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Strategies Used in Feigning Hearing Loss

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Abstract

Thirty unsophisticated participants with normal hearing were paid to simulate a hearing loss according to their success in "deceiving" the examiner. The behaviors that these "malingerers" manifested are described. A post-examination interview revealed the strategies used by these participants, which may reflect those strategies used by patients who truly attempt to feign a hearing loss.

Key Words: Malingering, nonorganic hearing loss, nonorganicity

Abbreviations: AC = air conduction, BC = bone conduction, NOHL = nonorganic hearing loss, PB = phonetically balanced, PTA = pure-tone average, SRT = speech recognition threshold, WRS = word recognition score

Although a thorough review of the current literature in audiology has failed to reveal any previous studies designed to identify the possible strategies used in nonorganic hearing loss (NOHL), speculations have been made. Researchers have suggested that malingerers use some kind of loudness judgment to maintain consistency throughout testing (Martin, 1994). Hood et al (1964) and Armbruster (1982) suggest that patients with NOHL attempt to set a level above their true thresholds as a reference for consistent suprathreshold responses. Based on previous speculations, one can hypothesize that malingerers attempt to feign a hearing loss or exaggerate an existing hearing loss by attempting to recollect and respond to a predetermined reference level of loudness that is above their true threshold.

It is obvious that true malingerers cannot be interviewed to learn of the strategies they use in feigning a hearing loss. With this in mind, this study examined unsophisticated participants with normal hearing who were paid according to how convincing they could become at malingering.

METHOD

Participants

The present study involved the evaluation of 30 adult participants. The 15 males and 15 females (ages 18–35 years) were recruited from the campus at The University of Texas at Austin. The only requirements were that participants have normal hearing sensitivity (<15 dB HL at octave intervals from 250 through 8000 Hz) and that they be unaware of details involved in the testing of hearing.

As an incentive to participate in the study, financial compensation was provided to stimulate motivation for malingering. Specifically, individuals were awarded cash for participating in the study but had the opportunity to double the amount if they tried diligently to feign a hearing loss

Materials and Equipment

All audiometric measurements were obtained using a Madsen Orbiter 922 clinical audiometer, which was calibrated to ANSI (American National Standards Institute, 1996) specifications. Acoustic stimuli were presented

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to participants through insert receivers. Testing was conducted in a prefabricated two-room arrangement that exceeded ANSI (American National Standards Institute, 1991) allowances for permissible ambient noise levels. Listening checks were performed prior to each data collection session to ensure that audiometric instrumentation was functioning properly.

Procedures

Initially, participants underwent otoscopic examination and a pure-tone hearing screening. After passing the screen, all participants underwent an audiologic evaluation during which they were asked to pretend to have a hearing loss and to be as consistent as possible in their responses. The four conventional audiologic measurements carried out were air-conduction (AC) and bone-conduction (BC) thresholds, speech recognition thresholds (SRTs), and word recognition scores (WRSs). This study employed the tests and procedures that are most commonly used at this time (Martin et al, 1997).

The ASHA method (1978) was used to obtain AC thresholds for each ear at octave frequencies from 250 through 8000 Hz and the mid-octave frequencies 3000 and 6000 Hz. A pure tone was initially presented at 30 dB HL for each frequency. If no response was given, then the intensity was increased to 50 dB HL with further 10-dB increases until a response was obtained. Once the participant responded, the level of intensity was decreased in 10-dB steps and increased in 5-dB steps until the participant was able to correctly identify three presentations at a given intensity.

BC thresholds were obtained by placing the BC oscillator against the mastoid process. Thresholds were measured at 250, 500, 1000, 2000, and 4000 Hz in each ear. No masking was used during BC or any other testing. The procedure for obtaining BC thresholds was identical to that for AC.

SRTs were obtained for each ear using spondaic words, which were presented via monitored live voice using the method described by Martin and Dowdy (1986). This procedure is identical to the ASHA (1978) method, the only difference being that the stimuli were spondaic words and not pure tones.

WRSs were measured for each ear using insert receivers and presenting 50 words from a phonetically balanced (PB) word list to each ear at a level that was 30 dB above the SRT for each ear. The PB word list was chosen from the "C" list of Northwestern University Test No. 6 (Tillman and Carhart, 1966).

Immediately after the hearing evaluation, an interview was conducted to gather information regarding the strategies used to feign a hearing loss. The interview consisted of a questionnaire, which was a combination of open-ended and closed-set questions.

