

Does spatial empathy help to avoid collision at sea ?

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This research was realised at Naval Research Institute, France.

Well-Known

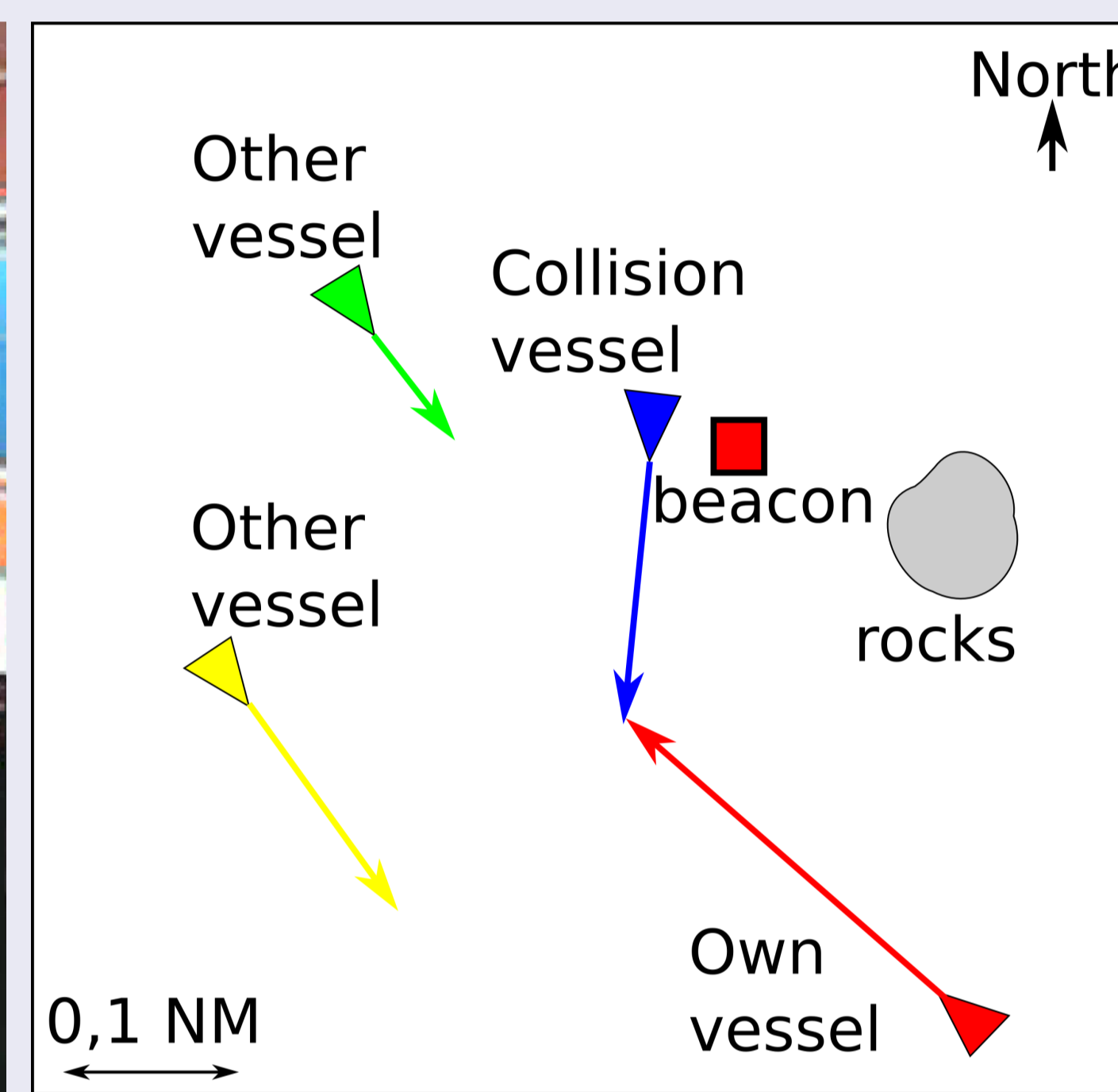
Previous studies about avoiding collision at sea have shown the importance of watch officers perceptions of the elements of the environment. Spatial features (position, heading, speed) and intentions of other vessels are essential in the decision making process (from Risser (1985) to Chauvin *et al.*, 2008). At the same time, spatial cognition theories attach great importance in the coordination of frames of reference to manage spatial task (Mou *et al.*, 2006). In this study, we investigate if instructed watch officers in charge to move from egocentric point of view (from the bridge of their own ship) to an exocentric point of view (from the bridge of the other vessel) could help them to safer maneuver.

