Hearing Aid Effect in Older Females

Sheryl Doggett*
Ramona L. Stein†
Donald Gans‡

Abstract

Surveys have revealed that nonusers of hearing aids frequently hold negative perceptions of hearing aid users (the “hearing aid effect”). This study involved the use of both objective and subjective approaches in measuring the perceptions of older females toward hearing aid wearers. Twenty older females rated an aided and unaided peer after reading to them. Between-group differences were insignificant for objective measures (vocal intensity, reading time) and two subjective measures (age, attractiveness). However, the older females perceived their aided peers significantly more negatively than their unaided peers on measures of confidence, intelligence, and friendliness. This negative perception also surfaced in females who were unaware of the hearing aids, suggesting that a negative self-image by hearing aid wearers may contribute to the hearing aid effect.

Key Words: Audiology, aural rehabilitation, gender, hearing aid

The majority of adults with hearing loss tend not to use hearing aids (U.S. Department of Health and Human Services, 1994a, b; Kochkin, 1996). The 1990–1991 percentage of the adult population using hearing aids varies with age and perceived hearing difficulty. Between the young (18–44 years) and the elderly (65 years and older), the percentage increases by 35 percent for adults with severe difficulty and 18 percent for those with mild difficulty (NCHS, 1994a).

The magnitude of hearing aid underuse might be attributed to the perception that hearing aids are a visible symbol or stigma of the negative perceptions associated with hearing loss. From a survey of hearing aid nonusers, Kochkin (1993) found that 60 percent in the age bracket between 35 and 44 years and 30 percent between 75 and 84 years listed stigma as one of their top five reasons for rejecting hearing aids. Approximately 40 percent of all nonusers in that survey reported stigma as a major reason for their rejection of hearing aids. These nonusers perceived that wearing hearing aids is associated with increased age, weakness, and hearing difficulty (Franks and Beckmann, 1985; Kricos et al, 1991; Gleitman et al, 1993; Kochkin, 1993).

Applying the stigma of hearing aids to people who wear them is known as the “hearing aid effect” and indicates a tendency to judge hearing aid wearers more negatively than their peers who do not wear hearing aids (Blood et al, 1977). One example of this effect was reported by Johnson et al (1982) in a survey of young adults’ perceptions of hearing aid users. The young adults perceived those wearing hearing aids as older and as less effective communicators. In another survey, Johnson et al (1995) found that nurses expressed positive attitudes toward older adults wearing hearing aids but reported feeling uncomfortable when speaking with them. The nurses’ positive attitudes may have been an attempt to hide negative perceptions about communicating with older adult hearing aid users. In two other surveys (Brimacombe et al, 1983; Kasten and Henry, 1986), children and young adults had negative perceptions of hearing aid users of varying ages. Judges who had prior encounters with hearing aid users did not conceal negative perceptions. In fact, they had more negative perceptions than judges who had no prior contact with hearing aid wearers. The perceptions
also varied with the age of the user portrayed in the surveys.

Iler et al (1982) did not find any hearing aid effect in older adults who rated photographs of their peers wearing hearing aids. However, their data tended to show more negative ratings from those judges who had previous experience with hearing aids or hearing aid users than from those without such experience. Therefore, some of the hearing aid effect may have been attributed to the behavior of hearing aid users. Because the stigma of hearing aids affects purchase behavior (Gleitman et al, 1993), it is important to determine the perceptions of adults with no prior hearing aid experience. Additionally, Iler et al (1982) found a significant group-by-gender interaction for personality ratings, although there was no information to determine the direction of this interaction. Females have a longer lifespan than males and are thus likely to experience a longer period of hearing aid rejection and hearing difficulty (Magilvy, 1985). Therefore, it is important to determine if there is a hearing aid effect for older females.

The present study used objective as well as subjective measures because the elderly may conceal their attitudes on subjective measures such as surveys. The older females' speaking rate and vocal intensity were the objective measures used to determine whether they expected their peers wearing hearing aids to be less effective communicators. Subjective estimation of the peer's age was used to examine the contention that hearing aids make people look older. Subjective ratings of attractiveness, confidence, friendliness, and intelligence were used to reveal older females' perceptions of the personality of hearing aid users. Additionally, this study evaluated the possibility that some of the hearing aid effect might be attributed to the image projected by the hearing aid wearer. The objective and subjective measures came from two groups of females: one group with advance knowledge of the hearing aids on the aided peers and a second group without such knowledge.

METHOD

Participants

Each female in this study participated as either a peer or judge. All of the females resided in independent-living conditions, had not previously owned or used hearing aids, and had a voice and hearing screening before data collection.

