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The Missing Link in Training to Detect Deception and its Implications for Justice

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ABSTRACT

Purpose – *The purpose of this paper is to investigate the effect of response bias and target gender on detecting deception.*

Design/ methodology - *Participants were randomly assigned to one of three experimental conditions: a stereotype condition (bogus training group), a tell-signs condition (empirically tested cues), and a control condition. Participants were required to decide whether eight targets were lying or telling the truth, based upon the information they had been given. Accuracy was measured via a correct or incorrect response to the stimuli. The data was then analyzed using a 2x2x3 mixed Analysis of Variance (ANOVA) to determine whether any main or interactional effects were present.*

Results - *Results revealed training condition had no significant effect on accuracy, nor was there a within-subjects effect of gender. However, there was a significant main effect of accuracy in detecting truth or lies and a significant interaction between target gender and detecting truth or lies.*

Research limitations – *Future research should seek a larger sample of participants with a more extensive training aspect developed into the study, as the brief training offered here may not be fully reflective of the extent and intensity of training which could be offered to professionals.*

Practical Implications - *Within the criminal justice system, the need for increased accuracy in detecting deception is of critical importance; not only to detect whether a guilty individual is being deceitful, but also whether someone is making a false confession, both to improve community safety by detaining the correct perpetrator for the crime but also to maintain public trust in the justice system.*

Keywords: *detecting deception, police training, individual differences, nonverbal behavior*

Paper type *Research paper*

Introduction

The ability to identify cues that underpin deception has long been a concern of social scientists and criminal justice practitioners. Ekman (1992) suggests the importance of reaching a better understanding of deception and its detection is evidenced by the notion that dishonesty is a central characteristic of life. Lying is generally considered an anti-social behavior, with most cultures having some prohibition against being deceptive (Moreno, 2016). Yet research shows, that on average, people lie once or twice per day (DePaulo et al., 1996). Despite individuals both lying and being lied to on a frequent basis, people consistently do no better than chance at detecting deceit (DePaulo, 1994; Ekman and O'Sullivan, 1991; Levine, Sun Park and McCornack, 2013; Vrij, Granhag and Porter, 2011). Within criminal investigations, the question of whether a person is being truthful frequently arises and forms a central part of police enquiries (Hovarth and Meesig, 1996). Research shows that many offenders will engage in a high level of manipulation and deception (Rogers, 1997) the stakes of which, are extremely high for these individuals. Even when an individual gets to trial, jury member's, decisions on whether they are lying or telling the truth has the potential to influence their overall decision on guilt (Willmott, 2017; Willmott, Boduszek and Booth, 2017). Subsequently, any improvement in the understanding around detecting deception has the potential to improve the investigative process, increase the number of offenders being prosecuted for their crimes and reduce the number of serial offenders within society, contributing to overall *safer communities*. The present research aims to contribute to the wealth of existing literature on training in detecting deception, focusing specifically upon the implications that target gender differences may have.

Background Context

The way in which deception is detected is typically affected by people's beliefs in the behavioral indicators thought to be associated with a lie. The media has historically had an important role in the formation of these beliefs and misconceptions surrounding how to detect deceit (Levine, Serota, and Shulman, 2010). Popular TV shows such as 'Lie to Me' have been shown to significantly decrease people's accuracy in detecting lies. The reasons for which are thought to be the result of increasing suspicion of deception, whilst failing to provide any information that actually increases accuracy (Levine, Serota, and Shulman, 2010). However, in previous research, Levine et al., (2005) surprisingly found that exposure to bogus information about nonverbal cues led to significant improvements in overall accuracy. One explanation of this variation in findings is that the participants in the Levine, Serota, and Shulman (2010) study were shown only a single episode of 'Lie to Me', likely resulting in too little exposure for information to have any significant impact upon accuracy. However, findings also showed watching just one episode of such a show increased suspicions about the veracity of what people were saying, suggesting that individuals may be left in a heightened state of awareness of potentially being lied to, without increasing their accuracy of this judgment. Instead, studies such as Levine et al., (2005) gave specific information about nonverbal cues, whether actual or bogus, not integrated into a TV show for the purpose of information. This removes the need for participants to extract this information themselves and may explain the differences in findings. Accuracy rates in these contexts can be subject to what is referred to as the 'veracity effect' (Levine, Sun Park and McCornack, 1999). This response bias results from an attempt to direct those judging deception to look for a lie or truth using set criteria delivered in a training program. This in turn, induces a truth or lie bias.

