The Deaf sixth sense: fact or fiction? Deaf identification by deaf and hearing observers

Sarah Bienias

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The Deaf Sixth Sense:
Fact or Fiction?

Deaf identification by deaf and hearing observers

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National Technical Institute for the Deaf
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Rochester, New York
The Deaf Sixth Sense: Fact or Fiction? Deaf identification by deaf and hearing observers

Master's Project

Submitted to the Faculty
of the Master of Science in Secondary Education
of Students who are Deaf or Hard of Hearing

National Technical Institute for the Deaf
ROCHESTER INSTITUTE OF TECHNOLOGY

By

Sarah Bienias

In partial fulfillment of the Requirements
for the Degree of Master of Science

Rochester, New York

June 8, 2001

Approved:

Susan D. Fischer, Project Advisor

Gerald C. Bateman, Program Director
The Deaf Sixth Sense: Fact or Fiction? Deaf identification by deaf and hearing observers

I. Abstract

Many deaf people believe that they possess a "sixth sense" which allows them to intuitively know if another person is deaf or hearing. Research indicating differences in deaf people's mannerisms, language use, and attitudes when compared to hearing people is discussed in this paper. This study tested that theory by videotaping native and non-native users of ASL (both hearing and deaf) in a natural conversation. This videotape was then shown to three groups of subjects – one deaf, one hearing with experience in ASL and Deaf Culture, and one hearing without exposure to ASL and Deaf Culture. The subjects were asked to pick out the deaf people in the conversations, and rate the certainty of their response; later they were asked, why they answered the way they had. The results of the hearing groups and the deaf group were compared, and indicated that there are a number of factors used by deaf people to identify other deaf people. Deaf people do seem to have a "sixth sense", which is influenced primarily by the level of ASL skill used in the conversation. Reasons why this may occur are discussed, and the need for future research is indicated.

II. Introduction

Statement of the Problem

Can deaf persons identify who is deaf and who is hearing from watching natural conversations? A few researchers, such as Kantor (1978) have touched on the idea that there is a difference between native and non-native ASL style. Some research has also been done comparing deaf and hearing ASL structure, mannerisms while using ASL, and attitudes of deaf and hearing people toward each other. All of these can affect the
judgments made by deaf people about others' hearing status. Although many deaf
people claim that they can detect that someone is deaf, to date no research has been
published about the ability of deaf people to identify other deaf people by watching
conversations in ASL.

Importance of the Problem

As stated above, no published research exists about this theory. This research
project therefore fills a gap in our current knowledge about deafness and the linguistic
abilities of deaf people. The new information learned from this study will show if the
theory that deaf people possess this "sixth sense" which identifies other deaf people is
true or false. By including a group of hearing people with exposure to ASL and Deaf
Culture, we can tease apart factors relating to deafness from factors relating to
language. Both of these groups are compared to the control group, hearing people
without exposure to deaf people or ASL on a regular basis. If the results of this study
show that deaf people do have a deaf identification sense that hearing people do not
possess, then another area of research will open up. Future research can be done to
determine what observers are paying attention to that indicates that a person is deaf or
hearing. If the results of this study show that deaf people do not possess this ability to
determine who is deaf and who is hearing by looking at a conversation, then they will
still add to our knowledge about ASL and its use among deaf people.

Order of Presentation

This paper continues with a literature review, covering related research. It
begins with the background about the theory that deaf people do have this "sixth
The "Deaf Identification Sense" 4

sense". It continues by outlining possible reasons why this ability might exist, including possible linguistic differences, environmental pressures, biases of deaf and hearing people about each other, and differences in mannerisms, such as breathing patterns or eye gaze.

After the literature review, the paper moves on to describe the method used in the current experiment. The research topics and questions are stated, followed by a description of the subjects in the study, and finally a description of the procedures used in the experiment. The results of the study are then stated and discussed. At the end of the paper, the references and appendices, which include the survey and the permission forms used, are included.

III. Literature Review

Introduction:

The theory that deaf people have a "sixth sense" has been a popular belief shared by many in the Deaf Community. Many deaf people report anecdotally that they can tell if a person is hearing or deaf just by observing them in conversation. However, this theory has not yet been proven in research. The reasons behind the phenomenon have not yet been discovered. Some existing theories include the differences in ASL styles between deaf and hearing native and non-native signers (Christie, 1990), spatial visual skills and other non-manual signals, and pre-existing attitudes of hearing people towards deaf people (Emerton, 1975), and deaf people's attitudes towards hearing people (Kannapell, 1989). In this paper, literature that supports and contradicts these hypotheses is discussed.
Native vs. Non-native ASL users

The differences between native and non-native signing abilities have been documented in linguistic research. Rebecca Kantor (1978) set up a study where deaf and hearing native and non-native signers were videotaped, and other hearing and deaf native and non-native signers were asked to view the videotape. They were given a survey to complete, asking who on the videotape they thought was a native and who was a non-native signer. The results of Kantor's study showed that native signers could pick out other native signers on the videotape with a higher level of accuracy than non-native signers could pick out native signers on the videotape. These results clearly showed that a "sixth sense" did exist in native signers of American Sign Language with respect to identifying other native ASL users. The reasons why this occurred were not as clear – many of the subjects claimed that the movements were not as fluid in non-native signers, or that the facial expressions of the natives were different than the non-native facial expressions. Kantor's (1978) study does not, however, specifically address the issue of deaf identification.

Other research that supports the ability to detect native signing was published by Christie (1990). Her research focused on the mechanism that deaf children acquire as they acquire ASL as a first language. She compared many of the native ASL users to the non-native ASL users, and found that often when the native ASL user began the conversation with the non-native ASL user, the native would automatically simplify the language to match the learner's skill level. Christie hypothesized that the children could automatically pick out who was a native signer, and who was a learner, and accommodate their ASL structure to the other person's communicative needs. Both of these studies seem to confirm that there is an "identification sense" for native signers.
which begins in childhood. It seems to be an adaptive technique that deaf children acquire as they acquire ASL as a first language. Christie’s study does not address the issue of identification of deafness either.

