

## What Psychologists Know and Believe about Memory: A Survey of Practitioners

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*Summary:* We surveyed 858 licensed psychologists, members of the Norwegian Psychological Association, about their knowledge and beliefs about human memory. The results were compared to the results of parallel surveys of legal professionals and lay persons, and evaluated in the light of the results of current memory science. The results indicate that psychologists are not memory experts *qua* psychologists; as a group, psychologists do not score above the level of knowledge of lay persons or trial judges on issues of eyewitness memory, and a substantial minority of the sample of respondents harbours scientifically unproven ideas of memory. The implications of these findings for psychological practice, with special reference to the court room, are briefly discussed. Copyright © 2011 John Wiley & Sons, Ltd.

Many academic professions deal with issues of episodic and autobiographical memory. Biographers and historians, interviewing informants about events sometimes dating decades back, must filter true events as interpreted by the informant at the time of the event from noise and the systematic distorting factors introduced by time and changing history (Schudson, 1995) in order to separate 'the way we were from the way we are' (Schacter, 2001). Law enforcement officers, attorneys and trial judges face the task of deciding whether eyewitness testimonies are reliable or are contaminated by memory-distorting factors. Clinical psychologists, although not primarily fact finders, must always consider the possibility that their clients' personal stories as revealed in the therapy room do not reflect genuine experiences but are memories distorted by time or are even false memories (Quin, Goodman, Bottoms, & Shaver, 1998). Psychologists also testify in court, sometimes on memory-related issues and occasionally in the double role of therapist and memory expert. Sorting memory facts from memory fiction is not an easy task, and in order to decide which stories to trust and which stories to distrust, knowledge about the fallibility of episodic memory and factors that may distort memory would appear crucial to success. Do members of the professions that deal with questions of episodic and autobiographical memory in their professional work possess this knowledge? The available evidence suggests they do not.

Several recent surveys have probed the general public about their knowledge and beliefs about memory and target professions about more specific memory issues arising in the context of eye witness testimony. An international group of memory researchers (Magnussen, Andersson, Cornoldi, De Beni, Endestad, Goodman, Helstrup, Koriat, Larsson, Melinder, Nilsson, Rönberg, & Zimmer, 2006) surveyed a representative sample of the adult Norwegian population ( $n = 1000$ ) and found that on many general issues public belief and memory science were in harmony, but on other issues, such as the memory performance of young children compared with the memory performance of adults, the onset of adult

memory decline, and the question of repression of adult traumatic memories, memory science and psychological folklore departed. A number of the surveys that targeted professional groups who are players in the judicial system on issues relating to the reliability of eyewitness testimony have used a questionnaire developed by Wise and Safer (2004), which makes the results of the various studies directly comparable across groups, countries and cultures. The Wise and Safer (2004) questionnaire is based on the survey of eyewitness experts reported a decade ago by Kassin, Tubb, Hosch and Memon (2001) and selected issues on which the memory experts agreed both on the answer and its empirical support and in addition were willing to testify in court. Confirming the results of a large body of research reviewed by Benton, McDonnell, Ross, Thomas and Bradshaw (2007), these studies show that US police officers (Wise, Safer, & Maro, 2011), US, Norwegian and Chinese judges (Magnussen, Wise, Raja, Safer, Pawlenko, & Stridbeck, 2008; Wise, Gong, Safer, & Lee, 2010; Wise & Safer, 2004), Norwegian jury eligible citizens and citizens who actually served jury duty (Magnussen, Melinder, Stridbeck, & Raja, 2010) and US law students and undergraduate students (Wise & Safer, 2010) have limited knowledge about factors that may affect the reliability of eye witness memory. The one exception to this somewhat depressing message appears to be US defence attorneys (Wise, Pawlenko, Meyer, & Safer, 2007; Wise, Pawlenko, Safer, & Meyer, 2009), who perform closer to the memory experts of Kassin et al. (2001).

In cases where the court relies heavily on the testimonies of expert witnesses, the *Daubert* ruling of the US Supreme Court (*Daubert vs. Merrell Dow Pharmaceuticals, Inc*) formulated four questions that trial judges in a gate-keeping role of the scientific soundness of expert witnesses should ask (Kassin et al., 2001): are the theories and methods used by the expert to formulate an opinion testable, have they been subject to peer review, is there a measurable error rate, and are the theories and methods generally accepted within the expert's community?<sup>1</sup> However, given the limited

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<sup>1</sup> In Norway, there are no recommended guidelines, but reports of expert witnesses of the medical professions in criminal trials are reviewed by an independent panel of experts, and a parallel panel for psychologists has recently been established; however, there are no memory experts on the psychology panel.

knowledge of legal professionals about factors that affect the reliability of eyewitness testimony and the results of studies suggesting that trial judges and jurors may have difficulty in distinguishing between science and junk science (Kovera, Russano, & McAuliff, 2002; McAuliff, Kovera, & Nunez, 2009), the court may have problems complying with the *Daubert* recommendations, and the issue boils down to the appointment of qualified eyewitness expert witnesses.<sup>2</sup>

