

Chapter 5: Nonverbal Cues to Deception and Their Relationship to Terrorism

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Introduction

The desire to detect deception has existed as long as act of deception and both have been pursued across generations in an attempt to gain an advantage over another. While the precise motives and nature may differ (i.e. strategic advantage in battle or business, maintaining positive relations with a lover we have wronged, sparing a friend hurt feelings) the desire to deceive and detect this deception remains constant. For this reason, vast amounts of research time and money have been poured into this topic in order to gain a better understanding of the nature of deception (e.g. DePaulo, et al., 2003; O'Brien, 2008). While we have learned a great deal, there are still many mysteries associated with deception. The main areas that have been pursued in the study of deception include verbal and nonverbal cues (including speech tone, speed, pitch, body and facial movements). The purpose of this review is to outline the progress of research related to the use of nonverbal cues in deception detection within the specific context of terrorist activities. Conducting research in this area is a challenge because of the fortunate rarity of terrorist events. However, relying on our understanding of cognitive processes and extrapolating from other situations, we can begin to understand how nonverbal cues work in a terrorist domain.

In this review, we will outline four main areas: 1) Why is nonverbal behaviour important in studying deception? 2) What are the main findings about nonverbal behaviour and deception? 3) What are the challenges of studying nonverbal behaviour and deception? 4) What are the future paths for exploring research in the topic of nonverbal behaviour and deception?

The majority of interactions we have with people are truthful in nature so we have an inherent tendency to trust (DePaulo et al., 1996; DePaulo & Kashy, 1998). However, every day individuals engage in many lies that are generally harmless. Unfortunately there are some acts of deceit that can have dire consequences. Deception can be used to swindle someone

out of his or her fortune, cause emotional damage or physical harm. Deception is one of the main tactics that can be used by terrorists to make attack plans 'invisible' until the actual incident (Caddell, 2004; Godson & Wirtz, 2000; Hoffman & McCormick, 2004; Jessee, 2006; Moore, 1997), and therefore requires systematic investigation from researchers. It has been contended by the Security Service (MI5) that "terrorism presents a serious and sustained threat to the United Kingdom and UK interests abroad" ("Terrorism," 2012). In recent years, terror attacks have become more strategic than before, and terrorists are deploying new techniques and tactics in the processes of realising their plans (Jessee, 2006; Seib & Janbek, 2011; Victoroff, 2005).

Definitions

For the purpose of this review, nonverbal behaviour includes anything that takes the form of a gesture or physical movement. Other research has included speech tone, speed or pitch as a nonverbal behaviour, but that is beyond the scope of the current review. Here we are particularly interested in what would allow an individual to detect deception purely through visual cues.

There are many ways of defining the term *deception* and many characteristics may be adapted to feature deception behaviour in relation to terrorism. Krauss (1981) and other researchers (Zuckerman, DePaulo, & Rosenthal, 1981, p. 3) have defined deception as "an act that is intended to foster in another person a belief or understanding which the deceiver considers to be false". Burgoon and Buller (1994, pp. 155-156) later defined deception as "a deliberate act perpetrated by a sender to engender in a receiver beliefs contrary to what the sender believes is true to put the receiver at a disadvantage"; this emphasises the resulting disadvantage of the receiver, due to deception. More recently, Vrij (2008, p. 15) has defined deception as "a successful or unsuccessful deliberate attempt, without forewarning, to create in another a belief which the communicator considers to be untrue". In the context of

terrorism, we would expect deception to include for example concealment or creating an impression of being in a place for another purpose other than the true intention.