In relation to accuracy rates, most findings show that the majority of people are no better than the rate of chance at detecting deception (Bond and DePaulo, 2006; DePaulo, 1994;

Vrij, 2008), with meta-analyses showing averages of around 50 percent to be typical (Aamodt and Custer, 2006; Bond and DePaulo, 2006). However, people's belief surrounding their ability does not always correlate with actual accuracy (Mann, Vrij and Bull, 2004), with certain groups more likely to overestimate their ability (Inbau et al., 2001). Indeed, police officers have been found to overestimate their ability to accurately detect deception, yet research failed to reveal any significant differences between their accuracy and the accuracy of lay people (Garrido and Masip, 1999). There are exceptions to this consensus, with some individuals performing consistently above average on high-stake lie detection tests (O'Sullivan and Ekman, 2004) suggesting the existence of individual differences. Furthermore, research has also shown that individual differences occur in a target's ability to tell lies (Bond and DePaulo, 2008). This is especially true when an individual is asked to lie, which in turn affects an individual's belief of whether or not a liar is credible (Stiff and Miller, 1986).

Not unlike lay people, researchers also believe there are certain non-verbal cues that may leak deception (Poon and Fatt, 1998). There is a wealth of research investigating which, if any, non-verbal cues best reveal deception, with findings showing cues ranging from movement in the legs and arms (Ekman and Freisen, 1974) to a decrease in eye blinks followed by an immediate increase in eye blinks post lie (Leal and Vrij, 2008). The typical explanation for such is an increase in cognitive demand thought to occur when a person is being deceitful (Vrij et al., 2011; Vrij et al., 2010). The resulting behavior is thought to reveal deception as an individual's attempt to conceal deceit makes them more rigid, inhibited, and suspicious (Ekman, 1992). Yet despite an increase in understanding, it is argued that people remain poor detectors because they continue to focus upon inaccurate indicators (The Global Research Team, 2006; Stiff and Miller, 1986). The concept of a stereotypical liar and the behaviors such an individual exhibits is evident cross-culturally. The most dominant cues that people across the world believe to indicate deception are gaze aversion (The Global Research Team, 2006)

and nervous behavior (Vrij, Akehurst and Knight, 2010), yet both exist without empirical support. Somewhat more worryingly is that such cues continue to be included in police manuals as reliable indicators for investigating officers (Gordon, Fleisher & Weinburg, 2002), which have important implications for police investigations when making decisions in relation to an individuals' perceived innocence or guilt. With a move towards evidence based practice, especially in policing (Lum and Koper, 2017) this is an area that clearly warrants attention.

Training

It is no surprise that certain groups have great interest in being able to improve their accuracy rates in detecting deception. The implications for the development of an accurate and efficient training method for improving lie detection are obvious, especially within criminal contexts where as previously discussed the consequences can be particularly damaging at all stages of an investigation, which in turn have a wider impact on society as a whole. The scientific study of training in detecting deception research has consequently become increasingly popular. The typical method used to determine the effect of training is through controlled comparison groups, utilizing training and non-training conditions (Driskell, 2012). Early research in this area adopting such a design indicated that training commonly decreased accuracy in detecting deception (Kassin and Fong, 1996). Yet a lack of agreement as to the effect training has on detecting deception has since developed. Bull (2004) conducted a narrative review of the existing research and concluded that training had a minimal effect, whereas other reviews have found modest effects of training (Frank and Feeley, 2003). Seemingly, this suggests there is little agreement and mixed findings with regards to the ability to train individuals to be better at detecting deception (Akehurst, Bull, Vrij and Kohnken, 2004) or as to the conditions under which training may, or may not, be successful. One possible reason for the early findings by Kassin and Fong (1996) is that the cues provided to participants were not underpinned with

