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Research Article

The Impact of Presentation Modality on Perceptions of Truthful and Deceptive Confessions

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This study examined the impact of presentation modality and the effectiveness of direct and indirect measures of deception to distinguish truthful from deceptive confessions. Confession statements were presented in one of three formats: audiovisual, audio-only, or written text. Forty-six observers classified each statement as true or false and provided ratings of confidence, information sufficiency, perceived cognitive load, and suspiciousness. Compared to audio and written confessions, exposure to audiovisual recordings yielded significantly lower accuracy rates for direct veracity judgements, with below chance level performance. There was no evidence that indirect measures assisted observers in discriminating truthful from deceptive confessions. Overall, observers showed a strong bias to believe confessions with poor detection rates for false statements. Reliance on video recordings to assess the veracity of confession evidence is unlikely to reduce wrongful convictions arising from false confessions.

1. Introduction

Due to the pervasive nature of deception in society, individuals are faced with the difficult task of distinguishing truths from lies on a regular basis. These judgments are especially important in the context of the criminal justice system, where law enforcement and legal professionals are routinely tasked with assessing the credibility of witnesses and suspects in police investigations and other criminal proceedings. The ability to accurately discriminate truths from lies in legal settings is crucial, as judgment errors can have grave consequences. This is especially relevant to confession evidence given the weight accorded this type of evidence in decisions to prosecute and trial verdicts. Evidence of a confession is considered the most incriminating form of trial evidence and can have a powerful and persuasive effect on conviction rates [1–3]. Given the ever-growing body of research detailing numerous examples of individuals wrongly convicted on the basis of false confession evidence [1, 4–8], it is vital that the veracity of confessions be accurately evaluated.

Ensuring that wrongful convictions on the basis of false confessions are avoided involves both the use of appropriate and noncoercive police interviewing techniques and the implementation of effective safeguards to assess the credibility of suspect admissions. Historically, police interviews have been conducted in an accusatorial style, aimed at inducing a suspect to confess [9, 10]. This objective was supported by the use of psychologically coercive and manipulative tactics that can exert strong pressure on suspects to confess [11, 12]. While this approach has largely been abandoned in some jurisdictions such as the United Kingdom and Australia, it remains the dominant approach to police interviewing in the United States [12, 13] and has been identified as a key factor in many documented cases of false confessions [1, 5, 8, 10, 14].

In recent years these practices have been strongly criticised. A number of scholars [6] have advocated for the full audiovisual recording of police interviews, both to discourage the use of coercive methods and to ensure that an accurate record of suspect statements is available for subsequent evaluations of veracity [15, 16]. This led to the introduction

of formal policy changes in many jurisdictions requiring audiovisual recording [9, 13]. However, these changes do not provide an absolute safeguard against wrongful convictions on the basis of false confessions [9, 13, 17]. Indeed, the possibility remains that police may engage in preliminary unrecorded questioning with a suspect which may compromise the credibility of any subsequent recorded admissions. This is clearly illustrated in the Australian case of Andrew Mallard who was wrongly convicted and imprisoned in 1995 for murder based in part, on a 20-minute false videotaped confession recorded following 11 hours of police questioning [18]. Perhaps of greater concern is the possibility that fact finders may use a video recording as a tool to assess the veracity of suspect admissions in the event of a disputed confession [13]. Decades of deception research showing that fact finders are generally no more accurate than chance at discerning between videotaped truthful and untruthful statements [19] calls into question the reliability of video recordings to prevent erroneous prosecution on the basis of a false confession.

The use of video recordings to assess the veracity of confession evidence is further complicated by the inherently believable nature of confessions and the possibility that, in this context, truths and lies may be especially difficult to discern. This bias was confirmed by experimental research showing that confessions were overwhelmingly believed (>80% of the time) irrespective of actual message veracity, resulting in very low detection rates for false confessions [20]. Kassin [10, 21] noted two possible reasons why false confessions may be particularly difficult to detect, first due to a truth-biasing attribution error (fundamental attribution error) [22], which "leads people to expect self-serving behaviour in others—and hence, to trust confessions" [10, page 223]. Secondly, and perhaps more appreciably, false confessions typically contain highly detailed, persuasive, and emotional features that are commonly associated with truth telling (e.g., details of how and why a crime was committed and expressions of remorse) [10]. The presence of these persuasive features combined with a predisposition to believe self-incriminating accounts may make false confessions particularly difficult to detect.

