Abstract

The causes of false confessions are an important issue in legal studies and forensics. Recent advances in DNA testing have increased the number of proven false confessions; however, there are likely many cases without scientific evidence to refute the guilty verdict. The current research provides a novel approach to understand the structure and process of police interrogation techniques, in America: Behaviour Sequence Analysis. This method allows complex interactions in interrogations to be broken-down and the progression of techniques analysed clearly. A case study is provided of an individual who confessed to a series of very serious crimes. The results show several psychological techniques, such as leading statements, pressure, empathy, and inducements are used, in increasing frequency, which resulted in the suspect's confession. This research provides support for Behaviour Sequence Analysis as a new method to understand the structure of police interrogations and how psychological techniques may be used to gain false confessions.

KEYWORDS: false confession; behaviour sequence analysis; interrogations; Reid Technique; legal system

Unmaking a murderer: Behaviour sequence analysis of false confessions

Despite the recent rise in media portrayals of false confessions, many people are still unable to understand why an innocent individual would confess to a crime they did not commit. Indeed, as the seriousness of the crime increase (e.g., homicide), people find it even harder to understand and accept that an individual would falsely confess to the crime (Drake, 2011; Henkel, Coffman, & Dailey, 2008; Leo & Liu, 2009; Woestehoff & Meissner, 2016). To date, however, the Innocence Project (2006) states that more than 220 individuals have been exonerated and released from prison, after post-conviction DNA testing. While this raises awareness of cases that could be scientifically overturned by DNA evidence, it leaves the question of a much larger issue: how many guilty verdicts have been made due to false confessions. Understanding the processes of why and how individuals may give false confessions is a central concern in legal systems around the world, especially in America (Kassin, 2008; Leo & Ofshe, 1998). False confessions obviously have the immediate issue of an innocent person being wrongly convicted and sent to prison; however, a further corollary is that a guilty person is left free to commit further crimes.

Confessions hold a lot of weight in the legal system, especially in influencing jury members' verdicts (Leo & Davis, 2010; Leo & Ofshe, 1998; Leo, 2008). The police investigation approach in America typically begins with police conducting interviews to gather information and assess the guilt of the suspect, known as the Behaviour Analysis Interview (BAI; Vrij, Mann, & Fisher, 2006). A major issue with this stage of the investigation is that police officers have an overconfidence in their own ability to detect deception and presume guilt; therefore, many police wrongly believe they only interrogate guilty suspects (Gudjonsson & Pearse, 2011; Kassin & Gudjonsson, 2004). The Reid Technique (Inbau, Reid, Buckley, & Brian, 2001), which is the main training manual for

most criminal interrogators in America, states that police officers can be trained to detect suspects' deception in the BAI to a high degree of accuracy, around 85% (Meissner & Kassin, 2002); though empirical evidence suggests that there is no evidence for this (Vrij et al., 2006). However, because Inbau and colleagues (2001) claim that the BAI leads to investigators making accurate decisions on suspects' guilt, they then claim that only guilty suspects are interrogated. As only presumed guilty suspects are interrogated, this changes the police approach from information gathering to extracting a confession from the guilty suspect. This is an example of the principle of explosion: *ex falso sequitur quodlibet* ~ from falsehood, anything follows; while investigators are proceeding under the false assumption that their ability to detect deceit is higher than it actually is, this opens the possibility for innocent people to be wrongly moved from the BAI into the second stage of the interrogation process: the adversarial interrogation.

