Multisensory Pre-Alarm System for Physicians

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Mystery Machine

Oral Report 3
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What’s the Problem?

Problem Statement

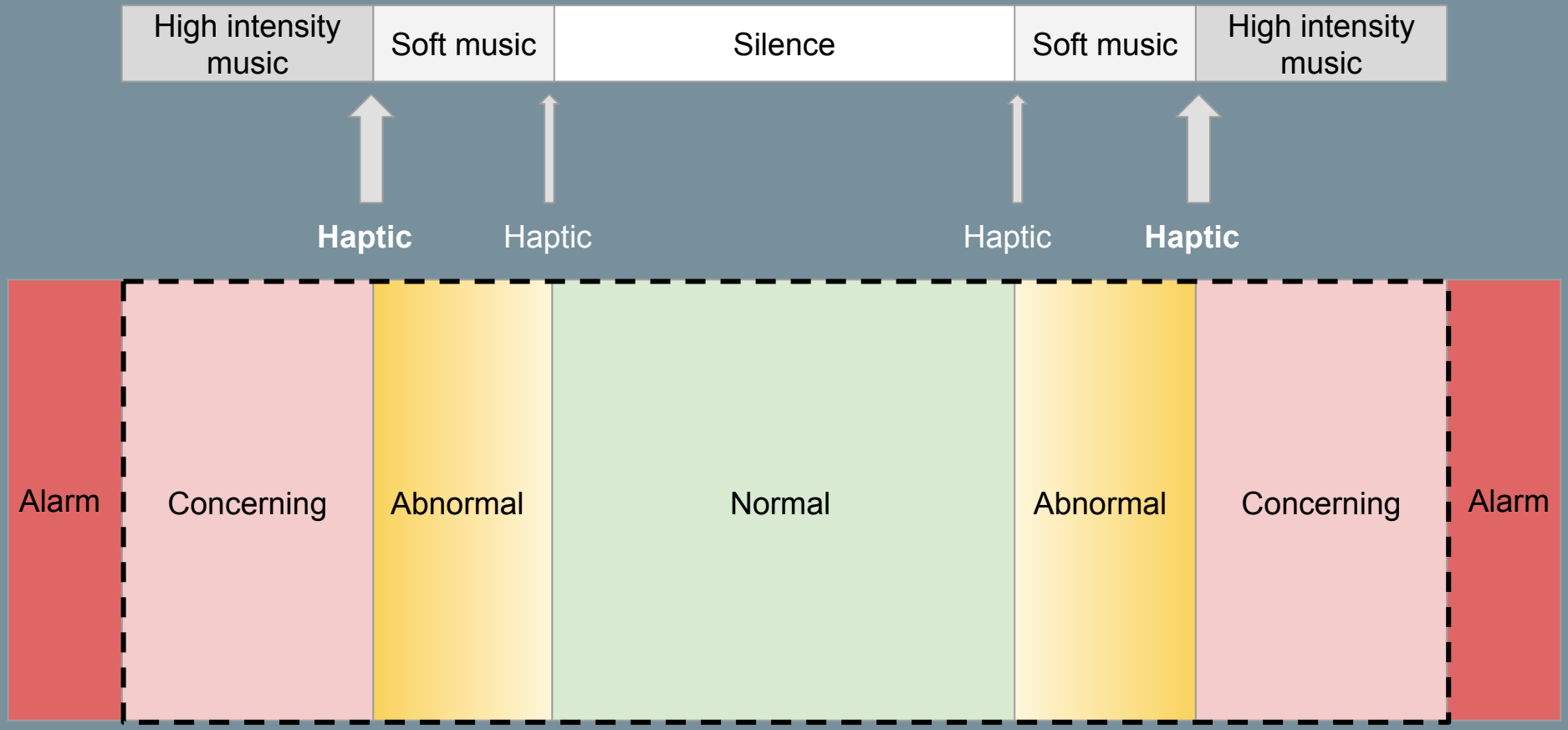
- Too many distracting alarms and sounds in Intensive Care Units
- Only 23% of ICU alarms go off correctly
- Leads to patient and physician fatigue
  - Snoozing alarms
  - Patient distress
- No differentiation between different parameters