Research directly investigating observers' performance at distinguishing truths from lies in the specific context of confessions is limited, as is the number of studies comparing mode of communication in this context. Perhaps the most pertinent study on this topic examined observer assessments of the credibility of five truthful and five deceptive confessions provided by incarcerated prisoners [23]. Results revealed an overall accuracy rate of 53.9%, a relatively unimpressive performance level, not significantly better than chance alone. Similarly, an analysis of 20 brief (written/audiotaped) excerpts (mean length 10 seconds) of actual criminal confessions [24] yielded comparable levels of accuracy (55% to 62%). Even lower accuracy rates (33%) were reported for observers making veracity assessments on the basis of video-recorded confessions to mock crimes in the absence of supporting contextual information [25]. While these findings afford little optimism for success in discerning true from false confessions, performance accuracy improved when the modality of a confession was varied. For instance, participants achieved higher accuracy rates when confessions were presented in audio-only compared to audiovisual format [23]. These findings were congruent with most outcomes in the general deception literature (see [24, 26] for exceptions) indicating that observers tend to achieve higher accuracy rates when they attend to speech content (written transcripts) or vocal cues (audio recordings), compared to exposure to the full audiovisual presentation of the target (audiovisual recordings) [27–34]. As noted by Vrij [35] these findings controverted the widely-held belief that "lie detection is easiest when the lie detector has access to the full picture of the potential liar and that just reading a textual version of a statement or just listening to someone's voice hampers lie detection" (p. 303).

Differences in performance accuracy between presentation modalities may be attributed to the fact that when visual information is available, observers rely most heavily on nonverbal behaviours and are particularly drawn to stereotypical cues to deception (e.g., gaze aversion and fidgeting) to guide their deception judgments [26, 29, 36–39]. Given the body of evidence showing that these cues are not indicative of deceit [40], it is unsurprising that judgments made on this basis are less accurate than those in response to vignettes where these potentially distracting cues are unavailable. This contention is supported by research suggesting that reliance on demeanour cues (e.g., physical movements, eye gaze, and interaction style) alone can result in poor accuracy at discriminating truths from lies [41]. Furthermore, research has shown that there are generally more valid verbal and speech-related cues to deception than nonverbal cues [19, 40, 42] and that observers' notions about the validity of verbal cues to deception are generally more accurate than those concerning nonverbal cues [43]. Hence, observers may show increased detection accuracy when visual information is ignored or unavailable, perhaps allowing them to direct their attention to the more diagnostic speech content and/or vocal aspects of the message.

Furthermore, to the extent that truthful confessors experience feelings of guilt or shame associated with acknowledging responsibility for a transgression [40], they may exhibit behaviours consistent with the stereotypical image of deception. These behaviours are more apparent in some modalities than others. Since stereotypical beliefs about deception are most commonly nonverbal [26, 44], observers who view videotaped confessions may be particularly impaired in their ability to discern truth from deception compared to observers who are not exposed to nonverbal behaviours of confessors. However, these findings have not been used to guide policy developments regarding the uses of police video recordings to assess the credibility of confession evidence, indicating a need for further clarity on the impact of presentation modality on perceptions of confessions. The primary aim of the current research was to address this gap in the literature to help inform the development of guidelines on how police interview recordings should be used to better evaluate the veracity of confessions.

While restricting message modality is one procedure that may improve veracity discrimination, other strategies may

further assist in focusing observers' attention on valid cues to deception and in turn improve detection accuracy. One such strategy is to ask observers to make indirect judgments of veracity (e.g., "Does the person have to think hard?") instead of explicit truth versus lie classifications (e.g., "Is the person lying?"). Indeed, some studies have shown that indirect measures of deception may discriminate truthful from deceptive messages more accurately than explicit truth versus lie classifications [45–47], possibly because observers have implicit or intuitive notions about deception that are more accurate than their explicit ideas [48]. For example, in a videotaped lie detection task, Anderson et al. [45] found that explicit detection accuracy was no better than chance; yet observers were able to distinguish messages using indirect measures such as observer confidence (higher for truthful statements), suspiciousness of the message (greater for deceptive statements), and the extent to which observers felt that they had enough information to make a veracity rating (higher for truthful statements). Similarly, when using a theoretically based indirect measure of deception to test the proposition that lying draws on more cognitive resources than does truth telling ("Does the person have to think hard?"), police officers were able to distinguish between videotaped truths and lies, whereas those officers asked to make explicit veracity ratings of the videotaped statements were unable to make this distinction [47]. Findings from this study further suggested that using the indirect method focused observers' attention on behavioural cues that were indicative of deceit, while those who made explicit truth/lie judgments focused on stereotypical cues that were not reliably associated with deception. As these strategies have yet to be tested in the context of confessions, the secondary aim of the current research was to address this gap in the literature and to provide further information to assist practitioners in developing guidelines to effectively assess the veracity of confession evidence.

