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Dangerous decisions: A theoretical framework for understanding how judges assess credibility in the courtroom

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Purpose. Numerous wrongful convictions have brought into question the ability of judges and juries to accurately evaluate the credibility of witnesses, including defendants. Dangerous decisions theory (DDT) offers a theoretical framework to build our understanding of the decision-making process that can culminate in such injustices.

Arguments. According to DDT, the reading of a defendant's face and emotional expressions play a major role in initiating a series of 'dangerous' decisions concerning his/her credibility. Specifically, potent judgments of trustworthiness occur rapidly upon seeing a defendant's face, subjectively experienced as intuition. Originally evolved to reduce the danger to the observer, the initial judgment – which may be unreliable – will be enduring and have a powerful influence on the interpretation and assimilation of incoming evidence concerning the defendant. Ensuing inferences will be irrational, but rationalized by the decision maker through his/her subjective schemas about trustworthiness and heuristics for identifying deceptive behaviour. Facilitated by a high level of motivation, a non-critical, tunnel vision assimilation of potentially disconfirming or ambiguous target information can culminate in a mistaken evaluation of guilt or innocence.

Conclusions. Empirically based education and responsible expert testimony could serve to reduce such biases and improve legal decision-making.

One of the pillars of society is a legal system that makes fair and accurate decisions concerning guilt and innocence. Despite the centuries-old assumption that our courts live up to this expectation, there are good reasons to question its validity. First, it is not possible to empirically evaluate the accuracy of trial outcomes. Secondly, the courts, like science, do not hold the self-expectation of infallibility in their decisions. However, whereas psychological science has long relied on an acceptable error rate of 5%, the courts maintain the enigmatic 'beyond a reasonable doubt' criterion. The imprecision of this definition acknowledges that doubt is permissible, but only to the extent that it would be unreasonable to conclude otherwise. The definition also recognizes that

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errors will occur in 'some' proportion of cases. Third, in numerous contexts human decision-making is highly irrational (e.g. Englich, Mussweiler, & Strack, 2006; Kahneman & Tversky, 1982). Thus, to maintain the assumption that legal decision-making is generally sound, one must accept that its accuracy is not testable, that the reasonable doubt standard ensures that only few errors occur, and that judges and jurors have the knowledge and ability to overcome normal biases to make rational decisions.

While, undoubtedly, the legal system itself has a vested interest in maintaining this assumption, there is good reason to believe that the decision-making process leading to findings of guilt and innocence may be fundamentally flawed. This assertion is based on the observation that ultimate decisions of guilt are guided by subjective decisions by judges and juries of whom and what to believe during a trial. What is the 'truth'? In this paper, the manner in which judges and juries evaluate witness credibility is critically examined and presented in a theoretical framework called dangerous decisions theory (DDT).

The critical role of credibility assessment in legal decision-making

A key role of judges and jurors during a trial is to decide whether various witnesses are lying or telling the truth, a task known as *credibility assessment*. As pointed out in *R. v. Morrissey* (1995), credibility is not synonymous with 'reliability': 'When one is concerned with a witness's veracity, one speaks of the witness's credibility. When one is concerned with the accuracy of a witness's testimony, one speaks of the reliability of that testimony. Obviously, a witness whose evidence on a point is not credible cannot give reliable evidence on that point. The evidence of a credible, that is honest witness, may, however, still be unreliable' (p. 205). So, how does a judge or juror know whether a witness is providing an honest version of events and is not engaging in perjury and lying through his/her teeth? This issue is not trivial; in an adversarial system, most trials feature contradictory testimony by witnesses. Further, in many cases, there is little or no evidence other than conflicting stories told by the complainant and defendant, and decision-making is guided almost entirely by credibility assessments. For example, the judge in the Air India mass murder case (*R. v. Malik* & *Bagri*, 2005) concluded that the case essentially reduced to a credibility contest: '. . . the determination of guilt devolves to the weighing of the credibility of a number of witnesses who testified in these proceedings.' In countries such as Canada with no statute of limitations, legal decision makers face the task of assessing allegations that go back decades. In many such cases, witness testimony usually represents *the* evidence, with one person claiming that an event happened and the other denying its occurrence. While such trials may be extreme in that their outcomes rely almost completely on credibility assessment decisions, it might be argued that credibility assessment is the 'bread and butter' task for judges and juries in all trials.

Given the central role of credibility assessment in judicial decision-making, it is important to examine both the manner in which it is viewed and approached in practice by the court. In reviewing the Supreme Court of Canada's rulings on the matter, it becomes clear that the dominant judicial attitude is that assessing credibility is a straightforward matter. In *R. v. Marquard* (1993), the Supreme Court, relying on observations from British common law, concluded that the determination of the honesty of a witness is *common sense*: 'Credibility is a matter within the competence of laypeople. Ordinary people draw conclusions about whether someone is lying or telling the truth on a daily basis' (p. 248). Further, in the Supreme Court case *R. v. Francois*

(1994), Justice McLachlin stated: 'In the end, the jury must decide whether it believes the witness's story in whole or in part. That determination turns . . . on the demeanour of the witness and the common sense of the jury'.

