



UNIVERSITY
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Introduction

If we are looking for a friend in a crowded restaurant, we usually have no trouble picking that person out even if they are not looking directly at us. Our ability to recognize faces at different angles is somewhat surprising considering that often only a partial view of the face is available. While this ability has been well studied in young adults, how this ability is affected by age and/or degenerative diseases, such as Alzheimer's, remains a question².

In the current study, we begin our investigation of this issue by comparing a young adult population to a neurologically healthy older population in a face matching task with upright and inverted faces shown at different orientations.

Hypothesis

In comparison to the young adult control group, participants in the older experimental group will exhibit longer reaction times and decreased accuracy.

Method

Subjects:

Twenty one young adults (16 females, 5 males, age range 18-24, mean 19.95) were recruited from the introductory psychology classes at the University of Manitoba.

Eleven older participants (4 females, 7 males, age range 65-92, mean 72.09) were recruited from an independent living retirement home, and through poster recruitment.

Stimuli

The stimuli consisted of male and female faces obtained from the Max Planck Face Database. This database consists of 3D models of real faces that are rotated to one of three positions around the vertical axis.



Full-face (0°) Three-quarter (45°) Profile (90°)

Design

Three faces appeared during each trial: a target face presented above two choice faces. There were four sets of trials; two consisted of all faces presented upright, and the other two all faces were inverted.

The rotation angle between the target face and two choice faces could either be the same or different (0, 45, 90). In contrast the two choice faces were always shown at the same angle.

Task:

Participants were instructed to match which of the two choice faces (left or right) was the same person as the picture above, regardless of how the faces were rotated.



Face Recognition and Aging?

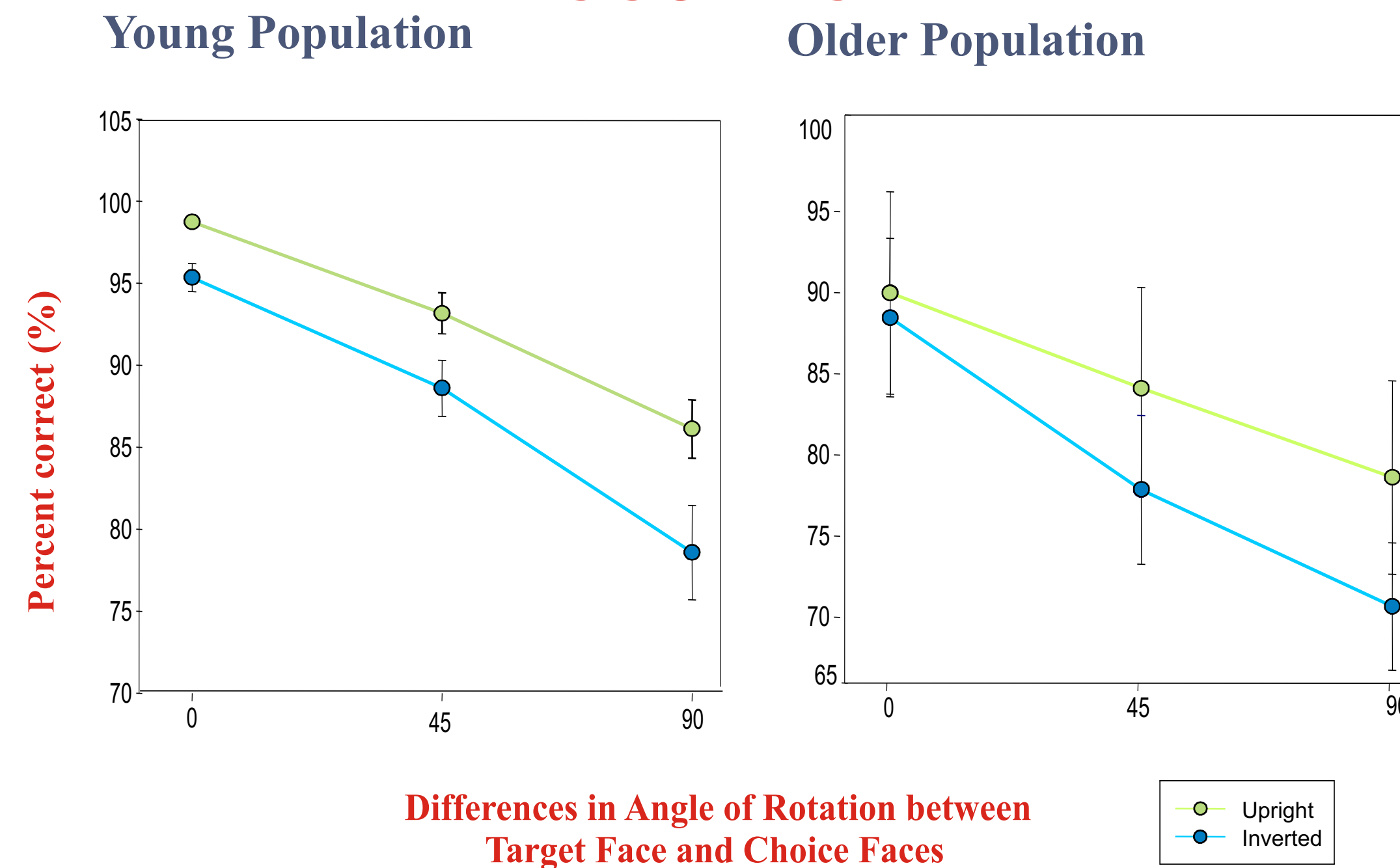
Cassandra A. Adduri & Jonathan J. Marotta

