Variation of liar's cognitive load through the ADCM model and GKT protocol

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Deception generates an increase of cognitive load (Vrij & al., 2008). However, in the cognitive model of Activation-Decision-Construction-Model (ADCM; Walczyk & al., 2014), it is difficult to identify which module generates a higher cognitive load. According to this model, the process of recognition, inhibition or response construction shouldn't generate a similar cognitive load, because recognition is regarded as an automatic process in memory unlike inhibition and response construction.

We used variation of pupil diameter to assess cognitive load (Goldinger & Papesh, 2013) that we coupled with a Guilty Knowledge Test protocol (GKT), considered as one of the most robust protocol for lie detection (Verschuere & al., 2011). GKT protocol presents several alternatives in response to a question ("Where bodies were found?") and compare reaction differences between crime elements and irrelevant crime alternatives ("In a field? In the forest?").

Examination of pupil variations over time allows to detect cognitive load. For instance, liar should inhibit automatic answer and construct an alternative answer, while honest people shouldn't use those processes.

During the test, participants had to either watch a video on criminal scene (deception condition) or a video unrelated to the crime scene (honest condition). All participants had to answer "no" to all the alternatives presented (GKT protocol). An eye tracker recorded the pupil dilation.

Results of mean pupil diameter indicate a more important cognitive load for liar participants; this is consistent with Mann and Vrij (2006) where liars seemed to think hard more than honest people. If we only consider pupil diameter variation of liar participants, some variation differences appeared between alternatives of crime video and irrelevant items. In view of ADCM model, this implies that some cognitive processes (e.g., inhibition or answer construction) were different than other for deceptive items. Implications of cognitive load variation in deception production will be commented.

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