This common sense argument advocated by Canada's highest court may be interpreted as the first sign of 'danger' in this context; it is incompatible with the empirically based conclusion that credibility assessment is a highly complex and often unreliable task, with errors occurring in about 45% of assessments (e.g. Bond & DePaulo, 2006; Vrij, 2000). For example, judges, police officers, and other professional groups perform around the level of chance in judging the credibility of videotaped speakers (Ekman & O'Sullivan, 1991). While it is not possible to know the frequency of mistakes concerning credibility in the courtroom, numerous wrongful convictions suggest that credibility assessment is a highly fallible process and by no means a matter of mere common sense. Such cases also highlight the gravity of the consequences of flawed credibility assessments. In a 2001 inquiry into a wrongful murder conviction in Canada, Justice Cory observed that witnesses commonly use deception, and many are 'smooth and convincing liars' who have fooled judges and juries (Wilson, 2003). Thus, it is essential that the beliefs of members of the judiciary be scrutinized to illuminate the manner in which they approach the task of evaluating credibility.

How does the judiciary assess credibility?

It is widely recognized that human decision-making is subject to a host of biases to the extent that it often is irrational (e.g. Kahneman & Tversky, 1982). Although they no doubt strive to maintain objectivity, judges and juries are not immune from such normal human biases. For example, research on sentencing indicates that judges are heavily influenced by schemas based on their past experiences with defendants and complainants (e.g. Greenberg & Ruback, 1982; Konecni & Ebbesen, 1982). Further, judges are susceptible to critical thinking errors and a reliance on false stereotypes (e.g. Granhag & Stromwall, 2004; Vrij, 2000, 2004; Vrij & Mann, 2004).

In attempting to understand the nature of judicial and jury decision-making, researchers have differed in their views of the nature of the major biasing influences. Some models suggest that a single powerful piece of evidence is overvalued in decision-making, and all other evidence is discounted (Dhami & Ayton, 2001). This 'fast and frugal' heuristic seems best applied to judicial decisions in expeditious hearings such as bail hearings (Dhami, 2003; Gigerenzer, Todd, & ABC Research Group, 1999). Increasingly complex models have been formulated in order to elucidate more complex trial decision-making. Pennington and Hastie (1992) argued that decision makers construct 'stories' of the events in question based on information provided by the prosecution and defence that may or may not accord with factual reality. These stories are then assessed in terms of their coherence and how well they accommodate all of the presented evidence to determine the degree of the validity of the narrative. Wagenaar, Van Koppen, and Crombag's (1993) anchored narratives model resembles Pennington and Hastie's (1992) story model, but emphasized that generated stories must be anchored by common sense generalizations about the world. Alternately, Petty and Cacioppo's (1986) elaboration likelihood model suggests that the persuasion of a judge or jury can take place centrally, through careful evaluation of evidence and corresponding arguments, or peripherally and less validly, through erroneous characteristics such as witness attractiveness. While they suggested that high motivation

and the decision makers' trait need for careful consideration of the evidence at hand (need for cognition) would increase objectivity, mock jurors who scored high on a measure of need for cognition were influenced more heavily by legal arguments presented before case evidence than contrary arguments presented later (Kassin, Reddy, & Tulloch, 1990). That is, they were heavily influenced by initial impressions. This finding suggests that while motivation and a need for cognition may result in close scrutiny of the presented evidence, this appraisal may be coloured by initial, biased impressions. As the authors stated, 'Perhaps it is precisely because high-NC people are relatively *active* processors of information that they form opinions early, engage in confirmatory hypothesis-testing, and find support in ambiguous evidence' (p. 52).

Not surprisingly, decision makers may be completely unaware of the power of their biases in the courtroom. Kaufmann, Drevland, Wessel, Overskeid, and Magnussen (2003) found that perceived credibility of complainants in rape cases is based largely on the expressed emotion of the complainant (as opposed to the objective evidence), but that (mock) judges were not cognizant their own bias. Thus, it is an important objective to assess the information influencing judicial credibility assessment decisions in order to highlight the factors that likely lead to inaccurate decisions. In order words, what specific types of information do judges rely on in their credibility decisions?