Perception and Action Lab

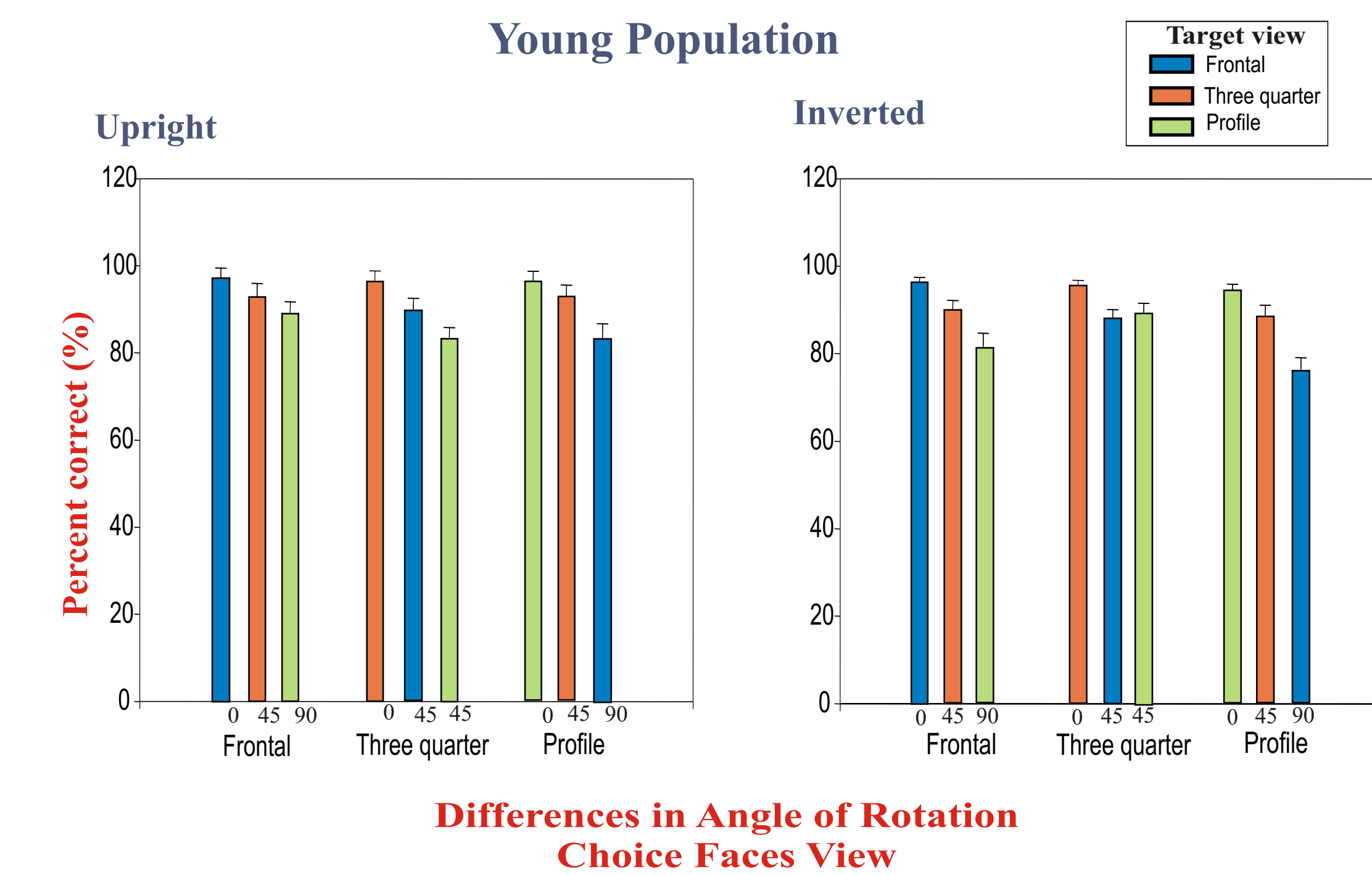
Department of Psychology, University of Manitoba