Issue

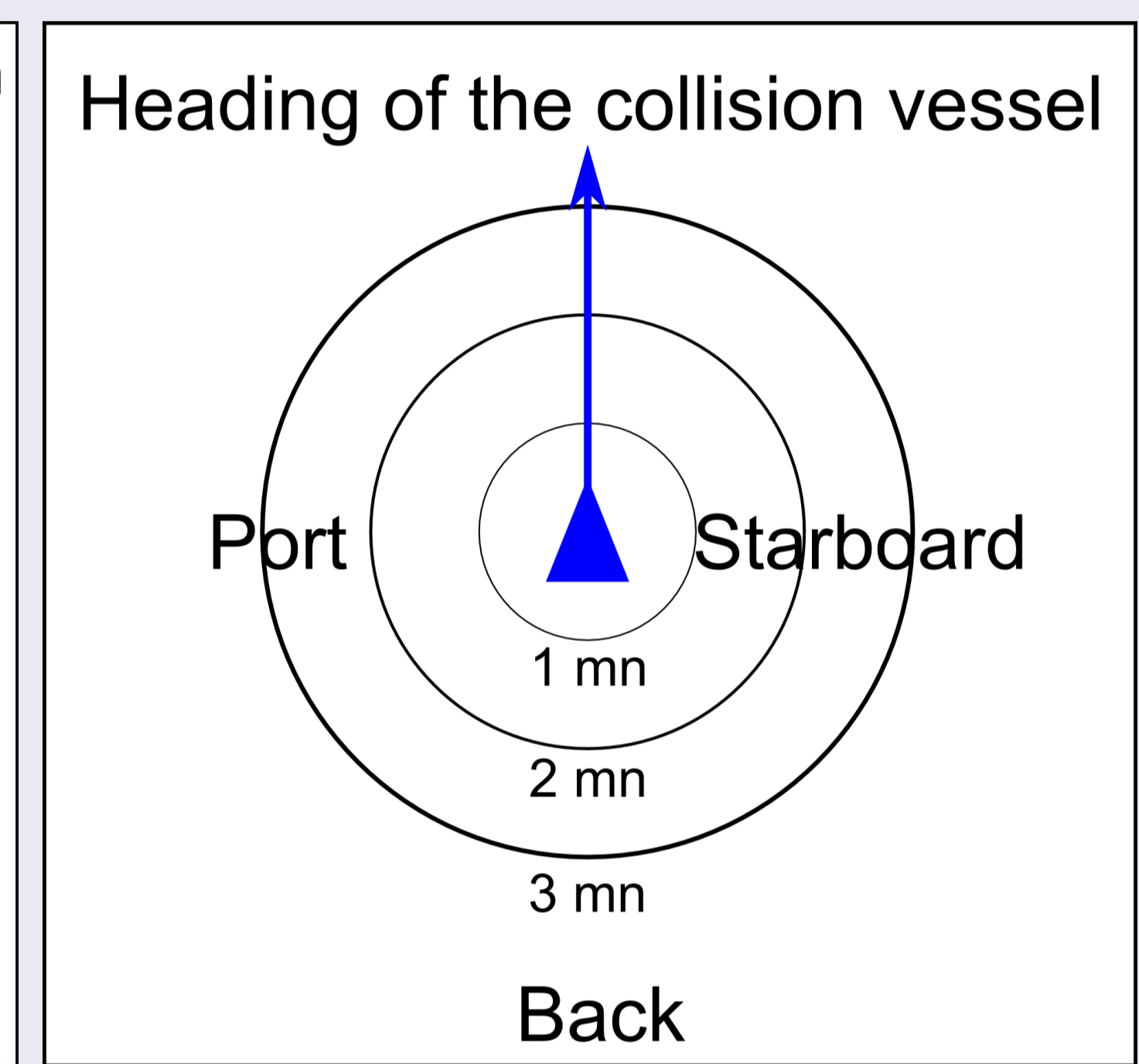
We set a collision situation on board the navigation simulator of Naval Research Institute. Until now, 14 watch officer students have participated in this experiment (6 experimental / 8 control). Within the experimental group, once a null DCPA (Distance at Closest Point of Approach) was detected, we asked the watch officer student in charge to draw the relative positions of other ships from the point of view of the vessel with a collision threat. We then collected the safety distances of trajectories and analyzed the accuracy of the sketches.