empirical evidence. Therefore, what they were actually measuring was the impact of training in, what are known as, stereotypical cues of deception (Ekman, 1992). This gives rise to the argument that the content of training has important implications for its success. To explore the impact of training content Levine et al., (2005) included a bogus training group to determine the importance of training on empirically supported cues, or just the presence of training that had a positive effect on accuracy. Findings indicated that training itself improved accuracy, regardless of the legitimacy of the cues used (Levine et al., 2005). This refutes previous findings that training in stereotypical cues not only fails to improve accuracy but actually decreases accuracy (Kassin and Fong, 1996) and suggests that training content has little importance. To address such variations Driskill (2012) conducted a meta-analysis of the effect of training in detecting deception. The results of the meta-analysis indicated that deception detection training is an effective means of increasing accuracy. Further, it was found that training content was a significant moderator of training effectiveness (Driskill, 2012). Yet Driskill (2012) highlights that conclusions regarding the effect of training and the impact of content are still varied. Driskill also discusses what he calls the 'indoctrination' component of training; explaining that the reason for results such as those from the Levine et al. (2005) study may in fact be due to the ability of any training to focus an individual's attention to the task they are being asked to complete (Driskill, 2012). Suggesting an attention over knowledge affect. The lack of clarity in this area should not deter further research in an attempt to underpin strategies with the empirical basis for improving deception detection. Rather, it should direct research to explore the conditions during which training is successful or not, and establish further clarity around the implications of training content.

Response Bias

Not all concepts within the study of detecting deception are subject to such disagreement. One element that is well established is the notion of the truth bias. Explorations around the existence of the truth bias indicate it refers to an individual's need to believe what they are told is true and, as such, they are less likely to question the veracity of information provided than they are to accept it is the truth (Bond and DePaulo, 2006; Levine, Park and McCornack, 1999; Zukerman et al., 1984). Some have taken this to demonstrate that people are generally easily led (Burgoon and Buller, 2015; O'Sullivan, 2003) and that this bias means being easily led is, to some degree, outside of their control (Gilbert, 1991). Views of the easily led individual, and the notion of the truth bias have existed for some time within the detecting deception research community (Bond and DePaulo, 2006; Kraut, 1980; Mandelbaum, 2014). The reason for this is that, in general, communication is most useful when both parties deliver the truth (Grice, 1975). People typically speak the truth (DePaulo et al., 1996; Grice, 1975; Halvey, Shalvi and Verschuere, 2013; McNally and Jackson, 2013) and, as such, a bias toward believing an individual is telling the truth is functional and will generally lead to the correct judgment (Jekel, Glockner, Broder and Maydych, 2014; Jussim, 2012; Meiser, Sattler and von Hecker, 2007). Research shows that given an equal number of lies and truths to be judged, a truth bias leads to higher accuracy in detecting the truth (Bond and DePaulo, 2006; Levine et al., 1999). As well as 'truth bias', a 'lie bias' may also occur under certain conditions (Hauch et al., 2016), especially in the context of training police personnel (Meissner and Kassin, 2002). For example, police officers may be more susceptible to the lie bias in their capacity as determiners of the truth and perhaps greater exposure to liars more often than lay people where the stakes for such lies are typically higher with a need to protect the public (Meissner and Kassin, 2002). Such findings show that in contexts where there is a greater expectation of being lied to and a need to ensure someone pays for the crime that has been committed (Meissner and Kassin,

2002), the way in which such response biases operate are likely to be different. Together these response biases have important implications for understanding deception detection both in practice and in designing more informed research.

Target Gender

Another important issue within previous deception research, especially the body of literature investigating training (Driskell, 2012; Kassin and Fong, 1999), is the use of primarily male targets or a lack of specific information about the targets used. The justification for which being that males are over represented in the offender population and, thus, the investigation of male targets have greater implications. Instead paying greater attention to the differences that reside in the detector, reveals that females may be slightly better than males (Bond and Lee, 2005). An explanation which is thought to be the result of an increased sensitivity to multisensory emotion recognition within females (Hunter, Schellenberg, and Schummack, 2010). Although some researchers have argued that deceivers vary little in their skills (Kraut, 1980), there is a dearth of empirical research to support this. Specifically any investigation surrounding the extent to which there is a homogeneity of telling lies or truths between male and female targets. Yet researchers will often justify the generalization of findings using these early suggestions that liars are in fact a homogenous population in relation to the cues they exhibit, indicated by their lack of recognition around target gender in methodology (Driskell, 2012; Hauch et al., 2016). However, not all researchers have held the belief that this is the case. Indeed, early research suggested that detecting deception among males and females operates independently of one another (DePaulo & Rosenthal, 1979) whereas others have found only slight differences in leg movement and the use of illustrators but no significant differences in laughter/smiling and eye contact duration (Cody and O'Hair, 2009). Yet the investigation of individual

