

# [When speaking of the experience, do not leave out the experiencer: on self and ma...](https://assignbuster.com/when-speaking-of-the-experience-do-not-leave-out-the-experiencer-on-self-and-magnitude/)

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Memory, motor-control, attention, learning, navigation, emotion, and perception are among the foundations of cognitive neurosciences. For many years, these have been studied separately, as distinct functions ( [Fodor, 2000](#B9) ). Recently, several veins of research have lead to the idea that different cognitive faculties may be handled by similar neurocognitive mechanisms. Likewise, Buzsáki and Moser proposed that a range of interacting cell types (such as “ place cells,” “ grid cells” or “ time cells”), which support navigation, may also play a role in memory ( [Buzsáki and Moser, 2013](#B4) ). Moreover, these prominent researchers have suggested that navigation and memory rely on two fundamental mechanisms: one that is more allocentric, related to representations of landmarks in the environment, and another that is egocentric, self-referenced ( [Buzsáki and Moser, 2013](#B4) ). Similarly to navigation, memory encompasses autobiographical memory, related to events that happened to the experiencer (self-referenced), and semantic memory of events that the experiencer “ knows”. Perception may be taken from a self-referenced first-person-perspective or from a third-person-perspective. Correspondingly, in the affective plane, emotion may be self-referenced, reflecting the experiencer own-feelings, or may be dominated by a third-person-perspective, when the experiencer is absorbed in the life of others ( [Zinck, 2008](#B17) ).

Another vein of research, which pointed to cross-modalities, relates to “ mental-lines.” Experiments on mental number scaling in archaic cultures or children have revealed that humans represent numbers along a logarithmic scale, termed “ mental-number-line” ( [Dehaene and Cohen, 1995](#B5) ; [Dehaene et al., 1999](#B8) , [2008](#B6) ). Human experience numbers according to the resolution of perception: the perceived resolution decreases as numbers increase, yielding logarithmic scale. Logarithmic distribution was shown to fit the relation between temporal-distance of the experiencer from the experience and memory retention ( [Rubin and Schulkind, 1997](#B13) ; [Spreng and Levine, 2006](#B15) ). Moreover, cognitive performance was found to decrease logarithmically as temporal-distance to the event increased ( [Arzy et al., 2009a](#B1) ). Emotional expression was also found to be represented by a mental-magnitude-line ( [Holmes and Lourenco, 2011](#B11) ). It is proposed that these common patterns of magnitudes are related to the self-referenced (spatial) processing of the different domains.

The temporo-parietal junction (TPJ) is believed to play a special role in these self-referenced magnitude-related processing. The TPJ was found to be implicated in processing the mental-number-line ( [Göbel et al., 2001](#B10) ) with respect to quantity, numbers, or spatial attention ( [Dehaene et al., 2003](#B7) ), and likewise may be involved in other mental-magnitude-lines. However, the TPJ is known to be involved in many self-referenced functions including agency, ownership, perspective-taking and autobiographical memory which are not necessarily related to magnitude ( [Blanke and Arzy, 2005](#B3) ). Likewise, in a couple of investigation of the mental-time-line ( [Arzy et al., 2009b](#B2) ), activation at the right TPJ showed a symmetrical distribution of brain activity as a function of the temporal-distance of events from the present time: activation was increased for closer events than for more distant events (both in past and future). The TPJ was also found to play a special role in coordinating the relation between one's self-location in space and different external reference points ( [Ruby and Decety, 2001](#B14) ; [Vogeley and Fink, 2003](#B16) ). In the personal/social domain, the TPJ was found to coordinate the relation between mentalizing oneself and others ( [Lombardo et al., 2010](#B12) ).

Taken together, this suggests that different aspects of the subjective experience should be regarded in relation to the experiencing self. Self-related mentalization may have a specific logarithmic pattern, reflected as a “ mental-line.” The temporo-parietal junction may play a special role in mediating these self-referenced functions in the different domains.

## Acknowledgments

Supported by the German-Israeli Foundation for Scientific Research and Development (GIF) and the Marie Curie Intra-European Fellowship within the framework of the EU-FP7 program.

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