

A noisemaker kit for evaluating maximum output

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Selection of acceptable maximum output is important for fitting hearing aids and other amplification systems. While it is generally accepted that the maximum output of the amplification system should be low enough to avoid loudness discomfort (UCL), it also may be desirable to maximize the listener's residual dynamic range by setting the maximum output only slightly below UCL.

Verification of the appropriateness of each client's maximum output setting should take place while clients wear their hearing aids in the clinic. This poster describes the acoustic validation of four noisemakers which could be put to this use.

Procedures

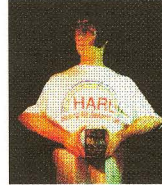
To assess within-clinician reliability, one clinician generated noise with each of the noisemakers, in order, 10 times. To assess between-clinician reliability, 8 clinicians assembled their own kits (excluding the plastic jar noisemaker) and generated noise one time.

Noisemakers				
	Coffee can	Plastic jar	Glass jar	Cellophane
Description	• 12/13 oz. metal can with plastic lid. • 5 grooves encircle the can	• Rubber-maid #3093 "Servin Saver" 1 pt. plastic bottle	• Smucker's 12 oz. jelly jar with metal lid. • 4 3/4" tall 7 7/8" circ. • name molded on taper 1 1/2" from metal cap	• 12" by 20" strip of gift wrap
Contents	• three 3/4 by 1 1/2" hex head bolts • four 5/8" hex head nuts	• four 5/8" hex head nuts	• twenty pennies	
Source	• Grocery store • Hardware store	• Discount store • Hardware store	• Grocery store • Piggy bank	• Craft store

Instructions

Stand 3 1/2 feet in front of the client, generate noise with each noisemaker approx. 6-8 inches in front of your torso according to the following instructions and demonstrations by HARL staff member "Kelvis."

Coffee can



Hold coffee can by ends (tilted horizontally).

Shake can up and down vigorously at a rate of approx. 2 up/down cycles per second (i.e. 20 shakes in a 10 second period).

Plastic jar



Grasp the jar with your thumbs holding the lid and your fingertips touching the bottom of the container.

Hold the jar upright and shake vigorously at a rate of approx. 2 up/down cycles per second.

Glass jar



Grasp the jar with your thumbs holding the lid and your fingertips touching the bottom, but do not let the palms of your hands touch the glass.

Hold the jar upright and shake at a rate of approx. 2 up/down cycles per second. Shake the jar hard enough to move all of the contents, but not hard enough to make the coins regularly hit the metal lid.

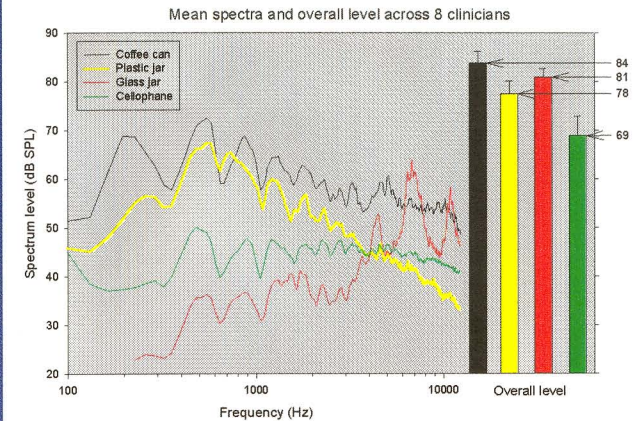
Cellophane



Hold approx. 2" of the short ends of the cellophane strip in each hand. Place hands approx. 6" apart, so that the middle of the cellophane strip is hanging loosely. Turn your wrists so that your palms are facing inward.

Move your hands up and down in opposite directions as quickly as possible.

Note: Your hands should not travel up or down so far that the cellophane is pulled taut at the extremes of your hand movements.



Conclusions

- ◆ Noisemakers with consistent spectra can be assembled by clinicians based only on simple written instructions.
- ◆ When the same noisemakers are used by the same clinician, the noises showed 1/3 octave band standard deviations of less than 2 dB.
- ◆ When different coffee can, glass jar, and cellophane noisemakers are used by different clinicians, the noises showed 1/3 octave band standard deviations between 2 and 4 dB.
- ◆ Clinical data are needed to guide interpretation of responses to the noises.

