Study shows vision is necessary for spatial awareness tasks

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(Medical Xpress) -- People who lose their sight at a later stage in life have a greater spatial awareness than if they were born blind, according to scientists at Queen Mary, University of London.

The study, published in the journal *Neuroscience and Biobehavioral Reviews*, examined research which looked at the spatial skills of sighted and blind people and found that some spatial tasks need visual experience.

Co-author on the study, Dr. Michael Proulx from Queen Mary's School of Biological and Chemical Sciences, said: "Numerous studies have tested how humans use vision for knowing the spatial locations of things yet few have examined the other senses and whether people with a visual impairment use the same strategies.

"In reviewing research already available, we found visual experience is necessary for the brain to develop the ability to process multisensory information. We use vision and the other senses to create a mental map of where objects are in relation to other objects and the environment.

"Our findings suggest that there is a sensitive period during which visual experience is necessary for the brain to develop those neurons that can represent the world in this way."

Lead author Dr. Achille Pasqualotto, also from Queen Mary's School of Biological and Chemical Sciences, said: "Blindness reveals how well

humans can function using the remaining senses, even in a world designed by sighted people for sighted people.

“The brain develops spatial abilities that relate an object’s location to the individual. This makes sense given that a visually impaired person does not see objects at a distance in an environment, but instead acquires their location by personally approaching and identifying them.”

The team is building on their findings now by testing sighted and blind people on a variety of spatial tasks that will explicitly test these findings.

They hope this research will not only reveal the psychological and neural basis for spatial cognition, but also translate into better services for blind persons, such as the development of better navigational tools.

Dr. Proulx said: “We are actively recruiting blind people to participate in our research and we are particularly keen to involve people who have been blind since birth, yet people who lost vision later in life would be welcome to contact us too.”

Provided by Queen Mary, University of London