Nonverbal Behaviour, Deception and Terrorism

Before we explore deception and its relation to terrorism in greater detail, it is essential to understand what specific role nonverbal deception serves in terrorist attacks. Deception, as a deliberate activity, is employed as a tactic in terrorism activity from the pre-attack planning to the post-attack cover-up stage. It is firstly a crucial component of the pre-attack stage. For example, terrorists need to covertly collect and test information/material required for the attack and sometimes they use fake identities to do so (Jessee, 2006). Both covert and feigning activities are deception. Deception is not only used in hostile reconnaissance and intelligence gathering, but on the day of the execution of the attack, deception is also needed (Jessee, 2006; O'Brien, 2008). Terrorists need to use fake identities in order to pass security checks; such a deception is not easy to detect. According to the commission report of the 9/11 terrorist attacks (U.S. National Commission on Terrorist Attacks Upon the United States, 2004), airport security workers were unable to recall anything out of the ordinary regarding the terrorists. It would appear that they looked like 'normal' passers-by. This may well be due to the fact that these terrorists, mostly trained prior to the attacks (e.g., Horgan, 2005; Shane, 2009), were skilled at using deception techniques such as concealing and falsifying their real intentions, emotions and identities on the day of the event (Portera, Juodisb, Leanne, Kleinb, & Wilsonb, 2009). Furthermore, at the post-attack stage, deception is used if a terrorist needs to leave the scene of the attack without being identified. In the longer term, terrorists utilize deception in their signalling strategies, so as to "enhance their freedom of action" with regard to their targets (Bowyer, 1982; Hoffman & McCormick, 2004). The above is an example of how terrorists might use

deception as a mechanism at all points in planning, executing and exiting the act. Table 1 summarises possible deception tasks by stage of the attack.

Identifying behavioural cues and understanding their underlying cognitive or emotional processes may help to identify terrorists, from the pre-attack stage. This is considered as one of the crucial strategies that may be applied in order to detect terrorism in advance of a catastrophe, and in addition, to help people understand how terrorists may plan and carry out attacks.

In many areas where there is a potential security threat, security checkpoints will be established. This allows security officials a chance to observe behavioural and verbal cues in a systematic manner. However, frequently, if there is no checkpoint in place, for example in open spaces such as shopping centres, security officials must rely purely on visual cues to identify suspicious individuals. While there is clearly a range of expertise in observing cues based on experience and skill, it is important to understand how these individuals can assess nonverbal cues that can indicate someone may be acting in a deceptive manner – i.e. the deceiver's intentions are not what they immediately appear to be.

Behavioural Cues to Deception

Observers are often inclined to attend to nonverbal behaviour because there is an assumption that it is more difficult to control nonverbal behaviour (DePaulo, Rosenthal, Eisenstat Rogers & Finkelstein, 1978; Hale and Stiff, 1990; Kalbfleisch, 1992; Maxwell, Cook & Burr, 1985; Stiff, Hale, Garlick & Rogan, 1990; Vrij, Dragt & Koppelaar, 1992). Therefore observers believe that it is more likely that a deceiver will 'leak' the information they are trying to hide through their nonverbal cues (Vrij, 2000).

In some instances there may not be both verbal and nonverbal cues to rely upon, but if the nonverbal behaviour and speech content are discrepant. When this happens, individuals tend to emphasise nonverbal cues. For example, a job applicant that appears reserved but

claims to be excited about the job will be perceived as less enthusiastic about the job than he or she reports (DePaulo, et al., 1978; Hale & Stiff, 1990; Zuckerman, Driver, & Koestner, 1982; Zuckerman, Spiegel, DePaulo, & Rosenthal, 1982). In sum, we are used to drawing inferences about a person based on nonverbal behaviour (Vrij et al., 2010). This is particularly troublesome because in a recent deception detection experiment, researchers found that nonverbal cues, particularly visual ones, decrease the accuracy rate of deception detectors compared to those relying on only audio information (Burgoon, Blair, & Strom, 2008).

