HEESUN CHOI

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EDUCATION:

2010-2016 **North Carolina State University** Raleigh, NC

- **PhD.** in Human Factors and Applied Cognition, Psychology (2016)

  "Older drivers' attentional functions and crash risks in various hazardous situations: Relationship, taxonomy, and compensatory behaviors" (Under the direction of Dr. Jing Feng)

- **M.S.** in Human Factors and Ergonomics, Psychology (2013)

  "The impact of visuospatial characteristics of video games on improvements in cognitive abilities" (Under the direction of Dr. Sharolyn A. Lane)

2002-2007 **Yonsei University** Seoul, Korea

- **B.A.** in Psychology | **B.B.A.** in Business
- Graduated with high honors (awarded to the top 3% in College of Liberal Arts; GPA 4.09 / 4.3)

2004-2005 **University of Washington** Washington, WA

- One year exchange program

WORK:

2016-Present **National Institute for Occupational Safety and Health (NIOSH)** Morgantown, WV

Part of the Centers for Disease Control and Prevention (CDC)

(Oct. 2017 – present) **Associate Service Fellow**

(Dec. 2016 – Oct.2017) **Regular Fellow**

Protective Technology Branch | Division of Safety Research

Center for Occupational Robotics Research

• Major research projects:

(16-present) Human factors evaluation of fire-truck speed warning system

(18-present) Improving safety of human-robot interaction

2007-2010 **SK Telecom** Seoul, Korea

The largest mobile telecommunication service provider in Korea

Product Manager

• Work description: Product management of mobile/internet services, UI/UE strategy, and user analysis

• Divisions and major projects:

(07) Communication Intelligence Unit - Mobile idle-screen services (*T interactive*, *i-Topping*)

(08) UI Planning team - Content delivery platform in mobile device (*T menu*) / Mobile widget services

(09-10) Open Market Place team – Application open-market (App store; *T Store*) / Mobile web browser

RESEARCH INTERESTS:

Applied cognitive psychology, human factors, attention, mind wandering, occupational safety, driving safety, cognitive aging, cognitive training, human-robot interaction

PUBLICATIONS:

Peer-reviewed journal articles

Choi, H., Kasko, J., & Feng, J. (in press). An attention assessment technology for informing older drivers' crash risks in various hazardous situations. *The Gerontologist.*

Feng, J., **Choi, H.**, Craik, F.I.M., Levine, B., Moreno, S., Naglie, G., & Zhu, M. (2018). Adaptive response criteria in road hazard detection among older drivers. *Traffic Injury Prevention*, *19*(2), 141-146.

Choi, H., Geden, M., & Feng, J. (2017). More visual mind wandering occurrence during visual task performance: Modality of the concurrent task affects how the mind wanders. *PloS one, 12*(12), e018966.

Feng, J., Craik, F. I., Levine, B., Moreno, S., Naglie, G., & **Choi, H.** (2017). Differential age-related changes in localizing a target among distractors across an extended visual field. *European Journal of Ageing*, *14*(2), 167-177.

Jacob, T., Snyder, W., Feng, J., & **Choi, H.** (2016). A neural model for straight line detection in the human visual cortex. *Neurocomputing*, *199*, 185-196.

Journal manuscripts submitted, in revision, or in preparation

Choi, H., Grühn, D., & Feng, J. (in preparation). A self-report measure of attentional failures during driving and driving risks.

Choi, H., Feng, J., & Nam, C. (in preparation). The effects of executive attentional function on mind-wandering.

Peer-reviewed conference proceedings

Choi, H. & Feng, J. (2018). Older drivers' self-awareness of functional declines influences adoption of compensatory driving behaviors. *Proceedings of the 97th Annual Meeting of the Transportation Research Board*, Washington, D.C.

Choi, H. & Feng, J. (2016). Distinct attentional functions are differentially associated with specific driving errors and crash types. *Proceedings of the 95th Annual Meeting of the Transportation Research Board*, Washington, D.C.

Choi, H., Nam, C., & Feng, J. (2015). A wandering mind cannot resolve conflicts in displayed information. *Proceedings of the Human Factors and Ergonomics Society 59th Annual Meeting*. Los Angeles, CA.

Choi, H., Grühn, D., & Feng, J.(2015). Self-report attentional ability predicts driving citations and crashes among older drivers. *Proceedings of the 94th Annual Meeting of the Transportation Research Board*, Washington, D.C.

