



Memory as evidence: How normal features of victim memory lead to the attrition of rape complaints

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Abstract

The complainants' memory of the rape is commonly the key and frequently the only evidence in the investigation and prosecution of rape allegations. Details, specificity and consistency in the victim's recollection are central criteria that criminal justice agents – police, prosecutors and juries – use to assess the credibility of the victim account. However, memory research has shown these to be poor indicators of the accuracy of a memory. In this article we develop a conceptual model of the pathways through which normal features of the human memory result in complaints of rape dropping out of criminal justice process without a full investigation, prosecution or conviction, with a particular focus on the role of inconsistencies in the victim account. We provide initial, tentative evidence from a large, representative sample of rape complaints and discuss implications for criminal justice policy.

Keywords

Attrition, criminal justice, memory, policing, rape complaints, sexual violence

Introduction

Attrition is the process by which a complaint of rape fails to successfully progress through the criminal justice process. Attrition in England and Wales is staggering: 93 per cent of complaints of rape reported to the police do not result in a conviction; 82 per cent

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do not even go to court (Ministry of Justice et al., 2013). A significant proportion of these, we argue, may be wrongly dismissed because the criteria criminal justice agents use to judge the reliability and veracity of a victim's complaint of rape are, from a memory research perspective, flawed. The criminal justice process places high demands on human memory when given in evidence: the amount of minute, often insignificant peripheral detail the victim remembers, and the internal consistency of the victim account are key criteria the police and prosecution use to assess the veracity of a complaint, and its potential credibility in court (Ellison, 2005; Fisher et al., 2009; McMillan and Thomas, 2009; O'Keeffe et al., 2009; Temkin, 1997, 2002). Yet, memory research has established that inconsistencies are a normal feature of memories and that remembering only few details is the norm, remembering many peripheral details unusual (Conway et al., 2014; Howe, 2013). The implications of such criminal justice misconceptions of, and unrealistic demands on memory are significant, in particular for complaints of rape.

In complaints of rape the victim's memory is frequently the only and nearly always the central piece of evidence of what happened during the alleged rape. Forensic evidence, when available, can sometimes prove that sexual intercourse took place, and on occasion circumstantial evidence can corroborate the victim account of their memory of the events that took place (for short, 'victim account' in the remainder of the article).¹ Ultimately however, the victim account is normally still required to prove a lack of consent.² Despite the centrality of the victim account for rape convictions, there is surprisingly little research on how criminal justice agents use victim memory as evidence: we suggest that herein lies a missed opportunity to address part of the attrition problem. The attrition problem refers to the persistent finding that most rapes are not reported to the police, and that of those reported the majority drop out of the criminal justice process and thus do not result in a conviction. The attrition problem persists despite the academic research, legal reform, inspection reports, reviews and inquiries and legal reform of the past decades (Hohl and Stanko, 2015).

Much of course has been established already: the field of memory research has produced a wealth of insight into human memory, including its fallibilities and proneness to error (see, for example, Baddeley et al., 2009; Schacter, 2001). With regard to criminal justice outcomes of rape complaints, we know that the victim's evidence is nearly always central and that the case outcome often stands or falls with it. It is well established that rape victims are routinely doubted and not believed, and their testimony painstakingly scrutinized by the defence council during cross-examination in court, a scrutiny that often succeeds in discrediting the victim (see, for example, Temkin and Krahé, 2008).

What is known reveals a conundrum: memory evidence is central and frequently the only evidence in rape cases. It thus appears only correct for it to be heavily scrutinized by the police, prosecution and in court. Memory research has shown human memory to be fallible. One might thus argue that the police, prosecution and courts are rightly doubtful of rape complaints that rest on victim testimony alone.

Yet, at the same time the evidence suggests that in fact only a very small proportion of rape complaints are false (CPS, 2013; Kelly, 2010; Saunders, 2012). The criminal justice system is faced with an unprecedented number of rape cases as more victims come forward than ever (ONS, 2015). This includes an increasing number of historic child sexual abuse cases in which the problem of memory as evidence is powerfully

amplified. It is thus vitally important to make explicit, understand and address the issue of criminal justice use of memory evidence in rape complaints, and its implications for the outcomes of rape cases; that is, the attrition problem.

This article makes an initial step in this direction. First, by bringing together the domains of existing research. At present, research on human memory and criminological research on the treatment of rape complaints within the criminal justice system are largely disconnected bodies of literature. The article provides a systematic, albeit brief, review of both literatures – *the modern view of human memory*³ and criminal justice conceptions of memory evidence. Second, we develop a conceptual model of the pathways through which typical features of victim memory, such as inconsistencies in the victim account, lead to attrition. We put a key hypothesis derived from the conceptual model to the test using a large, representative sample of rape complaints made to the London Metropolitan Police Service (MPS). The results provide evidence in support of the hypothesis that inconsistencies in the victim account increase the odds of attrition. We conclude with a discussion of the implications of the findings for criminal justice policy and questions for further research.