differences overall, let alone sex differences, is limited (Bond and DePaulo, 2006). With an increasing number of female suspects (Ministry of Justice, 2015), it is important to investigate whether sex differences are present and how detection differs in males and females. Research has consistently found that emotions have important implications in deceitful behavior (Frank and Ekman, 1997; Frank and Feeley, 2003). Emotions are also consistently found to differ in both how individuals display resulting behaviors (Nolen-Hoeksema, 2012; Thompson and Voyer, 2013), as well as how they understand emotions in others (Baron-Cohen and Wheelwright, 2004; Eisenberg and Lennon, 1983). At the very least this highlights the importance of investigating the moderating effect of gender.

Present Study

Research in this area has undoubtedly begun to address issues highlighted previously, such as the truth bias (Hauch et al., 2014) and training content (Driskill, 2012). However, research findings to date have tended to generalize both males and females, suggesting that detecting deception operates the same in both groups, despite early research indicating this is unlikely to be the case (DePaulo and Rosenthal, 1979). The present study builds upon that of Levine et al.'s., (2005) research and includes three groups: a control group, a training group provided with empirical cues, and a bogus training group provided with stereotypical cues of deception. The present study also distinguishes between truths and lies to explore the truth bias (Bond and DePaulo, 2006), and extends on previous research by exploring the differences between male and female targets (liars or truth tellers), in order to address this gap in knowledge within the detecting deception literature.

METHODS

Design

The experiment adopted a mixed measures design. There were two within-subject independent variables: 1) whether the target was lying or telling the truth, and 2) the target gender (male or female). The between-subjects independent variable was the information given prior to the presentation of the videos, with three levels: stereotype cues, tell signs, and no information (control). The dependent variable was accuracy of the decision measured via correct or incorrect response to the question “was the individual you just watched telling the truth or telling a lie”.

Sample

An opportunistic sample of 102 undergraduate students was utilized. The age of participants ranged from 18 to 43 ($M = 20.20$, $SD = 3.57$) with 86 females and 16 males. The only inclusion criterion for participants were that they were aged 18 and above, with no upper age limit. Most participants were recruited utilising a British universities internal experiment participation system (known as SONA) whereby undergraduate psychology students received one course credit for taking part. The remainder were recruited via email correspondence with the research team, responding to advertisement posters distributed throughout the university campus.

Apparatus

A Toshiba Camileo P100 video camera was used to record the footage of eight targets volunteers. The experiment was conducted using Superlab where participants using a response box to record their deception/truth decisions, were connected to a desktop PC using the Microsoft Windows operating system. Raw data was extracted into an excel file before being

transferred to SPSS. The experiment took place in a purpose built psychology laboratory located on the university campus.

Procedure

Videos were recorded of eight targets, four males and four females. All targets were asked three questions, which required a substantial answer, as opposed to closed questions. The first question, used as the baseline with all targets answering truthfully was “who is your idol and why?”. They were then asked to respond to a further two questions; “what was the best day of your life? And “what was the worst day of your life?” Targets were instructed on which questions to lie and which questions to tell the truth immediately prior to recording to limit the ability to reverse an answer. With the combinations of truths/lies varying between targets. Superlab software was then used to create the experiment, with the footage of each target played consecutively. After each question, the video stopped until a response was made by the participant, with the exception of question one (the baseline). The experiment was uploaded onto all computers within a purpose set up laboratory. Participants were instructed to arrive at the room at the allotted time where they would be given further instructions.

Participants were seated individually, and were unaware of the different conditions, or that they were receiving different information sheets dependent on these conditions. Instructions were given to read the information form thoroughly and to ensure that they remembered all information given to them. The information sheet related to the specific condition they had been assigned to. Those assigned to the stereotypes condition were instructed to look out for signs such as gaze aversion and grooming gestures (which have no empirical support as cues of deception), whereas those assigned to the tell signs condition were instructed to look for signs such as change in the use of hands, changes in the legs (cues that have empirical support for indicating deception) and highlighted the importance of taking note

of the difference between their behaviour in the baseline question and behaviour in the two following questions.

