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Lying through the eyes: How a combination of ocular measurements may elicit cues to improve deception detection and how psychopathy, machiavellianism and narcissism effect such ocular cues

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Background: Literature highlights that trained lie catchers are not sufficiently more accurate in detecting deception than their layperson counterparts. Thus, research has focused on cues that may be elicited when an individual is deceiving, including ocular measurements such as pupil diameter which has been shown to increase when deceiving and blink frequency which has been shown to decrease when deceiving. Additionally, Psychopathy, Machiavellianism and Narcissism have previously been shown to affect alternate cues to deception yet such effects are under-researched in regards to ocular cues: The present investigation aims to address this gap.

Methods: An opportunity sample of 24 participants from the general public was recruited for this investigation, 14 of which were male and 10 of which were female. Age ranged from 18 to 26 years ($M=22$, $SD=2.28$). A mock crime experiment was used: half of the participants stole £20 or a watch from a drawer whereas the other half did not steal anything. Each participant was then exposed to a live interview streamed through Skype™ and stationary eye tracking equipment was used to record ocular behaviours. The 'Dirty Dozen' dark triad measurement was used to define personality traits.

Results: The combining of pupil diameter cues produced a statistically significant logistic regression that could classify group membership (guilty/innocent) with 83.3% accuracy. Crime irrelevant and crime relevant questions significantly effected pupil diameter and blink rate. Additionally, it seemed that Psychopathy; Machiavellianism and Narcissism did not affect ocular cues to deception.

Conclusions: A combination of pupil diameter cues is useful in diagnosing a guilty or innocent participant. No single cue could significantly determine guilt or innocence. Personality type does not affect ocular cues to deception in the present study. Sample size should be addressed in future investigation.

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