Who are eyewitness experts? The British Psychological Society Research Board's report *Guidelines on Memory and the Law* (2008) concluded as follows: a memory expert is someone whose expertise is recognized by their peers, that is other memory researchers. Recognition should usually be in the form of relevant outputs that are publicly verifiable, for example peer-reviewed publications, other publications or presentations at professional meetings. Being a member of a professional society or societies, no matter how exalted, does *not* of itself make a person a memory expert. Having acted as memory expert in the past does *not* make a person a memory expert. Listening, evaluating, interpreting or advising on accounts of memories as part of one's professional activities does *not* necessarily make a person a memory expert. Working in a forensic area does *not* confer memory expertise.

These are strict recommendations, which taken literally would seem impossible to comply with in small countries where the number of potential experts are limited. These may be too strict because at present we do not know what psychologists in general do know and believe about important issues of memory. It is a distinct possibility that the memory expertise of psychologists is underestimated; after all, standard (US and UK) textbooks on the cognitive psychology of attention, perception and memory are on the psychology curriculum in all western universities. A survey of professionals in Norway showed that psychologists had more realistic views of children as witnesses than had the legal professions (Melinder, Goodman, Eilertsen, & Magnussen, 2004). In the present paper, we report a survey of a large sample ( $n = 857$ ) of licensed psychologists, members of the Norwegian Psychological Association, combining items from the eyewitness questionnaire (Magnussen et al., 2008, 2010; Wise & Safer, 2004) with the memory survey of the general public (Magnussen et al., 2006) and adding an item on an issue that still seems to be disputed (Davis & Loftus, 2009), namely the question of repressed and recovered memories. The items represent memory issues on which psychologists may testify in court and issues they might face in the psychological practice.<sup>3</sup>

<sup>2</sup> In the Norwegian system, most expert witnesses are appointed by the court, serving as experts neutral to the case; however, in addition to court-appointed experts, the defence and the prosecutor may appoint their own experts. For a discussion of the differences between the US and Scandinavian legal systems, see Stridbeck and Granhag (2010).

<sup>3</sup> We also distributed the questionnaire electronically to members of The Norwegian Association of Psychiatrists, but unfortunately few completed questionnaires were returned ( $n = 78$ ). Perhaps, the psychiatrists did not feel that memory was part of their professional area of expertise. The pattern of responses of the limited sample of psychiatrists was almost identical to the pattern of responses of the psychologist sample, but since they may not be representative of psychiatrists in general, they are not included.

## METHODS

### Participants

The questionnaire, which in addition to the memory items included questions on gender, age, education and professional experience, was distributed by E-mail (with link to the web questionnaire) to members of the Norwegian Psychological Association ( $n \approx 5000$ ), which is the only professional organization for psychologists in Norway. No reminder was employed to those who did not reply. A completed questionnaire was obtained from 857 licensed psychologists (36% women), covering an age span of 30–70 years with the largest proportion of respondents, 35%, between 30 and 39 years. With regard to current employment, 72% of the respondents were employed by hospitals or clinical institutions, 13% were in private practice, 6% were employed by a university or college, and 8% worked in private organizations. The majority of the respondents were engaged in clinical work with children, 33%, or adults, 64%; 12% were involved in research and 17% in teaching; 12% had served as expert witnesses for the court. The numbers exceed 100% because respondents could check more than one area of professional activity.

### The questionnaire

The questionnaire covered both issues specific to eyewitness testimony and more general memory issues. Seven items from the Wise and Safer (2004) questionnaire, adapted to the Norwegian judicial system by Magnussen et al. (2008), were included (items 1–7, Table 1); in addition, we included four items from the Magnussen et al. (2006) survey (items 8, 9, 11, 12) and a new item probing the beliefs about repressed and recovered memories. The statements and the response alternatives are shown in Table 1, with the answer that is most likely to be the correct answer according to current memory science indicated by an asterisk. For items 1–3 and 5–7, scientific 'truth' is defined by the evaluations of the research literature by the eyewitness experts of Kassin et al. (2001); these items were selected by Wise and Safer (2004) because of very high agreement among the memory experts both on the answer and on the strength of the empirical evidence supporting it (see also Magnussen et al., 2008); the correct response to item 4 was added to the Magnussen et al. (2008) survey based on the meta-analysis of Deffenbacher, Bornstein, Penrod and McGorty (2004); for items 8, 9, 11 and 12, the definitions of correct answers were based on the reviews of the research literature by the 13 memory researchers authoring the Magnussen et al. (2006) survey; for the final item 10, the evidence is briefly reviewed in the Discussion.