**Possible Reasons for native ASL Identification:**

The reasons behind the phenomenon of being able to detect native signing ability have yet to be determined. Most of the research to date has shown that there is a general difference between native users of a language (L1) and non-native users (L2). Christie's (1990) research outlined the observed differences between L1 and L2 learners of American Sign Language. In her study, three independent raters watched videotaped sessions of native and non-native ASL users telling a story in ASL, and also during tutoring sessions of the L2 learners. The tutoring sessions were videotaped so that the native signers could be observed helping the non-native signers with their ASL learning. The raters assessed four areas for the level of ASL structure and comprehension: the actual signs themselves, fingerspelling, gestures, and mime. Christie analyzed the differences between the native and non-native signers. She found that native signers tended to exaggerate their facial expressions and elaborated their signs when interacting with the L2 learners. They also used more detailed facial expressions when talking with other natives (for example, using eyebrow movement in the correct ASL form), in contrast to the non-native group. The natives also used more gesture with the non-native signers, but overall, the L2 group used more gesture with both the native and the other non-native signers.

Bailey (1980) studied the effects that a second language learner’s environment has on the expression of the new language during the learning process. Through her diary of her experience learning French, she found that her physical surroundings
affected her learning performance. She felt that during her expression of the new language, she needed constant positive feedback and support so she felt confident in the language. Lambert, et al. (1958) also reached the same conclusions. They found that second language learners of French excelled in the language when they could use it in contextual situations, where the culture that surrounds the language can be learned as well. This environment created positive feedback from the L1 users of French and encouraged self-confidence in the second language learner. The influence of environment can be applied to both L2 and hearing people who use ASL with deaf native signers. If L2 learners of ASL feel judged by native signers because of their lack of signing ability, they may not feel as comfortable in the environment. Therefore, they may either make mistakes within their ASL expression, or emanate a feeling of reduced self-confidence, which can be seen by deaf people, letting them know that this person is probably nonnative.

One might hypothesize that deaf people can tell the difference between hearing and deaf people because they have greater use of their visual system. This may be implemented in noticing differences in the nuances of ASL, and making a decision about hearing ability based on those differences. Fischer (1978) studied the role of prestige in Creole languages, and argues that ASL is creolized in every generation due to the circumstances of many deaf people. For example, if a child is deaf and born to a hearing family, s/he may not receive full exposure to ASL, and will therefore need to create a Creole of ASL. Each Creole will have certain characteristics that may be identified by other Creole users, or other deaf ASL users. It is also important to note that this recreolization process is due to the age that most deaf children are exposed to a native form of ASL, which more often than not is at a later age, after the child has lost the
The "Deaf Identification Sense" 8

cognitive ability to learn ASL as a native. This is because most deaf children are born to
hearing parents, who are not native users of ASL themselves, and therefore have no
exposure to ASL in its full native form until later in life. Stokoe (1970) also points out
that there are variable amounts of diglossia (using different dialects of the same
language in different situations) that occur in ASL due to the isolation into which many
of its deaf users are born. This code switching may be another indicator of who is deaf
and who is hearing to the deaf person. The Creole factor and variations in the use of
ASL may influence deaf people to make decisions about other people's hearing level
based on the level of ASL or English used in a conversation. This may occur in deaf
people due to a heightened visual ability.

However, Parasnis (1996) presents data that goes against the hypothesis. Her
research team investigated the spatial abilities of hearing and deaf children, such as
hand dexterity, facial expression identification, and visual orientation skills. They found
that the two groups had the same spatial abilities. The hearing children in this study did
not know a signed language, and Parasnis hypothesized that the knowledge of a signed
language may enhance spatial abilities later in development. Parasnis' results indicate
that this theory is not to be dismissed, but more research needs to be done in the field
of determining spatial abilities in deaf people compared with hearing people to prove the
relevance of this new hypothesis.²

Another hypothesis is that the attitudes of both deaf and hearing people toward
each other can affect their judgments of deciding who is hearing and who is deaf. In
the realm of spoken language, Samarin (1966) researched the role of prestige in Creole
languages. He interviewed subjects in a Central African population which used a
language system which was a Creole of the tribal languages and Sango, a language that
was used by the upper class in that population. He found that there was a hierarchy within the linguistic system – the Creole was considered more basal than using Sango, which indicated prestige in that society. This information can be transferred to the deaf population in the United States today. Their language is ASL, and they may associate prestige with that language. The more “formal” ASL a person has, the more “Deaf” he may be considered. Thirty years ago, the opposite was true. English was the “prestige” language, and if a person used more English structure while signing ASL, s/he could be considered more “Hearing” and part of the mainstream society.

Other attitudes may influence a person’s decision about who is deaf and who is hearing. Emerton and Rothman (1975) studied the attitudes of hearing students at the Rochester Institute of Technology (Where the National Technical Institute for the Deaf is located) towards deaf students. They interviewed 100 hearing students at RIT, 50 of whom lived with deaf people in the dorms, and 50 of whom did not. The results of this study were mixed – and inconclusive. There were more positive attitudes towards the deaf students than negative. However, many of the students felt that the stereotypes they had entered school with had been disproven during their experiences with deaf people on campus.

Kannapell (1989) conducted a study of deaf people’s attitudes towards hearing students. She surveyed deaf students of various backgrounds about their attitudes towards hearing people, as well as their attitudes towards ASL and Deaf culture. She found that the responses were also very diverse, but generally, people who used only ASL in their daily communication felt very proud of their language and culture, and often had negative attitudes about the hearing world around them. Both the Emerton & Rothman (1975) and Kannapell (1989) studies are important because one’s perception
of who is deaf and who is hearing may be decided by recognizing a certain personality trait, and then associating that personality with deafness or hearing.

Both of these studies indicate that there are both negative and positive attitudes in both hearing and deaf populations. This may affect the perception of "deafness". For example, if a deaf person feels bias towards another person he is watching, he may decide that that person is hearing based on his quick judgment about the person's personality. This situation can also go the other way - if a hearing person decides that the person she is communicating with is deaf based on that person's personality, then the hearing person may take the role of "more prestigious" in the conversation, giving the deaf person clues that this person is indeed hearing. Other indicators of a person's hearing ability can be seen in the appearance of some deaf people, for example the use of hearing aids or cochlear implants. These indicators may contribute to the hearing person in the conversation making judgments about the deaf person based on a previous experience with deaf people, and are a factor in this experiment. Attitudes affect decisions every day, and when deaf people identify other people as deaf by watching conversations and mannerisms, attitudes and bias need to be considered. The three types of bias mentioned here only superficially cover this topic – more research is needed in this field to determine how other types of bias affect the hypothesis.