Feng, J., Craik, F. I. M., Levine, B., Moreno, S., Naglie, G., **Choi, H.**, & Medina, A. (2015). Drive aware task: Measuring target detection in a visual clutter in the driving context. *Proceedings of the 94th Annual Meeting of the Transportation Research Board*, Washington, D.C.

Choi, H. & Feng, J. (2014). Age-related changes in attentional failures during driving: A self-report measure. *Proceedings of the Human Factors and Ergonomics Society 58th Annual Meeting*. Chicago, IL.

Creager, J., Wardlaw, W., Frankosky, M., Pappalardo, G., English, A., & **Choi, H.** (2014). Human factors methods in a design

cycle framework. *Proceedings of the Human Factors and Ergonomics Society 58th Annual Meeting*. Chicago, IL.

Choi, H. & Lane, S. (2013). Impact of spatial characteristics of video games on improvements of cognitive abilities. *Proceedings of the Human Factors and Ergonomics Society 57th Annual Meeting*. San Diego, CA.

Liu, S., Bahn, S., **Choi, H.**, & Nam, C. (2013). Behavioral characteristics of users with visual impairment in haptically enhanced virtual environments. *Proceedings of HCI International 2013*. Las Vegas, NV.

Book chapters and encyclopedia entries

Sall, R., **Choi, H.**, & Feng, J. (2018). Aging and transportation technology. In Pak, R. & McLaughlin, A. (Ed.), *Aging, Technology, and Health.*

Choi, H. & Feng, J. (2016). Using video games to improve spatial skills. In R. Zheng., & M. Gardner. (Ed.), *Handbook of Research on Serious Games for Educational Applications.*

Choi, H. & Feng, J. (2016). General slowing hypothesis. In S. K. Whitbourne (Ed.), *The Encyclopedia of Adulthood and Aging*.

Presentations, posters, and invited talks

Hsiao, H., Castillo, D., **Choi, H.**, & Morata, T. (2018). The role of robotics in workplace safety and health. To be presented at the *11th International Occupational Hygiene Association (IOHA) International Scientific Conference*, Washington, DC.

Choi, H. (March 14, 2018). Introduction to the Center for Occupational Robotics Research. Invited to the *National Occupational Research Agenda (NORA) Manufacturing Sector Program Council Meeting*. Cincinnati, OH.

Choi, H. & Feng, J. (2018). Older drivers' self-awareness of functional declines influences adoption of compensatory driving behaviors. Poster presented at the *97th Annual Meeting of the Transportation Research Board*, Washington, D.C.

Choi, H. (October 13, 2017). Robotics safety in the workplace: Robot trends and implications for worker safety. Invited to the *2017 Tri-State Occupational Medicine Association (TSOMA) Conference*, Columbus, OH.

Hongwei, H., **Choi, H.**, Sammarco, J., Earnest, S., Castillo, D., & Hill, G. (2017). An occupational safety and health perspective on robotics applications in the workplace. Presented at the *National Robotics Safety Conference*, Pittsburgh, PA.

Choi, H. (October 16, 2016). Human factors and driving research. Invited to the *Cognitive Science Colloquium, Yonsei University,* Seoul, Korea, October 2016.

Choi, H. & Feng, J. (2016). Distinct attentional functions are differentially associated with specific driving errors and crash types. Poster presented at the *95th Annual Meeting of the Transportation Research Board*, Washington, D.C.

Choi, H., Nam, C., & Feng, J. (2015). A wandering mind cannot resolve conflicts in displayed information. Presented at the *Human Factors and Ergonomics Society 59th Annual Meeting*. Los Angeles, CA.

Choi, H. & Feng, J. (2015). Attentional functions of a wandering mind. Poster presented at the *2015 North Carolina Cognition Conference,* Elon, NC.

Choi, H., Grühn, D., & Feng, J.(2015). Self-report attentional ability predicts driving citations and crashes among older drivers. Poster presented at the *94th Annual Meeting of the Transportation Research Board*, Washington, D.C.

Choi, H. & Feng, J. (2014). Age-related changes in attentional failures during driving: A self-report measure. Presented at the *Human Factors and Ergonomics Society 58th Annual Meeting*. Chicago, IL.