The Modern View of Human Memory

According to *the modern view of human memory*, memories are mental constructions. They contain various types of information, conceptual knowledge and imagery.

Memories represent only short time slices of experience, and because they are ‘sample’ fragments derived from the experience rather than a (complete and literal) record of it, never fully represent an experience. Thus all memories are *time-compressed* relative to the event they represent (Conway and Pleydell-Pearce, 2000). For example, recalling an event such as a dinner party one attended some months previously takes only a few seconds or minutes although the event itself, the party, may have lasted all evening. Because of time-compression, gaps and missing information, rather than being unusual, are fundamental characteristics of human memory. From a memory perspective accounts purporting to be of memories that are fluent rather than fragmentary and that contain many specific or peripheral details most probably are not memories or, at least, not accounts of memories in any straightforward way. Instead, they are over-rehearsed narratives, the core of which may be a memory fragment, to which order and details have been added, often unconsciously, sometimes deliberately, and frequently a mix of both (Conway, 2005). Furthermore, victims of one-off traumas typically recall only three to five ‘hotspots’ (vivid details) from their ordeal (Holmes et al., 2005) and relatively undetailed memories are thus to be expected.

Returning to our dinner party example, a remembered event has a *retention interval*, measured in months in this example, and as the retention interval lengthens memory details become progressively inaccessible. Perhaps one can no longer remember what one wore to the party or what other guests were wearing. However, and this is the key point, in the memory everyone is clothed. Obviously this is an example, but the same principle applies to all memories: the brain automatically and non-consciously fills in details to frame the remembered fragments. Such details may or may not be accurate but they will be plausible, for example, that one was clothed at the dinner party even though

one cannot recall what one was wearing. Thus, just as the visual system working with low quality sensory information is able to build a model of the visible world that we experience as stable, three dimensional, with colours, depth and so on, so the memory system fills in our memories with plausible information. Just as the brain makes up the present, it also makes up the past (Conway, 2005; Schacter et al., 2012).

Because of this complexity in the brain, memories are particularly prone to the deleterious effects of brain damage, psychological illnesses, pharmacological interventions, alcohol and other recreational drugs. The effects are always disruptive, sometimes extremely so, and can lead to amnesia, memory errors, false memories, déjà vu states, delusions and hallucinations (Conway, 2005). This is particularly relevant in this context as around one-third of rape victims are believed to be intoxicated when assaulted (Hohl and Stanko, 2015; Kelly et al., 2005). Similarly, in extreme cases of negative emotions, such as rape trauma, memories may be impaired with amnesia or amnesic gaps, distorted and contain false details along with vivid intrusive details (Conway et al., 2004; Holmes et al., 2005; McNally, 2003; Tromp et al., 1995).

Memories often contain information that is non-consciously inferred by the brain, and sometimes consciously inferred, such as dates. Because of their constructed nature memories are prone to error, distortion, confabulation and even wholly false memories may at times arise. As a general rule, the more specific and detailed a memory the greater the possibility of error. This is especially the case when a rememberer is pressurized to be more specific, for example by repeated questions, implicit demands or recognition methods as they are often used during police interviews. Such techniques are likely to increase memory errors (British Psychological Society, 2010 [2008]). The rememberer's confidence in the accuracy of such recalled detail is of little help here. Research has found that participants who are highly confident that they have recalled a particular piece of information accurately can in fact be incorrect; there is no simple relation between confidence and accuracy (see Roediger et al., 2012).

Relevant in the context of child sexual abuse cases is research which has established that a brain area crucial to remembering, the prefrontal cortex, does not mature until late adolescence/early adulthood. The prefrontal cortex is critical in both forming memories and in later reconstructing them. Processes associated with this brain region underlie what has been termed *reality monitoring*: the ability to recognize or differentiate that which is genuinely remembered from that which is imagined, seen, heard or read about (Macintosh, 2011). This has implications for adolescent and child victims' recall of sexual assault, whose memories will be even more fragmentary and contain more imagined details than those of adults.

Finally, current views of the function of memories emphasize their role in 'meaning making'; that is, making sense of our lives, of the lives of others and social interactions and in guiding behaviour (e.g. their influence on the future). These functions of memory often override exactness and accuracy in remembering and, instead, prioritize the retention and recall of information of value to the self, whether or not that information is veridical with respect to actual past experience (Conway, 2005; Conway and Loveday, 2015; Conway et al., 2016).

According to *the modern view of human memory* then, memory is a complex, highly labile and dynamic system in which memories are constructed across interlocked neural

networks in the brain. It is closely linked to the future as well as the past and plays an important role in imagination and in allowing us to have distinct and unique selves. There are many consequences of this complex view of memory for our legal systems. But perhaps the most important is that fragmentary, confused, inconsistent, undetailed memories, with low specificity, are the norm.⁴

Criminal Justice Conceptions of Victim Memory

Every complaint of rape begins its passage through the criminal justice process with an initial report to the police followed by an in-depth police interview. The witness statement (written or video-recorded) produced during the interview then forms the basis of the police investigation and if the case goes to trial, key evidence to be interrogated in court. In order to understand how criminal justice evaluations of the witness statement impact on a complaint's progress – or lack thereof – through the criminal justice process one must remind oneself of the ultimate decision maker if the case goes to trial: the jury. We thus turn to jury evaluations of witness memory evidence first.