Once the experiment began, participants were presented with on-screen instructions which stated what was required of them and which buttons on the response box corresponded with a lie response and which corresponded to a truth response. The experiment consisted of eight videos played consecutively, each one lasting approximately 90 seconds. Once participants had made a decision on all of the questions, the experiment concluded, and they were debriefed; this included an explanation of what the study actually involved, and why those in the stereotype condition were partially deceived.

In order for participants to believe the information they were given was accurate, it was necessary to utilize some minor element of deception in that, all participants were told they were taking part in the same condition, when in fact this was not true. In order to minimize the impact of deception all participants were given a full explanation as part of the debriefing process. This involved ensuring they understood all the information given to them, and providing them with the opportunity to ask questions or raise any issues or concerns. Notably, all ethical guidelines set out by the British Psychological Society were adhered to throughout the duration of the study and institutional ethical approval was granted for the research, prior to being conducted.

Analysis

The raw data taken from Superlab was input into excel and then transferred to SPSS 22 to test the following hypotheses: 1) there will be a significant effect of sex of target upon accuracy and, 2) there will be a significant effect of training upon accuracy.

Firstly, descriptive statistics were examined to test whether any differences within measures of central tendency could be found. As the descriptive statistics indicated a possible effect, a three-way ANOVA was conducted to see whether there were any main effects.

RESULTS

Descriptive statistics

Descriptive statistics, including overall mean accuracy for the three conditions, mean accuracy separated by male and female targets for each of these three conditions, and mean accuracy separated by accuracy in detecting truths and accuracy in detecting lies for male and female targets and by each of the three conditions are presented in Tables 1-3. Additionally, accuracy rates for detecting truths and detecting lies are presented in Table 4.

Analysis of Variance (ANOVA)

A 2x2x3 mixed ANOVA was conducted to assess mean accuracy in detecting truths and lies in males and females between three conditions (control, stereotypes, and tell signs).

Preliminary analyses were conducted in order to determine independence of observations, normality, homogeneity of variance and intercorrelations, and sphericity. Levene's test of equality of variance was statistically significant for accuracy in detecting truths for male targets ($p < .001$), but non-significant for the remaining variables. As moderate departure from the homogeneity of variance assumption is not a threat to ANOVA when group sizes are equal, it was deemed appropriate to proceed with the mixed ANOVA (Tabachnick and Fidell, 2013). Additionally, while Box's test of equality of covariance matrices was statistically significant, it was considered appropriate to continue with the mixed ANOVA, as

sample sizes were equal across the three conditions ($n = 34$; Field, 2013). Mauchly's test of sphericity could not be calculated as the two within-subjects variables each had only two levels and, as such, sphericity was assumed.

Results revealed a significant main effect for the within-subjects factor of accuracy in detecting truths or lies, $F(1, 99) = 12.84, p < .001$, with significantly lower scores for detecting lies ($M = 4.55, SD = 1.52$) than for detecting truths ($M = 5.25, SD = 1.26$). This was a moderate effect, $\eta^2 = .12$. Additionally, there was no significant main effect for the within-subjects factor of target gender $F(1, 99) = 3.21, p = .08$. There was also no significant main effect for the between-subjects factor condition $F(2, 99) = 1.00, p = .37$.

Furthermore, findings indicated no significant interaction between target gender and condition $F(2, 99) = 1.87, p = .16$. There was also no significant interaction between condition and detecting truths or lies $F(2, 99) = 1.16, p = .32$. However, a significant interaction was found between target gender and accuracy in detecting truths or lies $F(1, 99) = 33.13, p < .001$; this was a large effect, $\eta^2 = .25$. Accuracy in detecting truths or lies varied according to target gender, with mean accuracy in detecting truths significantly higher when the target was male ($M = 2.94, SD = 1.00$), as opposed to female ($M = 2.31, SD = .83$), and mean accuracy in detecting lies significantly higher when the target was female ($M = 2.41, SD = .98$) rather than male ($M = 2.14, SD = .96$; see Figure 1). However, there was no significant interaction between condition, target gender, and detecting truths or lies, $F(2, 99) = .20, p = .82$.

