

Publications of Henry Otgaar

A Bibliography



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Scope

This bibliography lists citations and abstracts to articles and chapters authored and co-authored by Henry Otgaar of the Netherlands. Both English and Dutch language publications are included.

Organization

Publications are listed in date-descending order. Links are provided to full text documents when possible.

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Publications of Henry Otgaar

A Bibliography

Arbiyah, N., Otgaar, H., Sauerland, M., Rassin, E., Maegherman, E. & Merckelbach, H. (2023). [The use of alternative scenarios in assessing the reliability of victims' statements](#). *Psychology, Crime & Law*. DOI:10.1080/1068316X.2023.2236274

The use of alternative scenarios has been advocated as a method to mitigate bias when evaluating the reliability of testimonies. In two experiments, undergraduate students acted as expert witnesses when reading an alleged child sexual abuse case file and evaluated the reliability of the statements. In the first experiment, a subgroup of participants were encouraged to think about alternative scenarios (i.e. the statements are fabricated) when evaluating statements (N = 150). Contrary to our expectations, these participants were not more skeptical about the reliability of the alleged victim's testimony than the control participants. In the second experiment (N = 205), we tested whether scenario-thinking protected against context effects (i.e. the unintended influence of irrelevant information) from a defense lawyer or prosecutor. We found no support that being sensitized to alternative scenarios made participants more skeptical of the reliability of testimonies. However, when we performed an internal joint analysis of Experiments 1 and 2, we did find some evidence that considering alternative scenarios made participants more skeptical of the suspect's guilt than those in the control group. We discuss the use of alternative scenarios in expert witness work and potential ways to empirically test the alternative scenario approach in the future.

Bücken, C.A., Otgaar, H., London, K., Riesthuis, P., Battista, F. & Mangiulli, I. (2023). '[Nothing happened](#)': Legal implications of false denials among abused children. *Child Abuse Review*, 32(2), e2791. DOI:10.1002/car.2791

People lie on a frequent basis. However, when a victim of maltreatment lies by denying the abuse, lies can become forensically relevant. We have reviewed the relevant literature on the prevalence and memory consequences of such false denials. The way forensic interviewers proceed in the face of denying children will be shaped by their beliefs about the frequency with which truly abused children deny abuse. We discuss that estimates of the prevalence of false denials among abused children vary but that such false denials do happen. When falsely denying children eventually come forward with their experiences, a second issue lingers: how valid are maltreated children's statements after a false denial? We review the literature indicating that false denials can negatively

affect memory for the investigative interview during which the lie was told. Yet, memory for the denied experience itself seems to be mostly preserved, and some research even found potential protective effects of false denials. We conclude that denials should always be handled with care in the court room, since the ground truth usually is not known, but that statements should not be dismissed based solely on previous denials.

Marr, C., Otgaar, H., Quaedflieg, C. W. E. M., Sauerland, M., & Hope, L. (2023). [Correcting myths about stress and memory: A commentary on Pezdek and Reisberg, 2022](#). *Frontiers in Psychology, 14*. 1078021. DOI:10.3389/fpsyg.2023.1078021

The question of how acute stress might affect memory has applied value because witnesses, victims, and perpetrators often report experiencing stress or associated emotions (e.g., fear) during a crime. They might also experience acute stress when they are interviewed by the police. It is therefore important that legal professionals and memory scientists, particularly those acting as expert witnesses, can rely on evidence-based knowledge concerning the acute effects of stress on memory. Pezdek and Reisberg (2022) recently published an article aimed at debunking six psychological myths about evidence in the legal system. In their article, they argued that the idea that high stress improves the accuracy of memory is a myth (Myth #2). We take issue with this assertion on the basis that such a conclusion is not empirically warranted and does not accurately reflect the current state of research. In this commentary, we lend some critical nuance regarding the complex stress-memory relationship in eyewitness contexts.