(Mock-)jury evaluation of memory evidence

How do juries decide whether or not to believe the victim account? How do juries assess the accuracy and credibility of witness testimony? Jury studies, or mock-jury studies in jurisdictions such as the UK in which studying real juries is prohibited, provide some insight. Bell and Loftus (1989) found that (mock-)juries perceive witness testimony as more credible if it contains vivid detail, however insignificant, peripheral or wholly irrelevant it is to the case. They further found the credibility of a witness was damaged if they had to admit that they had not noticed or could not remember a particular, however insignificant, detail. Bell and Loftus (1989) call this effect *trivial persuasion*. Brockhardt et al. (2003) investigated a similarly powerful phenomenon termed the *discrediting effect*: if details in the witness's testimony, however small, are found to be inaccurate it discredits the witness and their entire testimony in the eyes of the (mock-)jury and automatically renders the opposing party more credible. Inconsistencies in the witness testimony, arising either from repeat questioning or in comparison to the (pre-trial) witness statement are widely evidenced to discredit the witness in the eyes of the (mock-)jury. Again, this also holds true for inconsistencies in minute detail, however insignificant (Brewer and Burke, 2002; Brewer et al., 1999; Fisher et al., 2009; Potter and Brewer, 1999).

These cognitive biases are common knowledge among the legal profession and routinely exploited during cross-examination in rape trials. Defence lawyers use a range of cross-examination techniques to expose memory gaps, inaccuracies and inconsistencies in the victim's testimony, typically by homing in on minutiae and peripheral detail where the aim of inducing errors is most easily achieved (Kebbell et al., 2007; Taylor, 2004). Socio-legal scholars have observed a detrimental effect of such cross-examination techniques on convictions in rape trials (Ellison, 2005; Taylor, 2004; Temkin, 2000, 2002; Temkin and Krahé, 2008). Yet, memory research has found that in fact gaps, errors, omissions and inconsistencies in memories are the norm. Indeed, the *modern view of*

human memory, reviewed above, considers all memories to be incomplete and to contain details and other information that were not part of the original event.

Police and prosecution evaluation of memory evidence

Police officers and prosecutors build and dismiss cases with the jury in mind: with limited resources available, police and prosecutors cannot pursue every rape complaint equally. Instead, police and prosecutors tend to focus on cases they anticipate will have a good chance of succeeding in court. Conversely, police and prosecutors are likely to drop a case as it becomes apparent that it would have little chance in court. This idea is central to Munro and Kelly's (2009) 'vicious cycle' of attrition. It may also explain why police officers' and prosecutors' criteria of credibility of victim accounts mirror exactly those of (mock-)juries: ability to recall detail; accuracy of the victim's recollections; and consistency of the victim account – internally and over repeated retellings.

Police interviews are conducted with a view to elicit as much fine-grained detail as possible – including peripheral details of the alleged rape or sexual assault (McMillan and Thomas, 2009; O'Keeffe et al., 2009; Westra et al., 2011). Unresolved inconsistencies put in doubt the credibility of the victim and the continuation of the case (see also Jordan, 2001). The importance attributed to inconsistencies, gaps and omissions in the victim account are reflected in police officers' notions of 'false allegations' of rape. Saunders (2012) found that police officers deem false an account of a rape if the victim forgets, omits or incorrectly relays – deliberately or not – aspects of a genuine rape. Saunders (2012) shows that police officers treat 'false accounts' of genuine rapes in a similar fashion to 'false complaints' because officers believe that these would not withstand scrutiny in court.

Yet, in contrast to court and mock-jury studies that find that even minor inconsistencies can discredit a victim entirely, research on police officer and prosecutor perceptions of inconsistencies and gaps in the victim account does not produce the same 'black and white' picture. In fact, police officers and prosecutors show some awareness of the problem of memory and recall, and acknowledge that noticing and recalling extreme detail is unnatural for most people, and that a rape is a traumatic event that may impair recall, in particular when under the influence of alcohol or drugs (McMillan and Thomas, 2009; O'Keeffe et al., 2009). Police officers and prosecutors perceive a certain amount of inconsistency in the victim account as normal and to be expected, and would aim to resolve these through repeat interviewing of the complainant (Saunders, 2012) – although such repetition is more likely to increase the number of erroneous memory details incorporated in the emerging narrative (Goldsmith et al., 2005). What exactly the threshold for acceptable types and levels of inconsistencies in victim accounts is, and whether and how these change at different stages of the criminal justice process is unclear and in need of research. Based on the existing research it appears that at the police investigation stage at least, a tacit acceptance of some inconsistencies in victim account uneasily co-exists with awareness that even minor inconsistencies can put in jeopardy a successful prosecution.