Results

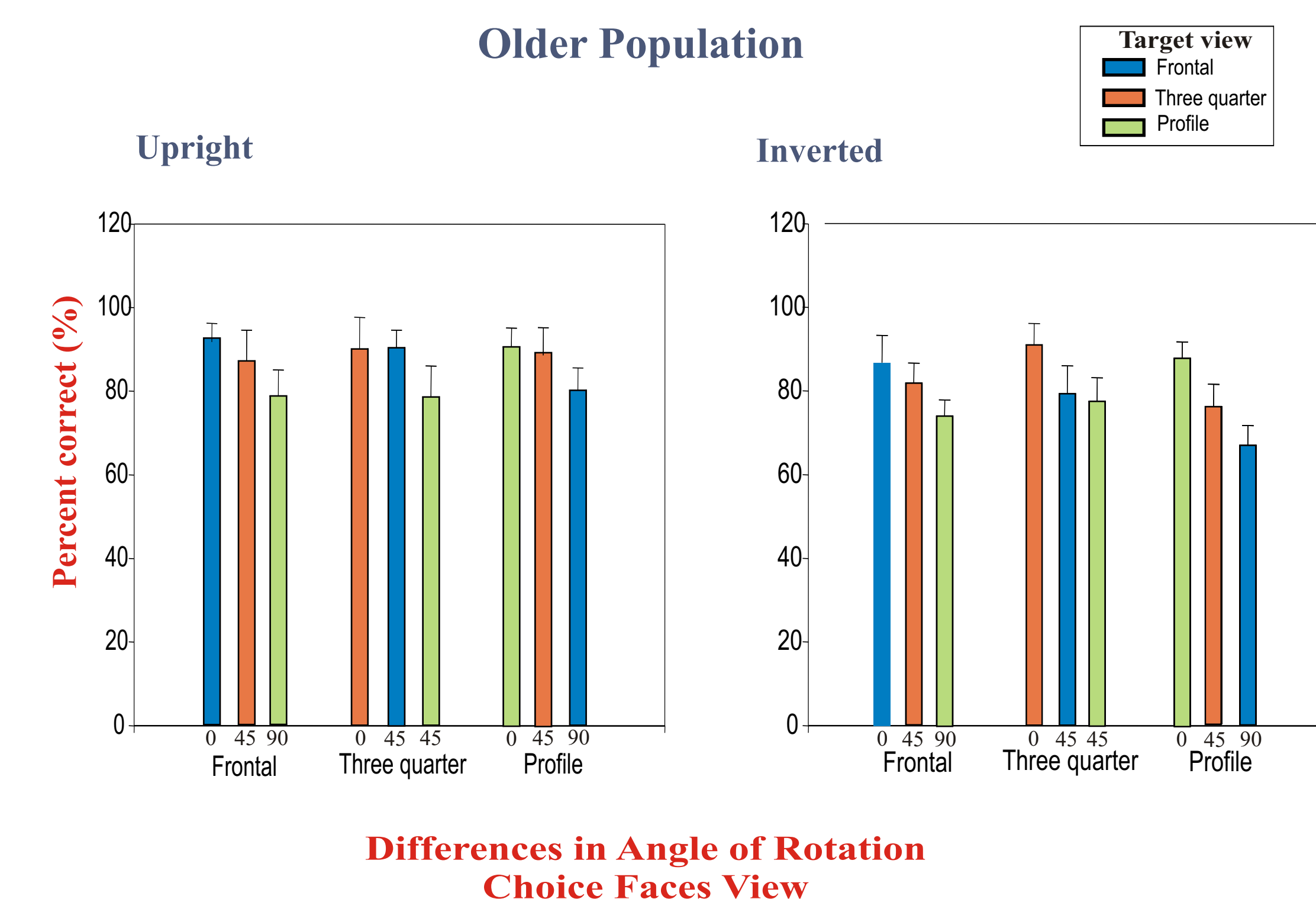
ACCURACY



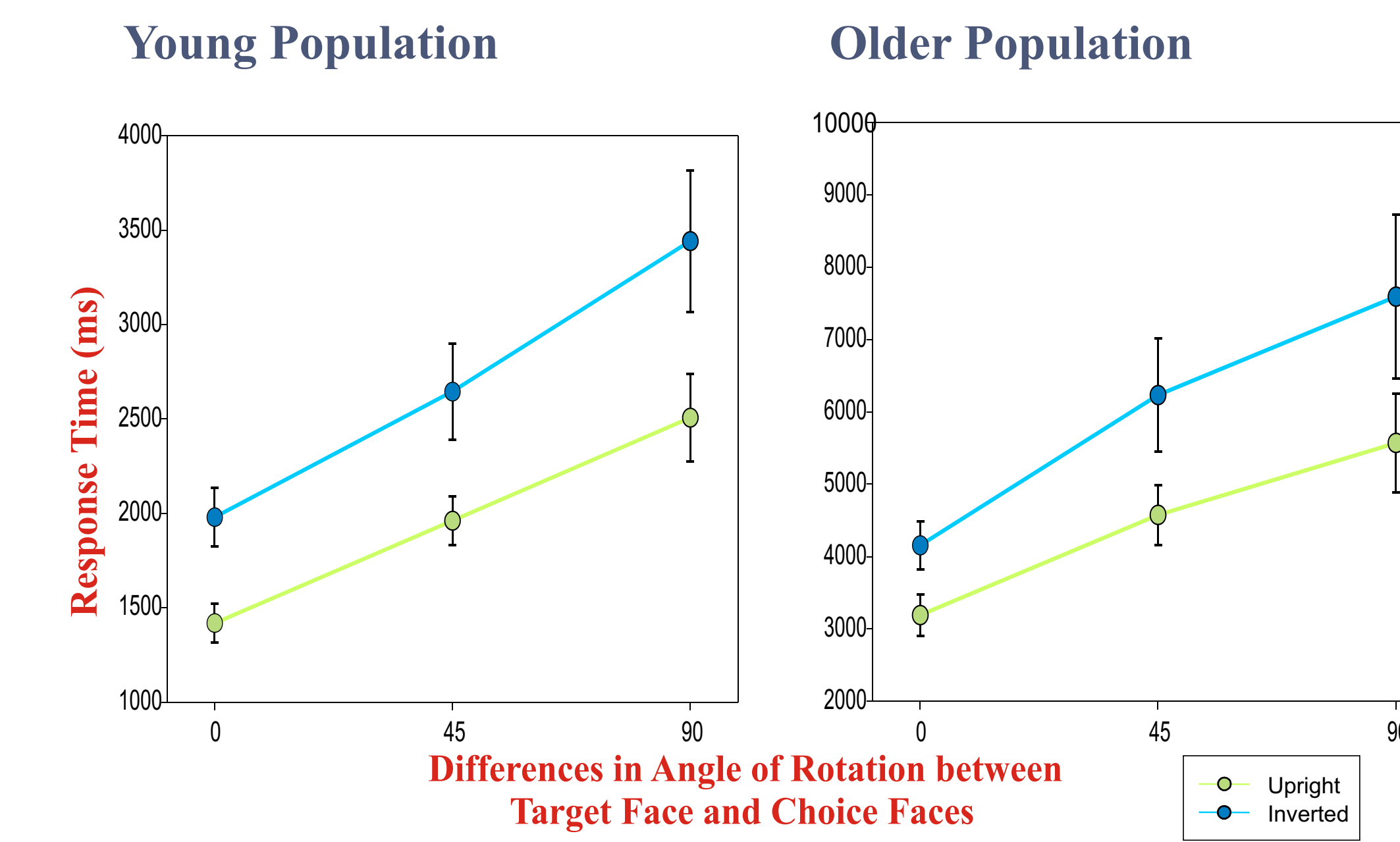
As the angle between the target face and two choice faces increased, accuracy decreased in both experimental groups. Both experimental groups were less accurate when faces were inverted.



While there was a trend for the older population to be less accurate compared to the younger population, no significant difference was found.