Own ship bridge



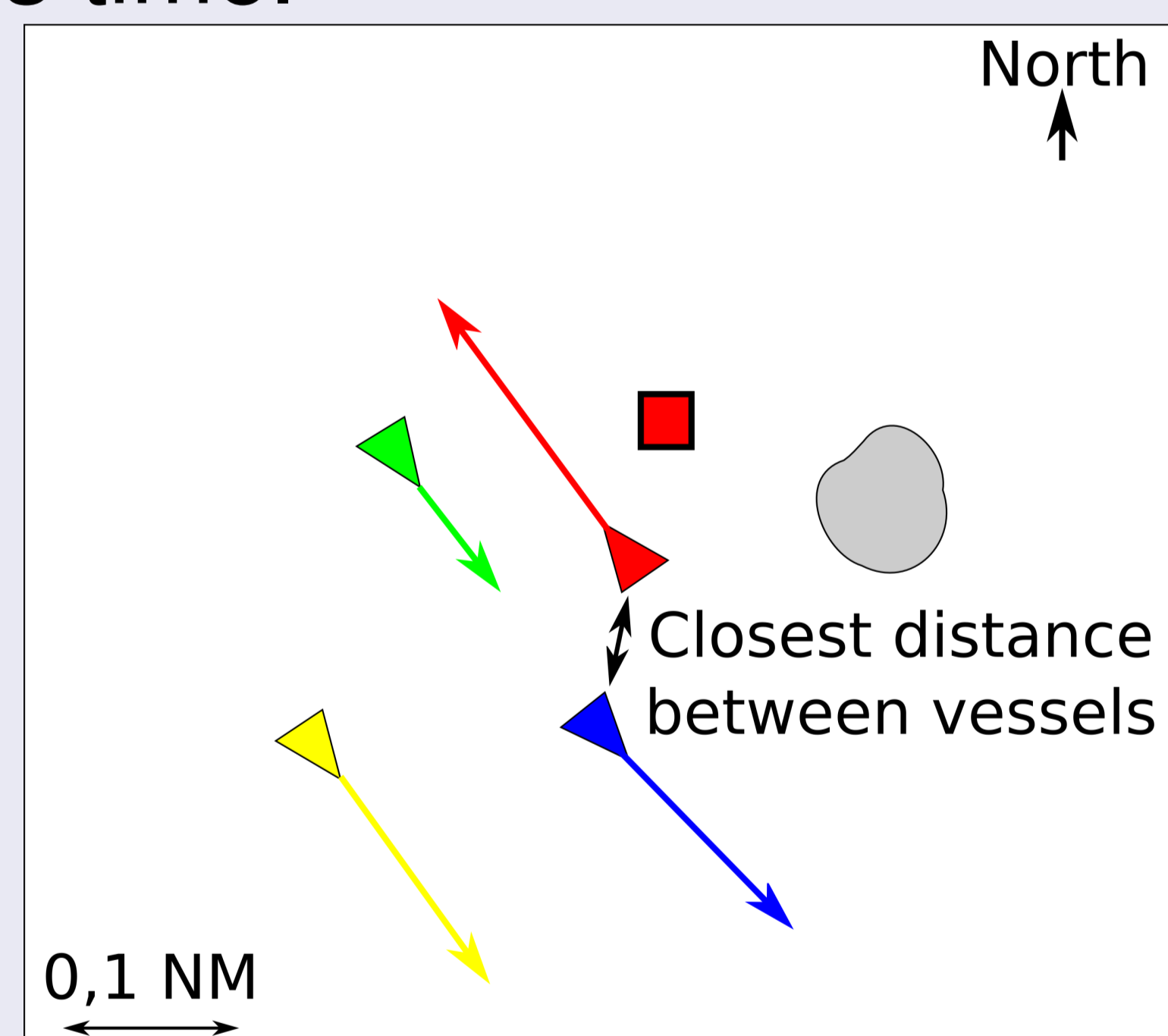
Collision situation



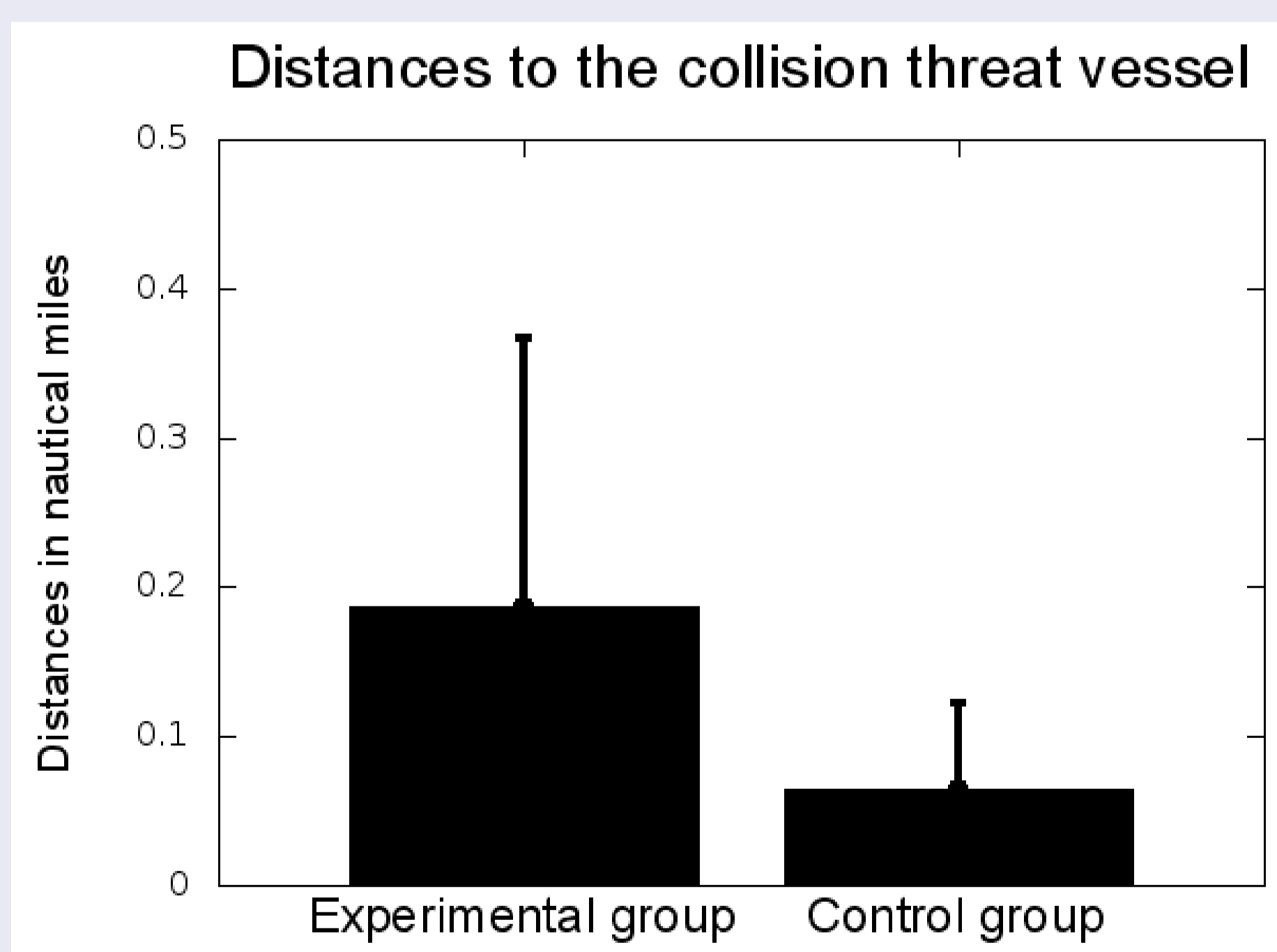
Sketch to complete

Results

The first analysis showed that students in the experimental group were three times as far from the vessel with a collision threat that students in the control group. The second analysis showed that the student which has achieved the most accurate sketches also produced the highest safety distance. However, the lack of significant difference forbids us to conclude at this time.



Closest distance



Distances for each group

Conclusion

Finally, it appears that the empathic spatial representation plays a role in the safety of the ship trajectory. If these results were confirmed with larger samples and in verbalizations analysis, it would be interesting to imagine and test the effectiveness of additional methods for learning to avoid collision at sea.

References

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- . Mou, W., McNamara, T. P., Rump, B., and Xiao, C. (2006). Roles of egocentric and allocentric spatial representations in locomotion and reorientation. *Journal of Experimental Psychology : Learning, Memory, and Cognition*, 32, 1274-1290.