Otgaar, H., Riesthuis, P., Neal, T. M. S., Chin, J., Boskovic, I., & Rassin, E. (2023). [If generalization is the grail, practical relevance is the nirvana: Considerations from the contribution of psychological science of memory to law](#). *Journal of Applied Research in Memory and Cognition, 12*(2), 176–179. DOI:10.1037/mac0000116

In this commentary, we argue that besides focusing on generalization, sufficient attention must be invested in the practical relevance of psychological and applied memory research. That is, memory research is frequently used to address real-life questions. In the area of psychology and law, memory scientists are sometimes asked by court to provide expert opinion about, for example, the validity of witness testimony. When doing so, they refer to applied memory research to support their conclusion on whether or not a statement is valid. But when can applied memory research meaningfully inform legal cases? Memory scientists can best know the practical relevance of

research by considering the smallest effect size of interest in a given domain. Applied memory research has generally failed to consider the importance of the smallest effect size of interest and instead relies uncritically on benchmarks of effect sizes (e.g., small, medium, large). We demonstrate how memory scientists can set the smallest effect size of interest, and we provide an example in the area of false memory. We argue that psychological science can best contribute to law when memory scientists make use of the smallest effect size of interest.

Otgaar, H., Dodier, O., Garry, M., Howe, M. L., Loftus, E. F., Lynn, S. J., Mangiulli, I., McNally, R. J., & Patihis, L. (2023). Oversimplifications and misrepresentations in the repressed memory debate: A Reply to Ross. *Journal of Child Sexual Abuse*, 32(1), 116-126. DOI:10.1080/10538712.2022.2133043

Ross argued that false memory researchers misunderstand the concepts of repression and dissociation, as well as the writings of Freud. In this commentary, we show that Ross is wrong. He oversimplifies and misrepresents the literature on repressed and false memory. We rebut Ross by showing the fallacies underlying his arguments. For example, we adduce evidence showing that the notions of dissociation or repression are unnecessary to explain how people may forget and then remember childhood sexual abuse, stressing that abuse survivors may reinterpret childhood events later in life. Also, Ross overlooks previous critiques concerning dissociation. Finally, we will demonstrate that Ross misrepresents work by Freud and Loftus in the area of repressed and false memory. His article confuses, not clarifies, an already heated debate on the existence of repressed memory.

Otgaar, H., Howe, M. L., & Dodier, O. (2023). [Realistic guidelines on expert witness work concerning memory](#). *Forensic Science International: Mind and Law*, 4, 100117. DOI:10.1016/j.fsimpl.2023.100117

Bücken, C. A., Mangiulli, I., Uzun, S., & Otgaar, H. (2022). [False denials increase false memories for trauma-related discussions](#). *Memory*, 30(9), 1158-1171. DOI:10.1080/09658211.2022.2094964

False denials are sometimes used to cope with traumatic experiences. We examined whether false denials can affect true and false memory production for a traumatic event and conversations surrounding the trauma. One hundred and twenty-six participants watched a trauma analogue video of a car crash before being randomly asked in a discussion with the experimenter to (1) respond

honestly or (2) falsely deny that certain details happened in the video. After one week, all participants received misinformation about the discussion with the experimenter and the car crash. Finally, all participants were instructed to respond truthfully in a source memory task. Participants who falsely denied information during the first session were statistically significantly more prone than honest participants to omit details they denied and to report misinformation about what was discussed in the first session. Our work suggests that false denials of a traumatic experience might lead to both forgetting and increased false memory levels for earlier conversations about the event.

Bücken, C. A., Mangiulli, I., & Otgaar, H. (2022). [Simulating denial increases false memory rates for abuse unrelated information](#). *Behavioral Sciences & the Law*, 40(3), 433–451. DOI:10.1002/bsl.2566

Victims of abuse might deny their traumatic experiences. We studied mnemonic effects of simulating false denial of a child sexual abuse narrative. Participants (N = 127) read and empathized with the main character of this narrative. Next, half were instructed to falsely deny abuse-related information while others responded honestly in an interview. One week later, participants received misinformation for the narrative and interview. In a final source memory task, participants' memory for the narrative and interview was tested. Participants who falsely denied abuse-related information endorsed more abuse-unrelated misinformation about the event than honest participants. Abuse-related false memory rates did not statistically differ between the groups, and false denials were not related to omission errors about (1) the interview and (2) narrative. Hence, victim's memory for abuse-related information related to their experience might not be affected by a false denial, and inconsistencies surrounding the abuse-unrelated information are more likely to take place.