## RESULTS

The results are shown in Table 2. For 11 of the statements, we also have data for representative samples of adult Norwegian citizens ( $n = 1000$  in each sample; Magnussen et al., 2006, 2010) and for seven of the statements, we have additional data for a sample of Norwegian judges ( $n = 157$ ; Magnussen et al., 2008); the results for these samples are shown in brackets, in

Table 1. Eyewitnesses topics and statements—the response alternative believed to be most correct according to current memory science is indicated by an asterisk

Topics	Statements
1. Confidence-accuracy	At trial, an eyewitness's confidence is a good predictor of his or her accuracy in identifying the defendant as the perpetrator of the crime. Response alternatives: Agree—disagree*—uncertain
2. Effects of post-event information	Eyewitness testimony about an event often reflects not only what a witness actually saw but information obtained later on from other witnesses, the police, the media, etc. Response alternatives: Agree*—disagree—uncertain
3. Minor details	A witness's ability to recall minor details about a crime is a good indicator of the accuracy of the witness's identification of the perpetrator of the crime. Response alternatives: Agree—disagree*—uncertain
4. Impact of stress	Very high stress at the time of observation has a negative effect on the accuracy of testimony. Response alternatives: Agree*—disagree—uncertain
5. Attitudes and expectations	An eyewitness's perception and memory for an event may be affected by his or her attitudes and expectations. Response alternatives: Agree*—disagree—uncertain
6. Weapon focus	The presence of a weapon can impair an eyewitness's ability to accurately identify the perpetrator's face. Response alternatives: Generally true*—generally false—uncertain
7. Forgetting curve	The rate of memory loss for an event is greatest right after the event and then levels off over time. Response alternatives: Generally true*—generally false—uncertain
8. Children's recall	When small children tell about events they have experienced, do you think they remember better, as well as or worse than adults? Response alternatives: Better—as good as—worse*—uncertain
9. Infantile amnesia	Many people talk about memory from early childhood year. How far back in time do you believe people can remember? Response alternatives: From birth on—one year—two years—three years*—four years—five years—six years or older.
10. Recovered memories	Sometimes adults in psychotherapy remember traumatic events from early childhood, about which they previously had absolutely no recollection. Do you think such memories are real or false? Response alternatives: All are real—most are real—most are false*—all are false—uncertain
11. Dramatic events	Sometimes people become witnesses to dramatic events. Do you think the memory for such events are worse, as good as or better compared with the memory for everyday events? Response alternatives: Better*—as good as—worse—uncertain
12. Repression of adult traumatic memories	Sometimes people who have committed murder claim to have no memory for the crime. Do you think such memories can be repressed and that the perpetrator believes they are telling the truth, or do you think they are lying? Response alternatives: They tell the truth—they are lying*—uncertain

normal and bold font, respectively.<sup>4</sup> The answer deemed to be most correct according to current scientific knowledge is indicated by an asterisk. In the following paragraphs, we first consider the results of the seven items from the Wise and Safer (2004; Magnussen et al., 2008, 2010) questionnaire.

In general, the pattern of responses for the psychologist sample agrees well with the results for the other samples. In the psychologist sample, correct responses ranged from 33% to 98% compared with a range of 30–98% for the judges and 13–84% for the general public. The average score was 63% correct responses from the psychologists, 63% for the judges

and 56% for the general public. Thus, the average level of knowledge about these memory issues for the psychologist sample did not exceed the knowledge of the judges and was not much higher than the average level of knowledge of the adult citizens. An inspection of Table 2 further shows that on a few items psychologists scored better than the other two samples; for example, a higher proportion of psychologists (correctly) disagreed that confidence is a good indicator of accuracy (item 1). But on other items, psychologists scored lower than the judges and the general public (item 6, weapon focus and item 7, forgetting curve). It is particularly surprising that so few psychologists were familiar with the normal course of forgetting, the classic Ebbinghaus function.

The distribution of the responses of the psychologist sample for the four statements from the Magnussen et al. (2006) survey (items 8, 9, 11, 12) was likewise quite similar to the response distribution for the general public. On statement

<sup>4</sup> The results for the general public represent two representative samples of the adult Norwegian population ( $n = 1000$  in both), one responding to items 1–7 (Magnussen et al., 2010) and the other responding to items 8–9 and 11–12 (Magnussen et al., 2006); both surveys were carried out by OPINION, a major Norwegian survey research company, as noted in the published papers.

Table 2. Distribution of the responses of psychologists ( $n=857$ ), judges ( $n=157$ ) and the general public ( $n=1000$ )