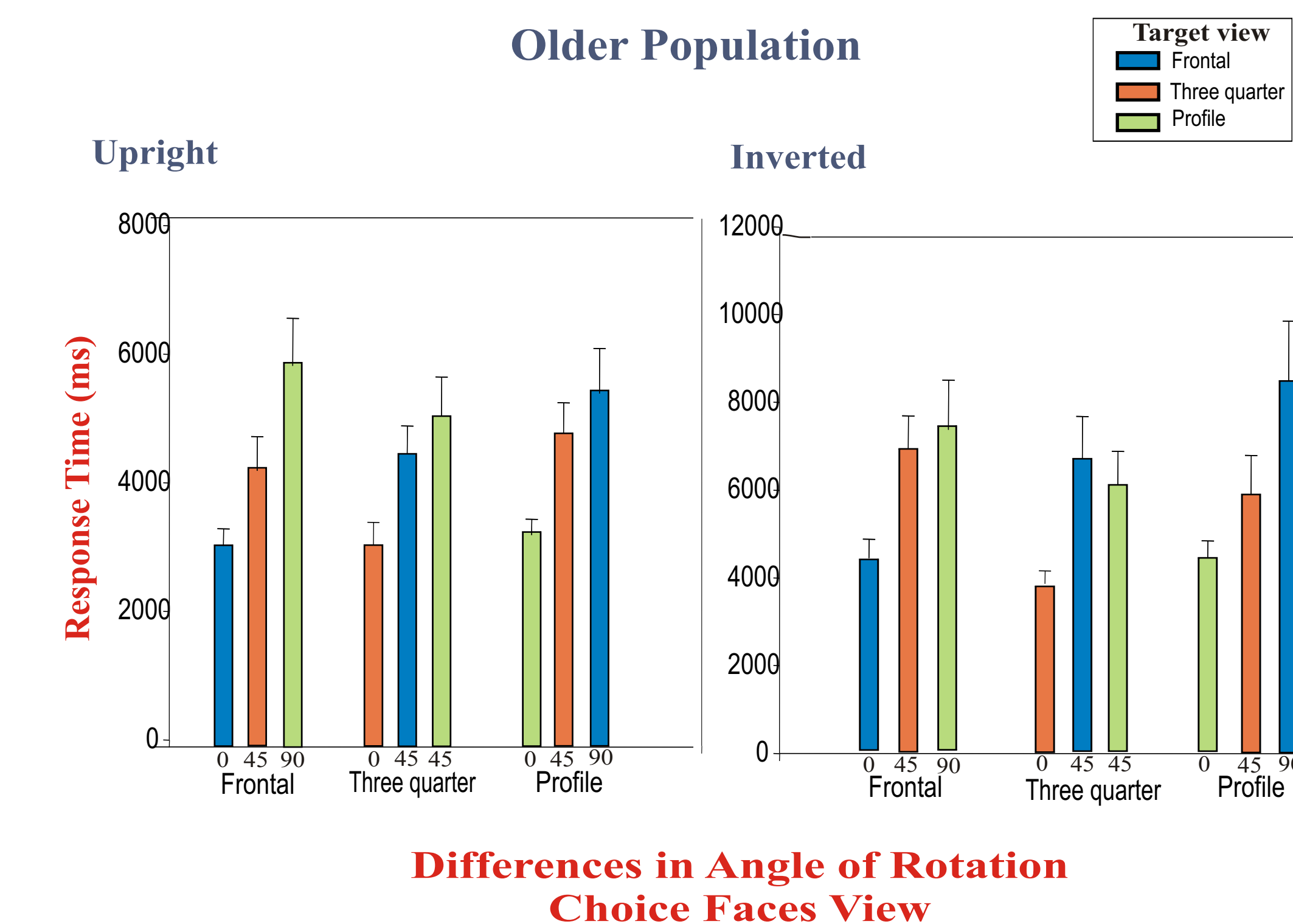
REACTION TIME



As the angle between the target face and the two choice faces increased from 0, to 45, to 90 degrees, reaction times increased in both experimental groups. Both experimental groups displayed increased reaction times when faces were inverted.



On average, the older population was 2- 3 times slower in their reaction times compared to the younger population.



Conclusions

The present study was designed to determine how the ability to perceive faces at different rotations may change as we get older. Our results found that although the older population was as accurate as the younger population, their reaction times were much slower.

As the angle between the target face and the choice faces increased, all participants would take longer and be less accurate in their response. Furthermore, when faces were inverted, all participants were less accurate and had longer reaction times compared to upright conditions. These results are consistent with previous findings¹.

Implications

From the results of this study, we are now embarking on a larger study where we are examining the sensitivity of face recognition in people with Alzheimer's disease (AD). One of the most devastating symptoms of people with AD is that their family members and friends will no longer be recognized. Previous research has shown that we are the fastest and most accurate at recognizing a face shown in a 3/4 view. It will be interesting to see if this preferred view is found in people with AD.

References

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2. Murphy, K.J., Kohler, S., Black, S.E., & Evans, M. (2000). Visual object perception, space perception, and visuomotor control in Alzheimer's disease. Retrieved from <http://cognet.mit.edu/library/conferences>.

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