Erens, B., Otgaar, H., de Ruiter, C., van Bragt, D., & Hershkowitz, I. (2022). [The NICHD interview protocol used by Dutch child protection workers: Effects on interview style, children's reported information and susceptibility to suggestion](#). *Applied Cognitive Psychology*, 36(1), 7-18. DOI:10.1002/acp.3893

In the Netherlands, there is currently no quality standard for conducting child forensic interviews in Child Protective Services (CPS). The lack of such standard causes concern regarding the quality of these interviews, which are used to determine the child's safety and implementing treatment. In the current study, we implemented the National Institute of Child Health and Human Development

(NICHD) protocol at Safe Home, the Dutch national reporting agency for child abuse and domestic violence. Professionals at Safe Home received a three-day training in the NICHD protocol with regular follow-up feedback sessions. We compared 38 NICHD interviews with 30 control interviews on variables such as the type of questions asked, number of reported words, and children's mood state. NICHD interviews contained more invitations and fewer suggestive questions compared to non-standardized interviews. Furthermore, children reported more information related to the reported incident when they were interviewed with the NICHD protocol compared to control interviews. After being interviewed, children reported a more positive mood state independent of how they were interviewed (NICHD or control interview). Finally, children interviewed with the NICHD protocol were less likely to succumb to suggestive probes provided after the interview than children in the control group. We argue that child protection professionals need training in an evidence-based interview protocol to improve fact-finding in CPS.

Hope, L., Anakwah, N., Antfolk, J., Brubacher, S. P., Flowe, H., Gabbert, F., Giebels, E., Kanja, W., Korkman, J., Kyo, A., Naka, M., Otgaar, H., Powell, M. B., Selim, H., Skrifvars, J., Sorkpah, I. K., Sowatey, E. A., Steele, L. C., Stevens, L., Sumampouw, N. E. J., Taylor, P. J., Trevino-Rangel, J., van Veldhuizen, T., Wang, J., Wells, S., & Anonymous. (2022). [Urgent issues and prospects at the intersection of culture, memory, and witness interviews: Exploring the challenges for research and practice](#). *Legal and Criminological Psychology*, 27, 1–31. DOI:10.1111/lcrp.12202

The pursuit of justice increasingly relies on productive interactions between witnesses and investigators from diverse cultural backgrounds during investigative interviews. To date, the role of cultural context has largely been ignored by researchers in the field of investigative interviewing, despite repeated requests from practitioners and policymakers for evidence-based guidance for the conduct of interviews with people from different cultures. Through examining cultural differences in human memory and communication and considering specific contextual challenges for investigative interviewing through the lens of culture, this review and associated commentaries highlight the scope for considering culture and human diversity in research on, and the practice of, investigative interviewing with victims, witnesses, and other sources. Across 11 commentaries, contributors highlight the importance of considering the role of culture in different investigative interviewing practices (e.g., rapport building, questioning techniques) and contexts (e.g., gender-based violence, asylum seeking, child abuse), address common areas of cultural mismatch between interviewer–interviewee expectations, and identify critical future routes for

research. We call for an increased focus in the investigative interviewing literature on the nature and needs of our global community and encourage constructive and collaborative discussion between researchers and practitioners from around the world to better identify specific challenges and work together towards evidence-based solutions.

Otgaar, H., Curci, A., Mangiulli, I., Battista, F., Rizzotti, E., & Sartori, G. (2022). [A court ruled case on therapy-induced false memories](#). *Journal of Forensic Science*, 67(5), 2122–2129. DOI:10.1111/1556-4029.15073

We report on a unique Italian criminal case in which a court ruled that a therapist implanted false memories of abuse in a young girl. Using therapeutic excerpts, we show that the therapist used a multitude of problematic interventions that are all linked to false memory creation. Specifically, an analysis of the therapeutic excerpts showed that across many sessions, the therapist asked highly suggestive questions to the girl, implying that she was abused by her father. In addition, the girl underwent EMDR techniques that have been associated with memory undermining effects. Our analyses showed that although before treatment the girl did not have any recollection of being abused by her father, she gradually started to remember the abuse and identified the father as her abuser during the therapeutic sessions. Our case report clearly shows the danger of suggestive pressure in a therapeutic context causing patients to form false memories of abuse and supports the need to prevent the therapeutic practice of suggestive techniques.