Recent developments in American interrogation techniques have moved away from physical threat and coercion to psychological techniques and processes, designed to gain confessions (Kassin, 2017; Kassin & Kiechel, 1996; Leo & Davis, 2010; Leo, 1992). The issue remains that many lay people and juries do not believe that psychological persuasion techniques are able to cause false confessions; indeed, the developers of the modern interrogation Reid Technique have explicitly claimed that psychological techniques cannot result in false confessions (Inbau et al., 2001). A number of techniques are used in police interrogations, including: isolating the suspect; placing the suspect in a stress and anxiety raising environment; interrogators exhibiting confidence in their assumption of guilt; and use of themes (e.g., moral excuses for suspect committing the crime). Investigators are also at liberty to use deception and trickery to convince a suspect that there is strong, scientific evidence to prove their guilt. DNA evidence, polygraph results, and various other forms of (pseudo-)scientific evidence such as statement validity analysis and computer voice stress

analysis (CVSA) may be alluded to during the course of an interrogation to convince the suspect that denial is futile. Investigators may then use a number of other techniques to encourage suspects to begin confessing to a crime, including: good-cop bad-cop routines; minimising the seriousness of the crime; and changing suspects' perceptions of severity of the crime and punishment.

Investigators are aware that they cannot force or directly coerce confessions from suspects; however, it is fair to say that many investigators may not be aware of the implicit influence of their language. For instance, understanding the difference between an open and a leading question may require further training, and even then it is easy to understand how a statement may be made during an interrogation that may be leading or otherwise present information that, when echoed by the suspect, appears to show privileged knowledge. Statement validity analysis (SVA) has been claimed to provide clear and accurate indicators of a suspect's guilt based on the type of language they use (Adams, 1996). However, recent research has called into question the validity of SVA, and indicated it is not an accurate means of identifying guilty (Miller & Stiff, 1993; Shuy, 1993). Understanding the structure and process of interrogations, however, remains an important area of research. Interrogations are intrinsically dynamic interactions between two or more individuals. Understanding the sequence of interactions and which psychological techniques are used throughout the course of the interrogation may begin to highlight the process through which (false) confessions are created. What is required, therefore, is a method for mapping the dynamic sequence of police interrogations, highlighting the transition between different psychological techniques, suspects' responses, and eventual confessions.

Behaviour Sequence Analysis

Behaviour Sequence Analysis (BSA; Keatley, Barsky, & Clarke, 2017; Marono, Clarke, Navarro, & Keatley, 2017), also called lag-sequence analysis (LSA), allows temporal chains of (verbal and nonverbal) behaviours to be mapped and presented in clear diagrams that can be used to show which psychological techniques are used in interrogations. BSA approaches allow complex episodes in time to be broken-down, or *parsed* into discrete categories of behaviours or events. Categories should be mutually exclusive and exhaustive (Bakeman & Gottman, 1986; Bakeman, Gottman, & Osofsky, 1987). The categories are then analysed in terms of their sequential order, for instance: *interrogator expresses empathy* followed by *suspect answers question*. Long sequences, or chains of categories can then be built, based on mathematical Markov Models (Ivanouw, 2007).

In lag-one BSA, which is the most common form of Sequence Analysis and the one used in the current study, transitions between categories that directly follow each other are calculated, for instance, $A \rightarrow B$. In this example, *A* (which represents a particular behaviour or event) is the antecedent and *B* (which represents another behaviour or event) is the sequitur. Sequence Analysis allows for recurring pairs of behaviours, for instance, if an interrogator repeatedly makes leading comments, then chains of $A \rightarrow A$ may occur. Over long durations, like interrogations, lengthier chains of behaviours may occur: $A \rightarrow B \rightarrow C \rightarrow n$. In lag-one BSA, sequences are analysed in one-step transitions (i.e., $A \rightarrow B$, $B \rightarrow C$ etc)[1]. Lag-one BSA tests whether transitions between pairs of behaviours occur above the expected level of chance (Bakeman & Gottman, 1986).

[1] There are, of course, more complex analyses that can be conducted. These higher order sequence analyses allow for longer chains to be made (i.e., $AB \rightarrow C$). However, higher order sequence analysis is typically not conducted for a variety of reasons (see Keatley, Barsky, & Clarke, 2017). Interested readers can access the data chains in the current research to perform their own higher order analyses.