Feigned loss was defined as mild (20–39 dB HL), moderate (40–69 dB HL), severe (70–89 dB HL), or profound (90+ dB HL), in accordance with the three-frequency pure-tone average (PTA). Each hearing loss was also defined by the type of loss simulated: conductive, sensorineural, or mixed. The types and degrees of the simulated hearing losses were evaluated, and the frequency of each was reported. Common signs of nonorganicity were also noted.

The information gained from the post-test interview regarding the strategies used to feign a hearing loss was examined, and categories were formed to group similar strategies. Each category is described, and the frequency of each is reported in order to determine the most frequently used strategy.

RESULTS

All participants followed directions to feign a hearing loss, although not necessarily convincingly. Based on the audiometric results, the majority (77% or 23 of 30 participants) of the hearing losses were bilateral. Those simulated hearing losses that displayed different degrees of hearing loss in each ear were considered asymmetric. Of the bilateral hearing losses, most (15 of 23 participants) were more or less symmetric.

The frequency of common types of nonorganic indicators was noted. Such signs included discrepancy between the SRT and the PTA (greater than 10 dB), BC thresholds more than 10 dB poorer than AC thresholds, lack of cross-hearing in unilateral and asymmetric losses, half-spondee responses during SRT testing, and exaggerated behaviors (e.g., over-reliance on lipreading, facial grimaces, exaggerated "listening" postures). In addition, because there has been limited information in the literature on how malingerers respond during word recognition testing, the present study also evaluated the types of incorrect responses that occurred during these tests.

According to Table 1, the majority of the participants displayed an SRT-PTA disagreement (63%). Among those discrepant results,

Table 1 Frequency of Each Type of Nonorganic Symptom (N = 30)

Type of Nonorganic Symptom	*Frequency of Occurrence*	*Percent of Total Participants*
SRT-PTA disagreement	19	63
SRT better than PTA	18	60
BC > AC threshold	3	10
Lack of cross-hearing	5	17
Exaggerated behaviors	11	37
Half-spondees	5	17
Incorrect responses (word recognition)	24	80

95 percent were found to have better SRTs than PTAs. During SRT testing, only a small number of individuals (17%) gave half-spondee responses. During word recognition testing, the majority of the participants (80%) gave incorrect responses. The general errors included failure to give any response, responding with similar-sounding words (e.g., "bed" for "dead"), and responding with random words (e.g., "cat" for "merge").

Only a small number of the participants (10%) displayed BC thresholds poorer than AC thresholds. Among the simulated asymmetric and unilateral hearing losses, only 33 percent displayed a lack of cross-hearing when it should have been present. The majority of the participants presenting an asymmetric or unilateral hearing loss gave normal responses from the "bad" ear during BC testing (e.g., unmasked BC thresholds of the poorer ear represented hearing sensitivity of the better ear). Among those participants who displayed exaggerated behaviors (37%), the general mannerisms observed included delayed speech responses, slow responses to pure tones, overstrained "listening" postures (e.g., body leaned in a forward position with eyes closed, indicating deep concentration), and facial grimaces. These results are also shown in Table 1.

Based on the data collected from the post-test interview, five categories were formed consisting of the different reported strategies used to feign a hearing loss. The strategies included loudness judgment, counting with a loudness reference, counting with a numerical reference, no response, and random response. In the loudness judgment strategy, the participants attempted to respond to a predetermined internal loudness reference. Initially, they established a loudness reference that represented some degree of hearing impairment, after which they attempted to recollect that level and respond to presentations that were equivalent to it.

In the second strategy, counting with a loudness reference, the participants counted the number of presentations necessary to reach their loudness reference and used that number to establish a consistent suprathreshold response. Specifically, the participants initially selected a loudness reference level and then responded to every third presentation following the reference in order to establish a consistent pattern. For example, if the participant initially responded at 50 dB HL, then the first presentation following that was 40 dB HL, at which the participant did not respond. The second presentation following the initial response was 45 dB HL, at which the participant again did not respond. Finally, the third presentation following the initial response was 50 dB HL, which was equivalent to the loudness reference; thus, the participant responded.