DePaulo and Kirkendol (1989) and Vrij (1996) identify at least four reasons why we rely more on nonverbal cues than verbal cues. First, there are automatic links between emotions and nonverbal behaviours and these automatic links do not exist between emotions and speech content. These automatic links make it difficult to remove emotion from nonverbal behaviours – thus the leaks that occur when we are under stress. Second, we have more practice in using words than behaviour to convey a message. This allows us to be more adept at changing our words rather than behaviours in order to deceive. Third, because words are more important than behaviour in conveying a message, we become more aware of the words we are using than the accompanying gestures. This focus upon words rather than behaviours allows our true feelings or intentions to leak out through our behaviours. Finally, we cannot stop the nonverbal messages being transmitted. We can stop speaking, but our body language is always conveying a message. This is an advantage for those skilled in reading nonverbal communication since there is a constant monologue to attend to.

Approaches to Deception

When trying to detect deception, the idea that there is one universal behavioural cue that people exhibit when they are lying is simply untrue (DePaulo et al., 2003; Masip, Sporer, Garrido, & Herrero, 2005; Sporer & Schwandt, 2006, 2007; Vrij, 2005). In other words there

is nothing like Pinocchio's nose. However, we are not without hope in trying to detect deception. According to DePaulo et al. (2003), there are 23 verbal and nonverbal indicators of deception, i.e. cues to deception, which showed significant effects in a meta-analysis study. However, many conflicting results indicate that no single cue can be confidently used to detect deception, due to the inconsistent pattern that cues present in deceivers (Vrij, 2008). There are some behaviours that are more likely to occur when an individual is being deceptive versus not deceptive (Vrij, Granhag, & Porter, 2010). It is here that we focus our attention. There are three main processes involved in conducting deception: the emotional approach, the cognitive effort approach and the attempted behavioural control approach as described in The Multi-Factor Model (Zuckerman et al., 1981) and later described by Vrij (2000; 2008). These processes have been tested by many others, and researchers have subsequently suggested supporting evidence for these processes which will be introduced in the following three sections together with discussion of how such processes relate to terrorism activity.

The emotional approach

There are three types of emotion associated with deception: fear, guilt and excitement (Ekman, 1985). These common aspects of emotion may occur simultaneously or separately, and contribute to the complexity of deception behaviour. Ekman and Frank (1993) have proposed a series of determinants that influence the feeling of fear during deception: the first is the liar's beliefs about the target's skill in detecting lies. Thus, liars facing lay people might feel less fear than when facing security officers, since they know that security officers are likely to be trained to detect deception. The second determinant is concerned with the liar's deception skills and preparation to deceive. When a liar is skilled or well prepared, they might feel less fear when lying, compared to those who are not skilled or well prepared. Many terrorists have experience conducting attacks (Pedahzur, Perliger, & Weinberg, 2003)

or at least, involvement in related training (Bowyer, 1982; Hoffman & McCormick, 2004). This might explain why they experience less fear than other liars. Thirdly, liars' feelings about punishment are related to fear. Also individuals may feel more fear when the stakes are high (Vrij, 2000). However, even though the stakes are high for terrorists, it is rare to find ones who fear punishment (Kippenberg & Seidensticker, 2006). Nonetheless, some terrorists do fear the unsuccessful execution of their mission, and this relates to their failure of fulfilling their strong political, religious or psychological purposes (e.g., Hoffman, 2006; Victoroff & Kruglanski, 2009; Whittaker, 2007). These factors that influence the emotion of fear could, at least to some degree, influence terrorists' behaviour while engaging in deception.

Guilt is another emotion that relates to deception. In line with Ekman's (1985) proposition about guilt, perhaps deceivers who hold different social values to that of the target, for example Al-Qaeda who see the western world as the enemy, are inclined to show less guilt when being deceptive in attacks. In addition, liars feel less guilty when their targets are anonymous than when they are known (Ekman & Frank, 1993), perhaps making it easier for liars (terrorists) to operate in situations where the targets (the public) are generally anonymous. Moreover, the strength of guilt is related to the difference between the liar's gain and the target's loss (Ekman & Frank, 1993). In terms of deception in general, liars normally feel a stronger sense of guilt when a stronger disadvantage to the target is perceived. However, terrorists are inclined to regard innocent people as 'justified' targets according to their own definition of 'enemy' (Hoffman, 2006), and thus are not disturbed by the loss of their 'enemy'. These characteristics might explain why terrorists lack the presence of guilt (Hare & Cox, 1978; Post, 2007).