Sequence Analysis has previously been used in a variety of criminal and legal contexts, including: drink driving (Keatley et al., 2017), behavioural deception detection (Marono et al., 2017a; Marono, Clarke, Navarro, & Keatley, 2017b), violent episodes (Taylor, Keatley, & Clarke, 2017), rape cases (Ellis, Clarke, & Keatley, 2017; Fossi, Clarke, & Lawrence, 2005; Lawrence, Fossi, & Clarke, 2010), homicides (Keatley, Yaksic, & Reid, 2017), and courtroom dynamics (Gnisci & Bakeman, 2007). In relation to the present research, to the authors' knowledge, there is no previous research using BSA to analyse legal interrogations. Therefore, the current research should be seen as the foundation and first step towards building a library of cases resulting in false confessions.

Present Study

The aim of the present research is twofold: first, to show how BSA can be used to show patterns in psychological techniques used in interrogation methods in America; second, to provide the basis for future research to build-on. The BSA approach is an additive research paradigm, allowing future research to be combined with existing research findings to build more complex patterns and pathways. Therefore, this research can be extended and grown in the future. The current study focused on a false confession made by an individual with learning difficulties (i.e., an IQ of 70). Given the wealth of research showing the vulnerability of young individuals (Gudjonsson, Sigurdsson, & Sigfusdottir, 2010) and individuals with learning or mental difficulties (Redlich, Summers, & Hoover, 2010), the present research focuses directly on arguably one of the biggest areas of concern in current American legal systems. Although the present research is exploratory in its approach, a number of hypothesis about the types of psychological techniques expected to be shown can be made. Techniques such as persuasion, leading comments, empathy, and proclaiming to know the truth are key

techniques used in the Reid Technique. All of these techniques are likely to occur in the current case; however, the order and repetition of these techniques is not clear.

Methods

Sample

The current study involved a 17 year old male, at the time of interrogation, with an IQ of around 70, who was originally arrested for suspicion of being party to first-degree murder, mutilation of a corpse, and second-degree sexual assault, when he was 16. The defendant was interrogated on four recorded occasions, though other interviews and interrogations are known to have taken place, no records have been made[2]. All police interrogations were made without the presence of a legal representative, parent, or other adult supervision on behalf of the defendant. The defendant, though denying involvement to begin, eventually made a full oral and written confession to the crime. The defendant later recanted the confession; however, the confession was still provided at trial, which resulted in a guilty verdict on the counts of intentional homicide, rape, and mutilation of a corpse. The defendant's intellectual limitations were ruled out during the court proceedings, as the cut-off is 70, and the defendant was said to be in the borderline range.

The detectives involved in the interrogation that is being analysed in the current paper followed the Reid Technique throughout the interrogation. This needs to be highlighted, as the current research is based on a standard Reid Technique interrogation, and therefore, is similar to other interrogations using this approach. It would be wrong, and

[2] This is quite normal in American legal systems, and is an issue facing all research into police interrogations. The analyses are based on recorded transcripts; however, the effects of pre-recorded sessions can never fully be known. This limitation should be taken into account on all research into interrogation procedures, and for more information, readers are directed to Shuy (2007).

oversimplified to explain the current false confession simply as a one-off, unique case. The detectives involved followed a procedure that is widely used and supported throughout America.

Materials

Legal transcripts of the first interrogation was gained from verified legal sites. Written transcripts made from recordings were used in the current analyses. As written transcripts were analysed, exact timing of categories could not be ascertained; however, the sequential nature of interrogation transcripts does allow for accurate sequences to be made. Though timings are not available for the current transcripts, the average length of the first interrogation was approximately 40 minutes.

