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# NONVERBAL BEHAVIORAL CUES AND PERSONALITY TRAITS IN CONCEALING HOSTILE INTENTIONS

Astrid THÉBAULT GUIOCHON, Marianne MORTIER-MOURZELAS, Mélody HANNOAH and Geoffrey DURAN<sup>1</sup>

## Abstract

The present study is aimed at completing the work on imminent threat detection using CCTV. The main goal was to investigate nonverbal behavioral cues to the concealment of hostile intentions while investigating the influence of personality traits. Forty participants (20 women) were asked to complete a questionnaire assessing their empathetic traits (affective empathy, cognitive empathy, emotional contagion), their "dark" personality traits (machiavellianism, narcissism, psychopathy) and their arousal. They then chose their test condition (aggression or non-aggression) which consisted of completing a route simulating an airport queue. During the course, participants made two stops of unknown duration (30 seconds and 1 minute respectively) before presenting their phone or shooting at a target (depending on the condition). Non-verbal behaviors were counted for each stop by body area (e.g. upper face, lower face, chest, etc.). Multiple regression analyses demonstrated the involvement of lower limb movements in the concealment of hostile intentions, as well as the influence of empathy levels and so-called "dark" personality traits such as narcissism and psychopathy. These results provide additional data regarding the concealment and the detection of malicious and even criminal behavior using CCTV.

## Introduction

### Context

- Identifying hostile behaviors is crucial in combating crime, and safeguarding individuals and belongings even more so considering the post-pandemic rise in crime rates.

### CCTV

- CCTV surveillance systems are effective in preventing and investigating vehicle offenses, but limited in reducing assaults (Gerell *et al.*, 2016; Welsh *et al.*, 2004).
- Troscianko *et al.* (2004) found detectors indicating visually relevant behaviors associated with detecting hostile intentions during CCTV video viewing.

### Nonverbal cues

- Hostile intentions may be more easily discernible than deception, with detection rates exceeding chance levels (Frey, 2014; Vrij & Bull, 2004).
- Koller *et al.* (2015) demonstrated criminals exhibit higher frequency of object-adaptive behaviors (e.g., phone usage) and fewer self-adaptive behaviors (e.g., head scratching).
- The cognitive load associated with concealing intentions affects nonverbal behavior, such as eye movements and hand gestures (Frosina *et al.*, 2018).

### Personality traits

- Empathy is linked to the capacity to engage in deceptive behavior (Gaspar *et al.*, 2021).
- There is a strong correlation between propensity for deception and expression of dark triad traits: Machiavellianism, narcissism, and psychopathy (Furnham *et al.*, 2013).

## Results

### Empathy, nonverbal cues & hostile behavior

- Negative correlations between cognitive empathy and leg movements at stop 1 ( $r = -.55$ ,  $p = .0006$ ) as well as leg movements at stop 2 ( $r = -.44$ ,  $p = .008$ ): the more subjects are empathetic, the less they move their legs.
- Empathetic traits explain 36% of the number of legs movements.
- Subjects who chose to shoot at the dummy were less affectively empathetic ( $p = .014$ ) and moved their legs more ( $p = .004$ ) than controls.

### Dark traits, moving speed & hostile behavior

- Positive correlations between moving speed between stops and psychopathy ( $r = .37$ ,  $p = .028$ ) as well as narcissism ( $r = .32$ ,  $p = .028$ ): the more subjects express dark traits, the slower they move between stops.
- Narcissistic traits explain 19% of the moving speed between stops, and 25% of hostile behavior.

## Discussion & Conclusion

- Empathy plays a crucial role in concealing intentions (Gaspar *et al.*, 2021; Vrij, 2008).
- Lower limb movements are more difficult to conceal and therefore could more accurately reflect intentions (Ekman & Friesen, 1969).
- There seems to be a strong correlation between the likelihood of deception and dark personality traits (Furnham *et al.*, 2013).
- The present study provides further support for hostile behaviors detection using nonverbal behavioral cues, as well as investigating the relationships between these cues and both prosocial and antisocial personality traits.

## Objectives

- Identify patterns of nonverbal behaviors reflecting hostile intentions.
- Investigate the influence of personality traits on the ability to conceal intentions.
- Consider both prosocial (empathy) and antisocial (dark triad) personality traits.

## Method

### Participants

- 40 (20 women, 20 men)
- 2 conditions (hostile, control)

### Material & Procedure

- Basic Empathy Scale in French (D'Ambrosio *et al.*, 2009).
- Dirty Dozen Scale in French (Bet *et al.*, 2015).
- Two-stop (30s, 1min) queue ending in front of a dummy to which they had to present their phone or shoot at.
- Nonverbal cues for each stop were counted by body zone (eyes, upper face, lower face, arms, hands, etc.).