Witness demeanour and the 'face of deceit'

From court transcripts, it is apparent that judges rely heavily on a witness's demeanour and face in deciding whether his/her testimony is credible. In *R. v. B.* (*K. G.*) (1993), the Supreme Court of Canada concluded that judges and juries must be able to view a witness clearly to 'adequately evaluate body language, facial expressions and other indicators of credibility that are not apparent from a written transcript.' But to what aspects of the body and face do judges and juries attend? The importance of this question is bolstered by the observation that a reliance on behavioural cues lacking in validity could comprise credibility assessment in the courtroom. Laypersons generally associate lying with nervous behaviours such as speech disturbances, longer pauses, gaze aversion, and body movements/shifting, whereas research generally indicates an opposite behavioural pattern (e.g. Vrij, 2000, 2008). Canadian judges are not immune to such misperceptions, for example, viewing nervousness as an important indicator of deception. In *R. v. Jabarianha* (2001), the judge stated: 'Mr. Corkum and Mr. Jabarianha were less than believable. Each exhibited classic signs of discomfort when challenged . . . Each was evasive at times or his eyes shifted around. Thus in certain points of the story displayed signs of untruthfulness.' In *Laurentide Motels v. Beauport* (1989), Supreme Court Justice L'Heureux-Dubé stated that judges should consider 'the movements, glances, hesitations, trembling, blushing' in assessing the credibility of witnesses.

The decision of a witness in the 2002 US Second Circuit Court of Appeals case *Morales v. Artuz* prompted the American judiciary to consider explicitly the relevance of a witness' face in assessing his/her credibility. The court considered the defendant's appeal of his convictions for manslaughter and criminal use of a firearm based on the fact that a key witness had testified while wearing dark sunglasses. Although the original judge told the witness that 'I don't believe and it does not provide the defendant with adequate opportunity to examine you and it does not provide the jurors with the opportunity to evaluate your credibility, if they can't see your eyes', he ultimately permitted her to wear the sunglasses. In reviewing precedents, the Appeal Court noted

that the Supreme Court's 'established law' of confrontation was intended to ensure an opportunity to see the defendant and for jurors to see the witness's eyes in order to assess credibility. The Court further noted that 'seeing a witness's eyes has sometimes been explicitly mentioned as of value in assessing credibility.' Of course, there is no way of knowing how often judges rely on such heuristics in practice but do not report them in their judgments.

Intuition and 'the ring of truth'

A common self-reported strategy for judges in assessing witness credibility is to consider whether testimony had 'the ring of truth' (see *R. v. Mervyn*, 2003; *R. v. Roble*, 2004; *R. v. S.* (*R. D.*), 1997). In other words, judges may assess whether the testimony 'seemed to be truthful' by relying on their intuition or 'gut instinct.' In *R. v. Lifchus* (1997), Justice Cory noted: 'it may be that the juror is unable to point to the precise aspect of the witness's demeanour which was found to be suspicious . . . A juror should not be made to feel that the overall, perhaps intangible, effect of a witness's demeanour cannot be taken into consideration in the assessment of credibility.' However, there is no evidence that the use of intuition is valid in evaluating credibility. In fact, contrary to Justice Cory's suggestion, Porter, Woodworth, and Birt (2000) found that a self-reported reliance on intuition and accuracy in detecting deception were inversely related.

An informal survey of judges' beliefs about credibility assessment and implications

A more direct way to examine the manner in which judges evaluate credibility is simply by asking them. In 2006, the first author was invited to speak about deception detection to a group of 20 Canadian judges attending a judicial education conference. Beforehand, the judges were asked to complete a questionnaire concerning credibility assessment. The 16 judges who did so were mostly male and had been members of the judiciary for an average of 10.73 years. Only one judge reported having received any specific training on credibility assessment during his/her legal education. The judges were asked to indicate their beliefs about verbal (e.g. amount of detail, consistency), vocal (e.g. voice pitch), and non-verbal (e.g. eye-contact, body movements, fidgeting/nervousness) behaviours as they might relate to deception.

For all questions, the judges' responses were highly variable (often about evenly split), suggesting a complete lack of consensus about deceptive behaviour. For example: 6/16 judges reported that dishonest witnesses gave more details than honest witnesses; 7/16 judges reported that witnesses avert their gaze when lying; 8/16 judges reported that lying witnesses gave less consistent stories than honest witnesses; 6/16 judges reported that dishonest witnesses do not differ from truthful witnesses in terms of frequency of body movements; and 6/16 judges reported that dishonest witnesses show an increase in 'fidgeting' or nervousness. Further, nearly half the judges (7) believed that it was more difficult to detect deception based on a transcript than live testimony. The judges expressed a high level of confidence in their ability to detect deception ($M = 5.13/7$, $SD = 1.15$) with six judges providing a rating of '6' (very good) or '7' (excellent ability). Unexpectedly, the judges exhibited a bias in their perceptions of the relative honesty of complainants and defendants; they considered complainants to be more deceptive in their testimony ($t(14) = 2.27$, $p < .05$). These results suggest that

judges hold no consistent strategies for assessing credibility, and exhibit individual biases that must influence their perceptions of specific individuals. Further, the lack of agreement and biases exhibited suggest that the evaluation of a common set of evidence by different judges could be highly variable.