In summary, juxtaposing the above review of memory research findings and criminal justice use of memory evidence exposes grave discrepancies. The consistent,

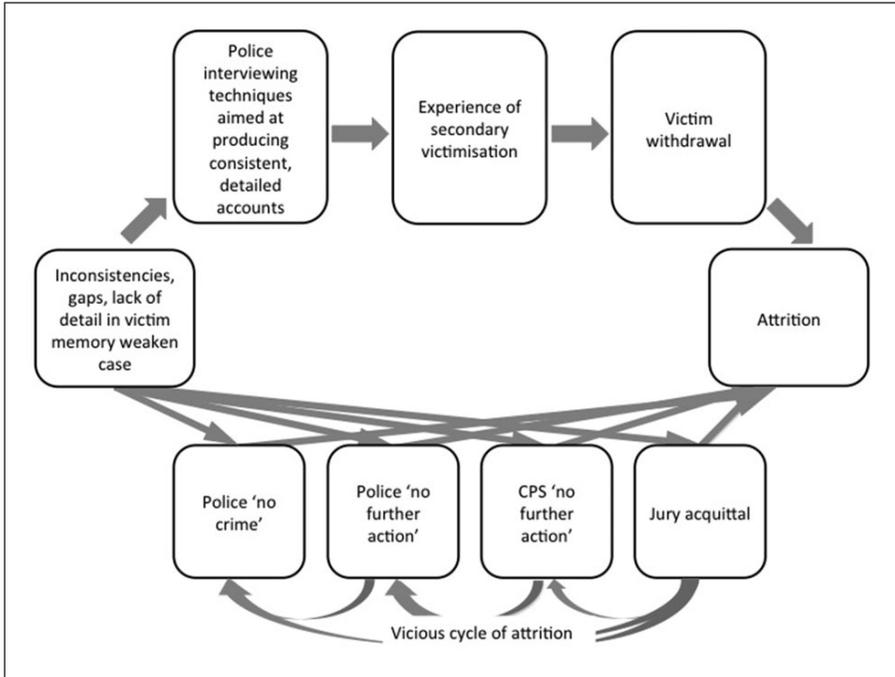


Figure 1. Conceptual model of pathways from normal features of memory to attrition.

detailed narratives police interviewing techniques aim to produce in order to increase a complaint’s chances of success are at odds with the nature of human memories which are always fragmentary, time-compressed and prone to errors of omission and commission. Vivid detail that persuades juries of the truthfulness of the victim account is particularly prone to error, and victims are unlikely to recall more than a few specific details. Contrary to common belief, inconsistencies and a lack of detail are typical of human memories and poor indicators of reliable memory or any sort of intention to deceive. While the detrimental effect of inconsistencies in the victim’s testimony on case progress has been noted in the literature to date there exists, to our knowledge, no systematic analysis of the extent to which and how these and other normal features of human memory impact on the attrition problem. From Typical Memories to Attrition: A Conceptual Model

Two pathways may lead from normal features of human memory to the attrition of rape allegations, depicted in Figure 1. The first pathway to attrition is victim withdrawal; the second is a criminal justice agent’s decision to drop the case or acquit the defendant(s) at one of the attrition points: the police decision to ‘no crime’ the case resulting in no further investigation; the police decision to take ‘no further action (NFA)’ rather than refer the case to the Crown Prosecution Service (CPS) for charge; the CPS decision to take ‘no further action’ rather than prosecute; and finally, the jury decision to acquit rather than convict a defendant.

Victim withdrawal

Complainant withdrawal from the process or retraction of the allegation accounts for a large percentage of attrition (Harris and Grace, 1999; Kelly, 2002; Kelly et al., 2005). If the complainant retracts the allegation or refuses to engage further, police and prosecutors are usually left with little choice but to discontinue the case. How police treat victims plays a major part in their willingness to stay with the process. Police interactions that leave victims feeling they are not believed, blamed for the rape or treated with a lack of dignity and empathy result in the experience of 'secondary victimization' – feeling 'raped all over again' by their treatment as a complainant. Victims lose trust that the police and criminal justice system will take their complaint seriously and pursue their case effectively, and as a result withdraw from the process or retract the allegation altogether (Jordan, 2001; Kelly, 2002; Stanko, 1985; Temkin, 1997).

Police interview techniques aimed at producing a coherent, consistent victim account replete with minute detail – the hallmarks of 'good' memory evidence – may play a major part in victims feeling disbelieved. Such interviewing techniques involve painstaking attention to seemingly irrelevant, insignificant and peripheral details that victims (rightly) find difficult or impossible to recall. Repeated probing of a victim's recollections and questioning them on apparent inconsistencies, and repetition of the same questions at different points in the interview and/or by different interviewing officers, also serve to deter. Police in-depth interviews are lengthy and majorly shape complainants' experience of the police. They can leave victims feeling disbelieved, confused about their memory of the rape, irritated, upset and unwilling to continue the process (McMillan and Thomas, 2009; O'Keeffe et al., 2009).

