement is greater than the observation obtained under the other. | Normality |
| [23] Cohen’s *U*1 | Independent groups, dependent groups |  |  | It estimates the proportion of nonoverlap relative to the joint distribution of two populations, which is the amount of combined area not shared by the two populations. | Normality |
| [24] Cohen’s *U*2 | Independent groups, dependent groups |  |  | It estimates the proportion of one group that exceeds the same proportion of the other group. | Normality, equality of variances, independence of groups *a* and *b* (for the independent groups design) |
| [25] Cohen’s *U*3 | Independent groups, dependent groups |  |  | It estimates the proportion of the group with the lower mean that the top 50% of the group with the higher mean exceed. Alternatively, it estimates the proportion of the group with the lower mean that the median member of the group with the higher mean outscores. | Normality, equality of variances, independence of groups *a* and *b* (for the independent groups design) |
| [26] Variance ratio (*VR*) | Independent groups, dependent groups |  |  | The ratio of group variances, with either group’s variance placed in the numerator. It estimates the respective ratio of population variances. | Normality, independence of groups *a* and *b* (for the independent groups design) |
| [27] Tail ratio (*TR*) | Independent groups, dependent groups | or |  | The ratio of the estimated proportion of observations in one group falling below (first two equations)/above (last two equations) a cutoff value *t* to the estimated proportion of observations in the other group falling below/above said cutoff *t*. It estimates the respective ratio of values falling below/above the cutoff *t* in the populations. | Normality, independence of groups *a* and *b* (for the independent groups design) |
| [28] Probability of superiority (*PS*) | Independent | with | ROC AUC (Kraemer, 2008) | The proportion of all possible pairings of the member of one sample with a member of the other sample where the member of the first sample has a higher score than the member of the other one—with ties being ignored. It estimates the same population effect as the *CLES*, namely the probability that a randomly sampled member of one group will have a score that is higher than the score attained by a randomly sampled member of the other group. | Independence of groups *a* and *b* |
| [29] Probability of superiority (*PS*) | dependent |  | (Grissom & Kim, 2005) | The proportion of untied pairs of dependent observations where the score attained under one measurement is greater than the score attained under the other measurement. It estimates the same effect as the dependent-groups version of the *CLES*, namely the probability that within a randomly sampled pair of dependent observations, the observation obtained under one measurement is greater than the observation obtained under the other. |  |
| [30] The *A* measure of stochastic superiority | independent | with  with |  | The proportion of all possible pairings of the member of one sample with a member of the other sample where the member of the first sample has a score that is higher than or equivalent to the score of the member of the other group. It estimates the probability that a randomly sampled member of one population has a value on the dependent variable that is higher than or equal to the value of the dependent variable of a randomly drawn member of the other population. When the dependent variable is continuous and thus ties are not possible, it estimates the same population effect as the *PS* and the *CLES*. | Independence of groups *a* and *b* |
| [31] The *A* measure of stochastic superiority | dependent |  |  | The proportion of pairs of dependent observations where the score attained under one measurement is greater than or equal to the score attained under the other measurement.  It estimates the probability that within a randomly sampled pair of dependent observations, the observation obtained under one measurement is greater than or equal to the observation obtained under the other. When the dependent variable is continuous and thus tied values are not possible, it estimates the same effect as the dependent-groups version of the *PS* and *CLES*. |  |