Conclusions:

This review demonstrates the ability of deaf people to differentiate between native and non-native ASL use. There is research showing a "native identification sense" which is present in many native ASL users. Kantor (1978) is one of the few
researchers who has done research that studies directly the abilities of natives to identify other native ASL users. However, the "deaf identification sense" (i.e. the ability to identify who is deaf and who is hearing by observing ASL conversations,) still has not been confirmed. If deaf people do have this sixth sense, there are many different possible ways that they can determine who is deaf and who is hearing from watching a conversation. The reason may be one or more of the above, or a combination of them all. There is also the possibility that there are other factors not discussed here that lead to the determination of who is deaf and who is hearing. Limitations of this review include the lack of proof around the theory or myth that deaf people have a "deafness identification sense." Future research needs to be done to determine to what extent deaf people have this sense, if at all. After that is concretely proven, there needs to be more research done to determine what cues deaf people use to decide who is deaf and who is hearing.

IV. Method

Research Topic/Questions

This study addresses two questions: First, do deaf people have the ability to identify other deaf people by watching conversations? And second, how certain are they of their answers?

Subjects/Participants

Nine people were chosen to participate in the interviewing process. One native signer was chosen to be the interviewer, and the other eight people were the interviewees, hereafter referred to as the "talent". The talent participants were selected
by their signing abilities. There were two deaf native ASL users, two deaf non-native ASL users (they are currently learning ASL, and have had three to five years of formal ASL training), two hearing native ASL users (Children of deaf adults, or CODAs), and two hearing non-native ASL users (they have had two to twenty years of formal ASL training). The two groups of nonnative signers were chosen to be of equivalent ASL skill. All of the talent were faculty and students from the National Technical Institute for the Deaf in Rochester, New York.

Participants who viewed the videotapes were from the Massachusetts area, ages 18 and older, hereafter referred to as the “subjects”. There were three groups of subjects: 8 deaf people, 8 hearing people who had experience with deaf people and Deaf Culture on a regular basis, and 8 hearing people without experience with deaf people and Deaf Culture on a regular basis. The subjects from the first two groups mentioned above were part of the faculty and staff of The Learning Center for Deaf Children in Framingham, MA. The Learning Center is a school that teaches deaf children in pre-kindergarten through grade 12 in a bilingual-bicultural environment. American Sign Language is used to teach all classes, and English is learned through reading and writing skills only, not through speech, Sim-Com, or any other manual English system. Classes are available to the students in Deaf History and Deaf Culture, and the school itself follows the rules of Deaf Culture. The other 8 hearing participants were engineers and scientists working at the Hanscom Air Force base in Bedford, MA, without exposure to other deaf people and Deaf culture on a regular basis, for a total of 24 subjects.
Procedure

In preparation for the experiment, the talent were videotaped in one-on-one style interviews with the same interviewer, in order to maintain consistency. Before the interviews, each participant signed a consent form (See Appendix A) explaining that they were to have a natural conversation in ASL. The interviews lasted 15-30 minutes, and covered a variety of topics such as politics, cars, sports, and social experiences. After the interviews were completed, they were reviewed, and four one and one half-minute segments were chosen from each interview. The segments were chosen to show the best use of ASL by the talent. The sections were edited onto two final tapes, which were shown to the subjects during the experiment. Each final tape had two segments from each interview, in random order, for a total of 16 segments on each tape. This was done to increase reliability within the experiment.

During the experiment, each group met separately in a comfortable environment. They signed the consent form (see appendix B) and were instructed about the response forms to complete during the viewing. (See appendix C) The subjects then watched the videotapes and filled out the response forms. The subjects were also asked later to describe how they identified the talent as deaf or hearing. After the experiment, the results were corrected, tabulated and analyzed.

V. Results

Performance of Subjects on Response Forms

Table 1 shows the percentage of correct answers given by Deaf subjects on the response forms. The Deaf subjects were able to identify native ASL signers who were deaf correctly all of the time, but were rarely able to identify non-native deaf ASL users
correctly. The results are opposite for the identification of hearing talent: the Deaf subjects almost always identified the native ASL users who were hearing as "deaf". They easily identified the non-native hearing subjects correctly 97% of the time. The interviewer, who was a native ASL signer, was identified correctly 88% of the time. (Table 1, Figure 1)

<table>
<thead>
<tr>
<th>Deaf Subjects' Correct Responses on Response Forms</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hearing status of talent</td>
</tr>
<tr>
<td>--------------------------</td>
</tr>
<tr>
<td>Deaf talent</td>
</tr>
<tr>
<td>Hearing talent</td>
</tr>
<tr>
<td>(Interviewer)</td>
</tr>
</tbody>
</table>

Table 1: Percentage of correct answers given on response forms by Deaf subjects.

Figure 1: Graph of percentage of correct answers given on response forms by Deaf subjects.

The hearing subjects with greater experience almost paralleled the Deaf group. (Table 2) These hearing subjects correctly identified the Deaf Native signers of ASL with almost 100% accuracy, and correctly identified the Deaf non-native ASL users only 13% of the time. The results are opposite for the identification of the hearing talent, but not
as strong as with the deaf subjects. The hearing subjects could identify the hearing native ASL users only 41 percent of the time, but did correctly identify the hearing non-native ASL users 56% of the time (near chance level). The interviewer was identified correctly as "Deaf" 75% of the time. (Figure 2)

<table>
<thead>
<tr>
<th></th>
<th>Native talent</th>
<th>Non-native talent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Deaf talent</td>
<td>97</td>
<td>13</td>
</tr>
<tr>
<td>Hearing talent</td>
<td>41</td>
<td>56</td>
</tr>
<tr>
<td>(Interviewer)</td>
<td>75</td>
<td></td>
</tr>
</tbody>
</table>

Table 2: Percentage of correct answers given by hearing subjects with exposure and experience with ASL.

