

Abstract: Using Pupillometry to Assess the Onset of Conscious Intention

The well-known Libet experiment (1983) found that unconscious brain activity (RP) began several hundred milliseconds *before* subjects reported they consciously decided to carry out a simple movement (he termed this self-reported time W-time). This finding, which has been well replicated (e.g. Haggard & Eimer, 1999; Schurger, Sitt, & Dehaene, 2012), suggests that our decisions are made unconsciously (or pre-consciously), and we only later become conscious of them. According to this interpretation, W time marks the shift from a preconscious state to a conscious intention. However, W-time has been demonstrated to be a very problematic measure of intention onset, if at all (e.g., Banks & Isham, 2009; see Maoz et al., 2015 for a review). At the same time, recent studies have shown that pupillometry can be used to quantify and track preconscious content and attentional shifts (e.g., Einhäuser, Koch, & Carter, 2010; Laeng, Sirios, & Gredebäck, 2012; Kang & Wheatley, 2015). So, it is plausible that pupillary responses would correlate with W-time. Such a pupillary response could serve as an external and objective measure of W-time in future research, moving those away from problematic measures relying on self-report. It would also enable participants to focus on the given task instead of splitting their attention between a task and clocking intentions. Here we propose a study to investigate possible correlations between w-time and pupillary response.