| [32] Dominance measure (*DM*) | Independent | with  and | *d* (Cliff, 1993) | The proportion of all possible pairings of the member of one sample with a member of the other sample where the member of the first sample has a higher score than the member of the other one compared with the reverse proportion. It estimates the difference between the probability that a randomly sampled member of one group outscores a randomly sampled member of the other group and the probability that a randomly drawn member of the latter group outscores a randomly sampled member of the former group. | Independence of groups *a* and *b* |
| [33] Dominance measure (*DM*) | dependent | with | *d* (Cliff, 1993) | For dependent data, the dominance measure is the sum of the within-subject and between-subjects dominance. The within-subject dominance is the proportion of individuals that change in a given direction. The between-subjects difference is the proportion of scores on the second occasion that are higher than scores by other individuals on the first one. It estimates the corresponding population quantity. |  |
| [34] Generalized odds ratio (*OR*g) | Independent groups, dependent groups |  |  | The ratio of the *PS* of one group over the other and the *PS* of the latter group over the former. In the independent groups design it estimates the odds that a randomly drawn outcome from one group will be superior to a randomly drawn outcome from the other group. In the dependent groups design it estimates the odds that within a randomly sampled pair of dependent observations, the observation obtained under one measurement is greater than the observation obtained under the other measurement. | Independence of groups *a* and *b* (for the independent groups design) |
| [35] Nonparametric overlapping coefficient (*OVL*) | Independent groups, dependent groups |  |  | The shared area below the group’s kernel density estimates. It estimates the same population effect as its parametric counterpart, namely the common area under two probability densities—i.e., the proportion of overlap between the two distributions/populations | Independence of groups *a* and *b* (for the independent groups design) |
| [36] Nonparametric overlapping coefficient two (*OVL*2) | Independent groups, dependent groups |  |  | The shared area of the combined area of the two group’s kernel density estimates. It estimates the same population effect as its parametric counterpart, namely the proportion of overlap relative to the joint distribution of two contrasted populations, which is the amount of combined area shared by the two populations | Independence of groups *a* and *b* (for the independent groups design) |
| [37] Nonparametric Cohen’s *U*1 | Independent groups, dependent groups |  |  | The area of the combined area of the two group’s kernel density estimates not shared. It estimates the same population effect as its parametric counterpart, namely the proportion of nonoverlap relative to the joint distribution of two populations, which is the amount of combined area not shared by the two populations. | Independence of groups *a* and *b* (for the independent groups design) |
| [38] Nonparametric Cohen’s *U*2 | Independent groups, dependent groups | with being the order statistic of group *a* that satisfies the conditions: |  | The proportion of one sample that exceeds about the same proportion of the other sample. It estimates the proportion of population *a* that exceeds the same proportion in population *b*. | Independence of groups *a* and *b* (for the independent groups design) |
| [39] Nonparametric Cohen’s *U*3 | Independent groups, dependent groups |  |  | The proportion of members of the group with the lower mean that have a score that is smaller than the median value of the group with the higher mean. It estimates the proportion of the population with the lower mean which the upper half of the cases of the population with the higher mean exceeds | Independence of groups *a* and *b* (for the independent groups design) |
| [40] *dMAD* | Independent groups, dependent groups |  |  | The difference in medians standardized by the median absolute deviation from the median of the baseline group, which could be either of the two. | Independence of groups *a* and *b* (for the independent groups design) |
| [41] *dRIQ* | Independent groups, dependent groups |  |  | The difference in medians standardized by the scaled interquartile range of the baseline group, which could be either of the two. It estimates the same population effect as *d*G under the normality assumption and the same population effect as *d* under the normality and equality of variances assumptions. | Independence of groups *a* and *b* (for the independent groups design) |
