Sample size determination for testing mediation with the mediation Bayes factor

X: independent variable (e.g., treatment assignment)

M: mediator

Y: outcome

a-path: coefficient of independent variable (X) in the mediator (M) model

b-path: coefficient of mediator (M) in the outcome (Y) model

The mediation effect is quantified as a*b

Standardized path coefficient of the a-path if the a-path is truly present (i.e., non-zero):

0.39

Standardized path coefficient of the b-path if the b-path is truly present (i.e., non-zero):

0.39

Standardized path coefficient of the cp-path:

0

If considering the uncertainty about the specified coefficients for a-path, b-path, and cp-path, please check the box below and then provide the standard deviations for these path coefficients.

☐ Considering the uncertainty about the specified coefficients for a-path, b-path, and cp-path?

The number of baseline covariates:

0

If baseline covariates are involved, please provide the proportions of variances explained by the covariates for X, M, and Y (see below).

Note: These proportions of variances are those obtained without adjustment for any variables (such as from a regression of Y on the covariates)

The proportion of variance in the independent variable (X) explained by the baseline covariates:

0

The proportion of variance in the mediator (M) explained by the baseline covariates:

0

The proportion of variance in the outcome (Y) explained by the baseline covariates:

0

Design prior odds values for a-path and for b-path are needed for generating samples under the null hypothesis of no mediation. Please specify these values below.

Design prior odds for the presence of a-path:

1

Design prior odds for the presence of b-path:

1

Analysis prior odds values for a-path and for b-path are needed for calculating the mediation Bayes factor (BFmed) with each generated sample. Please specify these values below.

Analysis prior odds for the presence of a-path:

1

Analysis prior odds for the presence of b-path:

1

BFmed > cutoff is interpreted as support for the alternative hypothesis that mediation is present. The cutoff can be defined as an absolute value, such as 3; or be definited as a relative value that corresponds to certain false positive rate, such as 5% false positive rate. If a user does not specify the absolute cutoff or the relative cutoff, the defaults are used.

Absolute cutoff for interpreting a Bayes factor value as supporting the alternative hypothesis:

3

False positive rate (used by the relative cutoff):

0.05

Please provide a sequence of candidate sample sizes below.

The smallest sample size to be considered:

70

The largest sample size to be considered:

120

a integer specifying the increment in the sequence of sample sizes:

10

The number of replications:

1000

Go

True positive rates and false positive rates:

Show 25 entries Search:

N	true_positive_relative.cut	relative.cut	true_positive_absolute.cut	false_positive_absolute.cut	a	b	cp	Design.PriorOdds.a	Design.PriorOdds.b	Analysis.PriorOdds.a	Analysis.PriorOdds.b	cutoff.BF	cutoff.FPR
70	0.88	2.57	0.86	0.04	0.39	0.39	0	1	1	1	1	3	0.05
80	0.91	2.52	0.89	0.04	0.39	0.39	0	1	1	1	1	3	0.05
90	0.92	3.71	0.94	0.06	0.39	0.39	0	1	1	1	1	3	0.05
100	0.96	2.94	0.96	0.05	0.39	0.39	0	1	1	1	1	3	0.05
110	0.97	3.15	0.97	0.05	0.39	0.39	0	1	1	1	1	3	0.05
120	0.98	3.17	0.98	0.06	0.39	0.39	0	1	1	1	1	3	0.05
N	true_positive_relative.cut	relative.cut	true_positive_absolute.cut	false_positive_absolute.cut	a	b	cp	Design.PriorOdds.a	Design.PriorOdds.b	Analysis.PriorOdds.a	Analysis.PriorOdds.b	cutoff.BF	cutoff.FPR

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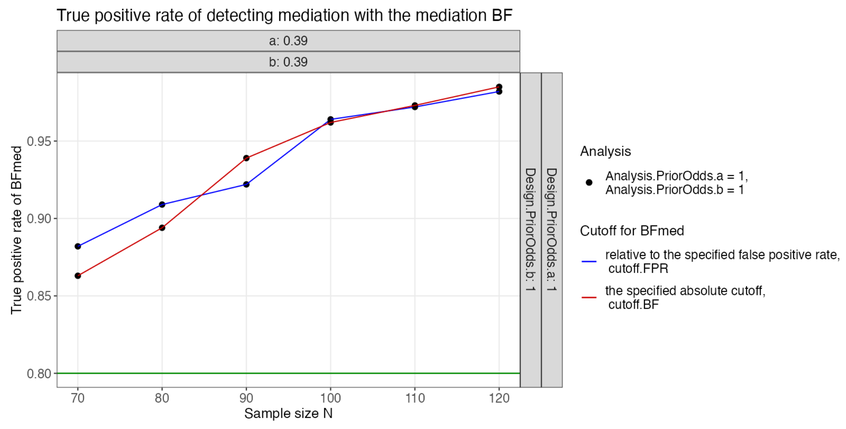
Plot of the true positive rates



Plot of the false positive rates