Otgaar, H., Howe, M. L., & Dodier, O. (2022). [What can expert witnesses reliably say about memory in the courtroom?](#) *Forensic Science International: Mind and Law*, 3, 100106. DOI:10.1016/j.fsimpl.2022.100106

Psychologists are sometimes asked to provide their expert opinion in court on whether memories of victims, witnesses, or suspects are reliable or not. In this article, we will discuss what expert witnesses can reliably say about memory in the legal arena. We argue that before research on memory can be discussed in legal cases, this research should ideally meet the following three conditions: replicability, generalizability, and practical relevance. Using a fictitious false memory case, we offer a guide to how psychologists should critically examine whether a particular segment of memory research is in line with these three conditions. We show that the area of false memory broadly fits these conditions but that for areas such as eyewitness identification and false

confessions, there is limited discussion on which effect sizes are of interest in legal cases. We propose several recommendations that expert witnesses can use when they evaluate the validity of statements such as working with scenarios (e.g., statements are valid or not). Being transparent about the limits and strengths of memory research will assist triers of fact in their decision-making process.

Otgaar, H., Howe, M. L., & Patihis, L. (2022). What science tells us about false and repressed memories. *Memory*, 30(1), 16–21. DOI:10.1080/09658211.2020.1870699

What does science tell us about memory phenomena such as false and repressed memories? This issue is highly pressing as incorrect knowledge about these memory phenomena might contribute to egregious effects in the courtroom such as false accusations of abuse. In the current article, we provide a succinct review of the scientific nature of false and repressed memories. We demonstrate that research has shown that about 30% of tested subjects formed false memories of autobiographical experiences. Furthermore, this empirical work has also revealed that such false memories can even be implanted for negative events and events that allegedly occurred repeatedly. Concerning the controversial topic of repressed memories, we show that plausible alternative explanations exist for why people claim to have forgotten traumatic experiences; explanations that do not require special memory mechanisms such as the unconscious blockage of traumatic memories. Finally, we demonstrate that people continue to believe that unconscious repression of traumatic incidents can exist. Disseminating scientifically articulated knowledge on the functioning of memory to contexts such as the courtroom is necessary as to prevent the occurrence of false accusations and miscarriages of justice.

Sumampouw, N. E. J., de Ruiter, C., & Otgaar, H. (2022). [Potential for police investigator bias: The impact of child sexual abuse victims' background characteristics on perceived statement credibility, case outcome and quality of interview questions](#). *Police Practice and Research*, 23(3), 370-387. DOI:10.1080/15614263.2021.1952872

This preregistered experiment aimed to investigate the impact of background information regarding an alleged victim of child sexual abuse on police investigators' perception of the credibility of the victim's statement, expected case outcome, and the type of questions police investigators plan to ask the victim in an investigative interview. We expected that the age and the

description of the alleged victim's character would affect perceived credibility, prediction of case prosecution and the use of biased questions in the interview plan. Indonesian police investigators (N = 369) read a case vignette of either a 5- or a 15-year-old female victim of child sexual abuse, including either a good character, bad character, or no character information. Participants receiving the story of the 15-year-old alleged victim perceived the victim as having contributed more to the crime, predicted the case as more likely to be withdrawn and included more biased questions in their interview plans than those who received the story of a 5-year-old alleged victim. Moreover, participants being told that the alleged victim had a bad character perceived her statement as less reliable, having contributed more to the crime, predicted the case as more likely to be withdrawn or dropped-out than those who received information about the alleged victim with a good character. We did not find any effect of our background information manipulation on the perception of suspect guilt, and on the estimated likelihood of the allegation being confirmed by corroborative evidence or being prosecuted. The current findings suggest that background information can negatively affect police investigators' judgment and decision-making when working on a child sexual abuse case.