1.1. Aims of the Research. The objectives of the current study were threefold:

(1) to further investigate the influence of presentation modality on deception detection accuracy in the context of confessions, using a larger set of statements longer in duration than those used in previous studies. This was achieved by comparing the deception detection performance of lay observers when assessing autobiographical confessions to personal transgressions presented in one of three different modalities (audiovisual recordings, audio recordings, and verbatim written transcripts),

(2) to shed light on behavioural cues that may be associated with deception in the context of confessions by coding selected verbal and nonverbal cues exhibited by truthful and deceptive confessors, and

(3) to extend the literature on the utility of indirect measures of deception by examining whether measures that benefited detection accuracy in earlier studies are effective in the context of confessions. This approach has not been explored previously with confessions.

1.2. Research Hypotheses. We predicted that

(1) participants exposed to audiovisual recordings would attend to potentially uninformative and biasing visual information and would therefore be less accurate on the explicit truth/lie discrimination task than participants exposed to the same information in audio-only recordings or written transcripts,

(2) to the extent that stereotypical nonverbal cues to deception are displayed more frequently by truthful than deceptive confessors, audiovisual observers' performance would be significantly impaired relative to chance,

(3) confidence would be higher and observers would feel they had more information when assessing truthful than deceptive confessions,

(4) deceptive confessors would be perceived as having to "think harder" than truthful confessors,

(5) deceptive messages would be perceived as more suspicious than truthful messages.

2. Method

2.1. Research Design. The study was conducted in two stages. First, 60 university students gave video recorded statements of truthful and deceptive confessions. Second, a subset of the 60 confession statements was presented to observers in audiovisual, audio-only, or written format. All confession statements comprised narratives up to several minutes in length.

2.2. Stage One: Elicitation of Stimulus Materials. To elicit convincing truthful and deceptive confessions, we adapted the real/simulating paradigm [49–51], a procedure traditionally used in hypnosis research to elicit real and simulated hypnotic narratives. A number of modifications were made as outlined by Barnier et al. [52]. First, a group of participants gave genuine autobiographical confessions describing social transgressions to an experimenter who video recorded their statements. Next, a group of "simulators" adopted one of the genuine confessional events already described (ensuring it was one that they had not themselves experienced) and concocted and presented a convincing deceptive confession based on that event, as if it were a real autobiographical experience. In this yoked design, genuine confessions were the basis for matched simulated deceptive confessions.

2.2.1. Participants. Participants were 60 students (41 females, 19 males) enrolled at the University of New South Wales in Sydney, Australia with an average age of 23.05 years (SD = 5.58 years).

2.2.2. Procedure. Each participant gave one truthful or deceptive confession. The initial 4–6 participants gave genuine accounts, as the experimental paradigm required that at least three genuine accounts be available for adoption by participants in the deceptive condition prior to recording statements by simulators. Once the initial genuine accounts were elicited,

Table 1: Behavioural coding of truthful and deceptive confessions: means and standard deviations.

Behaviour	Truthful confession	Deceptive confession	P-value
Pauses	6.89 (4.13)	6.79 (6.29)	0.970
Speech hesitations	19.46 (9.26)	17.46 (6.19)	0.540
Speech errors	7.83 (4.04)	10.25 (4.94)	0.203
Illustrators	43.04 (26.71)	45.25 (21.87)	0.827
Eye blinks	110.79 (62.58)	94.29 (48.16)	0.477
Smiling	12.00 (9.38)	8.17 (7.02)	0.269
Gaze aversion	124.08 (55.99)	101.58 (48.56)	0.304

Note. Frequency counts were employed for all coded behaviours except gaze aversion, which was coded as the number of seconds the speaker looked away. Standard deviations are displayed in parentheses.

assignment to truthful versus deceptive conditions was alternated for all subsequent participants.