In spite of having negative feelings, liars may feel positive emotions such as excitement when lying. They may also feel relief and pride in their sense of achievement afterwards

(Ekman, 1985; Ekman & Frank, 1993). This feeling of delight may be enhanced when liars feel challenged, or when there are audiences for their acts (Ekman, 1985; Ekman & Frank, 1993). Correspondingly, deception during terrorist attacks is a significant challenge and accomplishment for terrorists; committing the attack fulfils deception that involves a large “audience” (the public). This might result in positive feelings while conducting terrorism-related deception.

Although there is no evidence to show that terrorism-related deception will involve fewer emotions, terrorists who are normally trained before their mission might be aware of the need to conceal signs of emotions (Horgan, 2005; Kippenberg & Seidensticker, 2006). In addition, the strength of emotional feelings and their effect on building up deception behaviour may also be moderated by other individual and contextual factors.

The cognitive effort approach

Lying sometimes requires extra mental and cognitive effort (Vrij, 2008). Indeed, since liars need to formulate lies they may be pre-occupied by the need to remember to play their role and they must also pay particular attention to their behaviour whilst monitoring the reaction of their targets. In addition, deliberate efforts to balance the conflict between lies and truth in an individual’s mind places cognitive demands upon liars (e.g., Walczyk, Roper, Seemann, & Humphrey, 2003; Walczyk et al., 2005). This has been demonstrated in several studies (Vrij, Leal, Granhag, Mann, Fisher, Hillman, & Sperry, 2009; Vrij, Mann, Fisher, Leal, Milne, & Bull, 2008). Specifically, cognitive complexity can lead to fewer hand and arm movements and increased gaze aversion (Ekman, 1997; Ekman & Friesen, 1972). Cognitive load is related to neglect of body language and eye contact with a conversation partner and can act as a distracter when concentrating on a cognitively demanding task. These phenomena are supported by evidence given by neuroimaging studies (e.g., Carrión, Keenan, & Sebanz, 2010; Kozel et al., 2005; also see the review in Abe, 2011).

Vrij, et al, (2010) outlined six reasons for why lying can be more cognitively demanding than truth telling. To start, thinking of a convincing lie may be cognitively demanding. Second, because liars do not take their credibility for granted, they must expend effort in acting “believable” (DePaulo et al., 2003; Kassin, 2005; Kassin, Appleby, & Perillo, 2010; Kassin & Gudjonsson, 2004; Kassin & Norwick, 2004). Third, because liars are concerned with appearing credible, they must monitor the reactions of those with whom they are interacting (Buller & Burgoon, 1996; Schweitzer, Brodt, & Croson, 2002). Fourth, liars have to remind themselves to maintain a façade that requires cognitive effort (DePaulo et al., 2003). Fifth, not only do liars need to generate a lie and maintain it, they must also suppress the truth from emerging (Spence et al., 2001). Finally, activating a lie requires mental effort due to the associated intentionality, while the truth generally flows forward automatically. (Gilbert, 1991; Walczyk et al., 2003; Walczyk et al., 2005).

A study conducted by Carrión et al. (2010) where participants lied and told the truth with or without deceptive intentions found that the most difficult part of telling a convincing lie was in handling the cognitive conflict resulting from the need to keep alert to others’ mental states and reactions while deceiving them. While most terrorism-related lies are relatively straightforward to formulate and terrorists are normally trained in advance (Jessee, 2006), a high cognitive demand on terrorists arises from the need to monitor reactions from targets, paying special attention to their behaviour, and overcoming the conflict between truth in their mind and the deception they are performing. In addition, although information from intelligence, surveillance and reconnaissance (ISR) (O'Brien, 2008) is gathered prior to the attack, terrorists may still experience cognitive load when recalling information and engaging in the attack.

