

Utilising motion capture technology to identify trusted testimony in military encounters

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Background

Aim

Develop technology to aid soldiers' identification of untrustworthy others.

Social interaction is governed by perceptions and beliefs that occur outside of conscious awareness. One belief regards another's trustworthiness. Soldiers' beliefs about another's trustworthiness sometimes fail to reach conscious awareness. However, they may be detected through soldiers' non-verbal behaviour (i.e., changes in body language when interacting with untrustworthy others).

Is it possible to develop a device that alerts the wearer to those they shouldn't trust?

Method

Design

- Participants played the role of military investigators
- They interviewed 6 citizens (confederates) on a simulated military base about one of four fictional crimes
- Citizens varied in their cooperativeness ((un)cooperative) and knowledge (true, false, no knowledge) about the crime. This created 6 citizen types (see Table 1.)

		Knowledge		
		True	False	None
Cooperate	Yes	Honest Harry	Duped Darren	Keen Ken
	No	Resistant Rory	Lying Len	Silent Simon

Table 1: Six Citizen Types (vary along dimensions of Cooperation & Knowledge)

Sample

- 35 Female; 5 males students.
- Mean age 20 yrs (SD = 3.9; Range = 18-40yrs).

Measures

- Implicit Trust:** Movement was measured using Xsens motion capture suits. These were worn by participants when interviewing citizens
- Explicit Trust:** Conscious judgements of another's trustworthiness was measured using:
 - Trust Game:* Participants distributed a fictional £30 among the 6 citizens in the knowledge that the money would be tripled and the citizen would be given the opportunity to reciprocate
 - Re-interview rank order:* Participants ranked the citizens according to whom they wished to re-interview first to last (first = least trustworthy)
 - Citizen classification:* Participants categorised citizens as *cooperative* or *uncooperative*. This was compared with an automated classification based on body movement to explore if motion capture technology can enhance judgement accuracy

Results

- Participants moved more when talking to non-cooperative citizens $F(1, 1363.5) = 33.86, p < .001$ (see Figure 1)
- Participants moved more when talking to non-cooperative citizens that did not have knowledge compared to those that did have knowledge $F(1, 1363.1) = 3.01, p < .05$ (see Figure 1)
- Participants displayed the greatest movement for non-cooperative citizens 61.8% of the time. However, in a simpler version of the study, participants were only consciously able to identify non-cooperative citizens with 49.4% accuracy

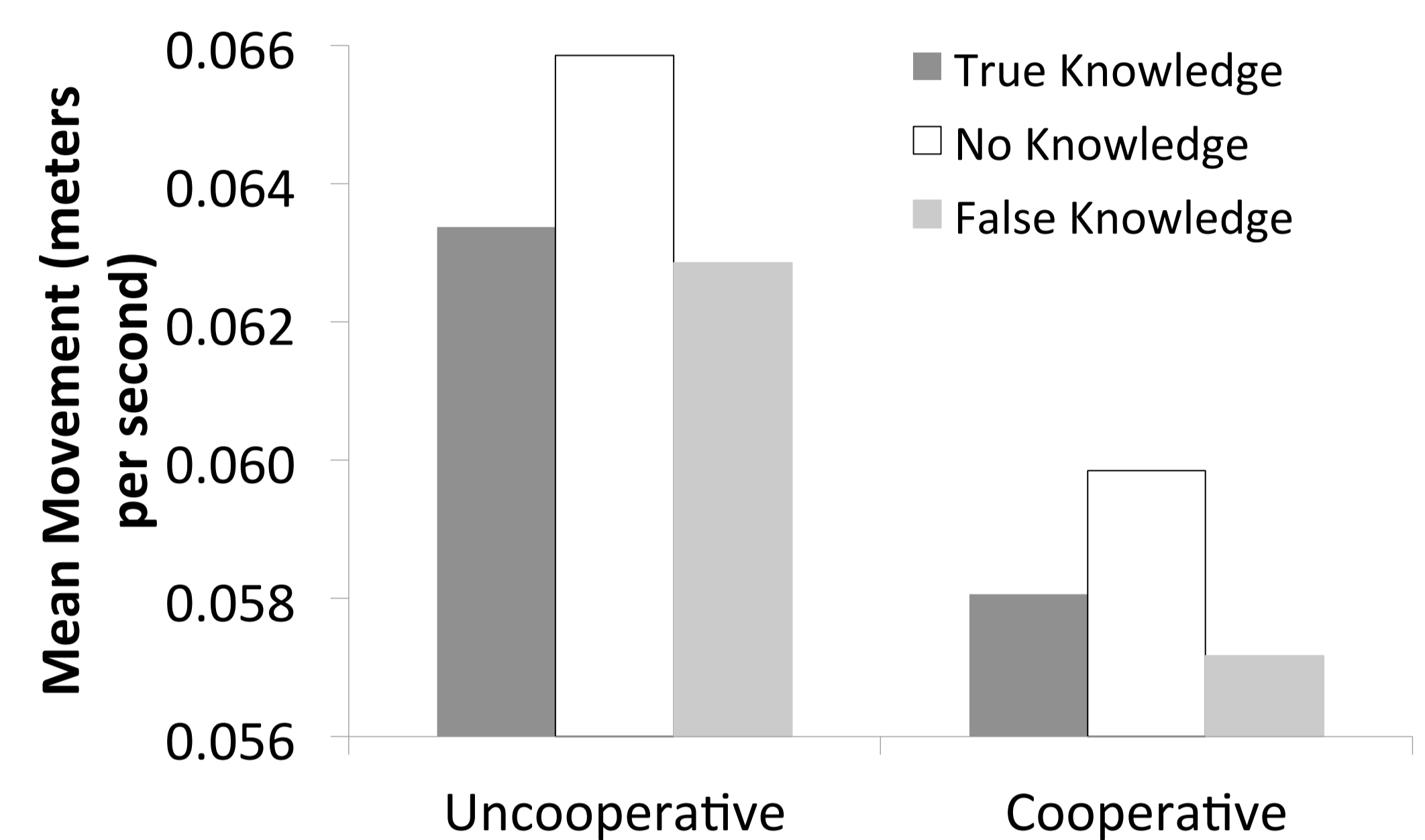


Figure 1: Mean extent of non-verbal movement according to citizen cooperation & knowledge

