Honk? Talk!: Designing Driver-to-Driver Communication Methods for Social Driving

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Is honking the best we can do?
How can we improve driver-to-driver communication to come?

Background

Driver-to-driver (D2D) Communication
Drivers often face situations where they have to share information and their intent to other drivers.

Social driving
Social isolation and conflicts can lead to dissatisfaction and aggressive driving.

→ It is important to facilitate good social relationships and communications between drivers.

Methods: Scenario-based Interview & Analysis

Preliminary Investigation → Scenario-based Interview → Solution Brainstorming → Interview on Participant's Solution → Wrap-up Discussion → Interview Analysis

- Demographics
- Driving experience
- Driver-to-driver communication experience
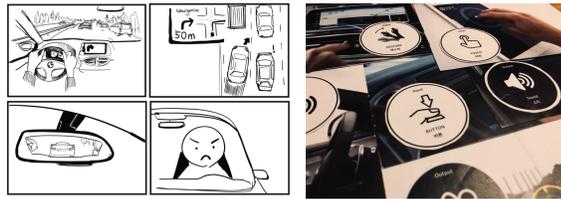
Scenario	Sender	Receiver
S1. Express positive emotion	Participant expresses gratitude.	Participant receives sign of gratitutde.
S2.Express negative emotion	Participant expresses anger to a reckless driver.	Participant receives sign of protest
S3. Convey information (1:1)	Participant tells other driver that his car's trunk is open.	Participant gets notified on his car's open trunk
S4.Convey information (1:N)	Participant tells other drivers that she must get to hoispital fast	Participant gets notified by another driver that she must get to hospital fast.

Input
- Touch Buttons
- Gesture
- Voice Recognition
- Physical Buttons
- Other*

Output
- Text
- Picture
- Sound
- Symbol /Emoji

*Participants were guided to freely suggest other inpur or output method on their own.

Semi-structured interview with think-aloud method

- Whether they had similar experience
- Preferred input output method
- Thoughts from sender/receiver's perspective

- Thoughts from sender/receiver's perspective
- Any additional comments

(1) Reviewed transcripts and shared initial observations.

(2) Conducted keyword-tagging on every single informative sentences.

(3) Combined keywords into a list of 134 themes.

(4) Reviews, linked, and categorized the themes into main findings

Findings

1. Drivers Want to Use Social Cues for Affective Messages

When conveying affective messages like appreciation, apology, or protest, most participants wanted to put social cues so as to nuance their messages.

"I think emojis would be better. [...] In general cases, they(emojis) would appeal to someone better (than other methods)."

2. Drivers Want to Put More Details

Participants wanted to use richer communication methods that can lessen the loss of information; most pointed out that blinking and honking had often overly simplified messages.

"Text would be better. (I just want the message to be delivered) just as it is. Headlight is broken, trunk is open, it it necessary to send correct information."

3. Drivers Want Varying Scopes of Communication

Participants wanted to adjust the scope of communication according to the content of the message. Unless in emergency, they wished their messages not to be shared with unrelated drivers.

"The messages given to me should be shown to me exclusively."

+ Drivers Want Different Modalities of Communication Considering Different Perspectives

As senders, participants preferred more auditory methods of communication; as receivers, participants preferred "less intrusive" visual methods.

"Well, I think my attitude just changed. (When I am a sender) it's me who has to act, right? [...] I have to show appreciation, so before(when I was a sender) I preferred the strongest method[...]"

Initial Design Ideas

A. The communication method should be able to incorporate social cues when delivering affective messages.
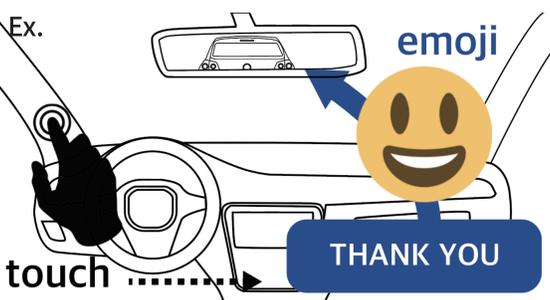
B. Drivers should be allowed to deliver detailed messages.
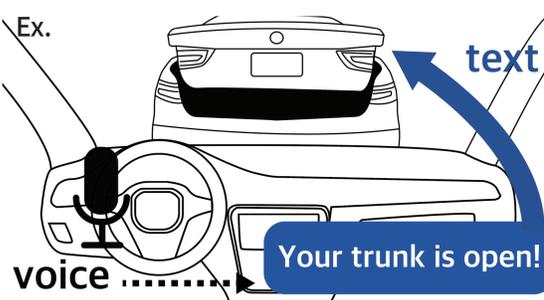
C. The communication method should allow drivers to select those with whom they want to communicate.

Future Work

Based on the initial design ideas, we are building simulation-based prototypes and conducting quantitative usability evaluation.