These results are similar to those of Stromwall and Granhag (2003) who found that legal professionals in Sweden often held false beliefs about deception, such as the notion that lying is associated with gaze aversion and fidgeting. Recent research indicates that similar beliefs are held by police officers, social workers, and teachers regarding the deceptive behaviour of adults and children (Vrij, Akehurst, & Knight, 2006). These beliefs conform to the false stereotypes found among laypersons all over the world (Akehurst, Köhnken, Vrij, & Bull, 1996; Bond & Atoum, 2000; Global Deception Research Team, 2006). Studies repeatedly have shown that observers rely heavily upon emotion-based, stereotypical signs of guilt (i.e. 'shifty eyes' and nervous gestures), over empirically based cues to deception (e.g. Mann, Vrij, & Bull, 2004; Strömwall & Granhag, 2003; Vrij, 2004). While most observers attempting to detect lies perform around chance, they tend to overestimate their accuracy (e.g. Memon, Vrij, & Bull, 2003; Vrij, 2004), as witnessed in our sample of judges.

A reliance on such stereotypical beliefs about deceptive behaviour may introduce systematic bias in decision-making pertaining to certain cultural groups. Understanding cultural differences in non-verbal behaviour/communication is of the utmost importance in the courtroom, especially considering the relatively frequent contact between ethnic minorities and the legal system. A consistent finding in the social science literature is that it is more difficult to detect lies when the liar and observer do not share the same ethnic or cultural background (Vrij, 2000). For example, African-American suspects make a more suspicious impression on Caucasian police officers than do Caucasian suspects regardless of when they are telling the truth (Vrij, 2000). It seems plausible that if Canadian legal decision makers rely on particular patterns of behavioural or demeanour evidence in detecting deception, they may sometimes misinterpret such patterns if they are more or less common in various ethnic or cultural groups. For example, judges who rely on gaze aversion as a sign of lying could be misinterpreting such behaviour among cultural groups in which looking away from an authority figure is a sign of respect. Given that Aboriginal people are so grossly overrepresented in Canadian prisons (Public Works and Government Services Canada, 1999), one cannot help but wonder whether Aboriginals' non-verbal behaviour in the courtroom could be frequently and unfairly viewed as reflecting a lack of credibility. As a medical doctor of Aboriginal descent, Brant (1993) discusses the non-verbal communication patterns of Aboriginals which may be construed by non-Aboriginals as passive, difficult, and deceptive. In particular, Aboriginals may, as predicated by their culture, suppress expressions of their emotions. Such a flat affect may be considered inconsistent with the context at hand, and interpreted as a sign of guilt, lack of remorse, or deception by decision makers (Kaufmann *et al.*, 2003). Brant (1993) observed that for most Caucasian Canadians 'people who do not provide direct eye-contact are seen . . . as being shifty, devious, dishonest, crooks, slippery, untrustworthy, etc.' (p. 261). In contrast, in most Aboriginal cultures in Canada direct, sustained eye-contact is seen as 'rude, hostile, intrusive' (p. 261). That is, the Aboriginal custom of avoiding eye-contact is intended as a sign of respect. Such behaviour may easily be construed as an indication of deception by observers, including members of the judiciary, who adhere to the belief that liars avert their gaze (e.g. Global Deception Research Team, 2006; Strömwall & Granhag, 2003). In fact, research indicates that avoidance of

eye-contact is the number one sign of lying to which professionals and laypersons attend (Bond & Atoum, 2000).

This discussion is not intended to be harshly critical of trial judges. Rather, it highlights that they, like laypersons, hold views about and actively approach the task of credibility assessment with misguided assumptions and strategies for uncovering the truth. Indeed, police, prosecutors, and defence lawyers may have even greater biases than judges and jurors due to their specific roles in the justice system. As famed Toronto lawyer Clayton Ruby observed (in relation to credibility assessment), 'We're terrible. That's in part because people hear what they want to hear. You want to believe your client's version of events' (Dotto, 2004, p. 45). However, given the consequences of mistakes in judicial decisions about credibility (which can literally be life and death for defendants in some countries such as the US), one thing is clear: there is nothing special about being trained in law or practising on the bench that seems to improve one's ability to assess credibility. As such, an examination of the foundations of the credibility assessment process, more generally, would also apply to how the 'process' of credibility assessment unfolds in court.

Assessing credibility in the courtroom via 'dangerous decisions'

> 'I got the impression that here was a man who could be relied upon when he had given his word'.