- Conscious trust judgements were based only on whether citizens were cooperative or not. Trust game: $F(1,39) = 12.15, p < .001$; Ranking task: $F(1,39) = 16.77, p < .001$ (see Figure 2)

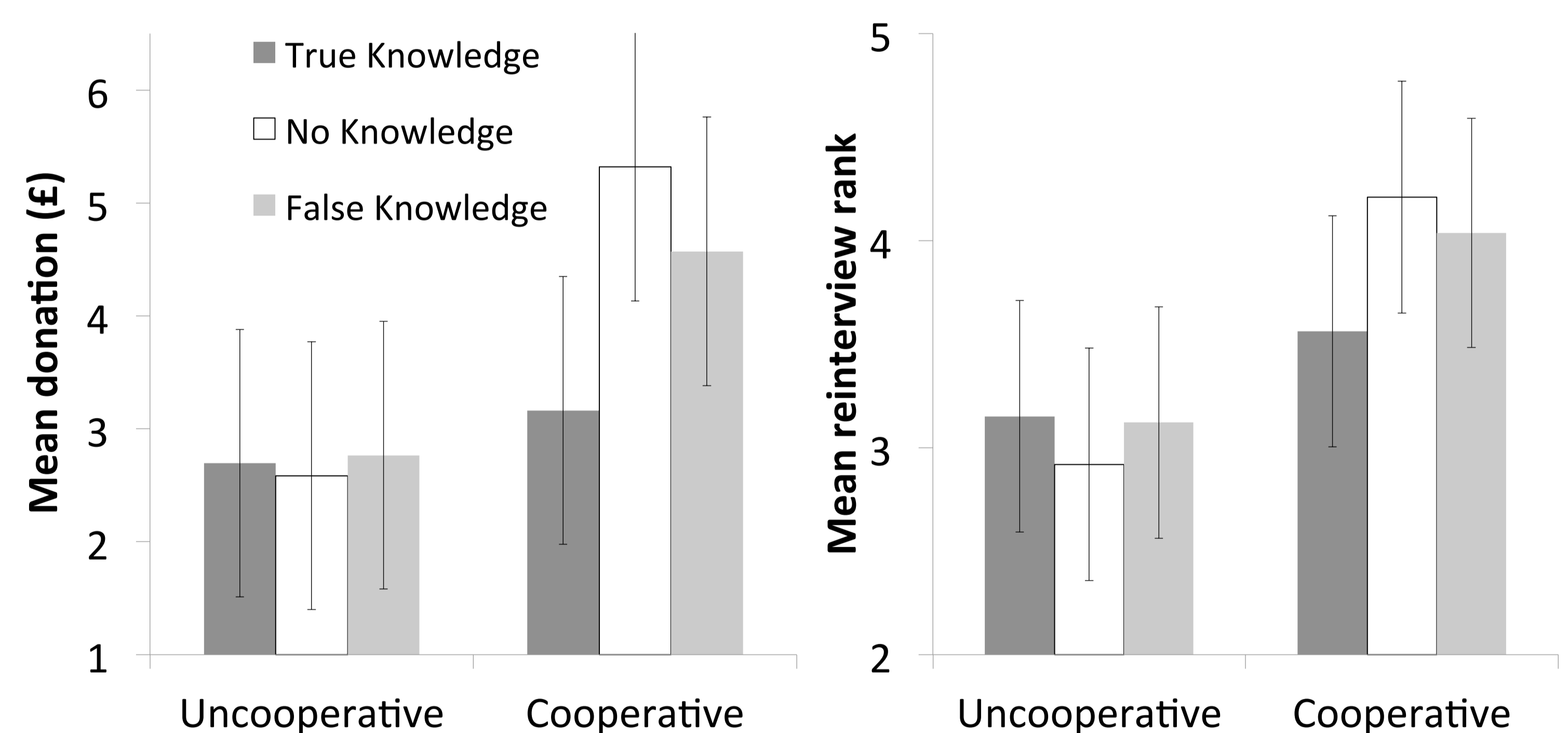


Figure 2: Mean donation to citizen during a trust game (left) and mean priority ranking for re-interview (left) according to citizen cooperation and knowledge type

Discussion

Participants could not judge whether a non-cooperative citizen had valuable information, yet they reacted differently to those with valuable knowledge. These beliefs were not available consciously to participants, with conscious judgements based upon whether citizens were cooperative or not but not upon the type of knowledge held.

Implications

- People respond behaviourally to cues of another's trustworthiness without this reaching their conscious awareness
- A simple haptic feedback device that alerts people to their non-conscious suspicions could improve detection deception
- Like all 'lie detectors' it is not deception that is detected so much as cues associated with deception. Therefore care is required in interpretation. That is, greater movement indicates only probabilistically greater likelihood of deception but similar responses to alternative cues remain possible

Acknowledgements

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