![Graph of percentage of correct answers given by experienced hearing subjects.](image)

Table 3 and figure 3 show the percentage of correct answers given by naïve hearing subjects. These results do parallel the results of the other two groups of subjects, but are not as extreme. These subjects correctly identified the Deaf native ASL users only 72% of the time, a number significantly lower than the other two groups, and correctly identified the Deaf non-native ASL users 47% of the time, a number significantly higher than the other two groups. This last number, the 47% guessed correctly by Deaf non-native users, is still at the chance level of occurrence. These
hearing subjects could identify the hearing non-native ASL users with greater accuracy than the hearing native ASL users. They correctly identified the hearing native ASL users 50% of the time, which was more than the other two subject groups. The naïve hearing subjects identified the hearing non-native ASL users with 72% accuracy. These hearing subjects identified the interviewer correctly 63% of the time, which was lower than the other two groups. (Figure 3)

<table>
<thead>
<tr>
<th></th>
<th>Native talent</th>
<th>Non-Native talent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Deaf talent</td>
<td>72</td>
<td>47</td>
</tr>
<tr>
<td>Hearing talent</td>
<td>50</td>
<td>72</td>
</tr>
<tr>
<td>(Interviewer)</td>
<td>63</td>
<td></td>
</tr>
</tbody>
</table>

Table 3: Percentage of correct answers given by hearing subjects without exposure to ASL or Deaf Culture (naïve).

Table 4 summarizes the correct answers given by different subject groups for the native ASL users. It shows that the Deaf subjects identified the Deaf native ASL users with the highest level of accuracy, but also identified the hearing native ASL users as
"deaf" most of the time. This is shown by the low percentage of correctly identifying the hearing native signer as “hearing” (22%). The experienced hearing subjects showed the same trend as the Deaf subjects, but identified the native hearing ASL users with more accuracy than the Deaf subjects. The results from the naïve hearing group shows the same trend as the other two groups, but do not identify Deaf native ASL users with as much accuracy as the other two groups. This group does identify the hearing native talent with more accuracy than the other two groups. (Figure 4) (Note: the deaf subjects are getting fooled; hearing less so)

<table>
<thead>
<tr>
<th>Subjects' Correct Responses to Native Talent</th>
<th>Deaf</th>
<th>Experienced Hearing</th>
<th>Naive Hearing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Deaf talent</td>
<td>100</td>
<td>97</td>
<td>72</td>
</tr>
<tr>
<td>Hearing talent</td>
<td>22</td>
<td>41</td>
<td>50</td>
</tr>
<tr>
<td>(Interviewer)</td>
<td>88</td>
<td>75</td>
<td>63</td>
</tr>
</tbody>
</table>

Table 4: Percentage of correct answers given by subjects for native ASL users.
Table 5 shows the percentages of correct answers given by different subjects groups when answering about non-native talent. Notice the interviewer is not listed, due to the fact that she is a native ASL user. The results here are opposite to those seen in table 4. The Deaf subjects identified the non-native hearing talent with a high percentage of correct answers (97%). The deaf subjects recognize the Deaf non-native ASL talent with a low percentage of correct answers, correctly identifying that talent group only 28% of the time. The same is true for the experienced hearing subjects. The trend is also the same for the naïve hearing subjects, but the difference between the hearing and Deaf talent is smaller than the other two groups. (Figure 5)

<table>
<thead>
<tr>
<th></th>
<th>Deaf subjects</th>
<th>Experienced hearing subjects</th>
<th>Naïve Hearing subjects</th>
</tr>
</thead>
<tbody>
<tr>
<td>Deaf talent</td>
<td>26</td>
<td>13</td>
<td>47</td>
</tr>
<tr>
<td>Hearing talent</td>
<td>97</td>
<td>56</td>
<td>72</td>
</tr>
</tbody>
</table>

Table 5: Percentage of correct answers given by subjects for non-native ASL users.

Figure 5: Graph of percentage of correct answers given by subjects for non-native ASL users.
The deaf subjects’ identification of any talent as “deaf” was analyzed with an analysis of variance technique, and a significant result is seen. (Table 6, Figure 6) The lines of the graph are parallel, which is indicative of two additive effects influencing the answers of the deaf subjects. The two main factors analyzed were the hearing status of the talent (F=13.2, df=(1,7), p=0.0083), and the talent proficiency (F=177.7, df=(1,7) p<0.0001) (table 6).

<table>
<thead>
<tr>
<th>Hearing status of Talent</th>
<th>Native</th>
<th>Nonnative</th>
</tr>
</thead>
<tbody>
<tr>
<td>Deaf</td>
<td>4</td>
<td>1.125</td>
</tr>
<tr>
<td>Hearing</td>
<td>3.125</td>
<td>0.125</td>
</tr>
</tbody>
</table>

Table 6: Mean values of deaf subjects’ identification of the talent as “deaf” on the response form.

Figure 6: Graph of mean values of deaf subjects’ identification of the talent as “deaf” on the response form.

An analysis of the variance related to the experienced hearing group can be seen in figure 7. These results show a clear interaction between the main
effects of the results, the talent proficiency and the hearing status of the talent. (F(1,7)=37.3 for talent proficiency, and F(1,7)=56.5 for the hearing status of talent) (table 7)

<table>
<thead>
<tr>
<th></th>
<th>Native</th>
<th>Nonnative</th>
</tr>
</thead>
<tbody>
<tr>
<td>Deaf</td>
<td>3.875</td>
<td>0.5</td>
</tr>
<tr>
<td>Hearing</td>
<td>2.375</td>
<td>1.75</td>
</tr>
</tbody>
</table>

Table 7: Mean values of experienced hearing subjects’ identification of the talent as “deaf” on the response form.

![Figure 7: Graph of mean values of experienced hearing subjects' identification of the talent as "deaf" on the response form.](image)

The analysis of variance results for the identification of subjects as “deaf” by the naïve hearing group stayed close to chance levels when the talent proficiency was analyzed (F(1,7)=18.7, p=0.0035) These results were not significant, but there are parallel lines seen on the graph of these results (figure 8), which indicates that the subjects in the naïve hearing groups are slightly sensitive to the level of sign skill seen in the talent. (table 8)
Table 8: Mean values of naïve hearing subjects’ identification of the talent as "deaf" on the response form.