In short, criminal justice criteria for 'convincing' memory evidence give rise to police interviewing techniques that can result in feelings of secondary victimization in the complainant. Secondary victimization experiences can trigger complainant withdrawal. Complainant withdrawal, in turn, typically results in the case being discontinued.

Police and prosecution decisions to drop the case

There are several attrition points a rape complaint must successfully navigate to result in a conviction, rather than attrition. Once a rape complaint is made, the police need to deem what is reported to them a possible crime and investigate it as such. Police might still decide to 'no crime' the complaint after initial investigations if these investigations produce verifiable information that the allegation is false and in fact no crime took place (Home Office, 2014). Yet, evidence suggests that some police forces 'no crime' some complaints because of inconsistencies in the victim account alone (HMCPSP/HMIC, 2007; HMIC, 2014; recall also Saunders' (2012) 'false accounts' treated as 'false allegations'). In 2012/2013 the average no-criming rate for rape complaints in England and Wales was 12 per cent, six times higher than for other victim-based crimes (2 per cent; HMIC, 2014).

The next hurdle is a successful police investigation that results in a referral of the case to the CPS for charge, rather than a police decision to take 'no further action'. It is at this stage that attrition is highest (HMCPSP/HMIC, 2007; Stern, 2010). Cases referred to the CPS for charge have to pass a further two-level test to result in a prosecution: an

evidential sufficiency test and a public interest test. If the prosecution decides that the evidence is insufficient for a realistic prospect of conviction or that a prosecution is, on balance, not in the public interest the case is closed with 'no further action'.

Attrition studies have identified a whole range of victim characteristics, victim–suspect relationships and circumstances of the rape that are associated with drop out at the various attrition points – victim memory is of course not the only reason why rape complaints might fail to progress (e.g. Brown et al., 2007; Daly and Bouhours, 2010; Harris and Grace, 1999; Kelly et al., 2005; Lea et al., 2003; for a recent review see Hohl and Stanko, 2015). Of these, Kelly et al.'s (2005) study included in their analyses a variable capturing the presence of inconsistencies in the victim account and its association with attrition. The authors found that inconsistencies in the account featured strongly in 30 of the 216 of the cases categorized as false allegations in their sample, all of which were dropped. Indeed, police officers and prosecutors do not perceive inconsistencies and lack of detail as a liability without reason. The final hurdle in the criminal justice process is the trial wherein a jury must return a 'guilty' verdict for the prosecution to succeed. There is ample evidence, reviewed above, to show how defence lawyers will exploit any weakness in the victim account during cross-examination. Cross-examination tactics aimed at forcing errors and inconsistencies in the victim's testimony or exposing gaps in the victim's memory are effective because juries are liable to trivial persuasion and discrediting effects, disbelieving victims and acquitting the defendant as a result (Fisher et al., 2009; Taylor, 2004; Temkin, 2000, 2002).

In summary, the existing research suggests that police officers and prosecutors may drop complaints of rape either because they themselves perceive the credibility of the complaint to be diminished by inconsistencies, lack of detail and memory errors in the victim account or because they anticipate that such shortcomings are likely to discredit the complaint in the eyes of later decision makers in the case (e.g. prosecutors, juries). If the victim account fails to convince the jury of the defendant's guilt beyond reasonable doubt as a result of inconsistencies, gaps and errors in their memory of the rape, a 'not guilty' verdict is likely. In this way criminal justice misjudgements of victim memory may contribute to the attrition problem. We now turn to the – partial – empirical test of the pathway model.

The Study

The data consist of all rape complaints reported to the London Metropolitan Police Service (MPS) during April and May 2012 ($N = 679$). Because all complaints within these two months are included the only factor introducing potential sampling bias is the selection of the months April and May, which Home Office data on seasonality in crime suggest are typical months (Hird and Ruparel, 2007). The risk of sampling bias thus appears small, rendering the sample representative of all rape allegations made to the London police. The full police records of each rape complaint were read, analysed and coded by the MPS Research Unit. The authors have been granted permission to re-analyse the dataset. As with all secondary data analyses, the data were not collected with the present study in mind and have limitations as a result. The dataset contains variables that capture some basic elements of our 'pathways to attrition' conceptual model: whether police officers noted inconsistencies in the victim account; victim withdrawal; and the

attrition points. However, there are no variables to test the exact mechanisms that link inconsistencies in the victim account to attrition as proposed in the pathway model (Figure 1). The dataset also contains no variables capturing the amount of detail in the victim account. In short, the dataset does not permit a full empirical test of the exact mechanisms that link normal features of memory evidence to attrition. However, the data do allow for a valuable, initial empirical test of one central association in this large, representative sample: based on the pathway model, inconsistencies in the victim account should be associated with higher attrition. If the data do not support this hypothesis the validity of the pathway model would be put into question. This study is thus an important first step in the empirical testing of the pathway model.