Participants in the genuine condition (truth tellers) were asked to recall and briefly describe three autobiographical events where they did something that they "felt guilty for and thought a lot about afterwards." Participants stated how old they were at the time of the event and how certain they were of the experience, using a ten-point scale (10 = absolute certainty). The experimenter selected one confessional event for the participant to describe based primarily on participants' certainty of having experienced the event (i.e., ratings closer to 10) and on recency (the most recent event was chosen). Participants in the genuine condition were given five minutes alone to think about the selected event details before describing it "in as much detail as possible" to a second experimenter who video recorded their statement.

Participants in the deceptive condition were presented with three brief summaries (3–5 sentences in length) of confessions elicited from participants in the genuine condition and were asked if they had ever experienced the event (yes/no) and their certainty using a ten-point scale (10 = definitely experienced the event). The experimenter selected one event (whichever the participant was most certain they had not experienced). Participants had five minutes alone to prepare a detailed and convincing confession of the selected event, as if they had truly experienced. Following the preparation period, participants were informed that the second experimenter was unaware whether they were telling the truth or a lie and that the participant's task was to convince the second experimenter that the statement was truthful by "describing the event in as much detail as you can, and by appearing as genuine as you can." The participant's narrative was video recorded without interruption.

Selection and Preparation of Experimental Accounts. A random subset of 24 statements was selected subject to the following constraints: an equal number of males and females (age range 18–41, $M = 24.00$ years, SD = 6.46 years); an equal number of truthful and deceptive confessions; and adequate framing of the participant in the video. The confessions described experiences such as stealing, property damage, lying to a loved one, and cheating on a partner. Statements ranged in length from 334 to 988 words ($M = 572.25$ words, SD = 189.81 words) and their recorded duration ranged from two to five minutes ($M = 189.13$ seconds; SD = 57.54 seconds). The 24 experimental confession statements were not significantly different in length (number of words), as a function of truth status ($t(22) = 0.27$, $P = 0.79$) or gender of the storyteller ($t(22) = 0.49$, $P = 0.63$).

All experimental statements were transcribed verbatim and verified by an observer blind to the truth status of each account. Nonfluencies such as "um," "ah", and "er", repetitions, and pauses (greater than two seconds) were retained (and noted in written transcripts) to preserve the quality of accounts. The 24 experimental video recorded statements were randomly organized for presentation in audiovisual, audio, and written modalities. An interval of approximately 20–25 seconds separated the audio and audiovisual presentations.

Behavioural Coding. To examine whether there were differences between the behaviours of truth tellers versus liars, visual and vocal cues were coded independently by two trained raters who were blind to the experimental conditions and study objectives. A series of behaviours drawn from a coding scheme employed in a number of earlier deception detection studies (see [53] for a description) were analysed and intercoder reliability was assessed using Krippendorff's alpha (α) [54]. As the two raters' estimates were sufficiently reliable [55] for all behavioural cues ($\alpha = 0.73$ to 0.99), mean values were used in all subsequent analyses. Vocal cues (coded from transcripts) included frequency counts of the number of pauses ($\alpha = 0.99$), speech hesitations (e.g., "ah", "er", $\alpha = 0.98$), and speech errors (e.g., sentence repetition, stutters, false starts, $\alpha = 0.77$). Visual cues (coded from video recordings) included frequency counts of illustrators (arm/hand movements that accompany speech, $\alpha = 0.95$), eye blinks ($\alpha = 0.85$), smiling (grin/smile or laugh, continuous smiles scored anew every two seconds, $\alpha = 0.73$), and gaze aversion (the number of seconds that the participant looked away from the interviewer, $\alpha = 0.86$). No statistically significant differences emerged for any of the coded behaviours across truthful versus deceptive confessions (all P values > 0.20). A similar pattern of nonsignificant findings was observed after controlling for the duration of each statement. Means and standard deviations are presented in Table 1.

2.3. Stage Two: Observer Classifications. In the second stage of the experiment, observers, none of whom were involved

Table 2: Signal detection measures for presentation modality groups.