Confidence Levels of Subjects

Confidence levels were averaged for each group. The results are shown in tables 9-12 and figures 9-12. The confidence levels were measured by questions on the survey, which asked the subjects to circle their confidence levels of each answer. The scale was measured from 1 to 5, with 1 representing the lowest level of confidence, and 5 representing the highest level of confidence in each answer.
Table 9 shows the confidence level of the subjects who answered correctly on the response forms. When combined, the overall confidence level for the correct answers on the survey was highest in deaf subjects. The only talent group that was different was the hearing non-native group, in which all subjects, deaf and hearing, were equally confident in their answers. (Figure 9)

<table>
<thead>
<tr>
<th></th>
<th>D</th>
<th>H</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dn</td>
<td>4.5</td>
<td>3.5</td>
</tr>
<tr>
<td>Dnn</td>
<td>3.1</td>
<td>2.9</td>
</tr>
<tr>
<td>Hn</td>
<td>2.9</td>
<td>2.8</td>
</tr>
<tr>
<td>Hnn</td>
<td>3.8</td>
<td>3.8</td>
</tr>
<tr>
<td>I</td>
<td>4.4</td>
<td>4</td>
</tr>
</tbody>
</table>

D = deaf subjects  
Dn = Native signer – deaf talent  
Dnn = non-native signer – deaf talent  
Hw = experienced hearing subjects  
Hn = native signer – hearing talent  
H = hearing subjects  
Hnn = non-native signer – hearing talent  
I = interviewer  

Table 9: Confidence level of subjects who answered correctly on survey, deaf vs. hearing.

Figure 9: Graph of confidence level of subjects correct answers on survey, deaf vs. hearing.
Table 10 and figure 10 show that although the deaf subjects had the most confidence in all their correct answers, the experienced hearing subjects had more confidence in their answers than the naïve hearing subjects when answering correctly. The only exception to this is in the deaf non-native talent group, where the naïve hearing subjects are slightly more confident in their answers than the other hearing group.

<table>
<thead>
<tr>
<th></th>
<th>D</th>
<th>Hw</th>
<th>Hw/o</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dn</td>
<td>4.5</td>
<td>3.5</td>
<td>3.4</td>
</tr>
<tr>
<td>Dnn</td>
<td>3.1</td>
<td>2.8</td>
<td>3.3</td>
</tr>
<tr>
<td>Hn</td>
<td>2.9</td>
<td>2.8</td>
<td>2.7</td>
</tr>
<tr>
<td>Hnn</td>
<td>3.8</td>
<td>4.1</td>
<td>3.5</td>
</tr>
<tr>
<td>I</td>
<td>4.4</td>
<td>4.2</td>
<td>3.8</td>
</tr>
</tbody>
</table>

D = deaf subjects
Hw = experienced hearing subjects
Hw/o = naïve hearing subjects
H = hearing subjects

Table 10: Confidence level of subjects' correct answers on survey.

Figure 10: Graph of confidence level of subjects when answering correctly on survey.
In table 11 and figure 11, the confidence levels of the subjects when answering incorrectly on the survey are shown. If we compare the deaf and the hearing subjects, we see that the deaf subjects are more confident in their wrong answers than the hearing subjects are, except when deciding on the deaf non-native talent. When deciding about the native hearing talent group, both deaf and hearing subjects are equally confident in their incorrect answers. Note that there is only one bar on the first portion of figure 11 because there were no incorrect answers given by the deaf subjects for the native deaf talent group.

<table>
<thead>
<tr>
<th></th>
<th>D</th>
<th>H</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dn</td>
<td>0</td>
<td>3.3</td>
</tr>
<tr>
<td>Dnn</td>
<td>3.6</td>
<td>3.8</td>
</tr>
<tr>
<td>Hn</td>
<td>3.8</td>
<td>3.8</td>
</tr>
<tr>
<td>Hnn</td>
<td>3</td>
<td>2.6</td>
</tr>
<tr>
<td>I</td>
<td>5</td>
<td>4</td>
</tr>
</tbody>
</table>

D = deaf subjects  
Dn = Native signer – deaf talent  
Dnn = non-native signer – deaf talent  
Hw = experienced hearing subjects  
H = hearing subjects  
Hn = native signer – hearing talent  
Hnn = non-native signer – hearing talent

Table 11: Confidence level of subjects when answering incorrectly on survey, deaf vs. hearing.

Figure 11: Graph of confidence level of subjects when answering incorrectly on survey, deaf vs. hearing.
For all talent groups, the naïve hearing subjects were the least confident in their incorrect answers. (Table 12) The deaf subjects were less confident in their incorrect answers when deciding on the deaf non-native and native hearing talent than the experienced hearing subjects were. This is probably connected to their incorrect identification of those groups. The deaf subjects and experienced hearing subjects were equally confident in their incorrect decision about the hearing non-native talent. The deaf subjects were more confident in their incorrect analysis of the interviewer’s hearing level than both the hearing groups of subjects, who were equally confident in their answers. (Figure 12) Note that in the first bars on Figure 16, there is no bar for the deaf subjects. This is because there were no incorrect answers given for the native deaf talent group by the deaf subjects.

<table>
<thead>
<tr>
<th>D</th>
<th>Hw</th>
<th>Hw/o</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dn</td>
<td>0</td>
<td>3.4</td>
</tr>
<tr>
<td>Dnn</td>
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<td>3.8</td>
</tr>
<tr>
<td>Hn</td>
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<td>2.9</td>
</tr>
<tr>
<td>I</td>
<td>5</td>
<td>4</td>
</tr>
</tbody>
</table>

D = deaf subjects
Hw = experienced hearing subjects
Hw/o = naïve hearing subjects
H = hearing subjects
Dn = Native signer – deaf talent
Dnn = non-native signer – deaf talent
Hn = native signer – hearing talent
Hnn = non-native signer – hearing talent

Table 12: Confidence levels of incorrect answers of subjects on survey.
Figure 12: Confidence level of subjects when answering incorrectly on survey.

Figure 13 and Table 13 show the overall average confidence levels during the experiment. The confidence levels for both correct and incorrect answers for all subjects are almost identical.