[Insert Figure 1 here]

DISCUSSION

Building upon previous research, the present study investigated the effect of training and target gender on the accuracy of detecting deception. In addition to this, the present study further

analyzed the data in relation to the differences in detecting truths and lies. Participants were asked to make decisions upon whether eight targets were lying or telling the truth in their answers to two substantial answers which followed a baseline answer. Whilst previous research has varied in its findings with relation to training overall (Bull, 2004; Driskill, 2012; Frank & Feeley, 2003; Kassin and Fong, 1996), research has found that the content of training has important implications for its success (Ekman, 1992). Yet the current study found no significant differences between the three groups, suggesting training has a minimal effect regardless of content, supporting findings from Bull's (2004) review. Of course, it cannot be determined if participants actually based their decisions on the information they had been provided during the training or beliefs they previously held. Previous knowledge is difficult to control and inhibit (Stromwall, Granhag and Hartwig, 2004) and as such future research should attempt to measure this prior to study. This may indicate that any deception detection training program should seek to explicitly address the potentially problematic nature of prior knowledge and previously held beliefs.

In addition, findings revealed a significant large effect (Cohen, 1988) of target gender on accuracy in detecting truth or lies. The findings suggest that training individuals to detect deception in males and females is wrongly assuming both genders reveal the same cues when being deceptive. In exploring individual differences, previous research has focused on those differences which reside within the detectors, finding that females slightly outperformed males (Bond and Lee, 2005) with only a small number of studies examining individual differences that reside in the target (Cody and O'Hair, 2009). The current findings suggest that the lack of recognition and investigation of gender differences in relation to the target has led to a reductionist evidence base for detecting deception. With an increasing number of female offenders (Ministry of Justice, 2015) it would be inappropriate to ignore potential differences between gender groups. Generalising research from one gender to the other may lead to training

programs developed that are only of actual value when applied to males. With recent research in witness identification accuracy displaying the evidential value of prior training (Willmott and Sherretts, 2016), future research should seek to further explore the role of individual differences within the target, central to detecting deception research.

The current findings show that detecting truths was significantly more accurate in male targets than in female targets, but that detecting lies was more accurate in female targets. There are a number of possible explanations for these findings. First, it may be that males are more convincing, regardless of whether they are telling the truth or lying, whereas females may be less convincing when both telling the truth and lying, leading detectors to question the veracity of all their statements, even when they are being truthful. Alternatively, the performance of such truths and lies may affect the way in which they deliver said truths and lies (Bond and DePaulo, 2008). Previous research has explored the role of emotions in displaying behaviors, and the subsequent differences between genders (Nolen-Hoeksema, 2012; Thompson and Voyer, 2013). As such, it may be that the way in which emotions differ between genders impacts the way in which they are able to deliver a truth or lie. For example, a male's behavior when lying or telling the truth is less overtly impacted by emotions, thereby leading to less cues being leaked and, as such, detectors are more likely to think they are telling the truth, which has led to better accuracy in detecting truths in males. Yet in females, more cues are leaked, thus leading detectors to question the veracity of their statements, and an increased likelihood of them being suspected of lying, increasing accuracy in detecting deception.

These findings have important implications for the understanding of response biases, specifically the truth bias (Bond and DePaulo, 2006; Levine et al., 1999) and the lie bias (Hauch et al., 2014). Research has found the way such biases operate to be context dependent; for example, in a criminal context, police personnel are more likely to suspect an individual is lying as this is functional to the end result they hope to achieve (Meissner & Kassin, 2002).

Also in everyday occurrences, people tend to expect those communicated with to be telling the truth and, as such, will be more likely to judge such individuals as telling the truth (McNally and Jackson, 2013). The current findings suggest it is not merely context that influences such response biases, but also gender differences between targets. Whilst the current analyses do not allow the exact nature of the response biases in relation to males and females to be determined, it provides the basis for future research to address the relationship between target gender and response bias. The findings indicate that a truth bias may be more likely in males, whereas a lie bias may be more likely in females. However, further research is necessary to investigate the explanatory factors around this relationship.