The key variable of interest is whether police noted inconsistencies in the victim account in the case file, coded as 1 = 'noted' and 0 = 'not noted'. These can refer either to internal inconsistencies within one interview (witness statement) or inconsistencies over repeated interviews of the victim; that is, between separate retellings of the victim's memory of the incident. It is important to note that this is a measure of police perceived and recorded inconsistencies, rather than of 'objective' inconsistencies. The researchers did not have access to the original case files precluding an analysis of the reliability of such police judgements. Arguably however it is police judgements of inconsistencies, rather than researcher judgements that influence police decision making in the case.

Z-tests are used to test the statistical significance of the observed differences between cases with and without inconsistencies noted in the case file with regard to the outcome at each attrition point. The following attrition points are considered: (a) police decision to 'no crime' the case instead of continuing to investigate it as a crime (coded 1 = 'no crime' and 0 = 'continued investigation'); (b) a police decision to close the case with 'no further action' instead of referring it to the CPS for charge (coded 1 = 'police no further action, 0 = 'referred to CPS for charge'); (c) a CPS decision to take no further action instead of prosecuting in court (coded 1 = 'CPS no further action' and 0 = 'prosecution'). At the time of data collection none of the cases had been before a court, attrition through a jury 'not guilty' verdict can thus not be empirically considered in this study.

The pathway model specifies victim withdrawal as a second pathway to attrition. Again, z-tests are used to test the significance of any observed differences between cases with and without inconsistencies. We distinguish between three types victim withdrawal: (1) formal retraction of the complaint stating the allegation was false; (2) a written, signed statement from the victim stating that they do not wish the complaint to be pursued further without retracting the allegation as false; and (3) informal victim withdrawal where the victim becomes difficult to contact and ceases to cooperate with the police, thus effectively withdrawing their support of the investigation. All of the variables are coded as 1 = 'yes' or 0 = 'no'.

Finally, a series of binary, multivariate logistic regression analyses tests for potential confounding variables. A separate binary logistic regression model is fitted for each of the attrition points as well as for victim withdrawal as the dependent variable (variables coded and specified as described above). The key explanatory variable is the binary 'inconsistencies' variable (described above). Table 1 gives an overview of the additional explanatory variables available in the dataset to test for potential confounding effects. All are coded as 1 if the particular characteristic was present and coded as 0 if it was absent. These control variables were considered one at a time. In the small number of instances

Table 1. Key characteristics of the cases in the sample.

	Percentage		Percentage
<i>Incident characteristics</i>		Suspect bailed	34
Assault happened outdoors/public place	24	Suspect claims consent	22
Victim believes they have been drugged	4	Suspect denies intercourse/sexual contact	15
Victim had voluntarily consumed alcohol	28	<i>Victim characteristics</i>	
Victim physically resisted assault	32	Male	7
Victim sustained visible injuries	24	Aged under 13 at time of incident	8
Perpetrator had a weapon	4	Aged under 16 at time of incident	23
<i>Evidence</i>		Ethnicity non-white	47
Inconsistent victim account	11	Mental health problems	22
Independent corroborating evidence	18	Learning difficulties	4
Independent evidence casts doubt	5	Alcohol abuse problems	6
Early Evidence Kit used to collect forensic evidence	32	Drug abuse problems	6
<i>Reporting</i>		Prior police record	21
Delayed report (>24 hours)	69	Previous rape report by victim	15
Report outside forensic window (>7 days)	47	Previous false allegation (sexual assault or rape)	4
Historical report (>1 year)	30	<i>Victim-suspect relationship</i>	
Victim appeared drunk/drugged when reporting	10	Complete stranger	8
Victim appeared unclear about meaning of 'consent'	9	Known for less than 24 hours	21
<i>Police investigation</i>		Colleague, friend or acquaintance	34
Investigated by Child Protection Unit (CPU)	10	Family member	9
Victim attended a Haven	27	Previous or current intimate partner	28
Capacity/staffing issues noted	15	History of consensual sex with suspect	26
Video recorded victim witness statement	30	<i>Suspect characteristics</i>	
Cooperation/communication problems with victim	39	Male	99
Police note doubt about credibility in case file	21	Ethnicity non-white	69
<i>Investigation milestones</i>		Prior police record	39
Suspect identified	67	Known for sexual offending	15
Suspect arrested	45		

Note: Sample size $N = 679$ (including male and female victims).

Table 2. Comparison of rape complaint outcomes by inconsistencies in the victim account.