<table>
<thead>
<tr>
<th>hearing status of talent</th>
<th>confidence level</th>
</tr>
</thead>
<tbody>
<tr>
<td>D</td>
<td>3.4</td>
</tr>
<tr>
<td>Hw</td>
<td>3.6</td>
</tr>
<tr>
<td>Hw/o</td>
<td>3.7</td>
</tr>
</tbody>
</table>

Table 13: Average Confidence Levels of all subjects.
An analysis of variance indicates that there are two significant differences in the confidence levels of any group of subjects. Results analyzed included the hearing status of the talent \( F(2,21)=4.4, p=0.0257 \). Subjects were more confident identifying the deaf native talent than the hearing native talent, and subjects were also more confident when identifying non-native hearing than non-native deaf. The ASL proficiency of the talent was also analyzed \( F=(2,21), p=0.0147 \). The more ASL skill extremes (either native or very non-native skills) displayed by the talent, the more confidence the subjects displayed in their answers.

VI. Discussion

The results show that deaf people do have greater ability to identify other deaf native ASL users than hearing people. The deaf subjects also identified non-native hearing people as hearing with higher accuracy than the hearing subjects. (Figures 1-3, tables 1-3) However, deaf subjects were fooled by talent that went against their
The apparent hypothesis that deaf people are skilled in ASL and hearing people are not.

(Figures and Tables 4-5) This indicates that the deaf subjects are using linguistic cues as one of the main factors in determining hearing status, especially the level of signing ability. The statistical results in figures 6, 7, & 8 and tables 6, 7, & 8 show that the deaf subjects were more correct about deaf talent than about the hearing talent groups. The statistical results in figures 6, 7, & 8 indicate that the level of ASL used by the talent, hearing or deaf, was a major component of the identification of the talent.

The results in table and figure 7 cannot be fully interpreted – there is interference with the experienced hearing subjects that may be a result of a number of factors. Basically, we can conjecture that the experienced hearing subjects are forming a global impression based on some subconscious process that integrates the ASL behavior and the "deaf" behavior. Non-native like skills of a deaf person suggest hearing skills, and thus a hearing person. So the congruent groups are the native deaf and non-native deaf, because native deaf act deaf and sign well; non-native deaf act hearing and sign poorly. Native hearing talent sign like deaf people, and have deaf mannerisms, but also have hearing mannerisms, so the experienced subjects become confused. Non-native hearing talent act hearing but have some some ASL skills, so they are easily identified as hearing. It seems that experienced hearing subjects sense that non-native deaf talent are deaf, but override that decision based on ASL skill level. This also can be seen occurring with the deaf subject group, but it appears that the deaf subjects are better at determining who is truly deaf – there is no interference in the significant results seen in figure 6. It also appears that the naïve hearing subjects were guessing at their answers – they scored below a reliable level in table 8. This strengthens the hypothesis that
linguistic cues were used - the naïve subjects did not have any linguistic background in ASL, and therefore had no reliable way to obtain the correct answer. These results are in agreement with Christie’s (1990) findings that native users of ASL who are deaf may develop the ability to identify deaf and hearing people who are non-native signers and instinctively match their signing levels in conversations. Christie’s hypothesis is also supported in figures and tables 4 and 5, where all three groups of subjects can be seen. The subjects who had experience with ASL and Deaf Culture (the deaf subjects and one group of hearing subjects) answered the same way: they identified the native deaf talent more accurately than the naïve hearing subjects, but did not identify the native hearing talent as accurately as the naïve hearing group. In figure 13 and table (13), the confidence levels of both correct and incorrect answers (which were almost identical) also support Christie’s results.

These results suggest that one major indicator that the subjects were using was, in fact, the level of signing. If the talent demonstrated a lower level of ASL skill, then the subjects who knew about ASL assumed that that talent was hearing. If the talent demonstrated that they knew ASL at a native level, they were assumed to be deaf by the subjects. These results coincide with Kantor’s study (1978), where she found that “...the deaf judges [were better able to identify than hearing judges], the native vs. L-2 factor”. The deaf and experienced hearing subjects in my study were apparently watching for the “nativeness” of the signer.

The statistical data found in figures and tables 6 – 8 allows for many different hypotheses about why the deaf and hearing subjects identified the talent the way they did. As seen in the data, there is an obvious link to language level used by the talent. Figure 6 shows that there are two effects which influence deaf subjects to identify the
talent as deaf. One of these is obviously the linguistic skill of the talent, seen because the deaf subjects were fooled by the native hearing talent. (table 6, figure 6) However, because the graph in figure 6 shows that there are significant differences between the parallel lines in figure 6, that there must be an additive effect of both of the main factors analyzed in the results. (there is no significant interaction, only main effects, hence the parallel lines) One factor was linguistic skill, or ASL proficiency. The other factor used in the results was the hearing status of the talent. So, the deaf subjects did use another indicator besides linguistic skill in their identification process of the talent. This is where the possibilities open up - many other factors, such as facial expression, and personal bias, to name a few, could have been used to identify the talent as hearing or deaf. One can hypothesize that those subjects who were more experienced with ASL (the deaf and experienced hearing subject groups) used more linguistic factors than the naïve group, who were unfamiliar with the levels of ASL used in the videotape by the talent.

**Debriefing:**

At the end of the experiment, subjects were asked what indicators they used to determine who was deaf and who was hearing in the videotapes. (See the procedure section for a more detailed description) Besides the level of ASL vocabulary and grammar structure used (to determine the level of ASL used), the facial expressions, the mouth movements, or the hand placement during the “rest” times were ideas suggested by subjects as to how they were identifying talent.

One indicator used was the level of anxiety seen in the talent. This was one of the reasons cited by many of the naïve hearing subjects. Figure and table 8 both show the analysis of variance for the naïve hearing subjects when identifying talent as “deaf”. Although the results are not significant, it seems that there is a pattern which parallels
the deaf subjects' identification of the talent as "deaf" (figure & table 6). This insignificant pattern may be due to the identification of who appeared nervous or hesitant in their answers on the videotapes as "hearing". This would include both of the non-native talent groups (deaf and hearing), which would parallel the linguistic skill of the talent, one of the major factors used by the deaf subjects to identify talent as "deaf". If the person was very insecure, or hesitated and struggled with putting his thoughts into ASL, the person was assumed to be hearing.