This statement was made to the British public by Prime Minister Neville Chamberlain following his 1938 meeting with Hitler in which Hitler swore that he would not invade Czechoslovakia (see Ekman, 1992). How could Chamberlain have made such a cataclysmic error in missing Hitler's duplicity? Chamberlain's decision, while infamous, may have resulted from the same type of assessment process that occurs in criminal trials resulting in wrongful convictions. In fact, the foundation of such decision-making likely originates in our evolutionary past; the basic discrimination of friend and foe likely was one of the earliest interpersonal judgments to evolve (e.g. Cosmides & Tooby, 1992). Such decisions had to occur rapidly to inform the best course of action for survival. Complicating the evaluation, however, was the evolutionary development of deception and emotional concealment (e.g. O'Sullivan, 2003). Humans gained the ability to effectively sabotage the evaluation by manipulating their non-verbal behaviour and language. One way in which non-verbal behaviour can be manipulated to deceive is by the alteration or inhibition of facial expressions normally accompanying an emotion (Ekman, 1992; Leach, Talwar, Lee, Bala, & Lindsay, 2004). The analysis of emotion and facial expressions appears to play a critical role in credibility assessment in the courtroom, as pointed out by the Supreme Court of Canada in *R. v. B.* (*K. G.*) (1993). The face of the witness may be viewed by judges and jurors as a rich source of 'relevant' information.

DDT (illustrated in Figure 1), proposed here, offers a testable model outlining the psychological processes involved in arriving at an evaluation of credibility. According to DDT, interpersonal judgments of trustworthiness by judges and jurors occur rapidly upon seeing a witness's face. The process of judging another person's trustworthiness is associated with increased activity in the primitive brain areas, especially the amygdala, indicating the presence of a 'threat' in the environment (Adolphs, 2002). The expediency of the general process was demonstrated by Willis and Todorov (2006) who had participants view images of strangers' faces for 100 milliseconds, 500 milliseconds, 1 second, or unlimited time, and evaluate trustworthiness and other traits

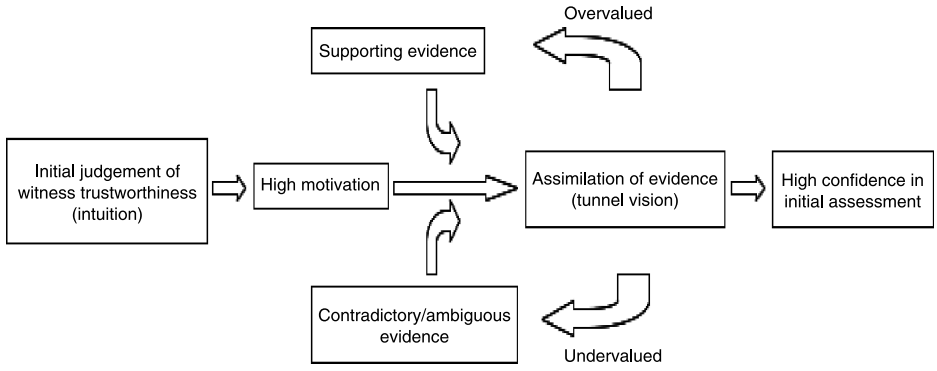

Figure 1. DDT: a framework for understanding how flawed decisions about witness credibility occur in the courtroom.

(e.g. likeability, aggressiveness). While confidence in accuracy increased with time, the judgments themselves remained virtually unchanged from the initial exposure. Judgments made after only 100 milliseconds had the greatest impact for ratings of trustworthiness, indicating their instantaneous and enduring nature. We hypothesize that judges and jurors make similar unconscious evaluations of the *general trustworthiness* of a defendant, complainant, or other witness immediately upon seeing him/her for the first time.

One possibility is that this evaluation process evolved to do the job effectively. That is, as Willis and Todorov (2006) appear to assume, perhaps these automatic judgments of a stranger's trustworthiness based on his/her face are accurate. However, this assumption is unfounded since the dispositional features of the target faces presented were unknown. It is noteworthy that some inferences based on the face have evolved to be highly accurate. For example, based only on facial photographs, women's ratings of the men's interest in infants were significantly predicted by the men's self-ratings (Roney, Hanson, Durante, & Maestripieri, 2006). Further, the identification of genuine emotional expressions (especially anger) is rapid and accurate (Williams & Mattingley, 2006). Nonetheless, DDT posits that such intuitive evaluations of trustworthiness, specifically, may be unreliable. For example, there is considerable variability in the trustworthiness ratings assigned to a common face by different observers (Adolphs, 2002). But just how unreliable might the process be? If intuitive judgments of trustworthiness have any validity whatsoever, the discrimination of faces of untrustworthy, dangerous individuals from those of relatively virtuous, trustworthy individuals should be possible. Porter, England, Juodis, and ten Brinke (2008) examined the accuracy of trustworthiness judgments from the faces of two groups of targets differing in trustworthiness: Nobel Peace Prize recipients/humanitarians versus America's most wanted criminals. Participants viewed 34 faces each for 1/10th of a second or 30 seconds, and rated its trustworthiness. Subsequently, they were informed about the two groups and estimated group membership. The mean judgment accuracy did not differ according to brief versus long exposure. However, initial judgments of untrustworthy faces were less accurate (mean of 48.8%) than those of trustworthy faces. When asked to assess group membership, judgment accuracy was only slightly above chance for both target types. Thus, intuition plays a small facilitative role in trustworthiness judgments, but errors are common.