Signal detection measures	Written ($n = 19$)	Audiovisual ($n = 15$)	Audio ($n = 12$)
Hits	41.2%	27.8%	36.8%
Misses	58.8%	72.2%	63.2%
Correct rejections	63.2%	55.0%	68.1%
False alarms	36.8%	45.0%	31.9%
Total correct	52.2%	41.4%	52.4%
Discrimination accuracy (d')	0.14	−0.55	0.14
Response bias (c)	0.30	0.40	0.43

in the first stage of the study, were randomly assigned to one of three conditions in which they (1) watched audiovisual recordings, (2) listened to audio recordings, or (3) read written transcripts of confession statements. Participants indicated (a) whether each statement was true or false and, on a 7-point Likert-type scale, rated (b) confidence in their veracity judgment; (c) the extent to which they had adequate information to judge veracity; (d) the extent to which they perceived the speaker to be "thinking hard" (experiencing high cognitive load); and (e) how suspicious they were of the statement. The primary dependent variable was the overall accuracy of participant veracity ratings, analysed using signal detection theory [56]. This framework yielded two independent parameters of performance, discrimination accuracy (d'), and response bias (c), measured by combining judgments for truthful and deceptive statements. Discrimination accuracy referred to participants' sensitivity in correctly detecting a signal when it was present (i.e., deceit) and correctly rejecting the absence of the signal when not present (i.e., truth). Higher positive values of d' indicated higher discrimination accuracy, a value of zero indicated chance level performance, and negative values indicated that accuracy was below chance [56]. Response bias estimated the extent to which each participant was predisposed to report "deception" versus "truth", with positive values indicating a truth bias and negative values indicating a deception bias.

2.3.1. Participants. Participants were 48 community volunteers and university students recruited via study email advertisements. Two participants failed to complete the experiment, leaving a total of 46 participants (38 females, 8 males) ranging in age from 18 to 75 years ($M = 39.96$ years, SD = 13.22 years).

2.3.2. Procedure. Participants in groups of 5–10 read, listened to, or watched 24 randomly organized confessions, some of which were true and some of which were false. They were advised that the percentage of truthful statements in the sample fell between 25% and 75% [47, 57].

3. Results

3.1. Accuracy Ratings for Explicit Credibility Assessments. The overall accuracy rate in assessing confession veracity (global judgment accuracy) across conditions, participants, and statements was 48.7%, 35.3% for deceptive confessions and 62.1% for truthful confessions. Overall accuracy was not significantly different from chance (two-tailed binomial test, $P = 0.40$). There was no relationship between overall accuracy and confidence ratings across modality groups (rho = −0.18, $N = 46$, $P = 0.23$, two-tailed).

To examine differences in classification accuracy as a function of presentation modality and account truth status, a 2 (truth status) × 3 (mode of presentation) mixed model ANOVA was conducted. This analysis yielded a significant main effect of truth status, $F(1, 43) = 66.83$, $P < 0.001$; $\eta^2 = 0.60$, showing that across all presentation modalities, observers were significantly better at identifying true ($M = 0.62$, SD = 0.13) than deceptive confessions ($M = 0.36$, SD = 0.16). The main effect of presentation modality was significant $F(2, 43) = 7.64$, $P < 0.005$; $\eta^2 = 0.26$. Planned contrasts using a Bonferroni correction revealed that participants assessing written confessions ($t(43) = 3.53$, $P < 0.005$; $M = 0.52$, SD = 0.08) and those assessing audio recorded confessions ($t(43) = 3.22$, $P < 0.005$: $M = 0.52$, SD = 0.07) classified significantly more statements correctly than participants who assessed audiovisual confessions ($M = 0.41$, SD = 0.11). There were no significant differences in overall accuracy between audio and written modalities, and two-tailed binomial testing revealed that neither of these two groups performed at levels significantly greater than chance. However, in the audiovisual condition, overall accuracy (41.4%) was significantly worse than chance (two tailed binomial test, $P < 0.0001$). The interaction between truth status and presentation modality was not significant, $F(2, 43) = 0.70$, $P = 0.50$.

3.2. Signal Detection Measures. For each individual participant, measures of discrimination accuracy (d') and response bias (c) were calculated across the 24 experimental statements. These values were averaged to obtain means for each modality group. Signal detection and performance accuracy measures are displayed in Table 2.