Item	Agree		Neither		Disagree
1. Confidence-accuracy	15 (60, <b>22</b> )		31 (24, <b>48</b> )		54 (13, <b>31</b> )*
2. Post-event information	96 (75, <b>94</b> )*		3 (14, <b>6</b> )		1 (8, <b>0</b> )
3. Minor details	34 (56, <b>30</b> )		33 (24, <b>40</b> )		33 (16, <b>31</b> )*
4. Stress impairs accuracy	64 (84, <b>70</b> )*		22 (8, <b>19</b> )		14 (7, <b>11</b> )
5. Attitudes/expectations	98 (82, <b>98</b> )*		2 (9, <b>1</b> )		1 (7, <b>1</b> )
	<b>Generally true</b>		<b>Generally false</b>		<b>Do not know</b>
6. Weapon focus	56 (67, <b>68</b> )*		10 (23, <b>5</b> )		33 (10, <b>27</b> )
7. Forgetting curve	39 (55, <b>51</b> )*		29 (31, <b>24</b> )		31 (14, <b>25</b> )
	<b>Better</b>	<b>As good as</b>	<b>Worse</b>		<b>Uncertain</b>
8. Children's recall	6 (38)	35 (37)	46 (18)*		13 (7)
	<b>Birth to &gt;1 year</b>	<b>&gt;2 years</b>	<b>&gt;3 years</b>	<b>&gt;4 years</b>	<b>&gt;5 years</b>
9. Infantile amnesia	5 (4)	24 (14)*	45 (29)*	17 (21)*	9 (32)
	<b>All real</b>	<b>Most real</b>	<b>Most false</b>	<b>All false</b>	<b>Uncertain</b>
10. Recovered memories	1	63	18*	0	18
	<b>Better</b>	<b>As good as</b>	<b>Worse</b>		<b>Uncertain</b>
11. Dramatic events	68 (70)*	15 (12)	10 (11)		6 (7)
	<b>They tell the truth</b>		<b>They lie</b>		<b>Uncertain</b>
12. Adult repression	38 (39)		31 (45)*		31 (16)

Number in parenthesis refers to the general public and the judges (bold font); \*indicates correct response according to current memory science.

8, assessing the memory of small children, the psychologists were more realistic than the general public; close to half the sample provided the correct response—that it is worse; still, more than 40% of the respondents believed that children's memory is as good as or better than adults' memory. On statement 9, probing the onset of lasting episodic memories, the psychologists were somewhat more optimistic than the general public, shifting the average age of onset downward. Since the onset of long-lasting childhood memories depends upon several factors associated with cognitive development, in particular language development (Goodman & Melinder, 2007; Nelson & Fivush, 2004), we consider a time window of 2–4 years to be the correct answer. On the two remaining statements taken from that survey, the scepticism of the general public to the amnesia of murderers compared with the psychologists is noteworthy. However, the average score on the four items common to the psychologist and general public surveys was comparable for the two samples, 50.5% for the psychologists and 50.2% for the general public. Finally, a large majority of the psychologists believed that most of previously forgotten traumatic childhood memories recovered in therapy are real memories.

Some of the items of the questionnaire would appear to tap into a common or at least a related set of beliefs regarding the impact of emotional arousal on subsequent memory performance (items 4, 10, 11 and 12). We therefore looked at the correlations between the items: there was no correlation between item 10 (recovered memories are real memories or not) and item 11 (is the memory for dramatic events better or worse than the memory for mundane events),  $r = .02$ ,  $p = .59$ ; the correlation between items 10 and 12 (repression of adult traumatic memories) was low ( $r = .13$ ) but statistically significant ( $p < .001$ ); there was no correlation between items 11 and 12 ( $r = -.009$ ,  $p = .71$ ); and finally, there was a low but statistically significant negative correlation between the beliefs in the duration of infantile amnesia (item 9) and the belief in the reality of recovered memories ( $r = -.13$ ,  $p < .001$ ).

The results are summarized in Figure 1 in terms of the distribution of scores on a knowledge scale, where the total

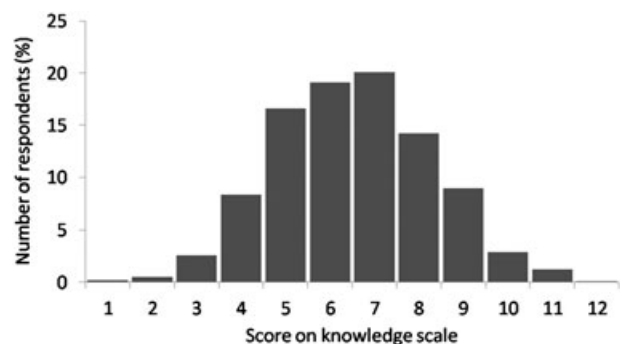


Figure 1. Distribution of scores on the knowledge scale in the sample of psychologists

number of correct responses for the 12 statements was calculated for each respondent. The scores cluster around 5–7 points, that is about half the sample provided correct answers to about half the number of statements.

### Relation to background variables

Analyses of the scores on the knowledge scale with respect to the background variables showed no effect of professional employment on number of correct scores on the knowledge scale,  $F(3,790) = 2.21$ ,  $p = .09$ ,  $\eta^2 = 0.008$ , but showed moderate-size effects of age and gender: the two youngest age groups (<30 years and 30–39 years of age) scored somewhat higher on the knowledge scale ( $M = 7.00$ ,  $SD = 0.19$ , and  $M = 6.71$ ,  $SD = 0.11$ , respectively) than did the >50-year group ( $M = 6.22$ ,  $SD = 0.11$ ),  $F(4,806) = 4.90$ ,  $p < .001$ ,  $\eta^2 = 0.02$ , and female respondents scored slightly higher ( $M = 6.80$ ,  $SD = 1.86$ ) than did male respondents ( $M = 6.37$ ,  $SD = 1.70$ ),  $F(1,809) = 11.18$ ,  $p = .001$ ,  $\eta^2 = 0.01$ .

