Problems

(1) No standards for talker characteristics on Public Announcement Systems.

- Consequently common Public Announcement systems can often be difficult to understand

(2) Low Speech Intelligibility

- What is speech intelligibility?
- What factors can degrade intelligibility?
  - *Focus: words/minute, pitch, duration.*
- How can we maximize speech intelligibility?

Solution

(1)Longer messages should be broken into shorter messages.

- When not feasible, longer messages should be spoken at slow speaking rates.

(2)For shorter messages, slow or neutral speaking rates should be used.

(3)IPRO 343 Showed that pitch had no significant impact on speech intelligibility, and therefore has no suggestion, as long as frequency is maintained within the boundaries of normal speech.

APPLICATIONS

- **Transportations:** With the need of critical messages being played on a day-to-day basis, a standard needs to be created in order to ensure intelligibility.
- **School Systems:** Public address systems.
- **Audible Advertisements:** Intelligible messages don't only apply to safety and security announcements, waiting in line at the grocery store while ads play on the mini screens is another application. Intelligibility is important to make sure consumers get the full message of a product.

References

- Lockyer, Norman. Nature. Vol. 214. Ann Harbor, Michigan: Nature Publishing Group, 1967.
- Lockyer, Norman. Nature. Vol. 226. Ann Harbor, Michigan: Nature Publishing Group, 1970.
- Dubbelboer F, Houtgast T. Department of Otolaryngology, VU Medical Center, Amsterdam, The Netherlands. 2007 Nov

IPRO It takes a team!

INTERPROFESSIONAL PROJECTS PROGRAM

IPRO343

IMPROVING COMMUNICATION QUALITY IN NOISY& DISTRACTING ENVIRONMENTS

IPRO Day
Spring 2009

Team Structure

Dr. Matthew Bauer
Instructor

Halcyon Lawrence
Teaching Assistant

Co-Team Leaders

Shavanna Pinder
Final Report

Kevin Arnold
Recording

Sub-team Roles

Hyemin Choi
Exhibit

Scott Justus
Presentation

Brian Bjerke
Experiment Admin.

Crystal Reynolds
Midterm Report

Justo Moraga
Experiment Materials

Jessie Bauer
Data Analysis

Nor Tanapura
Project Plan/IRB

Karen Hong
Recruitment

Phases

Preparation
Project Plan/IRB
Recording/Analysis
Midterm Presentation

Experiment
Recruitment
Materials
Administration

Culmination
IPRO Day – Exhibit
Final Report
IPRO Day – Presentation

Experiment Process

A. Participants

All participants of the experiment were IIT students. The team recruited 77 participants, and among these participants, there was a mix of non-native and native speakers of English. All participants were compensated with pizza and refreshments after the experiment.

B. Stimuli

Synthesized recordings were used as the stimuli of the experiment. These synthesized recordings were composed of 8 shapes, 8 colors, and 4 directions.

- Triangle, diamond, square, circle, star, cross, heart and oval.
- Yellow, blue, black, orange, red, white, green, and purple.
- Up, down, left, and right.

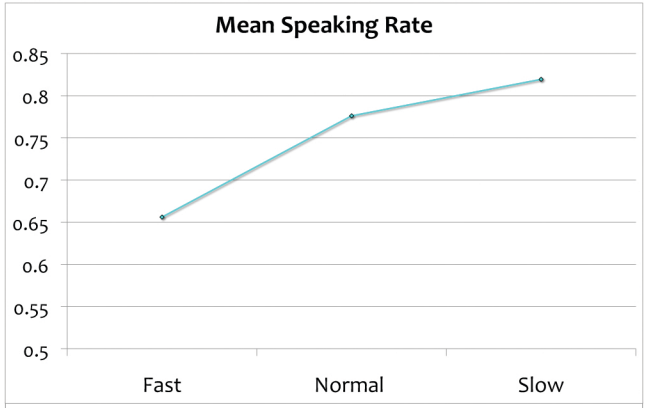
The recordings were manipulated to fit the following variables:

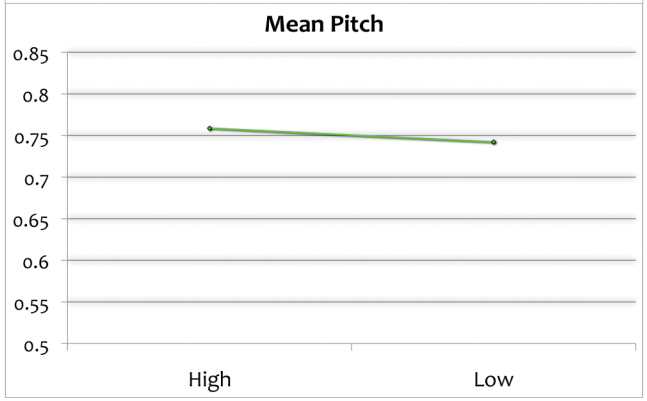
Duration	Pitch	Rate
S: short	H: High	S: Slow
L: Long	L: Low	N: Neutral
		F: Fast

C. Devising the Experimental Procedure

The stimuli were ordered using excel's random feature, after the recordings were modified according to one of 12 combinations of duration, pitch, and rate. Recordings were modified using PRAAT.

Analysis





- Results for duration show that shorter messages have higher levels of intelligibility.
- Results for speaking rate show that the slower the speaking rate the better the intelligibiligy.
- As for pitch, it cannot be said that pitch has a significant impact on speech intelligibility.