Needs Assessment

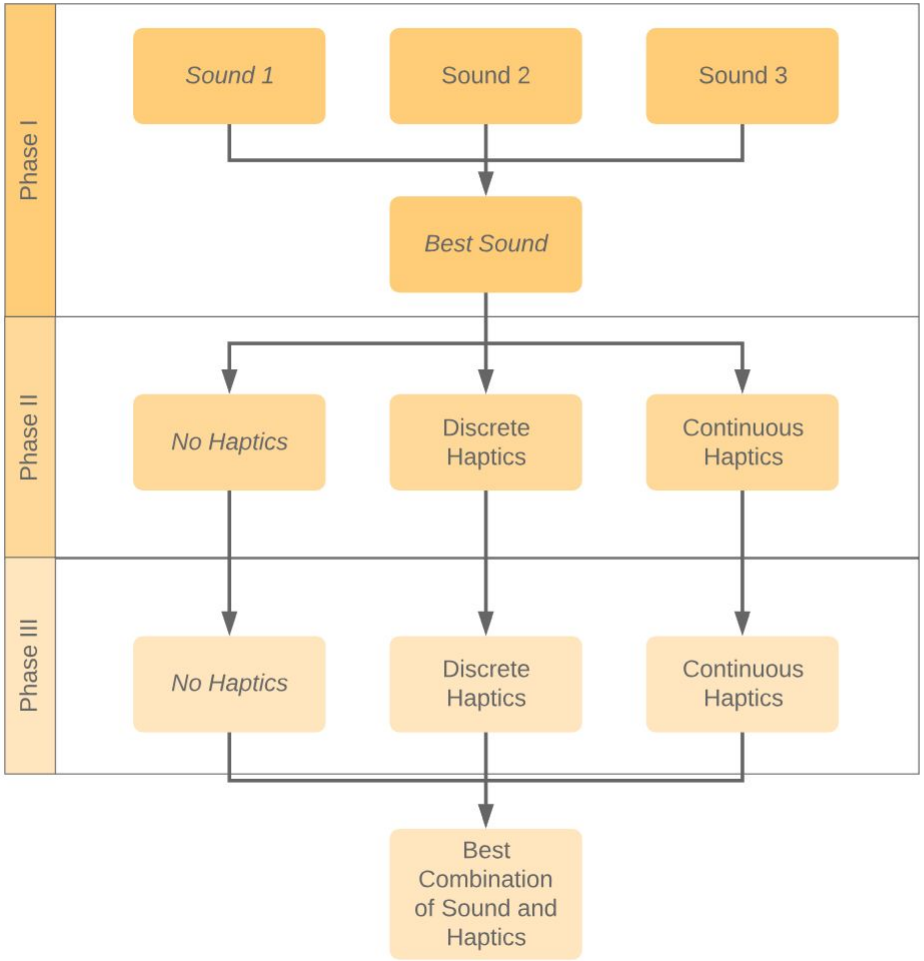
- **UX**
- Patient Efficacy
- Safety
- Hospital System Efficiency
- **Technical Needs**

Updates

1) IRB
2) High level study plan
3) Test script



*Additional haptic when change in secondary patient's vitals


Phase I
Sound 1
Sound 2
Sound 3
Best Sound
Phase II
No Haptics
Discrete Haptics
Continuous Haptics
Phase III
No Haptics
Discrete Haptics
Continuous Haptics
Best Combination of Sound and Haptics