Coding Procedure

Coding was deliberately made as simple as possible in the current research. Over-complicated coding schemes, though providing more idiosyncratic details of an investigation would likely reduce generalisability to future cases. The coding list (see Supplementary Materials S1) used in the current case was largely based on the techniques outlined in the Reid Technique, including: leading facts (split into leading facts related to 'locations', 'times', 'facts'); punishments; empathy; reassurance; rewards etc. Two coders independently developed the coding list and then checked to ensure agreement on speech acts in the current interrogations. Ambiguous cases were discussed and resolved through agreement of when particular speech categories (i.e., 'leading location') began and ended. There were no disagreements about codes, per se, just ensuring that start and end points aligned. The codes for each interrogator was duplicated, so that analyses could clearly show which interrogator was talking and using different verbal techniques. A third coding list was developed for the defendant, indicating whether they were agreeing, providing new facts, or repeating facts

given by the interrogators. To emphasise the effects of leading statements, categories of 'echo' (indicating the defendant was immediately echoing what he had just heard) and 'retell a story/script' (indicating the defendant was repeating an earlier piece of information given by the detectives) was included in the coding scheme.

To ensure that the complete interrogation was captured in the sequence analysis, categories were included to be used when conversation was not directly related to anything involved in the case, so-called 'small talk'. Interrogators are trained to use small-talk and non-accusatory talk to build rapport. Therefore, "talk" was included as a category to stand for any conversation act that did not appear to be directly relevant to the case, and can be understood as a form of rapport building that does not fit into any other defined category. This approach to categorisation, use of an 'other' category, is typical and encouraged in Sequence Analysis research, so as to provide exhaustive lists and overviews of analysed episodes.

Statistical Analysis

The interrogation transcripts were analysed using a lag-one sequence analysis approach. This means that transitions between pairs of categories were analysed, and then put into longer chains. This is important to remember when reading the results. The lag-one analysis is between pairs of behaviours, $A \rightarrow B$, $B \rightarrow C$ etc. It is possible to connect these pairs into longer chains, $A \rightarrow B \rightarrow C$, and indeed the state transition diagram does this. However, interpretation should be made between pairs of categories only, in single-transition steps. The sequences were input into the statistical software R (R Core Team, 2013), using a program developed by the research team to analyse the data. The program first outputs frequencies of individual categories, followed by the lag-one sequence analysis.

Results

Within the first interrogation, the frequencies of each category are shown in Table 1. The table indicates that one of the interrogators, Wiegert, asked a lot of factual questions (n = 82). The next most frequently observed categories were: Fassbender (the second interrogator) offering reassurance to the suspect (n = 66), and the suspect saying yes/agreeing with the interrogators (n = 66). It should be noted, however, that in the current dataset leading questioning was split into leading questions based on different subjects (i.e., time, facts, location). If the leading questioning is grouped at a meta-level, ignoring specifics, then a total of 71 leading speech acts are made (36 by interrogator Fassbender, and 35 by interrogator Wiegert). There are also 46 times when either Fassbender or Wiegert answer for Brendan, thus possibly feeding him information that he later retold in a confession, which appears to be first-hand knowledge of the crime. Indeed, there are 15 times when Brendan immediately echoes information he has been given, 7 times where he repeats the story or script he has been given, and 7 times when his story explicitly changes. None of these factors alone point definitively towards guilt or innocence; but, it does show that the process of the interrogation altered the story being told by Brendan.

--TABLE 1 ABOUT HERE, PLEASE –

A lag-one behaviour sequence analysis was conducted on the interrogation transcripts. The analyses provides a transition frequency matrix (see Supplementary Material S2), and this table can be plotted in a state transition diagram (see Figure 1). The state transition diagram shows the significant transitions between pairs of behaviours. Only those

transitions that occur significantly above the level of chance are included in the state transition diagram. This provides an illustration of techniques in the interrogation as a whole, and shows how behaviours are connected. The diagram should be read one step at a time between behaviours.

The strongest transition in the BSA, measured by the standardised residual, was Fassbender repeating Wiegert's statement that the witness should turn against the other suspect in the crime (n = 2, SR = 15.30). Effectively, whenever Wiegert suggested that the suspect should turn on the other named suspect, Fassbender immediately repeated this statement. In terms of other behaviours related to the Reid Technique, the data shows that Fassbender was likely to apply social pressure to the suspect, and immediately follow this with sentiments that the suspect should help himself by helping the investigators (n = 2, SR = 8.79). Essentially, this shows a build-up of techniques occurring, rather than one technique being used and then waiting for a response. The interrogators layer, or chain psychological techniques outlined in the Reid Technique. Other examples of this include both Fassbender (n = 24, SR = 8.66) and Wiegert (n = 12, SR = 12.63) repeating multiple reassuring comments in sequence.