Another strategy involving counting was the third category, counting with a numerical reference. This strategy was similar to the previous one except that the type of reference used was different. In this strategy, the participant used a numerical reference to establish the preferred degree of hearing loss. A numerical reference was established by counting the number of presentations necessary to simulate a substantial hearing impairment. The participant might initially respond to the fourth presentation for each frequency. After establishing the preferred degree of hearing impairment, the participant counted the number of presentations required to reach the numerical reference and then used that number to establish a consistent suprathreshold response. Specifically, the participant responded to every third presentation following the numerical reference. Such a strategy produced a severe, flat hearing loss. For example, in accordance with the ASHA method (1978), the fourth presentation was given at 70 dB HL (i.e., 30 dB HL, 50 dB HL, 60 dB HL, 70 dB HL), at which the participant initially responded for each frequency. The first presentation following the numerical reference was 60 dB HL (i.e., 10-dB decrement), to which the participant did not respond. The second presentation was given at 65 dB HL (i.e., 5-dB increment), to which the participant again did not respond. Finally, the third presentation following the initial response was at 70 dB HL, which was equivalent to the initial numerical reference; thus, the participant responded, establishing a "threshold."

In the fourth strategy, no response, the participant attempted to simulate a profound hearing loss or "dead" ear by not responding to any of the stimuli. In the random response strategy, the participant attempted to simulate a hearing loss by randomly responding to the presentations, producing numerous false-positive responses.

The frequency of each type of strategy used is listed in Table 2. Eight of the participants used more than one strategy. Specifically, they initially used one approach and then switched to another before the evaluation was completed. Therefore, the frequency values listed in Table 2 are based on the total number of strategies used rather than the number of participants tested. As revealed in the table, loudness judgment was the most frequently used strategy (68%). The next prominent strategy was counting with a loudness reference (18%).

The three combination strategies included loudness judgment/counting with a loudness reference, no response/loudness judgment, and random response/loudness judgment. In the first combination, loudness judgment/counting with a loudness reference strategy, the participants used the loudness judgment strategy for the evaluation of the first ear and then switched to the counting with a loudness reference strategy for the evaluation of the second ear. Once they understood the standard presentation procedure, they switched to the counting with a loudness reference strategy. Specifically, they simulated a hearing loss in the second ear by responding to every third presentation following their loudness reference. Five participants used this combination.

In the second combination strategy, no response/loudness judgment, participants feigned one of two types of hearing loss: sloping profound hearing loss or asymmetric hearing loss with one "dead" ear. When participants feigned a sloping profound hearing loss, they used the no response strategy for the high frequencies and then switched to the loudness judgment strategy for the low frequencies. When the participants responded to the low-frequency stimuli, they attempted to respond to a predetermined reference level of loudness. When participants used the combination strategy, no response/loudness judgment, to simulate an asymmetric hearing loss, they used the no response strategy for the evaluation of the first ear and then switched to the loudness judgment strategy. They simulated a hearing loss in the second ear by responding to a predetermined reference level of loudness. Two participants used this combination.

In the third combination strategy, random response/loudness judgment, the participant used the random response strategy for evaluation of the first ear and then switched to the loudness judgment strategy for evaluation of the other ear. Specifically, the participant simulated a hearing loss in the first ear tested by randomly responding to the stimuli, giving numerous false-positive responses. For evaluation of the other ear, the participants simulated a hearing loss by responding to a predetermined reference level of loudness. Thus, the use of the loudness judgment strategy for the evaluation of the other ear eliminated false-positive responses as observed with the random response strategy. Only one participant chose to use this combination of strategies.

Table 2 Frequency of Each Type of Strategy Used to Malinger a Hearing Loss (N = 38)

Type of Strategy	*Frequency of Occurrence*	*Percent of Total Strategies*
Loudness judgment	26	68
Counting with a loudness reference	7	18
Counting with a numerical reference	1	3
No response	3	8
Random response	1	3

DISCUSSION

Based on the current findings, we suggest that malingerers may incorporate a combination of strategies to feign a hearing loss. Specifically, they may initially not respond to stimuli at all or may randomly respond but then switch to a loudness judgment, responding to a predetermined reference level of loudness. According to the present study, the majority of malingerers who use more than one strategy use a combination of loudness judgment and a counting method. Specifically, malingerers may use the loudness judgment strategy for the evaluation of the first ear and then switch to the counting with a loudness reference strategy. For the evaluation of the first ear, the malingerer may simulate a hearing loss by responding to a predetermined reference level of loudness. Once the patients decipher the standard presentation procedure, they may switch to the counting strategy for the evaluation of the other ear. Specifically, they may simulate a hearing loss in the second ear tested by responding to every third presentation following the predetermined loudness reference. This type of combination exemplifies the importance of departing from standard procedures, which experienced clinicians probably do. Incorporating specialized tests, like the CON-SOT-LOT (continuous, standard-off-time, lengthened-off-time) (Martin et al, 2000), that confuse the ability to either establish a beginning loudness reference or to count stimuli is advised.

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