| [42] *dbw* | Independent groups, dependent groups |  |  | The difference in medians standardized by the biweight standard deviation of the baseline group, which could be either of the two. | Independence of groups *a* and *b* (for the independent groups design) |
| [43] Nonparametric Glass *d*G | Independent groups, dependent groups | with  with | 1E/C/2E/C (Hedges & Olkin, 1984) | The /-quantile of the standard normal distribution. It estimates the same population effect as Glass *d*G under the normality assumption and the same population effect as Cohen's *d* under the normality and equality of variances assumptions. | Independence of groups *a* and *b* (for the independent groups design) |
| [44] Nonparametric Cohen’s *d*z | dependent | with | 3E/C (Hedges & Olkin, 1984) | The -quantile of the standard normal distribution. It estimates the same population effect as Cohen’s *d*z under the normality assumption. |  |
| [45] Nonparametric tail ratio (*TR*) | Independent groups, dependent groups | or |  | The ratio of the proportion of observations in one sample falling below (first two equations)/above (last two equations) a cutoff value *t* to the proportion of observations in the other sample falling below/above said cutoff *t*. It estimates the respective ratio of values falling below/above the cutoff *t* in the two populations. | Independence of groups *a* and *b* (for the independent groups design) |
| [46] *d*PPC-change | Pretest-posttest-control (PPC) design |  | *d*IGPP-change (Feingold, 2009) | Difference between the two group’s *d*z estimators. Estimates how many change score standard deviations the mean change score of one group is removed from the other group’s mean change score. | Bivariate normality in groups *a* and *b*, independence of groups *a* and *b* |
| [47] *g*PPC-change | PPC design | with  and |  | The bias corrected version of *d*PPC-change. Estimates the same population effect as *d*PPC-change. | Bivariate normality in groups *a* and *b*, independence of groups *a* and *b* |
| [48] *d*PPC, pre | PPC design |  | *g*PPC1 (Morris, 2008); *d*IGPP-raw (Feingold, 2009); *d*1 (Grissom & Kim, 2012) | Difference between the two group’s *d*G estimators using the standard deviation of pretest measurements as the standardizer. Estimates how many pretest standard deviations the mean difference of one group is removed from the other group’s mean difference. | Bivariate normality in groups *a* and *b*, equality of pretest-posttest correlations, equality of prest variances, independence of groups *a* and *b* |
| [49] *g*PPC, pre | PPC design | with  and | *d*PPC1 (Morris, 2008) | The bias corrected version of *d*PPC, pre. Estimates the same population effect as *d*PPC, pre. | Bivariate normality in groups *a* and *b*, equality of pretest-posttest correlations, equality of prest variances, independence of groups *a* and *b* |
| [50] *d*PPC, pooled-pre | PPC design | with  = | *g*PPC2 (Morris, 2008); *d*2 (Grissom & Kim, 2012); *ES*PPWC (Carlson & Schmidt, 1999) | Difference between the two group’s post-prestest mean differences standardized by the two group’s pooled pretest standard deviation. Estimates how many pretest standard deviations the mean difference of one group is removed from the other group’s mean difference. | Bivariate normality in groups *a* and *b*, equality of pretest-posttest correlations, equality of prest variances, independence of groups *a* and *b* |
| [51] *g*PPC, pooled-pre | PPC design | with | *d*PPC2 (Morris, 2008) | The bias corrected version of *d*PPC, pooled-pre. Estimates the same population effect as *d*PPC, pooled-pre. | Bivariate normality in groups *a* and *b*, equality of pretest-posttest correlations, equality of prest variances, independence of groups *a* and *b* |
| [52] *d*PPC, pooled-pre-post | PPC design | with | *g*PPC3 (Morris, 2008); *d*3 (Grissom & Kim, 2012) | Difference between the two group’s post-prestest mean differences standardized by the two group’s pooled pretest and posttest standard deviations. Estimates how many common standard deviations the mean difference of one group is removed from the other group’s mean difference. | Bivariate normality in groups *a* and *b*, equality of covariance matrices, independence of groups *a* and *b* |
| [53] *g*PPC, pooled-pre-post | PPC design | with | *d*PPC3 (Morris, 2008) | The bias corrected version of *d*PPC, pooled-pre-post. Estimates the same population effect as *d*PPC, pooled-pre-post. | Bivariate normality in groups *a* and *b*, equality of covariance matrices, independence of groups *a* and *b* |