--FIGURE 1 ABOUT HERE, PLEASE--

The data show that on multiple occasions Fassbender asks a factual question, and Brendan disagrees (n = 11, SR = 7.19). There is also a significant transition from Brendan replying with a "no" or disagreement leading to Wiegert then answering for Brendan (n = 3, SR = 3.66). There are also multiple occasions when the interrogators ask a leading factual question, and Brendan retells the story/script he has been given earlier by the interrogators (n

= 2, SR = 3.49). The fine-grained approach to categorising behaviours can sometimes make clear patterns harder to see in the diagrams. Therefore, to reduce complexity, categories of similar behaviours can be grouped together. For instance, if all instances of leading questioning are combined for each interrogator, then we see how leading questions are typically stacked in sequence (see Figure 2). For example, Fassbender making a leading statement is significantly followed by: Fassbender making another leading statement straight away (n = 4, SR = 2.11); Wiegert making a leading statement straight away (n = 3, SR = 1.34); Fassbender immediately proclaiming to know the truth ~ thus making denial futile (n = 3, SR = 2.67); and Fassbender encouraging Brendan to help himself by telling the truth ~thus essentially agreeing with Fassbender (n = 2, SR = 2.34). Wiegert in comparison, after he makes a leading statement, is typically followed by: Brendan agreeing (n=7, SR = 2.74); Wiegert offering reassurance (n = 4, SR = 1.94); Fassbender making a leading statement (n = 4, SR = 2.18); Wiegert making a further leading statement (n = 5, SR = 3.10); Wiegert immediately answering for Brendan (n = 2, SR = 1.63); and Brendan retelling the story that he has just heard from Wiegert (n = 2, SR = 3.30).

-- FIGURE 2 ABOUT HERE, PLEASE—

Discussion

The aim of the present research was to present a novel way of analysing complex police interrogations. Behaviour Sequence Analysis (BSA) is a useful method to clearly map and show patterns of interaction in dynamic episodes, such as interrogations. It should be noted from the outset that the current research does not make definitive claims about the validity of the Reid Technique in interrogations or the innocence or guilt of Brendan Dassey.

Every indication, at the time of writing, suggests that Brendan Dassey provided a false confession, and legal scholars have converged towards the opinion that the interrogation process was problematic in a number of ways. The current research makes no claims to support or diminish the views of legal scholars; however, the current research does have an impact in providing a clearer map of the pathways that lead towards the final (false) confession made by Brendan Dassey.

The current findings support previous research that has highlighted a number of psychological techniques and approaches police investigators use in America (Kassin & Gudjonsson, 2004; Kassin & Kiechel, 1996; Leo & Davis, 2010). The present research documents how these methods are used sequentially. Techniques such as leading questioning and giving information that Brendan can and does echo are seen throughout the interrogation. Expressing empathy and offering reassurance to reduce Brendan's perceptions of the severity of the crime are also psychological techniques that are well-documented in the interrogation literature (Kassin & Gudjonsson, 2004; Leo, 2008). There are other techniques, such as isolating the suspect, placing the suspect in a bare room, and sitting close to the suspect throughout the interrogation, which are used in interrogations, and should also be used to describe the environment of the current interrogation.

The current research shows one of two very different storylines in police interrogation practice. First, it may show the effectiveness of the Reid Technique in being able to make a guilty person finally confess to a number of very serious crimes. If this is the true case, then the method evidently has great benefit to the legal system. However, the second story is more problematic: what if the suspect is innocent. In this instance, the techniques and interrogation patterns shown in the current research indicate the risk of the Reid Technique making an innocent suspect confess to crimes they did not commit. The central issue becomes how investigators draw the line between 'good' and 'bad' interrogation

practices, which is an issue perhaps beyond the scope of the current research. An issue the current research can begin to elucidate is the sequence of behaviours that lead to false confessions being made. Though the present research is the foundational first step, the end result could be a better understanding of key pathways that are likely to lead to false confessions, in contrast to patterns in interrogations that lead to honest confessions. It may be that the methods and techniques forwarded by the Reid Technique of interrogation are valid and useful; but, only if they are used in the correct order and manner. Essentially, the Reid Technique may propose methods that are incredibly useful in extracting confessions; however, particular patterns of the technique may lead to false confessions.