Judges

There were two groups of judges (informed and uninformed), with 10 females in each group. The informed judges were told that the aided peers were wearing hearing aids, whereas the uninformed judges were not given this information. The average ages were 72 years (range = 64–81) for the informed judges and 74 years (range = 60–91) for the uninformed ones. The ages were not significantly different between groups (t = 0.6, df = 9, p > .05). Judges who had a voice disorder or more than a mild hearing loss (PTA > 40 dB HL) were excluded from the study.

Peers

There were two peer groups. One group served as peers for informed judges. There were three females who ranged from 55 to 67 years in this group. The other group of females served as peers for the uninformed judges. There were four females in that peer group ranging in age from 75 to 83 years. Every peer participated at least twice for the aided and twice for the unaided conditions. For the uninformed judges, it was necessary to use two alternate peers because two of the subjects knew the designated peers. Thus, there was an unequal number in the two peer groups.

Instructions

Judges

The judges were told that they would complete a survey about the peer's behavior after reading the Rainbow passage to them (Appendix A). Before the reading, the judges were provided a written copy of the Rainbow passage for familiarization purposes. Before participating, the judges were told that the study evaluated the peers' ability to listen quietly during the reading and to answer questions after the reading. After the experiment, the judges were told about the study's purpose and were asked for written consent to use their data; all judges consented.

Peers

The peers were told that they would wear binaural behind-the-ear hearing aids during some readings and not during others. The peers wore the hearing aids so that they were clearly visible (all peers had short hair). Before participating, the peers were given time to become
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comfortable wearing the hearing aids. The peers were told that the judges would read a passage to them and were also told that they would wear a noise dosimeter during all readings. If the judges conversed with the peers (other than the reading), the peers were to nod, smile, or gesture as they wished. The peers knew the purpose of the study and were told not to discuss it with the judges.

Objective Measures

A Quest model 7B noise dosimeter was used to record all acoustic measures before and during the readings. Ambient noise recorded before the reading was equal to or less than 47 dBA. All participants reported that the light, room temperature, and ambient noise were acceptable.

Each participant (judge and peer) pair was instructed separately and escorted separately to the room where the data were collected. The peer was introduced to the judge, and both participants were seated at a table at a 2-foot distance from one another. During introductions, the informed judges were told that the aided peer was wearing hearing aids; the uninformed judges were not given this information. After introductions, the body of the dosimeter was placed behind the peer so that it was not visible to either participant, and the microphone (with attached adapter) was clipped to the peer's clothing at the front near the shoulder so that it faced the judge. The participants were told that the dosimeter measured the peer's movement during the reading. The experimenter then started the dosimeter and left the room. The judge then read the Rainbow passage to the peer. After the judged finished reading, she was given a survey to complete about the peer. The peer and experimenter were not present while the judge completed the survey. In another room, the experimenter recorded the reading time and maximum and long-term average vocal intensity, and then reset the dosimeter. The judge then repeated the procedure with a different peer. The peer condition (aided and unaided) was counterbalanced across judges. Each judge interacted with the same peer for approximately 3 minutes.

The two groups of judges completed identical surveys containing seven statements about the peer and four about the conditions of the experiment (Appendix B). The 20 judges provided 20 aided and unaided surveys. Each judge completed two surveys (one aided and one unaided), providing eight measures for comparison: three objective (reading time and maximum and long-term average vocal intensities) and five subjective (age estimates and ratings of the peers' attractiveness, confidence, friendliness, and intelligence).

RESULTS

Perceived Age

A potential source for negative perceptions, possibly independent of the hearing aid condition, was the ages of the peers. Therefore, it was important to determine if the perceived and actual ages of the peers differed significantly. Because the ages of the peers were different for the informed (55–67 years) and the uninformed (75–83 years) judge groups, it was expected that estimates of their ages would also differ. Therefore, the difference between the peers' actual and perceived age (estimated by the judge) was compared between conditions (aided and unaided) for each judge group. This comparison permitted an evaluation of the contention that people wearing hearing aids appear older than their actual age. The comparison was not significant for the informed (t = 0.52, df = 9, p > .05) or for the uninformed judges (t = 0.26, df = 9, p > .05).

Personal Attributes

To verify that hearing aids were noticed on the aided peers, the judges chose all items
pertaining to the peer from a list that included earrings, eyeglasses, hearing aids, short hair, and long hair. None of the uninformed judges noticed the hearing aids. Recall that before reading to the aided peers, the informed judges were told that the peer was wearing hearing aids.