Choi, H. & Lane, S. (2013). Impact of spatial characteristics of video games on improvements of cognitive abilities. Presented at the *Human Factors and Ergonomics Society 57th Annual Meeting*. San Diego, CA.

Choi, H. & Lane, S. (2013). Video game experience, game playing skill and cognitive abilities. Poster presented at the *25th Annual Meeting of the Association for Psychological Science,* Washington, D.C.

Choi, H. & Liu, S. (2013). Benefits of landmark information in visual and auditory in-vehicle route guidance. Poster presented at the *25th Annual Meeting of the Association for Psychological Science,* Washington, D.C.

Media Exposure

Sydney Webb (March 15, 2018). HeeSun Choi, PhD, and Christina Socias-Morales, DrPh: Creating safer workplaces. *NIOSH Science Blog*. https://blogs.cdc.gov/niosh-science-blog/2018/03/15/choi_socias-morales/

Matt Shipman (September 26, 2017). Older drivers adapt their thinking to improve road hazard detection. *Medical Xpress.*

GRANTS, SCHOLARSHIPS AND AWARDS:

Research Funding

"Improving Safety of Human-Robot Interaction" (10/01/18-09/30/22), HeeSun Choi (PI). Funding agency: National Institute for Occupational Safety and Health – 2019 Intramural National Occupational Research Agenda (NORA) competition ($195,000).

Scholarships and Awards

2010-2016	Teaching or Research Assistantships, North Carolina State University
2016	John Oliver Cook Graduate Student Award in Psychology, North Carolina State University
2015	Raja Parasuraman Student Research Grant (AC-TG), Human Factors and Ergonomics Society
2014	UGSA Teaching Assistant Award (Excellence in Mentorship), North Carolina State University
2014	UGSA Award for Conference, North Carolina State University
2013	Aging TG Student Research Scholarship, Human Factors and Ergonomics Society
2013	Psychology Emeritus Graduate Award, North Carolina State University
2004-2005	Dean's List for academic excellence, University of Washington
2002-2004	University scholarship for academic excellence, Yonsei University

TEACHING EXPERIENCES:

North Carolina State University, Raleigh, NC

- Instructor
  - Spring 2016: PSY420 Cognitive Processes
  - Fall 2015: PSY340 Ergonomics
  - Fall 2014: PSY420 Cognitive Processes
  - Spring 2013: PSY241 Introduction to Behavioral Research I Lab
  - Fall 2012: PSY340 Ergonomics

- Teaching Assistant
  - Fall 2011, spring 2012, & spring 2015: PSY200 Introduction to Psychology
  - Fall 2010 & spring 2011: PSY230 Psychological Research
- Guest lecturer
  - Spring 2014: PSY340 Ergonomics - Research Methods
  - Spring 2012: PSY200 Introduction to Psychology - Psychopathology

MENTORING EXPERIENCES:

- Undergraduate Students: Phoebe Pradhan and Jesse Delarosa for the NCSU Undergraduate Symposium, 2015

SKILLS / QUALIFICATIONS:

- Data analysis and statistics programs: SPSS, SAS, R, AMOS, MPlus, NVivo
- Equipment/Software:
  - Experiment design: E-Prime 2.0, Qualtrics
  - Physiological measure: Biosemi (EEG), Biopac (ECG)
  - Eye-tracker: faceLAB/EyeWorks, Ergoneers/Dikablis
  - Driving simulator: STISIM 3, TruckSim® from Mechanical Simulation™
  - Graphic design/illustration: CorelDraw
- South Korean citizen, Permanent US resident (Green card holder)

PROFESSIONAL ACTIVITIES AND SERVICE:

Member

- Human Factors and Ergonomics Society (HFES) / NC chapter
- Association for Psychological Science (APS)
- Psi Chi (The International Honor Society in Psychology)
- North Carolina Senior Driver Safety Coalition (NCSDSC) (2015-2016)

AdHoc Reviewer

- National Occupational Injury Research Symposium (NOIRS) (2018)
- European Journal of Psychology Student (2017)
- AutomotiveUI (2017)
- International Journal of Human-Computer Interaction (2016)
- PLOS ONE (2016)
- Annual Human Factors and Ergonomics Society (HFES) proceedings (2015-2017)
- Handbook of Research on Serious Games for Educational Applications (2015)

Volunteer

- Student volunteer at the Annual Human Factors and Ergonomics Society (HFES) meeting (2013-2015)