The analyses of the grouped leading statements, Figure 2, clearly shows the way in which psychological techniques of persuasion, leading statements, confidence in proclaiming to know the truth, reassurances, answering for the suspect, and interruption can be used in close proximity to each other in order to leave suspect with the only options of agreeing, echoing the fact he has just been given, or repeating a statement he had previously been given by the interrogators. Again, this may indicate a prosecutorial process that is designed to not allow guilty suspects the chance to deny their guilt or make false statements of what occurred; however, it does appear in these sequences that the suspect is not given a chance to offer their version of events, amidst multiple leading statements and psychological techniques to make the suspect follow and agree with the interrogators storyline.

A limitation of the current research is, of course, argument about whether Brendan Dassey is innocent or guilty of the charges made against him. This, however, is also a strength as it is all-too-easy in research to tell ‘just so’ stories with data, once an outcome is known. For instance, analysing only those cases that have been overturned (perhaps through post-conviction DNA evidence) allows researchers to find post-hoc patterns that prove innocence. The current research investigates a crime that is still slightly open to debate, and

therefore, is conducted without the knowledge of hindsight. This is much more akin to the type of cases that the method could be used for in future. Though a database can be created and developed focusing on solved cases of true and false confessions; BSA can be used in real-time, with unsolved or uncertain cases. As long as researchers and investigators remain vigilant of the limitations within such research. The results are only as valid as the data, and if previous interrogations or conversations are had between a suspect and the police, then by the time recorded transcripts are made and analysed, the researcher may not know the effect of previous encounters. At present, researchers are unable to give indicators of accuracy regarding sequence diagrams and conclusions of true or false confessions. What researchers and legal scholars can begin to clarify, however, is which techniques have been used and whether suspects' stories have changed. Long interrogation interactions can be reduced to very simple, easy-to-follow sequence diagrams, which is particularly useful for interpreting complex results. Complicated statistical analyses of interactions can be shown in very clear, sequential steps that jury members can easily follow and understand. The benefit of this may be that jury members begin to understand just how easily it is for police to stack psychological techniques and lead suspects to making false confessions.

Future research should complement the existing findings by including analyses of other interrogations. Research should focus on false confessions that have been proven false through DNA evidence, as well as other forms of post-conviction evidence. In addition, research should also seek to analyse true confessions to a variety of crimes, which would provide a 'control' condition to compare false confessions to. Advanced statistical methods, such as optimal matching (Abbott & Tsay, 2000; Rosenbaum, 1989) may then be used to analyse the differences between typical true and false confession sequences. Furthermore, researchers could use more complex Behaviour Sequence Analysis approaches, such as T-System Analysis (TSA; Magnusson, 2000, 2017), to map the interaction of multiple

concurrent and sequential behaviours. T-System Analysis, for instance, could be used to analyse the role of verbal and nonverbal behaviours together. TSA may bring even more clarity to the techniques that interrogators use to influence or persuade suspects (such as reassuring touching, proximity, and gaze).

Conclusions

Overall, the present research highlights a novel approach to mapping interrogation dynamics, and showing how psychological techniques in the Reid Technique can be used to make a suspect provide a (false) confession. This is the first-step towards a major new approach in understanding interrogation procedures, and forms the basis of perhaps being able to classify false confession sequences from true confession sequences. While this area of research is very new, it holds great potential to future understanding of a complex and extremely important issue: how do we tell if someone has made a false confession, and how do we simplify this complex process into an easy outcome that a jury can understand and accept.

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