Vredeveldt, A., van Rosmalen, E. A. J., van Koppen, P. J., Dror, I. E., & Otgaar, H. (2022). [Legal psychologists as experts: Guidelines for minimizing bias](https://doi.org/10.1080/1068316X.2022.2114476). *Psychology, Crime & Law*. DOI:10.1080/1068316X.2022.2114476

Legal psychologists' assessments can have a major impact on the fact finder's evaluation of evidence and, consequently, perceptions of guilt. Yet, in the few studies about legal psychologists' assessments and reports, great variability was found. As is the case with other forensic expert domains, legal psychologists are prone to cognitive biases, such as being adversely affected by irrelevant contextual information, confirmation bias, and allegiance bias. Based on the scientific literature, we propose several ways in which legal psychologists can minimize cognitive biases in their assessments, most notably the alternative scenario method. Furthermore, we propose guidelines for expert witnesses in the legal psychological domain, designed to make reports as scientifically grounded, applicable, readable, transparent, and bias-free as possible. We hope that the guidelines will enhance the quality of expert witness testimony provided by legal psychologists around the world.

Battista, F., Curci, A., Mangiulli, I., & Otgaar, H. (2021). What can we remember after complex denials? The impact of different false denials on memory. *Psychology, Crime & Law*, 27(9), 914–931. DOI:10.1080/1068316X.2020.1865956

False denial is a deceptive strategy that requires fewer cognitive resources than other strategies (e.g. simulating amnesia, fabrication). In the present experiment, we examined the effects of different types of false denials varying in cognitive load on memory. Participants (N = 159) watched a video (theft) and then answered some questions about it. Some participants had to tell the truth about the theft, while others were either asked to falsely deny all the event-related details (i.e. simple false denial) or to falsely deny just some details of the same event (i.e. complex false denial). After two days, all participants completed a memory task in which they truthfully recognized whether details were (i) discussed during the interview or (ii) seen in the video. Additionally, recall scores (i.e. correct details, omissions, commissions) of the memory for the event were assessed. Participants who falsely denied all details reported a higher memory impairment for the interview than the other groups. Interestingly, liars who were engaged in complex denying had the largest memory impairment for the event and reported more commissions than those in the simple false denial group. This experiment shows that under certain conditions, memory is increasingly impaired for high cognitive load lies.

Calado, B., Luke, T. J., Connolly, D. A., Landström, S., & Otgaar, H. (2021). Implanting false autobiographical memories for repeated events. *Memory*, 29(10), 1320–1341. DOI:10.1080/09658211.2021.1981944

Research to date has exclusively focused on the implantation of false memories for single events. The current experiment is the first proof of concept that false memories can be implanted for repeated autobiographical experiences using an adapted false memory implantation paradigm. We predicted that false memory implantation approaches for repeated events would generate fewer false memories compared to the classic implantation method for single events. We assigned students to one of three implantation conditions in our study: Standard, Repeated, and Gradual. Participants underwent three interview sessions with a 1-week interval between sessions. In the Standard condition, we exposed participants to a single-event implantation method in all three interviews. In the Repeated condition, participants underwent a repeated-event implantation method in the three interviews. The Gradual condition also consisted of a repeated-event

implantation method, however, in the first interview alone, we suggested to participants that they had experienced the false narrative once. Surprisingly, within our sample, false memories rates in the Standard condition were not higher compared to the Repeated and Gradual conditions. Although sometimes debated, our results imply that false memories for repeated events can be implanted in lab conditions, likely with the same ease as false memories for single events.

Otgaar, H., de Ruiter, C., & Sumampouw, N. (2021). [Protecting against misinformation: Examining the effect of empirically based investigative interviewing on misinformation reporting](#). *Journal of Police & Criminal Psychology*, 36, 758–768.
DOI:10.1007/s11896-020-094012

Children who are involved in legal cases are often interviewed about events they witnessed or that might have happened to them. Occasionally, after such interviews, children are confronted with misinformation regarding their experiences. The question that arises is whether their earlier interviews may protect them from reporting misinformation. The goal of the present experiment was to assess whether empirically based interviewing by means of the National Institute for Child Health and Development (NICHD) Protocol would affect the reporting of misinformation in children. Children were involved in an interactive event (i.e., science demonstration). Following this, three experimental groups were created: one group was interviewed using the NICHD Protocol, one group had to freely recall what they experienced, and one group was not asked to retrieve any memories about the event. Next, all children received misinformation concerning the event and were then subjected to a final memory test. We found that children's recall during the NICHD interview protected children against the incorporation of misinformation in their accounts of the event. This effect was absent in the other two conditions. The current experiment suggests that evidence-based investigative interviewing can inoculate children's memory against the corrupting impact of misinformation.