We then looked in more detail at items 8–12, which probe into memory issues on which psychologists might be expected to have different opinions depending upon their professional background, that is, on questions of early memories and the reality of repression. Contrary to intuition, professional

experience in terms of employment was not associated with the responses to four of the statements (items 8, 9, 11 and 12) [ $\chi^2(3, N=829) \leq 6.96, p \leq .07$ ]. The responses to statement 10, which probe into beliefs about recovered memories, were associated with professional experience in terms of employment [ $\chi^2(3, N=829) \leq 7.65, p = .05$ ], with psychologists affiliated with academic institutions responding more in line with current research (31% correct)—that is that recovered memories most often are false memories—than did psychologists in private practice (13% correct) employed by a private organization (17% correct) or psychologists working in clinical institutions (18.4% correct).

## DISCUSSION

Several authors (e.g. Benton, Ross, Bradshaw, Thomas, & Bradshaw, 2006; Benton et al., 2007; Granhag, Strömwall, & Hartwig, 2005; Magnussen et al., 2008, 2010; Wise, Dauphinais, & Safer, 2007; Wise & Safer, 2004) have recently expressed concerns regarding the level of knowledge among trial judges and other legal professions about factors affecting the reliability of eyewitness memory and the possible threat of the ignorance to criminal justice. The lack of knowledge among legal professionals may be partly compensated by expert witnesses in court, and in cases where the reliability of memory reports is an issue, psychologists are occasionally called as expert witnesses. The take-home message of the present study is that psychologists are not memory experts *qua* psychologists. The professional psychologists of our sample, all of whom had completed courses in cognitive psychology and memory science as part of their university curriculum, do not score higher than trial judges on memory issues specifically concerned with the reliability of eyewitness testimony, and they do not score higher than the average adult Norwegian citizen on more general issues of memory. The results thus support the recommendations of the British Psychological Society Research Board's report *Guidelines on Memory and the Law* (2008), that memory expertise must be proved in the individual case.

It is a little surprising, perhaps, that the beliefs and knowledge of psychologists who were affiliated with academic institutions and/or who were engaged in research matched the sample as a whole, except on a single item (10). However, this sub-sample may not be representative of academic psychologists in general because the Norwegian Psychological Association mainly attracts academic members from the clinical and applied disciplines who are not concerned with memory questions as part of their academic work.

Some of the items, in particular items 10–12, probe memory issues of interest to a wider range of psychologists than eyewitness experts, questions of the relation between emotional arousal and memory and the fate of traumatic memories. The current evidence from systematic and methodologically sound studies strongly suggests that memories of traumatic events are more resistant to forgetting than memories of mundane events (e.g. McGaugh, 2004; McNally, 2003; Phelps, 2006), which may be true for memories of high emotional activation in general, independent of emotional valence (Berntsen, 2001). It is important, however, to

distinguish between memory for an event and memory for the details of the event. The evidence suggests that, although the memories of dramatic and traumatic events are more persistent or more vividly retained than are mundane memories, their accuracy may suffer (Deffenbacher et al., 2004). A majority of the respondents in the present study correctly answered that stress may impair memory (item 4), while at the same time recognizing that the memory for dramatic events is better than the memory for everyday events (item 11).

The superiority of strong emotional events in memory would seem to be in conflict with the possibilities suggested by the response alternatives to statements 10 and 12, that traumatic memories may be blocked or repressed. However, close to 40% of the respondents answered that violent offenders' claims of amnesia for the crimes were true. Memory scientists do agree on the reality of psychogenic memory loss, defined as a memory loss without a documented neurological deficit, and agree that psychogenic amnesia may be the result of prolonged severe stress. However, these 'mnestic blocks' (Brand & Markowitsch, 2009) cover periods of weeks or even years rather than the short-term amnesia with its abrupt onsets and offset periods claimed by many offenders of violent crimes. The evidence from a recent volume of expert analyses of the literature on offenders' memories of violent crimes (Christianson, 2007) strongly suggest that even if the memory of the crime in a few cases may be impaired (Porter, Woodworth, & Doucette, 2007), the evidence support the trauma superiority argument, that is enhanced memory for traumatic events. The conclusion that can be drawn from the experts' analyses is that the overwhelming majority of claims of amnesia for committed murder, in cases where alcohol or drug intoxication can be ruled out, are fake, representing cases of malingering (Merckelbach & Christianson, 2007; Van Oorsouw & Cima, 2007). Interestingly, Magnussen et al. (2006), who asked the same question to a representative sample of 1000 adult Norwegian citizens, found that the belief in the reality of amnesia for committed murder was negatively correlated with the number of years of formal education; less than 20% of the respondents with elementary school believed the perpetrators were telling the truth, a figure raising to about 45% for respondents with university backgrounds. Sometimes, academic beliefs are corrupted by surviving popular but erroneous psychological theories.