Evaluations of trustworthiness appear to be influenced by a reliance on faulty information derived from the face during the inferential process. Facial features associated with perceived honesty include 'babyfacedness', symmetry, and attractiveness (Bull, 2006; Bull & Vine, 2003; Zebrowitz, Voinescu, & Collins, 1996). Because the initial evaluation occurs largely outside of conscious awareness, it may strike the observer as 'intuition'. Additionally, certain faces are viewed as being congruent with certain offences. In other words, there are some faces that people would agree 'look like' the face of a rapist, armed robber or murderer (Bull & McAlpine, 1998). For example, when shown a group of target faces, participants consistently labelled particular faces as 'good guys' (clergyman, medical doctor) or 'bad guys' (mass murderer, armed robber) (Goldstein, Chance, & Gilbert, 1984; Yarmey, 1993). Further, research suggests that if a defendant has a face that is considered to be consistent with the charged offence, they are more likely to be convicted of that crime than a person with an 'incongruent' face (Macrae & Shepherd, 1989; Shoemaker, South, & Lowe, 1973). Recent work indicates that this effect occurs regardless of the strength of the prosecution's evidence; defendants whose faces are congruent with the offence label are more likely to be found guilty (Dumas & Teste, 2006).

This rapid process of trustworthiness assessment likely was originally intended to reduce the 'danger' to our human ancestors. However, in the modern context, the impression leads to biased (or 'dangerous') decisions concerning the target, according to the second stage of DDT (see Figure 1). The initial impression of a defendant's trustworthiness in the courtroom has an enduring subconscious influence on the manner in which new information concerning the target is assimilated by judges and jurors. Specifically, the initial intuitive evaluation will influence subsequent inferences concerning the defendant (or other witness) by making decision-making about him/her increasingly irrational (Kahneman & Tversky, 1982). Decisions also will be influenced by an observer's experience and personal schemas about deceptive behaviour and heuristics for detecting lies. Thus, there will be individual differences in decision-making (as is witnessed on many conflicted juries) and judgments often will be unreliable. Ensuing inferences about the defendant will be largely irrational, but rationalized by the judge or juror through his/her heuristics about dishonest behaviour. This will generate a non-critical, 'tunnel vision' assimilation of potentially ambiguous or contradictory evidence concerning the defendant. In a study of criminal investigators, Ask and Granhag (2007) found strong support for this 'asymmetrical scepticism', the tendency to be more sceptical about evidence that runs counter to one's prior belief than evidence consistent with the belief. Kassin, Goldstein, and Savitsky (2003) found that investigators who presumed guilt asked more guilt-presumptive questions and exerted more pressure in order to obtain a confession than did investigators without such bias. As such, holding preconceived notions about the guilt of a suspect (or defendant) results in a tendency to seek confirmation for this belief (Meissner & Kassin, 2004). Further, initial beliefs can persevere even in the face of major disconfirming evidence (e.g. Ross, Lepper, & Hubbard, 1975). For example, individuals who voted for President Nixon maintained their positive beliefs about him while those who voted for his opponent formed increasingly negative beliefs about Nixon as the Watergate scandal emerged (Carretta & Moreland, 1982). More generally, this bias resembles a self-fulfilling prophecy wherein a person seeks to fulfil their personal beliefs (Rosenthal & Jacobson, 1968). Such a self-fulfilling bias is of particular concern with police officers who may exhibit a guilty response bias (Meissner & Kassin, 2002). Thus, they are more likely to evaluate a suspect as guilty than innocent, and consequently, seek out evidence to

confirm their initial assessment. While it is not clear whether judges and/or jurors hold a particular 'guilty' or 'innocent' bias, they may subconsciously form an early view of trustworthiness that influences the interpretation of evidence to come.