Separate one-way ANOVAs assessed differences in discrimination accuracy (d') and response bias (c) across the modes of presentation. For discrimination accuracy, results indicated a significant main effect of mode of presentation, $F(2, 43) = 8.37$, $P < 0.01$; $\eta^2 = 0.28$. Consistent with the findings above, those who assessed audiovisual recordings of confessions showed significantly lower discrimination accuracy relative to participants who assessed written transcripts ($t(43) = 3.73$, $P < 0.005$) and to those who assessed

Table 3: Means and standard deviations for ratings of indirect measures of deception as a function of truth status and modality group.

	Audiovisual		Audio		Written		Total	
	T	L	T	L	T	L	T	L
Confidence	4.87	5.03	4.63	4.60	4.69	4.77	4.74	4.81
	(0.52)	(0.73)	(0.82)	(0.94)	(0.75)	(0.72)	(0.69)	(0.79)
Information sufficiency	4.67	4.74	3.85	3.90	4.09	4.36	4.22	4.36
	(0.70)	(0.89)	(1.10)	(1.16)	(0.97)	(0.92)	(0.97)	(1.01)
Cognitive load*	3.50	3.04	3.40	3.35	3.73	3.61	3.57*	3.36*
	(0.66)	(0.50)	(0.63)	(0.59)	(0.53)	(0.72)	(0.60)	(0.66)
Suspiciousness*	3.88*	3.34*	3.72*	3.76*	3.78*	3.83*	3.80	3.65
	(0.57)	(0.71)	(0.41)	(0.49)	(0.65)	(0.70)	(0.56)	(0.68)

Note. *Significant differences ($P < 0.05$); standard deviations in parentheses.

audio recorded confessions ($t(43) = 3.32$, $P < 0.005$). No statistically significant differences emerged in the degree of response bias across groups ($F(2, 43) = 0.79$, $P = 0.46$). However, a series of one-sample t-tests comparing bias scores to zero revealed that respondents in all groups exhibited a truth bias (all P values < 0.002).

3.3. Indirect Measures of Deception. To examine observers' performance on the indirect measures of deception, a series of 2 (truth status) × 3 (presentation mode) mixed model ANOVAs were conducted on ratings of confidence, information sufficiency, cognitive load, and suspiciousness. Results showing means and standard deviations for all indirect measures as a function truth status and presentation modality are presented in Table 3.

For perceived cognitive load, there was a significant main effect of truth status, $F(1, 43) = 5.11$, $P < 0.05$; Wilks' Lambda = 0.89; $\eta^2 = 0.10$, showing that overall participants perceived a higher level of cognitive load among actual truthful confessors compared to deceptive confessors. Neither the main effect of presentation modality $F(2, 43) = 2.63$, $P = 0.08$, nor the interaction between truth status and presentation modality $F(2, 43) = 1.91$, $P = 0.16$, reached statistical significance. For perceived suspiciousness, results showed no significant main effects for truth status $F(1, 43) = 3.03$, $P = 0.09$, or presentation modality $F(2, 43) = 0.54$, $P = 0.59$. However, the interaction between truth status and presentation modality was significant, $F(2, 43) = 5.45$, $P < 0.01$; Wilk's Lambda = 0.80; $\eta^2 = 0.19$. Closer examination of group means suggested that participants who assessed written transcripts and audio recordings were more suspicious of deceptive confessions (written: $M = 3.83$, SD = 0.70; Audio: $M = 3.76$, SD = 0.49) compared to truthful confessions (written: $M = 3.78$, SD = 0.65; Audio: $M = 3.72$, SD = 0.41). By contrast, participants who assessed audiovisual recordings of confessions showed the opposite pattern of results, demonstrating more suspicion in response to objectively truthful confessions ($M = 3.88$, SD = 0.57), relative to deceptive confessions ($M = 3.34$, SD = 0.71).

Analysis of confidence and information sufficiency ratings revealed no statistically significant results for either the main effects of truth status, presentation modality, or the interactions. Results and associated F statistics for confidence were truth status $F(1, 43) = 0.95$, $P = 0.34$; presentation modality $F(2, 43) = 0.78$, $P = 0.47$; and interaction $F(2, 43) = 0.56$, $P = 0.58$. Results and associated F statistics for information sufficiency were truth status $F(1, 43) = 3.11$, $P = 0.09$, presentation modality $F(2, 43) = 2.76$, $P = 0.07$; and interaction $F(2, 43) = 0.92$, $P = 0.41$.