Study Plan: Action Items

Phase I:
Sounds

Phase II:
Haptics

Phase III:
Extinction

Study Plan: Action Items

Accuracy

Response Time

Comfort

Discernibility

Phase I: Sounds

Phase II: Haptics

Phase III: Extinction

Study Plan: Action Items

MATLAB Data Collection

Comfort

Discernibility

Phase I:
Sounds

Phase II:
Haptics

Phase III:
Extinction

Study Plan: Action Items

MATLAB Data Collection

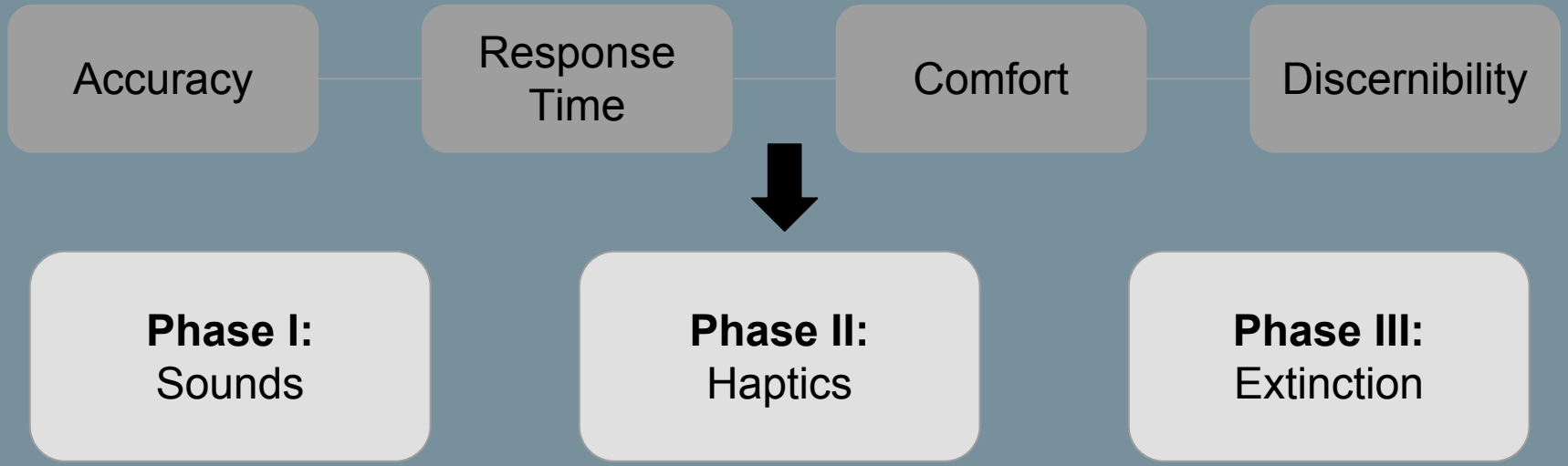
Post-Study Survey

Phase I:
Sounds

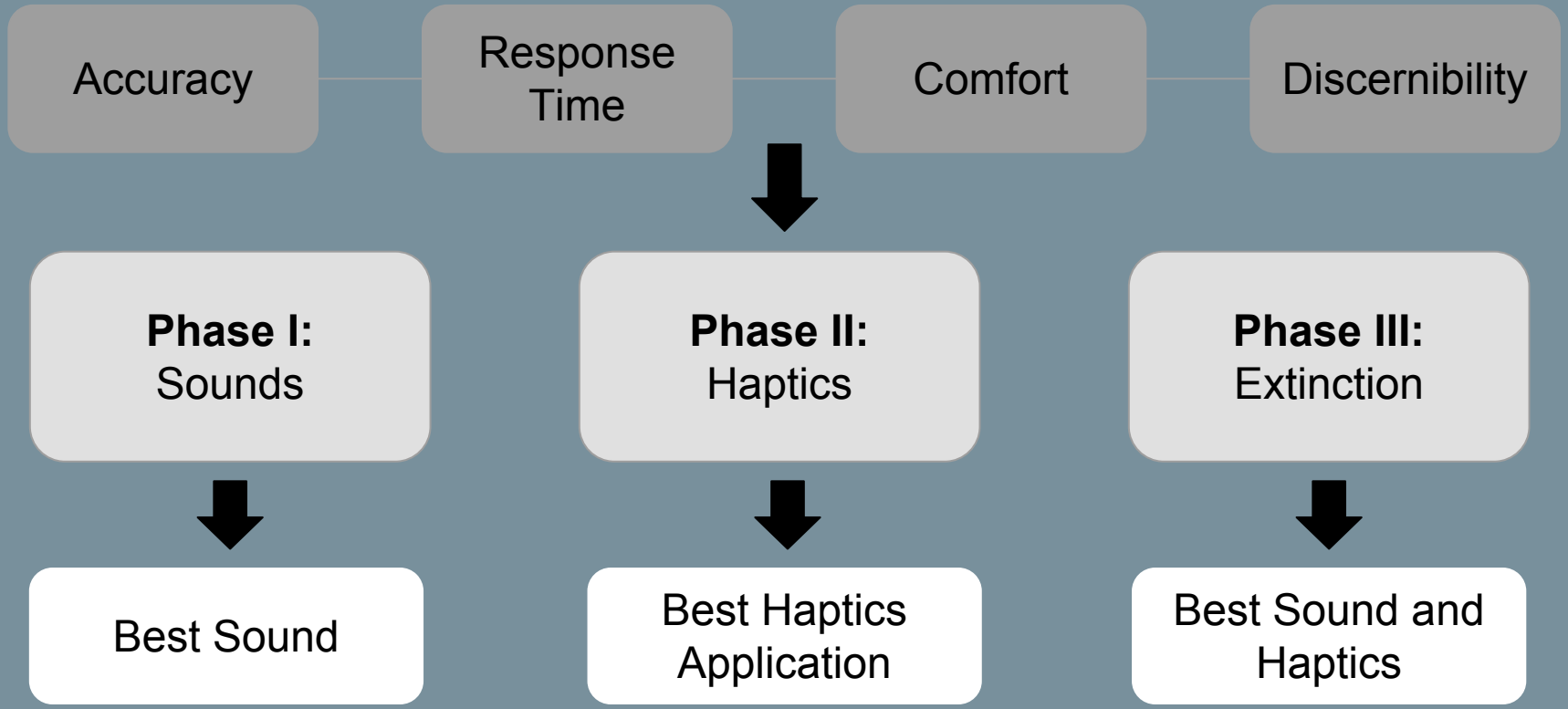
Phase II:
Haptics

Phase III:
Extinction

Study Plan: Action Items



Study Plan: Action Items

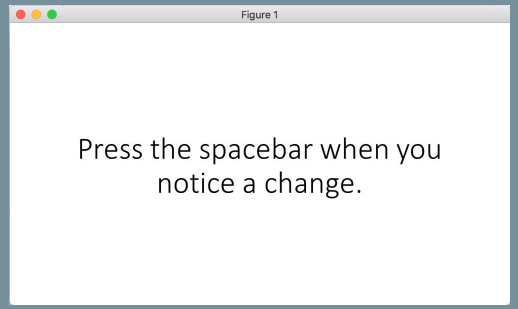


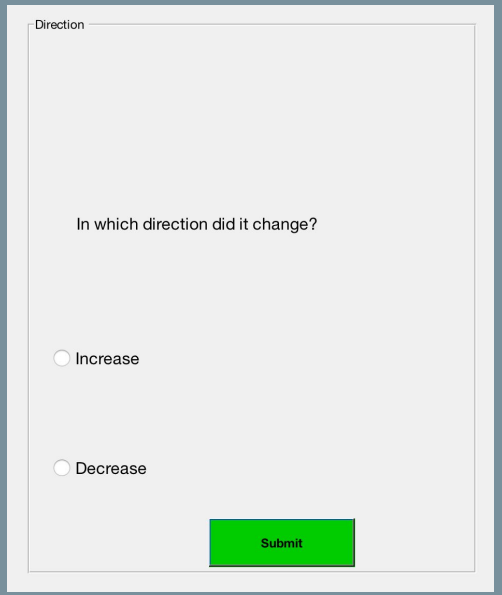
Study Plan: Materials Needed

- 30 participants
- Interactive user interface
  - System of buttons
  - iPad/tablet
- Quiet, controlled environment
- Basslet haptuator
- TREKZ Titanium by AfterShokz bone conduction headset

MATLAB Test Script: Current Working Version

- Investigated study script from last year
  - Survey
  - Teaching
  - Test--four blocks
- Ensured haptic and audio components run





MATLAB Test Script: Changes to be Made

- Add in new files
- No survey component
- More in depth training/teaching (whether or not it is in MATLAB simulation)
- Same model for automatic file writing
- Similar model for different blocks
- Buttons/User input

Next Steps

- Solidify initial study by 2/18
  - Determine haptic actuator use
  - MATLAB scripts
- Create second iteration of sounds
- Create adequate training materials
  - Educational Sounds/Script
- IRB Amendment
- Draft recruitment invitation for participants
- Draft pre- and post-surveys

Timeline

	1/27	2/3	2/10	2/17	2/24	3/3	3/10	3/17	3/24
Create 3rd Iteration of Sounds									
Create Haptics									
Plan Study									
Recruit Participants									
Study				Phase I	Phase II		Phase II		
Data Analysis									

QUESTIONS?