Statement 10 taps into the false memory–recovered memory debate, which has engaged both academic and clinical psychologists. Note that the formulation of statement 10 does not invite agreement or disagreement as to whether the stories of abuse patients tell in general are false or true; the statement targets memories of events 'about which they previously had absolutely no recollection'. Agreeing to the response alternative that most of these stories are true would seem to imply a belief in repression or dissociation as a mechanism of forgetting. A larger proportion of the sub-sample engaged in research responded in line with current memory science compared with the practitioners, but in all sub-samples a majority of the respondents believed that the memories were real. Thus, little appears to have changed over the last two decades. A survey of clinical psychologists in the UK and the USA carried out more than 15 years ago by Poole, Lindsay,

Memon and Bull (1995) indicated that more than 70% of the respondents had used so-called memory-recovering techniques to assist their clients in recovering memories of early abuse, and about 25% of the respondents reported a combination of beliefs and practices strongly suggesting a focus on memory recovery. The idea of repression of traumatic childhood memories is still very much alive among both psychologists and lay people. Two recent surveys have shown that a large proportion of people who think they might enter psychotherapy also believe that they may harbour repressed memories about their childhood (Pezdek & Blandon-Gitlin, 2009; Rubin & Berntsen, 2007). The lay belief in repressed memories is not that surprising in view of the cultural impact of Freudian thought in western societies, but it is a little surprising that the idea is still prominent among professional psychologists who are supposed to be scientifically updated. Repression is not among the mechanisms of forgetting acknowledged by current memory science (Della Sala, 2010; McNally, 2003; Tulving & Craik, 2000), and the available evidence does not support the idea of repression (Piper, Lillevik, & Kritzer, 2008); to the contrary, well-controlled prospective studies of persons who have been subjected to sexual abuse in childhood strongly indicate that such traumatic experiences are not forgotten, except perhaps as a result of childhood amnesia and in cases of milder abuse (Alexander, Goodman, Ghetti, Edelstein, Redlich, Cordon, & Jones, 2005; Goodman, Ghetti, Quas, Edelstein, Alexander, Redlich, Cordon, & Jones, 2003). In general, the responses to the statements probing the effect of stress and emotional arousal on memory performance did not indicate any consistent pattern of beliefs—the correlations were close to zero. There would seem to be a complete ‘dissociation’ between the beliefs in the superior memory for dramatic events, the belief that perpetrators of violent crimes may have amnesia for the crime and beliefs in repression and recovery of childhood traumatic memories—these ideas live in peaceful coexistence. In an analysis of the current status of clinical psychology, Baker, McFall, and Shoham (2009) concluded that the practice of US clinical psychologists was more governed by personal experience and clinical traditions than by scientific research. The present results suggest that the same is true for the beliefs in the more theoretical aspects of memory, which may guide psychological practice. The current psychlore appears to be a stronger determinant of the theoretical ideas than are the results of empirical research.

What is the lesson to be learned from this survey? As already stated, psychologists are not memory experts, although a few psychologists in the sample meet the requirement of memory expertise; for example, the distribution of responses shows that less than 5% of the psychologist sample scored correct on 10 items or more. Thus, memory expertise has to be documented, and courts are advised not to accept expert witnesses testifying on issues involving the reliability of memory reports unless expertise has been proven. This is an important point, because sometimes courts believe implausible memory performances. One recent example where memory experts might have prevented a miscarriage of justice, cited in some length by Magnussen et al. (2010), is the exoneration in 2004 of the Scottish citizens Thomas Campbell and Joseph Steele, who spent 20 years in prison for murder because the court was impressed by the (false) testimonies of four police officers who

claimed to have overheard an allegedly self-incriminating remark by Campbell. The police officers quoted the remark in identical wording, which puzzled The Scottish Criminal Case Review Commission.<sup>5</sup> The Commission solicited an empirical study, which showed that none of the participants were able to remember the statement verbatim and that the majority of the participants remembered less than half the statement. The High Court of Justiciary decided that the evidence had been fabricated and in 2004 quashed the convictions of Campbell and Steele. The question is, of course, would a memory expert have detected the unlikely memory performance of the police officers? We believe they would or at least would have called for an experiment of the sort that in the end was carried out, but we also suspect that psychologists in general would not detect any flaws in the evaluations and arguments of the court. A sound scepticism against unusual memory performances in court requires a solid knowledge of normal memory performance.