| [54] Nonparametric *d*PPC-change | PPC design |  | 3 (Hedges & Olkin, 1984) | Difference of the nonparametric Cohen's *d*z equivalents of the two groups. Estimates the same population effect as *d*PPC-change under the assumptions of bivariate normality of the pretest and posttest measurements in both groups. | Independence of groups *a* and *b* |
| [55] Nonparametric *d*PPC, pre | PPC design |  | 2 (Hedges & Olkin, 1984) | Difference of the two group’s nonparametric Glass *d*G equivalents using the standard deviation of pretest scores as a standardizer. Estimates the same population effect as *d*PPC, pre under the assumptions of bivariate normality of the pretest and posttest measurements in each group, equality of pretest-posttest correlations, and equality of prest standard deviations. | Independence of groups *a* and *b* |
| [56] An alternate nonparametric difference-focused estimator | PPC design |  | 1 (Hedges & Olkin, 1984) | Difference of the two group’s nonparametric Glass *d*G equivalents using the standard deviation of posttest scores as a standardizer. Estimates a similar population effect as *d*PPC, pre, namely how many posttest standard deviations the mean difference of one group is removed from the mean difference of the other group—under the assumptions of bivariate normality of the pretest and posttest measurements in each group, equality of pretest-posttest correlations, and equality of posttest standard deviations. | Independence of groups *a* and *b* |
| [57] Dominance measure (*DM*) | PPC design |  |  | Difference of the dominance statistics of the contrasted groups. Estimates the group difference of the probability of a posttest score being higher than a pretest score. | Independence of groups *a* and *b* |
| [58] Mahalanobis’ *D* | Multivariate |  |  | The distance between the mean vectors (centroids) of the two groups in terms of their common multivariate standard deviation. It estimates the distance between the population means standardized by the group’s common multivariate standard deviation in the direction of the line that connects the centroids. | Multivariate normality, equality of covariance matrices |
| [59] (bias-corrected Mahalanobis’ *D*) | Multivariate |  | D\* (Lachenbruch & Mickey, 1968) | This bias-corrected version of Mahalanobis’ *D*. It estimates the same population effect as *D*. | Multivariate normality, equality of covariance matrices |
| [60] Multivariate coefficient of overlapping (*OVL*) | Multivariate |  |  | The estimate of the common area under the multivariate probability densities of two groups. | Multivariate normality, equality of covariance matrices |
| [61] Multivariate coefficient of overlapping two (*OVL*2) | Multivariate |  |  | The estimate of the proportion of the area under the combined multivariate density shared by two groups. | Multivariate normality, equality of covariance matrices |
| [62] Multivariate Cohen’s *U*1 | Multivariate |  |  | The estimate of the proportion of the area under the combined multivariate density note shared by two groups. | Multivariate normality, equality of covariance matrices |
| [63] Multivariate Cohen’s *U*3 | Multivariate |  |  | The estimate of the proportion of one group which is more typical of that group than the median of the other group. | Multivariate normality, equality of covariance matrices |
| [64] Multivariate common language effect size (*CLES*) | Multivariate |  |  | The estimate of the probability that a randomly selected individual from one group is more typical of that group than a randomly selected individual from the other group. | Multivariate normality, equality of covariance matrices |
| [65] Multivariate probability of correct classification (*PCC*) | Multivariate |  |  | The estimate of the probability of correctly determining the group membership of a randomly sampled individual with linear discriminant analysis, based on their values of the variables considered. | Multivariate normality, equality of covariance matrices, equal population sizes |
| [66] Multivariate Tail ratio (*TR*) | Multivariate |  |  | The estimate of the proportion of members of one group relative to members of the other group in the region delimited by a hyperplane parallel to the classification boundary and *z* standard deviations away from one group’s centroid, in the direction of the other group’s centroid | Multivariate normality, equality of covariance matrices |
| [67] Multivariate variance ratio (*VR*) | Multivariate |  |  | The estimate of the ratio of the two group’s generalized variances which are defined as the determinants of the respective covariance matrices. |  |