This anxiety factor has been previously studied in other foreign languages, where the learners of a language often felt intimidated when conversing with native speakers of the language. (Bailey (1980) and Lambert (1958)) The interviewer in the experiment for this paper was a native deaf ASL user, and some of the subjects felt that certain people in the talent group were intimidated by that fact. This intimidation theory relates to the previous theory discussed - the subjects were using the level of ASL skill to determine who was deaf and who was hearing in the videotapes. If the talent's ASL skill level was high, then s/he appeared more comfortable with the interviewer, since she probably had more experience conversing with native ASL users, and was therefore labeled "deaf" by the subjects.

Another interesting idea was suggested by the subjects who have had experience with ASL and Deaf Culture (both deaf and hearing). When asked how they identified talent, many replied that they knew a person from their past who had similar personality traits, a similar signing style, or looked like the person who was on the videotape (what we might call the Miss Marple theory; see for example, A. Christie, The Thirteen Problems; Miss Marple was a protagonist in a number of novels and stories, who solved mysteries by showing parallels between the perpetrator and people she
knew at home). These indicators helped the subjects identify that specific talent with having the same hearing status as the person they knew from an outside situation. This familiarity factor can be linked to Kannapell’s (1989) research, along with that of Emerton and Rothman (1975). Both of these studies identified attitudes towards deafness and hearing by both hearing and deaf people. It appears that there is a connection to prior experiences with deaf and hearing ASL users and the identification of new contacts as deaf or hearing. The present experiment did not investigate the familiarity connection in depth, and therefore the possibility of this connection needs to be studied further in future research.

Fischer (1978) and Stokoe (1969) both discussed the re-creolization of ASL generation by generation, due to the circumstances that most deaf people are born into. These articles, as well as others by Stokoe, Casterline, & Croneberg, (1965), Padden & Humphries, (1988), and Fischer, (1998), have proven that ASL is a language, and documented the language and its importance to the Deaf community. It is interesting to note that the results from the experiment in this paper show that deaf people can identify native and non-native ASL use, although they often mistake hearing native ASL users for deaf native ASL users and non-native deaf ASL users for hearing non-native ASL users. These results indicate that a more standardized form of ASL may be emerging, perhaps due to the re-emergence of ASL use in schools for the Deaf late in the twentieth century (Strong, 1995), as well as the development of textbooks for teaching. ASL has gained popularity in recent years. This increase in popularity can be seen in a recent article in the Chronicle of Higher Education, which reported that the study of ASL is offered in more universities today than ever before, and more and more hearing students in these universities are becoming interested in learning ASL. (Prime Numbers,
1999) The increased interest and learning of ASL may have led to a more standardized form of ASL, which now can be identified by other native users of the language. The re-creolization process may be diminishing as the popularity and knowledge of the standard form of ASL is used in schools for the Deaf.

Another interesting result from this study was the connection between correct or incorrect answers and the level of confidence in those answers. It can be seen in figure 9 and table 9 that the deaf subjects had a slightly higher level of confidence in their correct answers than both of the hearing groups did. They also had a higher confidence level for incorrect answers, suggesting that they indeed believe in the Deaf Identification Sense. When the hearing groups are separated by experience level, the only group with consistently lower confidence levels in their correct answers is the naïve hearing group. (Table & Figure 10) This lower confidence level makes sense, because the naïve hearing group would have the least amount of background information to use for their answers. The same is true for the incorrect answers, shown in tables and figures 11 & 12. It is important to note that none of the results for the confidence levels of any groups was significantly different than the other two groups.

Future research needs to be done to explain these results fully. My original idea in proposing this project was to assume that the deaf identification sense existed, and then to examine the cues that Deaf people pay attention to in deciding that someone is deaf. The evidence presented in this study suggests that experienced ASL users, both deaf and hearing, use the level of ASL produced to determine if a person is deaf or hearing. However, the statistical results in figure and table 6 show that deaf people do have other factors that they use to identify other deaf people, and that they do identify deaf people with more accuracy than hearing people, both experienced and naïve. The
experienced hearing subjects appear to have a knowledge of this "sense", but do not always know when or how to use it to identify others as deaf or hearing correctly. These cues that deaf people use to identify deafness in others remains a mystery. Most of the studies focused on in this paper give evidence to support the cues that may indicate to the deaf person who is hearing and who is deaf. A few possibilities have been discussed here, as indicated by the subjects, but there are many possible reasons that have not yet been discovered. Another factor not discussed here was the exact levels of ASL, and where the border lies between native and non-native ASL skill. These exact cues that lead to the classification of "levels" of ASL need to be discovered.

More research also needs to be done to determine if the re-creolization effect is still occurring, at what rate is it occurring, and if there is a more standardized form of ASL used in America today, as compared to the earlier part of the twentieth century. If there is a decrease in the creolization effect seen, then the reasons behind this decrease need to be identified so that ASL can continue to have a more standardized form. An increase may be due to the recent increased use of ASL in schools for the deaf around the country, or other reasons not mentioned here.

Notes:

1 It is important to note that in my experiment, this was not a factor. The deaf people in the videotapes were asked to remove their hearing aids or any other visual indicator that they were deaf, so this could not be a factor in this experiment.

2 Although visual abilities may not be enhanced in deaf people, visual attention may well be.
VII. References


Acknowledgements

I greatfully acknowledge the assistance of my mentor, Susan Fischer in providing extensive advice and support on this project. I am also indebted to Vince Samar, who calculated all of the ANOVA statistics used in this paper. I am grateful to the staff and faculty of the Master of Science in Secondary Education Program at the National Technical Institute for the Deaf at the Rochester Institute of Technology for their support throughout a challenging program and final project, especially the program coordinator, Gerald Bateman. I would also like to thank the participants in this study. And, of course, my family, especially my fiance, Dave. Without your support, this project would not be successful.
Appendix A: Agreement to be a Subject in Research

Principal Investigator: Sarah Bienias

This research will help us to understand aspects of American Sign Language. I hope this research will open a new area of research about deafness identification, and will be built upon by different researchers in the future.

I will ask you to have a natural ASL conversation while being videotaped. I want you to use your sign skills to the best of your ability, and chat with the other person in the room.

The only risk in your participation is that you may feel awkward about being videotaped. Information will be kept confidential.

This information is correct to the best of my knowledge, and I promise that you can stop working on this research project at any time without penalty.

Date: ___________________________  ___________________________  Signature of Principal Investigator

I understand this agreement and the risks involved. I understand what I will do for this project and the purposes of the research.