A crucial factor that influences deception behaviour is that of stakes, insofar as it refers to the perceived consequences of successful and unsuccessful attempts at deception (Ekman

& Frank, 1993). The fact that the stakes are high can also have an influence on cognitive load, thus influencing emotion, cognitive effort and attempted behavioural control. Although high-stakes deception happens in everyday life, the consequence of terrorists' deception is usually more severe. For example, terrorists planning threats to public security are faced with skilled lie-catchers, and they will normally perceive the stake of severe consequences if caught. For example, the high risk to religious terror groups if detected would prevent them from realising their self-sacrifice (Post, Sprinzak, & Denny, 2003) and could result in harm to their, or their family's, social status in their group (e.g., Kuznar & Lutz, 2007; Silke, 2003).

The attempted behavioural control approach

Those engaging in deception continually monitor their audience and adjust their behaviours accordingly (Burgoon & Buller, 1994). Early theories such as Interpersonal Deception Theory (IDT) (Buller & Burgoon, 1996; Burgoon & Buller, 1994) proposed that liars might adjust their behaviour by monitoring the reaction of their targets (Burgoon et al., 2008; Burgoon, Buller, & Floyd, 2001) or by monitoring their targets' suspicions. Before this point, deception was not viewed as an interaction but as an individual act by one person. It is likely that such behavioural adjustment happens more when interpersonal interaction occurs (Burgoon, Buller, Ebesu, White, & Rockwell, 1996). For this reason, dialogue rather than monologue is advantageous when the goal is to deceive. In terms of terrorist attacks, the occurrence of interpersonal interaction depends on the specific task of the deception and the stage of the attack. For example, in some cases terrorists only need to walk in the public space and make sure they are not doubted by the public or security officers (no interaction is involved), whereas sometimes they need to talk to security officers while passing the security check (interaction is involved). Moreover, the IDT perspective provides an explanation of deceivers' increase in cognitive load and how self-monitoring leads to attempted behavioural control.

Perceiving, monitoring and communicating with targets helps liars deceive successfully (e.g., Burgoon et al., 2008; Burgoon et al., 2001). Notably, in order to appear honest or normal, liars may attempt to control their behaviour during deception. Some evidence shows that liars may try to exhibit behaviours they believe are credible, such as trying to behave positively, and in a friendly fashion, to convince their targets of their honesty (DePaulo et al., 2003). However, such deliberate self-regulation sometimes makes liars seem over-controlled (Vrij, 2008). The attempted behavioural control is an essential strategy for terrorism-related deception, as terrorists normally try their best to “blend in”, so as to reduce attention from the public or security officers (Shane, 2009). There is also information regarding behavioural control that states that individuals should not show signs of confusion or tension, but to smile, be bright and confident, as seen in the Attackers’ Spiritual Manual (Kippenberg & Seidensticker, 2006). It can be inferred that terrorists are seeking to give a positive impression to the receivers of their deception.

This idea of regulating behaviour was discussed in DePaulo’s (1992) self-presentation theory that emphasises the possibility that in some cases, a truth teller may experience similar cognitive processes of deception compared with a liar and regulate his or her behaviour. For example, a truth teller may also experience the emotion of fear when he or she perceives the negative consequence of not being believed (Ofshe & Leo, 1997) that might lead to the presence of similar behaviour as those who are actually deceiving. In other words, there are many reasons a person may want to regulate his or her nonverbal behaviour. DePaulo et al.’s (2003) proposition reveals the dilemma of detecting terrorism-related deception, as some innocent people may also perform deception-like behaviour when they are nervous or the stakes are high. Yet terrorists are well trained to behave as normally as possible, in order not to be detected. This complicates the process of detecting deception in the counterterrorism field.

Through attempts to control behaviour, there have been studies that have identified reduction in hand movements in particular (Vrij, Akehurst, & Morris, 1997; Vrij & Winkel, 1991). One explanation given for this is that there is an increase in cognitive load during deception due to the fact that liars not only have to deceive the other but also have to try to promote a credible impression. A second explanation is that they realize they are under increased scrutiny and in order not to be caught they reduce their body movements and focus on their script (Vrij, Akehurst, & Morris, 1997).