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## REFERENCES

- Alexander, K. W., Goodman, G. S., Ghetti, S., Edelstein, R. S., Redlich, A., Cordon, I., & Jones, D. P. H. (2005). Traumatic impact predicts long-term memory for child sexual abuse. *Psychological Science, 16*, 33–40.
- Baker, T. B., McFall, R. M., & Shoham, V. (2009). Current status and future prospects of clinical psychology. Toward a scientifically principled approach to mental and behavioral health care. *Psychological Science in the Public Interest, 9*, 67–103.
- Benton, T. R., McDonnell, S., Ross, D. F., Thomas, W. N., & Bradshaw, E. (2007). Has eyewitness research penetrated the American legal system? A synthesis of case history, juror knowledge, and expert testimony. In R. C. L. Lindsay, D. F. Ross, J. D. Read, & M. P. Toglia (Eds.), *Handbook of eyewitness psychology Vol 2, Memory for people*. (pp. 453–500). Mahwah, NJ: Erlbaum.
- Benton, T. R., Ross, D. F., Bradshaw, E., Thomas, W. N., & Bradshaw, G. S. (2006). Eyewitness memory is still not common sense: Comparing jurors, judges, and law enforcement to eyewitness experts. *Applied Cognitive Psychology, 20*, 1115–1129.
- Berntsen, D. (2001). Involuntary memories of emotional events. Do memory for trauma and extremely happy events differ? *Applied Cognitive Psychology, 15*, 135–158.
- Brand, M., & Markowitsch, H. J. (2009). Environmental influences on autobiographical memory. The mnestic block syndrome. In L. Bäckman, & L. Nyberg (Eds.), *Memory, aging and the brain* (pp. 228–264). Hove, UK: Psychology Press.
- The British Psychological Society Research Board. (2008). *Guidelines on memory and the law. Recommendations from the scientific study of human memory*. Leicester, UK: The British Psychological Society.
- Christianson, S. Å. (Ed.). (2007). *Offenders' memories of violent crimes*. Chichester, UK: Wiley.
- Davis, D., & Loftus, E. F. (2009). The scientific status of “repressed” and “recovered” memories of child sexual abuse. In J. S. Skeem, K. S. Douglas,

<sup>5</sup> In three European countries, England, Scotland and Norway, appeals are referred to the court by an independent commission. The commission reviews the evidence, evaluates new evidence and conducts further investigations if necessary.