The judges also rated personality attributes of the peers on a Likert scale (Dunn-Rankin, 1983) by selecting one of five categories (strongly agree, agree, neutral, disagree, strongly disagree) that followed the phrase “the listener was ___ (attractive, confident, friendly, intelligent).” Each judge provided an aided and unaided rating for each attribute. A difference score was obtained from each judge by subtracting the aided from the unaided ratings. A negative difference score signified a less favorable impression of the aided than the unaided peer. Due to the low number of judges who gave different ratings to the aided and unaided peers, statistical analysis was not possible for the informed and uninformed groups separately. Of the 20 judges, 10 (50%) provided a difference score for attractiveness, nine (45%) for confidence, six (30%) for friendliness, and six (30%) for intelligence. The low number of difference scores was encouraging, as it initially implied no hearing aid effect. However, 25 (80%) of the 31 differences (combined for both groups) were negative, with 38 percent coming from the informed judges and 42 percent from the uninformed judges. Consequently, the difference scores were ranked for both groups together. The positive and negative ranks were summed separately, and the sums were compared for significance using Wilcoxon’s T for dependent measures (Howell, 1992). A significant comparison indicated that the judges, combined into a single group, perceived the aided peers differently than the unaided peers. The comparison was insignificant for attractiveness (N = 10, R = 27, p > .05) but was significant for confidence (N = 9, R = 8.0, p < .05), intelligence (N = 6, R = 0, p < .05), and friendliness (N = 6, R = 0, p < .05). All significant differences were negative and thus less favorable for the aided than unaided peers.

Although separate within-group comparisons could not be analyzed statistically because of small sample sizes, inspection of the difference column in Table 1 revealed a similar negative tendency for both groups. For all four personality attributes, the informed group tended to give more negative ratings to the aided than the unaided peers. Surprisingly, this tendency also was found in the uninformed group for all but one (attractiveness) of the four attributes. For two (friendliness and intelligence), none of the aided peers were rated more positively than the unaided peers by any judge from either group.

### DISCUSSION

The results of this study support the presence of a hearing aid effect for older females. Significant differences were found for three of the four subjective variables but none of the objective variables. The aided peers in this study were perceived to be significantly less confident, friendly, and intelligent (but not less attractive) than the unaided peers. These findings are in agreement with previous studies suggesting a hearing aid effect for several age groups

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Group</th>
<th>Positive (N)</th>
<th>Negative (N)</th>
<th>Difference (N)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attractive</td>
<td>Uninformed</td>
<td>13 (4)</td>
<td>14 (2)</td>
<td>-1 (+2)</td>
</tr>
<tr>
<td></td>
<td>Informed</td>
<td>4 (1)</td>
<td>13 (3)</td>
<td>-9 (-2)</td>
</tr>
<tr>
<td></td>
<td>Combined</td>
<td>27 (5)</td>
<td>27 (5)</td>
<td>0 (0)</td>
</tr>
<tr>
<td>Confident</td>
<td>Uninformed</td>
<td>8 (1)</td>
<td>20 (5)</td>
<td>-12 (-4)</td>
</tr>
<tr>
<td></td>
<td>Informed</td>
<td>0 (0)</td>
<td>16 (3)</td>
<td>-16 (-3)</td>
</tr>
<tr>
<td></td>
<td>Combined</td>
<td>8* (1)</td>
<td>36 (8)</td>
<td>-28 (-7)</td>
</tr>
<tr>
<td>Friendly</td>
<td>Uninformed</td>
<td>0 (0)</td>
<td>12 (3)</td>
<td>-12 (-3)</td>
</tr>
<tr>
<td></td>
<td>Informed</td>
<td>0 (0)</td>
<td>9 (3)</td>
<td>-9 (-3)</td>
</tr>
<tr>
<td></td>
<td>Combined</td>
<td>0* (0)</td>
<td>21 (6)</td>
<td>-21 (-6)</td>
</tr>
<tr>
<td>Intelligent</td>
<td>Uninformed</td>
<td>0 (0)</td>
<td>10 (3)</td>
<td>-10 (-3)</td>
</tr>
<tr>
<td></td>
<td>Informed</td>
<td>0 (0)</td>
<td>10 (3)</td>
<td>-10 (-3)</td>
</tr>
<tr>
<td></td>
<td>Combined</td>
<td>0* (0)</td>
<td>21 (6)</td>
<td>-21 (-6)</td>
</tr>
</tbody>
</table>

A negative rank indicates that the unaided peer was rated better than the aided peer by the same judge.