4. Discussion

4.1. The Impact of Presentation Modality on Perceptions of Confessions. The first objective of this study was to test the influence of presentation modality (audio recordings, audiovisual recordings, and written transcripts) on observers' ability to accurately discriminate true from false confessions. As predicted, and consistent with the findings of Kassin and associates [23], participants exposed to audiovisual recordings were significantly less accurate at discriminating between truthful and deceptive confessions relative to those exposed to audio recordings or written transcripts. Although exposure to audio recordings and transcripts did not yield accuracy rates significantly greater than would be expected by chance alone, as predicted, performance below chance level by audiovisual observers demonstrated that exposure to visual images in this study significantly impaired detection accuracy. In fact, while observers assessing audiovisual recordings were poor at detecting both truthful and deceptive confessions, they were particularly deficient in their ability to identify deceptive confessions: barely more than a quarter (27.8%) of deceptive confessions were correctly identified.

One possible explanation for audiovisual observers' exceptionally poor performance is that they perceived behaviours that were more prevalent in truthful statements to be indicative of deception, systematically resulting in misclassifications of deceptive statements. Often when there is little corroborating information available to verify a statement, observers who have access to visual cues focus their attention on nonverbal behaviours, including stereotypical cues to deception [19, 37, 44, 58–60]. Since the typical stereotype of a liar is visual in nature, such stereotypes are more likely to be activated by testimony presented visually [26]. Although in this study, there were no statistically significant visible differences between the behavioural cues displayed by truth tellers versus liars, a nonsignificant trend indicated that truthful

confessors displayed more gaze aversion—a stereotypical nonverbal cue commonly associated with deception—than did deceptive confessors. Veracity judgments by observers who relied on this behaviour would have erred systematically, accounting for the finding that audiovisual observers were more likely to misclassify a true confession than to correctly identify a deceptive confession. Since the cues which observers relied on in making credibility judgments were not examined in detail, this explanation requires further research. However, this contention is supported by prior findings showing that observers assessing audiovisual recordings of confessions attended most closely to nonverbal behaviours and that reliance on stereotypical visual cues (e.g., gaze aversion and fidgeting) impaired detection accuracy [36]. If common stereotypical visual cues believed by many laypersons to indicate to deception [40] are in fact associated with true confessions, this may account for the finding that video observers performed at levels significantly worse than chance—a most unusual phenomenon in psychological research.

An interesting aspect of our results was the observers' strong tendency to believe both true and false confessions. While there were no differences across modality groups in terms of response bias, all observers were biased to perceive the confessions as true, resulting in greater accuracy rates in classifying true versus false confessions. These outcomes are well documented in the deception literature [19, 34, 61, 62] and are consistent with the notion that confessions are inherently believable due both to the persuasive features they often contain and to the presence of a common observer bias to expect "self-serving behaviour in others" [10, 20]. The fact that confessions in the current study described plausible social transgressions may have increased observer susceptibility to believe both true and false confessions.

4.2. Indirect Measures of Deception and Confessions. The second objective of this study was to examine the utility of indirect measures of deception to distinguish true from false confessions. Overall, contrary to our predictions, none of the indirect measures discriminated truthful from deceptive messages in the expected direction in any modality. Prior research examining indirect measures of deception demonstrated that these measures can outperform explicit lie detection decisions, showing that observers tend to be more confident and feel that they have more information in their assessments of truthful messages, while being more suspicious and likely to perceive deceivers as having to "think hard" [45, 47]. Interestingly, the current findings were contrary to those observed in prior studies in that observers perceived true confessors as having to "think harder" than deceptive confessors. Moreover, unlike observers who listened to or read confessions, observers who watched audiovisual recordings of confessions were more suspicious of true than false confessions. This was perhaps due to the fact that the indirect assessments were made by observers after they reported explicit veracity judgements, thereby reducing the force of the indirect ratings. However, previous research has demonstrated that indirect measures helped observers to discriminate true from deceptive statements even when both explicit and indirect assessments were made [45]. Alternatively, it may be the case that some indirect measures of deception were ineffective when applied to confessions due to the uniquely persuasive features of confessions that make the task of detecting deception more difficult compared to other types of witness statements.