Findings and Challenges

Out of all the nonverbal cues that have been identified, only a handful consistently emerged across studies. In fact, in many instances there are blatant contradictions in what nonverbal cues indicate deception (Miller & Stiff, 1992). This may be because each individual differs in how he or she expresses him or herself when lying or anxious for example (Miller & Stiff, 1992). It is important to state that there are behaviours that *may* indicate that an individual is being deceptive, but they do not necessarily mean that they are lying. It may mean that an individual realizes that they look suspicious and this creates a degree of discomfort and unnaturalness about them (Vrij, 2000). Also, many of the cues identified as being related to deception will only be displayed if an individual is experiencing fear, guilt or excitement. If the lie is easy to fabricate then the behavioural cues to deception are unlikely to be displayed. It is for these reasons that detecting deception is incredibly difficult.

Having said that, there is some hope in identifying deceptive individuals. A meta-analysis including 120 studies and 158 cues to deception demonstrated that most behaviours are only weakly related to deception, if at all (DePaulo et al., 2003; see also DePaulo & Morris, 2004). Rather than looking for specific cues to deception, general impressions of a person are stronger predictors of accurate deception judgment (Hartwig & Bond Jr., 2011). In

general, compared to truth tellers, deceivers appear to be more tense, such as having a higher pitched voice, presenting increased pauses and longer latency periods while lying, and decreases in hand and finger movements, leg and foot movements, and illustrators (hand and arm movements supporting speech) (Vrij, 2008). Deceivers may also respond faster and in a less straightforward way to the content of their statements, and may also provide more negative statements (Vrij, 2008).

Training to detect deceptive behaviour appears to be more effective when it focuses upon more global impressions such as looking for more tension (specifically more fidgeting) than when it does not. Similarly, looking for impressions of "less sense" (less logical, more discrepant); "less fluent" (more speech disturbances/word repetitions); and "less forthcoming" (shorter speaking duration, fewer details) improved training effectiveness, although these differences are not significant. However, there is little difference in training effectiveness for the cue less engaged (i.e. fewer illustrators). Taking the sum of these findings, this may mean that overall perceptions are more accurate predictors of deception than a specific nonverbal behaviour (Driskell, 2011).

Some evidence has demonstrated differences in emotional displays shown by liars and truth-tellers (Ekman & O'Sullivan, 2006). For example differences in micro-expressions have been investigated to distinguish liars and truth-tellers through these "leaked emotions". These micro-expressions are difficult to detect and often need to rely on slowed down visual displays in order to identify them.

As mentioned above, the occurrence of deception cues depends on the experience of cognitive processes, thus, the context in which a liar deceives will directly influence his or her behaviour. Cues to deception are more likely to be present when individuals are motivated to deceive than when there is little or no consequence attached to their performance (DePaulo et al., 2003, Driskell, 2011, Levine, Feeley, McCornack, Hughes, &

Harms, 2005). Accordingly, terrorism-related deceptions might show verbal and nonverbal cues in terms of stress or cognitive effort and might also feature more behavioural control when compared with deception in general. In addition, terrorists are trained to behave in a 'normal' way, so as to arouse less attention. This may also result in more controlled behaviour. Detecting terrorists is not as easy as 'spotting' suspicious individuals from the general public by following a checklist of cues to deception. Similar behaviour from both liars and truth tellers further increases the difficulty of spotting liars, and terrorists are even harder to detect on account of their apparent 'normality'.