I know that I can stop working on this research if and when I want to. I agree to participate in this research. I am 18 years old or older.

Date  ___________________________  X  ___________________________  Signature of Subject

When the results of this research are published or presented:

I prefer to be thanked by name ___________________________

I prefer to remain anonymous ___________________________
Appendix B:
Agreement to be a Subject in Research

Principal Investigator: Sarah Bienias

This research will help us to understand if deaf people are able to identify other deaf people by observing their conversations. I will compare these results with hearing subjects, and see if there is a difference in the identification abilities of deaf and hearing people. I hope this research will open a new area of research about deafness identification, and will be built upon by different researchers in the future.

I will ask you to watch a videotape of different people having ASL conversations. I will ask you to fill out a form, where you tell me if you think the person is hearing or deaf, and to indicate how certain you are about your answer.

The only risk in your participation is that you may feel awkward about filling out the form, and uncertain about your answers. All names will be kept confidential.

This information is correct to the best of my knowledge, and I promise that you can stop working on this research project at any time without penalty.

Date: ____________________________  Signature of Principal Investigator

I understand this agreement and the risks involved. I understand what I will do for this project and the purposes of the research.

I know that I can stop working on this research if and when I want to. I agree to participate in this research. I am 18 years old or older.

Date ______________  X ____________________________  Signature of Subject

When the results of this research are published or presented:

I prefer to be thanked by name ____________________________
I prefer to remain anonymous ____________________________
Appendix C

Video Survey

Please fill out form completely. You will watch a videotape of eight different conversations in ASL. Below, fill out if you think the person (pointed out by the tester) in each conversation is hearing or deaf, and how certain you are of your answer. Do not write your name on this form.

If you have any questions, please ask the tester.

Conversation #1

Do you think this person is deaf or hearing? (Circle one)

DEAF HEARING

On a scale of 1 to 5, where 1 is the least certain, and 5 is the most certain, how certain are you of your answer? (Circle a number)

least certain 1 2 3 most certain 4 5

Conversation #2

Do you think this person is deaf or hearing? (Circle one)

DEAF HEARING

On a scale of 1 to 5, where 1 is the least certain, and 5 is the most certain, how certain are you of your answer? (Circle a number)

least certain 1 2 3 most certain 4 5
Conversation #3

Do you think this person is deaf or hearing? (Circle one)

DEAF     HEARING

On a scale of 1 to 5, where 1 is the least certain, and 5 is the most certain, how certain are you of your answer? (Circle a number)

least certain 1 2 3 4 5

Conversation #4

Do you think this person is deaf or hearing? (Circle one)

DEAF     HEARING

On a scale of 1 to 5, where 1 is the least certain, and 5 is the most certain, how certain are you of your answer? (Circle a number)

1 2 3 4 5

Conversation #5

Do you think this person is deaf or hearing? (Circle one)

DEAF     HEARING

On a scale of 1 to 5, where 1 is the least certain, and 5 is the most certain, how certain are you of your answer? (Circle a number)

least certain 1 2 3 4 5
Conversation #6

Do you think this person is deaf or hearing? (Circle one)

DEAF          HEARING

On a scale of 1 to 5, where 1 is the least certain, and 5 is the most certain, how certain are you of your answer? (Circle a number)

least certain      most certain
1  2  3  4  5

Conversation #7

Do you think this person is deaf or hearing? (Circle one)

DEAF          HEARING

On a scale of 1 to 5, where 1 is the least certain, and 5 is the most certain, how certain are you of your answer? (Circle a number)

least certain      most certain
1  2  3  4  5

Conversation #8

Do you think this person is deaf or hearing? (Circle one)

DEAF          HEARING

On a scale of 1 to 5, where 1 is the least certain, and 5 is the most certain, how certain are you of your answer? (Circle a number)

least certain      most certain
1  2  3  4  5
Conversation #9

Do you think this person is deaf or hearing? (Circle one)

DEAF HEARING

On a scale of 1 to 5, where 1 is the least certain, and 5 is the most certain, how certain are you of your answer? (Circle a number)

least certain 1 2 3 most certain 4 5

Conversation #10

Do you think this person is deaf or hearing? (Circle one)

DEAF HEARING

On a scale of 1 to 5, where 1 is the least certain, and 5 is the most certain, how certain are you of your answer? (Circle a number)

least certain 1 2 3 most certain 4 5

Conversation #11

Do you think this person is deaf or hearing? (Circle one)

DEAF HEARING

On a scale of 1 to 5, where 1 is the least certain, and 5 is the most certain, how certain are you of your answer? (Circle a number)

least certain 1 2 3 most certain 4 5
Conversation #12

Do you think this person is deaf or hearing? (Circle one)

DEAF  HEARING

On a scale of 1 to 5, where 1 is the least certain, and 5 is the most certain, how certain are you of your answer? (Circle a number)

least certain  1  2  3  4  5

most certain

Conversation #13

Do you think this person is deaf or hearing? (Circle one)

DEAF  HEARING

On a scale of 1 to 5, where 1 is the least certain, and 5 is the most certain, how certain are you of your answer? (Circle a number)

least certain  1  2  3  4  5

most certain

Conversation #14

Do you think this person is deaf or hearing? (Circle one)

DEAF  HEARING

On a scale of 1 to 5, where 1 is the least certain, and 5 is the most certain, how certain are you of your answer? (Circle a number)

least certain  1  2  3  4  5

most certain
Conversation #15

Do you think this person is deaf or hearing? (Circle one)

   DEAF       HEARING

On a scale of 1 to 5, where 1 is the least certain, and 5 is the most certain, how certain are you of your answer? (Circle a number)

   least certain   most certain
   1    2    3    4    5

Conversation #16

Do you think this person is deaf or hearing? (Circle one)

   DEAF       HEARING

On a scale of 1 to 5, where 1 is the least certain, and 5 is the most certain, how certain are you of your answer? (Circle a number)

   least certain   most certain
   1    2    3    4    5

The interviewer

Do you think this person is deaf or hearing? (Circle one)

   DEAF       HEARING

On a scale of 1 to 5, where 1 is the least certain, and 5 is the most certain, how certain are you of your answer? (Circle a number)

   least certain   most certain
   1    2    3    4    5

Thank you for your participation! 😊