Column percentages	Inconsistencies in the victim account noted in police records		
	No	Yes	Total
<i>Outcome non-victim withdrawn cases</i>			
Police 'no crime'	6	16 ***	7
Police investigation ongoing	36	32	36
Police 'no further action'	39	43	39
CPS referral	19	10 *	18
– awaiting decision	4	3	3
– 'no further action'	6	7	6
– charge	9	0 **	8
<i>Victim withdrawal</i>			
– informal: victim ceases to cooperate	19	16	18
– formal: written withdrawal statement	23	25	23
– formal: written admission of false allegation	4	10 *	4
– non-withdrawn	55	49	54

Note: *** $p < .001$; ** $p < .01$; * $p < .05$.

where controlling for a second variable or including an interaction effect altered the statistical significance of the effect of inconsistencies on any of the attrition points or victim withdrawal, and where, upon careful inspection of standard errors, estimates and sub-sample sizes a conclusion was reached that the result is probably reliable, we report this in the text.

Findings

In the sample, police officers explicitly noted inconsistencies in the victim account in 11 per cent of cases. This is a lower percentage than one might expect based on the above reviewed memory research which suggests inconsistencies are a common feature of memories. It might be speculated that while inconsistencies may be present in a much higher percentage of cases, police officers expect and tolerate these to some degree (see McMillan and Thomas, 2009; Saunders, 2012) and may only explicitly make a note of these in the case file if they are deemed substantial. This finding brings us back to the open question of the quantity and quality 'thresholds' police officers and prosecutors may place on inconsistencies in victim accounts.

Turning to the hypothesized association between inconsistencies in the victim account and attrition, Table 2 shows differences in case outcomes between the cases in which inconsistencies in the victim account were noted and those in which no inconsistencies were noted in the police case file. The results suggest that attrition through police and CPS decisions to drop the case is significantly higher when inconsistencies are noted in the case file. In particular, while 16 per cent of cases with inconsistencies noted in the victim account are 'no crimed', only 6 per cent of cases with no explicit note of inconsistencies are dropped at this early stage. Multivariate logistic regression suggests an

interaction effect between the victim having consumed alcohol prior to the attack and inconsistencies in the victim account: the odds of the case being no-crimes increase from 2.5 if the victim is not intoxicated to 13.9 if the victim had consumed alcohol prior to the attack. This finding suggests that inconsistencies may harm the credibility of the case more if the victim was intoxicated at the time of the attack. Furthermore, the effect of inconsistencies on the odds of no-crimes ceases to be statistically significant once controlling for officers noting general doubts as to the credibility of the case.

Only half as many cases with inconsistencies are referred to the CPS for charge (10 per cent, compared to 19 per cent without inconsistencies noted). Multivariate logistic regression suggests that inconsistencies in the victim account cease to have statistically significant effect if the independent evidence casts doubt on the case (5 per cent of cases), if the allegation is confirmed as false (4 per cent of cases) and if no suspect could be identified (33 per cent of cases). Apart from one case in which independent evidence cast doubt, none of the cases with any one of these characteristics was referred to the CPS for charge.

Of the cases referred to the CPS for charge in our representative sample of 679 cases *no complaint with an inconsistent victim account resulted in a prosecution*. In contrast, over 50 per cent of cases referred to the CPS for charge resulted in a prosecution if there were no inconsistencies noted (corresponding to 9 per cent of the total number cases with no inconsistencies noted). These results provide evidence in support of the hypothesized effect of inconsistencies in the victim account on attrition via criminal justice agents' decisions to drop the case.

There is no statistically significant difference in attrition through victim withdrawal between cases with and without inconsistencies. However, in cases with inconsistencies noted in the case file more than twice as many victims retract the complaint stating their allegation was false (corresponding to seven out of 28 retracted complaints in the overall sample of 679 cases). Multivariate logistic regression analyses did not yield statistically significant changes once the control variables and interaction effects were taken into account. Overall, these findings suggest that the presence of inconsistencies in itself does not lead to victim withdrawal of cooperation (formal or informal), and that the association between inconsistencies in the victim account and attrition is largely mediated through police rather than victim decision making to discontinue the process.

Limitations

This initial empirical study only tested the association between inconsistencies in the victim account and attrition. While this association is central to the pathway model, and evidence of its presence an important first step in the validation of the model, it leaves much of the conceptual pathway model untested. Empirically testing the full pathway model requires interviews or surveys of police officers, prosecutors, complainants and (mock-) juries about their memory beliefs in addition to an analysis of the case files. A more in-depth analysis of recordings of police interviews with the victim would enable a more accurate and fine-grained identification of inconsistencies, gaps and availability of details in the victim's retelling of the rape which, as part of a prospective case tracking, would allow for a more robust test of the pathway model. Furthermore, inconsistencies in the victim account are an imperfect measure of victim memory. The dataset does not allow distinguishing between inconsistencies that result from memory errors of omission and

commission and those resulting from deliberate omissions and inaccuracies. Poor rapport between the interviewing officer and the complainant, a lack of trust in the police or courts, feelings of guilt or shame and fear of negative consequences may lead a complainant to feel unable or unwilling to give a full and accurate account. Furthermore, inconsistencies may originate from poor interviewing technique rather than memory errors. Qualitative analysis of interviewing technique and follow-up interviews with the victim would be required to better understand the origins of inconsistencies in the victim account.