Again, it should be noted that most judges and jurors probably are circumspect in their efforts to make the correct decisions concerning credibility. Yet, it may be possible to work too hard in this context; high motivation can exacerbate the level of bias in decisions about credibility. Porter, McCabe, Woodworth, and Peace (2007) identified a *motivational impairment* effect such that a high level of motivation in a deception detection task was negatively associated with accuracy (also see Ask & Granhag, 2007). Similarly, with other types of judgment tasks high motivation facilitates performance for easy tasks, but impairs it for difficult ones (Pelham & Neter, 1995). A high level of motivation such as that felt by a judge or juror, coupled with the complexity of credibility assessment, may serve to increase the power of the initial perception of trustworthiness and create tunnel vision decision-making. To use a courtroom example, a judge upon seeing a defendant – who is innocent and generally honest – may instantaneously assess his face as being untrustworthy based on certain physical characteristics. Although the judge is determined to be objective in evaluating credibility, the damage is already done. Evidence in favour of the defendant's credibility is undervalued in the judge's mind, while information suggestive of lying and guilt is emphasized. When the defendant acts nervously on the stand and emotionally denies his guilt, the judge concludes that his/her nervousness is a sign of lying and the emotional display represents 'crocodile tears', thus confirming the bias held by the observer. As such, a fundamental attribution error takes place – the emotional display is considered to reflect the deceptive nature of the defendant while other hypotheses and potential situational explanations for this display are discounted (Jones & Harris, 1967).

The hypothesized assimilation of new information in accordance with intuitive assessments of trustworthiness is reflected in patterns of judicial decisions. For example, baby-faced individuals receive more lenient judicial outcomes than mature-faced individuals. Within a population of African–American prisoners, those with more Afrocentric features received harsher sentences for comparable crimes (Blair, Judd, & Chapleau, 2004). Attractive defendants are more likely to be found not guilty, dealt shorter sentences, and considered less dangerous than their unattractive counterparts (e.g. Bull & Rumsey, 1988; Downs & Lyons, 1991; Esses & Webster, 1988). The DDT would suggest that the defendants' facial characteristics influenced the initial assessment of trustworthiness made by judges and jurors. From that first impression forward, all evidence was slanted in the mind of the decision maker to fit the initial assessment resulting in biased verdicts.

Is the face a window to the soul?

It appears that judges and jurors are influenced – both consciously and unconsciously – by the face and facial expressions of the defendant (and other witnesses). While the discussion to this point has been on the potential negative impact of attention to irrelevant (e.g. babyfacedness) or misleading (e.g. gaze aversion) aspects of the face, it is important to consider to what, if anything, about a witness's face ought to be attended in the courtroom. According to Ekman and colleagues, while facial expressions can be feigned successfully, certain aspects of facial communication are uncontrollable and can betray a liar's true emotion (e.g. Ekman, 1992, 2006; Frank & Ekman, 1997). How useful are such features of facial expressions for determining credibility in the courtroom?

According to Ekman and Friesen (1975), there are three major variations in the intentional falsification of emotional facial expression. First, an emotional expression can be *simulated*. This occurs when a facial expression is expressed in the absence of any genuine feelings. Secondly, *masking* involves covering a felt emotional facial expression with a different one (e.g. a defendant expressing remorse or sorrow when he/she is, in fact, pleased with the result of the crime). Third, an emotional facial expression is *neutralized* when a true emotion is felt but no emotion is conveyed by the face. Ekman and colleagues have argued that such deceptive facial expressions can be betrayed by 'micro-expressions', fleeting but complete facial expressions that reveal the felt emotion during emotional concealment and are suppressed within 1/5th–1/25th of a second (Ekman, 1992). Despite their popularity in the news media (Henig, 2006), and scientific community (Schubert, 2006), there is little empirical research to support their utility as a reliable deception detection tool. Porter and ten Brinke (2008) conducted the first thorough investigation of facial expressions associated with genuine and falsified emotions. Participants viewed highly emotional or neutral photographs and responded to each with a genuine or false emotional expression while being videotaped. Each 1/30th second frame of the clips then was coded for the presence of universal emotional expressions. The findings indicated that emotional expressions inconsistent with the intended display occurred more frequently in masked than in genuine or simulated expressions. However, participants generally were successful in neutralizing their expressions for all emotions. Further, displays of inconsistent emotion were more common in each of the three negative emotional expressions (sadness, fear, disgust) than in happiness. In the courtroom, deceptive individuals may experience difficulty maintaining their duplicity when forced to falsify negative emotional expressions (e.g. feigning sadness/remorse), and 'leakage' of the true emotion could occur. Although Porter and ten Brinke's (2008) study lends support to the hypothesis that leakage occurs during emotional falsification, it was rarely so brief as to be classified as a micro-expression. No full face micro-expressions were detected and only a small number of partial (lower or upper face) micro-expressions were found, occurring in both genuine and deceptive expressions. Nonetheless, partial micro-expressions were a reliable indicator of the concealed emotion in both masked and neutralized expressions. However, given the infrequency of these partial micro-expressions and their occurrence in genuine expressions, their usefulness as a cue to deception in forensic settings is questionable.

