Supplemental material, Miller et al., “Do Not Cut Off Your Tail: A Mega-Analysis of Responses to Auditory Perturbation Experiments,” *JSLHR*, https://doi.org/10.1044/2023_JSLHR-23-00315

Supplemental Material S1. Sensitivity analyses for Silverman’s modality tests. Power analyses were conducted to determine the sensitivity of Silverman’s modality tests to detect bimodal distributions of different mixture probabilities (p) and distances between distributions (D). Power analyses were conducted for samples sizes of n = 110 (our smallest neurotypical sample) and n = 308 (our largest neurotypical sample).

Figure S1. Visual depiction of the resulting mixture probability distribution functions from the different combinations of mixture probabilities (p, shown along the *x*-axis) and distances between distributions (D, shown along the *y*-axis) that were tested in our power analyses. Power analyses evaluated the sensitivity of a Silverman test evaluating unimodality from a mixture distribution of two gaussians with equal variances and varying distances and mixture probabilities. Mixture probability (p) refers to the percentage of the total sample that is present in each mode; e.g., if p = 0.5, 50% of the sample is in each gaussian distribution. D is the distance between the means of the two distributions, represented in these simulations as multiples of the distance D_0, the maximum distance between two gaussian distribution means still forming a unimodal mixture distribution (e.g., D_0 = 2 standard deviations for a p = 0.5 mixture probability). Top row shows the case D = D_0 where the two distributions combine to form a unimodal distribution. For larger values of D (D > D_0, second-to-fourth rows) the two distributions combine to form a bimodal distribution which can be detected by a Silverman test given a sufficiently large sample size.

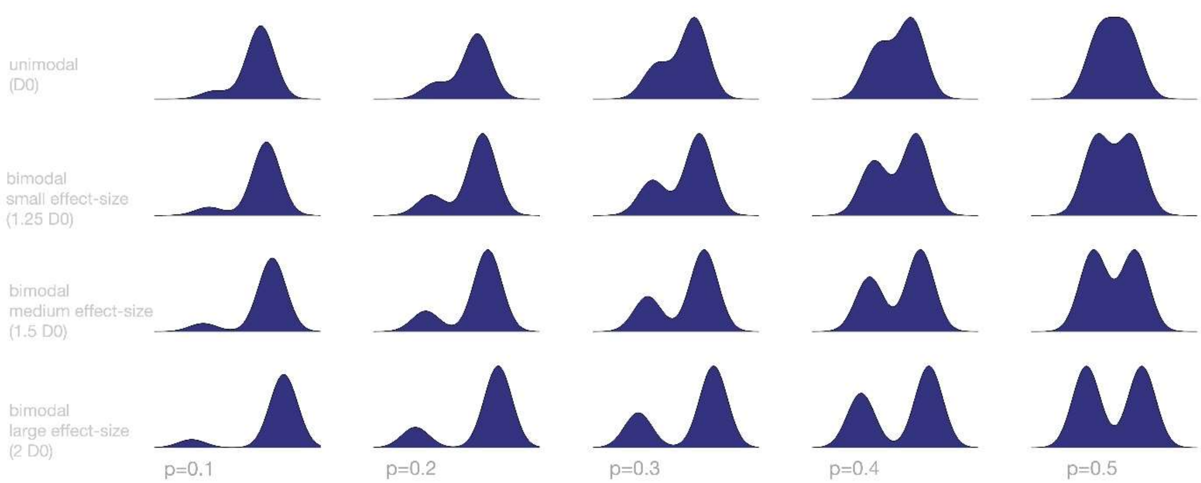

Table S1. Power at $p < .05$ alpha level of Silverman test evaluating unimodality of N samples from a mixture distribution of two gaussians with equal variances and varying distances and mixture probabilities (note: D_0 is the maximum distance between two gaussian distribution means forming a unimodal mixture distribution; e.g., $D_0 = 2$ standard deviations for a p = 0.5 mixture probability). Analyses with sufficient power (above 80%) to detect a departure from unimodality with a Silverman test are highlighted in green.

Distance	**Mixture probability**	**POWER (*n* = 110)**	**POWER (*n* = 308)**
Small effect-size ($1.25 \cdot D_0$)	p = 0.5	34% (27-42%)	59% (51-67%)
	p = 0.4	33% (26-41%)	63% (55-70%)
	p = 0.3	24% (18-32%)	66% (58-73%)
	p = 0.2	17% (12-24%)	43% (35-51%)
	p = 0.1	22% (16-30%)	30% (23-38%)
Medium effect-size ($1.5 \cdot D_0$)	p = 0.5	72% (64-79%)	99% (95-100%)
	p = 0.4	83% (76-88%)	99% (95-100%)
	p = 0.3	83% (76-88%)	100% (97-100%)
	p = 0.2	62% (54-70%)	98% (94-99%)
	p = 0.1	62% (54-70%)	94% (89-97%)
Large effect-sizes ($2 \cdot D_0$)	p = 0.5	99% (95-100%)	100% (97-100%)
	p = 0.4	100% (97-100%)	100% (97-100%)
	p = 0.3	100% (97-100%)	100% (97-100%)
	p = 0.2	100% (97-100%)	100% (97-100%)
	p = 0.1	99% (95-100%)	100% (97-100%)