* p < .05.
A surprising finding was that some of the hearing aid effect may result from the self-perception of the hearing aid user. All judges in the uninform ed group reported that they did not notice hearing aids on the aided peers. Nevertheless, the aided peers tended to receive more negative ratings from both groups of judges for all four subjective variables. The negative ratings from the uninform ed judges likely originated from self-images and consequent behaviors displayed by the aided peers. While wearing hearing aids, the peers may have displayed less confidence, friendliness, and intelligence in their outward behavior, indicating a more negative self-image. Thus, negative ratings of the aided peer might reflect the attitude of the judge toward the hearing aid user, the self-image of the hearing aid wearer, or contributions from both factors.

If older adults display less confidence, friendliness, and intelligence when wearing hearing aids, then observers will perceive this negative image regardless of whether the hearing aids are noticed. A negative self-image when wearing hearing aids may reflect a negative attitude toward hearing loss. In addition, the significant social, emotional, and communicative difficulties experienced by these adults prior to their actual use of hearing aids may foster a negative attitude toward hearing loss, which may continue after the hearing aids are fit.

In order to better counsel older adults regarding the potential for a hearing aid effect, hearing health care professionals also should examine their own attitudes toward hearing loss. Professionals who do not recommend hearing aids for mild-to-moderate hearing loss may be fostering a negative attitude toward the problems associated with hearing loss and thereby delaying recognition of the need for rehabilitation for their patients. Hearing specialists also must determine the older adult’s attitude toward hearing difficulties, since negative attitudes toward communication problems influence the older adult’s self-image. Attitudes toward problems associated with hearing loss may be more positive among older adults who accept hearing aids than among those who reject or are reluctant to use hearing aids (Griffing, 1992). Negative attitudes are often obvious even at the time of the hearing evaluation (Abrams et al, 1992).

Self-assessment scales of hearing handicap should be completed by all hearing-impaired clients at the initial hearing evaluation in order to expose and delimit negative attitudes, thereby helping direct counseling efforts. Intensive counseling could then be coordinated in an effort to redirect negative attitudes and to overcome any tendency to develop a negative self-image after hearing aids are fit.

It is important to note that the finding of an additional factor contributing to the hearing aid effect in the general population was based on a small group of subjects demonstrating a slight tendency toward negative self-images when wearing hearing aids. However, there has been a tendency for professionals to attribute all of the hearing aid effect to the attitudes of the general population toward hearing aids apart from the behavior of the hearing aid user. It is possible that more than one factor contributes to the general population’s negative perceptions of hearing aids. The results of this study as well as others (Iler et al, 1982; Brimacombe et al, 1983; Kasten and Henry, 1986) suggest that these factors include prior experience with hearing aids or people who wear them and the self-image of hearing aid wearers.

REFERENCES


The Rainbow Passage

When the sunlight strikes raindrops in the air, they act like a prism and form a rainbow. The rainbow is a division of white light into many beautiful colors. These take the shape of a long round arch, with its path high above and its two ends apparently beyond the horizon. There is, according to legend, a boiling pot of gold at one end. People look, but no one ever finds it. When a man looks for something beyond his reach, his friends say he is looking for the pot of gold at the end of the rainbow.

APPENDIX B

Survey

Circle response(s) that match your opinion with the statement.

1. In general, this experience was positive.
   - strongly agree
   - agree
   - neutral
   - disagree
   - strongly disagree

2. The directions were thoroughly explained.
   - strongly agree
   - agree
   - neutral
   - disagree
   - strongly disagree

3. The room and furnishings were comfortable.
   - strongly agree
   - agree
   - neutral
   - disagree
   - strongly disagree

4. The listener was friendly.
   - strongly agree
   - agree
   - neutral
   - disagree
   - strongly disagree

5. The listener was attractive.
   - strongly agree
   - agree
   - neutral
   - disagree
   - strongly disagree

6. The listener was confident.
   - strongly agree
   - agree
   - neutral
   - disagree
   - strongly disagree

7. The listener was intelligent.
   - strongly agree
   - agree
   - neutral
   - disagree
   - strongly disagree

8. The listener interrupted the reading.
   - never
   - once
   - several times

9. The listener was wearing (circle all that apply).
   - earrings
   - long hair
   - eyeglasses
   - short hair
   - hearing aids

10. Please estimate the listener’s age.
   - 25–35
   - 35–45
   - 45–55
   - 55–65
   - 65–75
   - 75–85
   - 85–95

11. I would participate in this study again.
   - yes
   - perhaps
   - no