While attention to the face could reveal information about the target's inner emotional state, the examination may also be tainted by a confirmation bias when viewed in light of preconceived notions. This bias is particularly evident in the assessment of wrongly convicted Steven Truscott who was exonerated in 2007 for a 1957 murder in Canada. His facial response to his guilty verdict was reported widely in the press at the time of his conviction (Sher, 2007). Inspector Graham, who arrested the then 14-year-old Truscott, was highly confident in Truscott's guilt and saw that his 'eyes were filled with anger, not fear' as the judge announced that he would be hanged for the crime. On the other hand, (presumably less-biased) journalists described the same reaction in a remarkably different light: 'his eyes filled with tears, Steven Truscott gasped in the dock' and 'the boy simply turned pale'. This dramatic example further highlights the necessity of objectivity when evaluating evidence, demeanour, and 'reading' faces.

Lying is also associated with verbal (e.g. Köhnken, 2004; Porter & Yuille, 1996; Sporer, 2004) and non-verbal (e.g. DePaulo *et al.*, 2003) cues other than facial expressions (also see DePaulo *et al.*, 2003; Vrij, 2000). For example, liars tend to over-control their behaviour by exhibiting fewer illustrators (e.g. DePaulo *et al.*, 2003).

However, as there is no Pinocchio's nose (DePaulo & Morris, 2004), it is probably more useful to emphasize to legal decision makers that stereotypical cues to deception are not useful instead of encouraging the application of somewhat reliable cues.

Improving credibility assessment in the courtroom

If the DDT theory is correct, miscarriages of justice can result from a series of dangerous decisions concerning a defendant's credibility, a process initiated by the initial impression and maintained by a biased weighting and interpretation of evidence. We think that this situation could be rectified to some degree through relevant legal education, ideally beginning in law school training. First, the myths that credibility assessment is a common sense matter and that intuition is a useful tool in this context must be dispelled. Further, decision makers need to be aware of the instantaneous nature of trustworthiness judgments and their unreliability. Second, the common reliance on misleading aspects of demeanour and behaviour must be combated. It has been previously shown that this approach can improve credibility assessment. Porter *et al.* (2000) demonstrated that a workshop for parole officers (consisting of myth dissolution, information about unreliable and reliable cues to deception, practice, feedback, and knowledge testing) led to a modest improvement in their deception detection ability. Subsequent research suggested that an important contributing factor leading to this improvement was a reduction in 'tunnel vision' decision-making (Porter *et al.*, 2007). That is, having decision makers think more critically about their decision-making, increasing awareness of intuitive influences and encouraging the use of empirical cues, could reduce the strength of biases present in the assimilation of evidence stage of the DDT framework. While workshops are useful for lawyers and judges, we would suggest a more dramatic legal reform for juries in which information on credibility assessment is provided either by the judge or via an educational video.

The other means to reduce the problem of dangerous decision in the courtroom is through expert testimony on credibility assessment. However, the courts generally have been reluctant to admit expert testimony in this area. For example, the Supreme Court of Canada in *R. v. Marquard* (1993) decided that an expert witness cannot comment on the ultimate credibility of a particular witness. Nonetheless, a psychologist can provide information to police investigators and lawyers as consultants during investigations, charge approval, or trials. Further, in recent cases judges have permitted general testimony on credibility assessment (not concerning a particular witness). For example, in 2006 a psychologist was qualified in a Canadian court as an expert on 'memory and the factors involved in credibility assessments' (*Children's Aid Society of Halifax v. P. M. H.*, 2006). This precedent could lead to the increasing presence of responsible expert testimony concerning credibility in jury trials.

Conclusion

In formulating their decisions of guilt and innocence, judges and juries must rely heavily on the evidence provided by witnesses. However, it has become clear that the assessment of witness credibility is a process fraught with error, despite the Supreme Court's contention that credibility assessment is a matter of common sense. Despite their experience with the task of credibility assessment, trial judges hold false stereotypes about deception and are vulnerable to dangerous biases in evaluating witness evidence.

As DDT outlines, this evaluation process may be heavily influenced by perceptions of a defendant's appearance and demeanour. Unconscious biases may form based on initial evaluations of trustworthiness gleamed from quick glimpse of his/her face, and be further strengthened by the assimilation of additional information to fit the first impressions. Paradoxically, a high level of motivation in determining the truth can exacerbate the degree of bias or tunnel vision evidenced in ensuing decisions concerning the defendant. The attitude that assessing credibility is a common sense skill may serve to increase confidence during this process. Education, training, and expert testimony to improve credibility assessment in the courtroom are essential to reduce the problem of unjust convictions. More generally, a critical evaluation of the validity of decisions of guilt and innocence in the courtroom can only serve to strengthen the legal system's role as a pillar of society.

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