Finally, we found inconsistencies were noted in only 11 per cent of complaints in the sample. The low percentage may indicate that police officers only explicitly note inconsistencies if they are severe. To our knowledge there currently exists no research on the amount and nature of inconsistencies in the victim account that is likely to put the complaint below the credibility threshold and into danger of attrition. A qualitative study of these thresholds is essential to furthering our understanding of police officer and prosecutor decision making over inconsistent victim accounts.

Conclusion

This article reviewed the evidence on criminal justice use of memory evidence and juxtaposed these with the current scientific understanding of memory. The consistent, detailed narratives that are considered 'good' evidence within criminal justice are at odds with the nature of human memory – memories are always fragmentary, time-compressed and prone to errors of omission and commission. While inconsistencies, lack of detail, errors and omissions in the victim account undermine its credibility in the eyes of legal agents and put the complaint at risk of attrition, *the modern view of human memory* considers all of these typical features of a normal memory.

We proposed a conceptual pathway model that describes the processes through which normal features of human memory may lead to attrition. The first pathway considers the negative effect of police interviewing techniques aimed at resolving inconsistencies and eliciting more and specific memory details, which may result in formal or informal victim withdrawal and subsequent discontinuation of the case. The second pathway describes how normal memory features discredit the complaint in the eyes of criminal justice agents that either directly, or indirectly via the 'vicious cycle' of attrition, results in the case being dropped. The findings of the study provide tentative, initial empirical support for an association between police case files explicitly noting the presence of inconsistencies in the victim account and significantly higher attrition through police officer and prosecutor decisions to discontinue the case. This finding validates a key hypothesis of the pathway model within the English criminal justice system. Further studies are required to test the generalizability of the findings to other jurisdictions, in particular those without juries.

Overall the findings suggest that criminal justice agents need to take memory research findings into consideration when assessing the veracity of a complaint of rape, whether during the police investigation, case construction or in court. It may be that police, when operating with a science-based model of memory, are able to adapt their interview techniques to make them more compatible with human memory. McMillan and Thomas (2009) found that victims prefer free recall. In particular victims do not respond

positively to demands of repeated recall of, in fact impossible-to-recall, minutiae. Such practices almost certainly undermine victim confidence. Free recall is thus not only likely to produce more reliable memory evidence, because rememberers automatically recall at the optimum level for their own memory (British Psychological Society, 2010 [2008]), but may also reduce attrition by reducing victim withdrawal.

Finally, this article focused on empirically establishing *whether* and conceptually developing *how* normal features of human memory lead to attrition. This of course raises a further question: *why* do normal features of human memory lead to attrition? Why are the criteria criminal justice agents use to judge the credibility of victim memory – such as consistency and rich detail – so at odds with the scientific understanding of human memory? The answer may lie simply in criminal justice agents' erroneous beliefs and lack of knowledge about human memory. The literature suggests that police officers, prosecutors and judges indeed have a limited knowledge of human memory in general and eyewitness testimony in particular, not significantly different from the knowledge and beliefs held by the general public, including jurors (Benton et al., 2005; Magnussen et al., 2006; Schmechel et al., 2006). This may explain part of the problem.

Perhaps, however, it is not only misconceptions of human memory that motivate police officers, prosecutors and juries to seek highly consistent, highly detailed and error-free witness testimony from the complainant. Might the nature of human memory evidence be fundamentally incompatible with the evidentiary demands of the criminal justice system? The criminal standard of proof, certainty beyond reasonable doubt, is likely to play a fundamental part in criminal justice conceptions of what constitutes a 'good' victim account. More research is required to understand the origins of criminal justice conceptions of good memory evidence, and to explore ways in which scientific knowledge of the nature of human memory may inform the production and evaluation of memory evidence in criminal proceedings, particularly in those where memory is key evidence, such as complaints of rape.

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Notes

1. In the literature, the terms 'victim account', 'victim evidence' or 'victim testimony' may refer to the full set of victim-related investigative material/evidence in court, rather than the narrow definition used here (i.e. victim account of the reported rape). The more commonly used wider definition includes information on the victim's personal background such as prior

- allegations of rape, police and medical records (including on mental health conditions), social services and school records, as well as the victim account of their lifestyle and their relationship with the suspect(s)/defendant(s).
2. There are some narrowly defined exceptions, for example if the victim is under the age of 13 (under certain circumstances under the age of 15) or otherwise unable to give consent, for example due to a mental disorder impeding choice (Sexual Offences Act 2003).
 3. The term 'the modern view of human memory' is an umbrella term used to cover various diverse findings relating to the process of memory construction. Thus, it is not so much a 'theory' of memory but, rather, a way to conveniently summarize a large body of findings from the behavioural, psychological, psychiatric, to the neuropsychological.
 4. This complexity is also strongly evident in studies of eyewitness testimony, see Wells and Olson (2003) for review, as well as in what has become the controversial study of memory for traumatic events in which false details have often been detected, see Morgan et al. (2013) for review.

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