- & S. O. Lilienfeld (Eds.), *Psychological science in the courtroom. Consensus and controversy* (pp. 55–79). New York: Guilford Press.
- Deffenbacher, K. A., Bornstein, B. H., Penrod, S. D., & McGorty, E. K. (2004). A meta-analytic review of the effects of high stress on eyewitness memory. *Law and Human Behavior, 28*, 687–699.
- Della Sala, S. (Ed). (2010). *Forgetting*. Hove, UK: Psychology Press.
- Goodman, G. S., Ghetti, S., Quas, J. A., Edelstein, R. S., Alexander, K. W., Redlich, A. D., ... Jones, D. P. H. (2003). A prospective study of memory for child sexual abuse. New findings relevant to the repressed-memory controversy. *Psychological Science, 14*, 113–118.
- Goodman, G. S., & Melinder, A. (2007). The development of autobiographical memory: A new model. In S. Magnussen, & T. Helstrup (Eds.), *Everyday memory*. Hove, UK: Psychology Press.
- Granhag, P. A., Strömwall, L. A., & Hartwig, M. (2005). Eyewitness testimony: Tracing the beliefs of Swedish legal professionals. *Behavioral Sciences & the Law, 23*, 709–722.
- Kassin, S. M., Tubb, V. A., Hosch, H. M., & Memon, A. (2001). On the “general acceptance” of eyewitness research. A study of experts. *The American Psychologist, 56*, 405–416.
- Kovera, M. B., Russano, M. B., & McAuliff, B. D. (2002). Assessment of the commonsense psychology underlying *Daubert*: Legal decision makers’ abilities to evaluate expert evidence in hostile work environment cases. *Psychology, Public Policy and Law, 8*, 180–200.
- Magnussen, S., Andersson, J., Cornoldi, C., De Beni, R., Endestad, T., Goodman, G. S., ... Zimmer, H. (2006). What people believe about memory. *Memory, 14*, 595–613.
- Magnussen, S., Melinder, A., Stridbeck, U., & Raja, A. Q. (2010). Beliefs about factors affecting the reliability of eyewitness testimony: A comparison of judges, jurors and the general public. *Applied Cognitive Psychology, 24*, 122–133.
- Magnussen, S., Wise, R. A., Raja, A. Q., Safer, M. A., Pawlenko, N., & Stridbeck, U. (2008). What judges know about eyewitness testimony: A comparison of Norwegian and US judges. *Psychology, Crime and Law, 14*, 177–188.
- McAuliff, B. D., Kovera, M. B., & Nunez, G. (2009). Can jurors recognize missing control groups, confounds and experimenter bias in psychological science? *Law and Human Behavior, 33*, 247–257.
- McGaugh, J. I. (2004). The amygdala modulates the consolidation of memories of emotionally arousing experiences. *Annual Review of Neuroscience, 27*, 1–28.
- McNally, R. J. (2003). *Remembering trauma*. Cambridge, MA: Harvard University Press.
- Melinder, A., Goodman, G. S., Eilertsen, D. E., & Magnussen, S. (2004). Beliefs about child witnesses: A survey of professionals. *Psychology, Crime and Law, 10*, 347–365.
- Merckelbach, H., & Christianson, S. Å. (2007). Amnesia for murder as a form of malingering. In S. Å. Christianson (Ed.), *Offenders’ memories of violent crimes* (pp.165–190). Chichester, UK: Wiley.
- Nelson, K., & Fivush, R. (2004). The emergence of autobiographical memory: A social cultural development theory. *Psychological Review, 111*, 486–511.
- Pezdek, K., & Blandon-Gitlin, I. (2009). Planting false memories for child sexual abuse only happens to emotionally disturbed people ... not to me or my friends. *Applied Cognitive Psychology, 23*, 162–169.
- Phelps, E. A. (2006). Emotion and cognition: Insights from studies of the human amygdala. *Annual Review of Psychology, 57*, 27–53.
- Piper, A., Lillevik, L., & Kritzer, R. (2008). What’s wrong with believing in repression? A review for legal professionals. *Psychology, Public Policy, and Law, 14*, 223–242.
- Porter, S., Woodworth, M., & Doucette, N. L. (2007). Memory for murder: the qualities and credibility of homicide narratives by perpetrators. In S. Å. Christianson (Ed.), *Offenders’ memories of violent crimes* (pp.115–134). Chichester, UK: Wiley.
- Poole, D. A., Lindsay, D. S., Memon, A., & Bull, R. (1995). Psychotherapy and the recovery of memories of childhood sexual abuse: U.S. and British practitioners’ opinions, practices and experiences. *Journal of Consulting and Clinical Psychology, 63*, 426–437.
- Quin, J. A., Goodman, G. S., Bottoms, B. I., & Shaver, P. R. (1998). Repressed memories of ritualistic and religion-related child abuse. In S. J. Lynn, & K. M. McConkey (Eds.), *Truth in memory* (pp. 360–283). New York: Guilford Press.
- Rubin, D. C., & Berntsen, D. (2007). People believe it is plausible to have forgotten memories of childhood sexual abuse. *Psychonomic Bulletin & Review, 14*, 776–778.
- Schacter, D. L. (2001). *The seven sins of memory: how the mind forgets and remembers*. Boston, MA: Houghton Mifflin.
- Schudson, M. (1995). Dynamics of distortion in collective memory. In D. L. Schacter (Ed.), *Memory distortion* (pp. 346–464). Cambridge, MA: Harvard University Press.
- Stridbeck, U., & Granhag, P. A. (2010). Legal procedures in the Nordic countries and in the USA: A comparative overview. In P. A. Granhag (Ed.), *Forensic psychology in context. Nordic and international approaches* (pp. 14–32). UK, Devon: Willan Publishing.
- Tulving, E., & Craik, F. I. M. (2000). *The Oxford handbook of memory*. Oxford, UK: Oxford University Press.
- Van Oorsouw, K., & Cima, M. (2007). The role of malingering and expectations in claims of crime-related amnesia. In S. Å. Christianson (Ed.), *Offenders’ memories of violent crimes* (pp.191–213). Chichester, UK: Wiley.
- Wise, R. A., Dauphinais, K. A., & Safer, M. A. (2007). A tripartite solution to eyewitness error. *The Journal of Criminal Law and Criminology, 97*, 807–872.
- Wise, R. A., Gong, X.-L., Safer, M. A., & Lee, Y.-T. (2010). A comparison of Chinese and U.S. judges’ knowledge and beliefs about eyewitness testimony. *Psychology, Crime and Law, 16*, 695–713.
- Wise, R. A., Pawlenko, N. B., Meyer, D., & Safer, M. A. (2007). A survey of defense attorneys’ knowledge and beliefs about eyewitness testimony. *The Champion, 33*, 18–27.
- Wise, R. A., Pawlenko, N. B., Safer, M. A., & Meyer D. (2009). What U.S. prosecutors and defense attorneys know and believe about eyewitness testimony. *Applied Cognitive Psychology, 23*, 1266–1281.
- Wise, R. A., & Safer, M. A. (2004). What US judges know and believe about eyewitness testimony. *Applied Cognitive Psychology, 18*, 427–443.
- Wise, R. A., & Safer, M. A. (2010). A comparison of what U.S. judges and students know and believe about eyewitness testimony. *Journal of Applied Social Psychology, 40*, 1400–1422.
- Wise, R. A., Safer, M. A., & Maro, C. (2011). What U.S. law enforcement officers know and believe about eyewitness factors, eyewitness interviews, and identification procedures. *Applied Cognitive Psychology*. DOI: 10.1002/acp.1717