4.3. Cognitive Load and Confessions. The finding that observers perceived truthful confessors as experiencing greater cognitive load than deceptive confessors was potentially important in highlighting that individuals making a genuine confession may experience an increased cognitive load. In this study, true confessions were made about social transgressions (e.g., cheating on a partner, stealing, and committing property damage) that were accompanied by feelings of embarrassment, guilt, and remorse. In certain situations, such as when making a confession, giving truthful accounts can be more cognitively complex and demanding than communicating deceptive messages [63]. In situations where "potentially damaging" content is presented, for instance, individuals conveying true messages must "decipher a way in which the truth can be palatably packaged" [63, page 110], whereas those choosing to deceive are required, perhaps more simply, to fabricate information suited to the demands of the situation. McCornack [63] contended that generating truthful messages in a "potentially damaging" context was more constrained, and hence more cognitively complex than generating deceit. Truth tellers in the current study may have conveyed an impression of elevated cognitive load via cues that were not captured in the current behavioural coding protocol. Conversely, if deceivers adopted the strategy of inserting autobiographical truths into their deceptive accounts [64], they might not have to "think very hard" about concocting their statements and thus may not have exhibited signs of high cognitive load.

The foregoing findings raise the possibility that assessing the credibility of a confession, wherein an individual acknowledges culpability for a transgression or crime may be an especially difficult undertaking, since genuine confessions may contain features or cues typically judged to be indicative of deceit. DePaulo et al. [40] noted that truthful communications associated with feelings of guilt or shame may elicit behavioural responses or cues which are traditionally linked to deception. Individuals who have engaged in questionable behaviour or committed a transgression often experience feelings of guilt [65]; thus truthful confessors may experience stronger guilt in confessing than individuals who are knowingly making a false or deceptive confession. As a result, "if the behaviour of truthful transgressors was compared with that of deceptive transgressors, cues to these self-conscious emotions would be more in evidence for the truth tellers if they distinguished them from the liars at all," [40, page 81]. In addition, DePaulo et al. [40] argued that deceivers typically experience a higher degree of "deliberateness" and may appear less forthcoming and more tense than truth tellers. However, in contexts involving self-incriminating statements, truthful communicators may exhibit a greater sense of deliberateness, and consequently may appear less forthcoming and provide less compelling statements than deceivers [40]. Taking these results together, it is plausible

that truthful confessions could contain certain characteristics conventionally assumed to occur more often in deceptive communication. This potential was emphasised by Kassin [10, 21] who noted that false confessions elicited in real-life investigative settings typically contain several features commonly associated with truth telling, such as rich details, highly accurate statements that often included explanations or justifications for commission of a crime, and statements of remorse. The inclusion of these features combined with the behavioural nuances described above may produce persuasive and credible false accounts that are difficult to discount.

4.4. Limitations of the Study. While the foregoing findings have important implications for assessing the credibility of confessions, some limitations must be acknowledged. First, the statement sample size of 24 may not have yielded adequate statistical power to detect differences in behaviours displayed by truthful versus deceptive confessors. Further research examining the cues displayed by truthful and deceptive confessors in larger samples is necessary to shed light on the behavioural features that may differentiate true from false confessions. Perhaps the most significant limitation of this study was that the confession statements were confessions to social transgressions by students, not high-stakes criminal admissions. While significant efforts were made to motivate participants to discuss salient life events and to provide convincing accounts we cannot rule out the possibility that our deception manipulation may not have elicited strong deception cues [40, 66], which may have increased the difficulty of the deception task for observers across all presentation modalities. However, results of the study on the impact of presentation modality were consistent with those conducted with relatively higher stakes [23].

4.5. Conclusions and Implications for Policy and Practice. The current findings have important implications for the implementation of policies that require a full audiovisual record of police interviews. In particular, the poor detection rate for false confessions (27.8%) shown by audiovisual observers suggests that reliance on video recorded statements to assess the veracity of confessions is unlikely to be an effective method of reducing wrongful convictions arising from false confessions. While an audiovisual record may go some way to ensuring adherence to police interviewing protocols [15], the current body of evidence indicates that the veracity of confessions is best determined via either audio recordings or written text-based statements, as these appear less susceptible to the biases that can impair visually based credibility assessments.

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