Given the potential implications of the present findings, future research should seek to further explore the three aspects of detecting deception examined here, but in doing so should aim to address some limitations. Due to resource constraints, there was an absence of high stakes within the present study; volunteers were asked to lie with no consequences, which may have impacted the way in which they delivered the information, truthful or deceitful. In an attempt to mitigate such an effect, volunteers were encouraged by the questions asked to respond with something meaningful, thereby increasing the likelihood of provoking real emotions. As such, this study may be criticized for not fully reflecting the true context in which lying, and motivations for being deceitful in relation to criminal justice typically occur (cf. Willmott and Ioannou, 2017). A further limitation may be that the training conducted was too brief and limited in nature; thus, future research should seek to replicate the study with the addition of a more comprehensive training element to examine whether the effect of length of training time, as well as comprehensiveness of content, influences detection of deception accuracy. Whilst undoubtedly such limitations exist and are typical of many experimental research designs, they should not detract from the important findings obtained within the current study, and the relevance of these to many areas, with wide ranging implications for

detecting deception and more broadly community safety. Results indicate that individual differences exist not only within detectors, but also within the target. They also highlight that the power of response biases, such as the ‘truth bias’, and even stereotypical beliefs and prior knowledge may be far greater than previously estimated. Something that based upon recent research may have important implications for juror decision making processors at trial (Willmott, 2016), and potentially community safety upon considering the effect such biases may have upon parole decisions surrounding the level of risk posed by a dangerous inmate who convincingly presents themselves in contrast to such. Moreover, the present study thereby offers further insight regarding the intricacies of accurately detecting truths and lies from crime suspects. For instance, if an offender is successful in deceiving police investigators, jurors, and members of the parole board, not only may they elude conviction, but it may also result in greater social harm upon their release (Granhag and Strömwall, 2004). In addition, research has shown the potential for incorrect suspect identifications to result from unreliable evidence, such as eyewitness misidentification (Mojtahedi, Ioannou and Hammond, 2017). In such circumstances, the inability to reliably detect a truthful account from an innocent suspect may in itself lead to a grave miscarriage of justice. Importantly, the combination of eyewitness fallibilities and active suspect attempts to misinform a police investigation, has the potential to result in the wrongful conviction of an innocent person, which would permit the real perpetrator to remain free to re-offend/ continue to offend within the community. Reports indicate that within approximately 48% of previous wrongful conviction cases, the real perpetrator had gone on to commit additional crimes (Cardozo, 2009). Owing to these issues, the current researchers assert that an increased understanding of detection of deception within the criminal justice system may in itself broadly contribute to the provision of safer communities, reducing the possibility that recidivistic offenders are able to re-offend and protecting innocent individuals from being wrongfully convicted. Finally, the way in which these response biases operate in

male and female targets is not homogenous and as such future studies addressing the combination of such limitations, may lead to substantial development in detecting deception research. Ultimately where the processes and biases underlying detecting deception ability are better understood, the risk posed to police investigations, juror decisions and subsequent parole release decisions, have the potential to be reduced - leading in turn, to safer communities.

Conclusions

The present study's findings show that individual differences within the target and differences in relation to accurately deciding whether targets are telling the truth or lying, exist. It has been suggested that because of the individual differences that reside between targets, a common detector of deception may not exist (Poon and Fatt, 1998). However, the current findings provide early evidence of the importance of considering not only individual differences within the detector, but also the individual differences within the target. The implications within a criminal justice context for such findings are clear. The decision of whether someone is lying or telling the truth may be key in the decision made by police officers to prosecute an individual or a juror's assessment of their testimony at trial and, subsequently that individual's freedom. This is not only relevant in cases where a suspect is denying committing a crime, but also in relation to false confessions. Making decisions on the veracity of statements delivered by female and male suspects in the same way, using the same cues is likely to be inaccurate, and ineffective in achieving the goals of an investigator. Investigators and other individuals with similar goals, where detecting deceit has high stakes, should be mindful of the current findings and ensure they are considered in order to try and minimize cognitive biases therein. The notable argument that detecting deception research may in itself assist in creating safer communities gains momentum upon considering that, every misdirected police investigation whereby a guilty perpetrators deception is not accurately detected, potentially leads to such

dangerous individuals remaining within the community. Free to continue offending against those seemingly predisposed to believe they're telling the truth.

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