Knowing that a reliable cue to deception does not exist presents us with a much more complex puzzle embedded in individual differences and contextual nuances. However it is still important to improve our ability to detect deception. The question is that if there are no reliable cues to distinguish between truth tellers and liars, then what is the purpose of this training? In fact, some authors have pointed out that deception detection training may be misleading and counterproductive if it is focused upon cues that do not actually distinguish between liars and truth tellers (Kassin & Fong, 1999). Because of the inherent weaknesses in the predictive nature of behavioural cues to deception, it may be more pertinent to focus upon intuitive notions about deception. It may be that increasing the behavioural differences between liars and truth tellers is a better way to arm security officials to detect deception rather than by looking for specific cues to deception (Hartwig & Bond, 2011).

Stereotypes

As Vrij et al (2010), state in their review article, there are many stereotypes that people hold about nonverbal cues that a liar will exhibit. Some common beliefs are that liars will act nervously, exhibit gaze aversion ("liars look away") and display grooming gestures ("liars fidget") (Strömwall, Granhag, & Hartwig, 2004; Taylor & Hick, 2007; The Global Deception Team, 2006; Vrij, 2008; Vrij, Akehurst, & Knight, 2006). Some evidence suggests

that gaze aversion may be related to a way to manage cognitive load. For example, an experiment with 8-year old children found that children did avert their gaze when engaged in pedagogical question and answer sessions. This may have been related to social factors. However the main function found for averting gaze is in cognitive load management when processing information (Doherty-Sneddon & Phelps, 2005). The challenge here is to identify when a person is averting gaze because they are concentrating on something honestly versus engaging in deceit. A problem with using cognitive load as a proxy for identifying deception is that not every person engaging in deceit will experience cognitive load in the same way. Research has shown that these cues commonly thought to be associated with lying are in fact not related. In particular, liars do not seem to exhibit the behavioural cues of gaze aversion and fidgeting (Vrij & Mann, 2001). For more details about people's beliefs about behavioural cues to deception see DePaulo, (1992); DePaulo, Stone, and Lassiter (1985); Vrij, (1998); Zuckerman and Driver, (1985); Zuckerman, Driver, and Guadagno, (1981).

It appears that multiple sources of information can assist in identifying when an individual is engaging in deception. In fact, the best-validated cues to deception are verbal and nonverbal cues to be considered together that include: illustrators, blink and pause rate, speech rate, vague descriptions, repeated details, contextual embedding, reproduction of conversations, and emotional 'leakage' in the face (Porter & ten Brinke, 2010). In a study by Blair, Levine, and Shaw (2010), they found that the mean accuracy of groups receiving contextual information was 21% higher than the accuracies reported in the Bond and DePaulo (2006) meta-analysis. This clearly demonstrates the importance of context when trying to determine whether a person is acting in a deceptive manner. Perhaps once we clearly move away from the search for a reliable behavioural cue we will begin to open our eyes to the complexity involved in detecting deception. It is a combination of science and intuitions

grounded in experience and general impressions that may help us get closer to detecting a deceptive individual.

Conclusion

In conclusion, identifying nonverbal cues to deception is clearly an important but challenging task. While we understand that there is no one reliable cue indicating deception, we need to delve into the complex task of identifying pairings of cues (verbal and nonverbal) that are indicative of deception. We have come a long way in understanding what drives a person to display certain cues when being deceptive, however this is unreliable because these cues are also present in other situations (e.g. when someone is anxious, nervous, lost). Future studies need to continue down the path of exploring combinations of cues to see if we can pinpoint a deceptive “look” more generally rather than looking for one particular cue. Once we begin to understand what drives these intuitions about a person being deceptive or not, we can once again begin to put science back into deception detection rather than appearing to simply rely on one’s gut.

Table 1
Terrorist activities that may involve deception

Stage of attack	Possible deception task
Pre-attack	Information/material collection and testing, financing, communication, travelling, locating and supporting for training.
Event execution	Passing the security operations, keeping out of the public eye, and securing weapons pre-attack.
Post-attack	Escaping from the attack scene and securing weapons post-attack if appropriate, destruction of evidence, and securing the terrorist organisation if caught.

Note. These activities that may involve deception are partially adopted from the identified crucial issues of terrorist attack proposed by (Horgan, 2005) and (Jessee, 1996).

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