Schopen, K., Otgaar, H., Howe, M. L., & Muris, P. (2021). [Effects of forewarnings on children's and adults' spontaneous false memories](#). *European Journal of Developmental Psychology*, 19(2), 177-197. DOI:10.1080/17405629.2021.1904877

The current experiment examined the effect of forewarning on children's (11 to 12 years of age) and adults' spontaneous false memory creation by presenting participants with semantically related word lists that are often used to elicit false memories (i.e., Deese-Roediger-McDermott (DRM)

paradigm). The forewarning consisted of an explanation of the false memory effect and a demonstration of a DRM word list and an associated recognition task. It was hypothesized that children would have fewer false memories than adults using the DRM paradigm and that forewarning would reduce the number of critical lures remembered by children and adults. We found a developmental reversal effect in that children had lower false memory levels than adults and that forewarning reduced, but did not eliminate, false memory propensity in both children and adults. Our findings further indicated that forewarning was more effective in reducing false memory levels in 11- to 12-year-old children than in adults. Finally, analyses revealed that participants were more accurate when they received a forewarning as compared to when they did not.

Sumampouw, N.E.J., Otgaar, H., La Rooy, D. & de Ruiter, C. (2020). [The quality of forensic child interviewing in child sexual abuse cases in Indonesia](#). *Journal of Police and Criminal Psychology*, 35, 170–181. DOI:10.1007/s11896-019-09342-5

Most of the foregoing research on child investigative interviewing has focused on interview practices in Western countries, thus potentially limiting the generalizability and application of the findings to improve interview practices in non-Western countries. The current studies are the first to examine police interviewing practices involving alleged child sexual abuse (CSA) victims in Indonesia which has marked cultural differences compared with Western countries. In Study 1, we presented Indonesian police child interviewers (N=26) with a sexual abuse case vignette concerning a 7-year-old girl. Police interviewers were asked to write down the questions they would pose to the child. We categorized questions into four types: open-prompts, directives, option-posing, and suggestive. In Study 2, we examined Indonesian police files (N=24) containing child sexual abuse interviews and also scored the type of questions used as per the first study. We compared our data with those obtained in Western countries. The consistent finding in both studies is that Indonesian police interviewers rarely used open-prompts, asked more directive and option-posing questions. Consistent with findings from Western countries, our studies provide indirect evidence that open-prompts may be infrequently used by forensic child interviewers in Indonesia.

Otgaar, H., Howe, M. L., Muris, P., & Merckelbach, H. (2019). [Dealing with false memories in children and adults: Recommendations for the legal arena](#). *Policy Insights from the Behavioral and Brain Sciences*, 6(1), 87–93. DOI:10.1177/2372732218818584

Children are often viewed as poor eyewitnesses. Fact-finders, lawyers, and researchers assume that children are exceptionally prone to accept external suggestive (leading) questions and to create false memories. Is this assumption justified? This review will show it is not. First, studies on spontaneous false memories—elicited without any suggestive pressure—reveal that children are less likely than adults to produce them. Second, under certain circumstances, children are even less prone to accept external suggestions than adults. This counterintuitive finding happens when false suggestions contain information that is associatively related but in actuality not experienced by children or adults. Using empirically based interview protocols can maximize the retrieval of accurate memories in children and adults. Furthermore, expert witnesses should use alternative scenarios to better evaluate whether statements by children or adults are based on truth or fiction.

Otgaar, H., Chan, J. C. K., Calado, B., & La Rooy, D. (2019). Immediate interviewing increases children’s suggestibility in the short term, but not in the long term. *Legal & Criminological Psychology*, 24(1), 24–40. DOI:10.1111/lcrp.12137

Purpose: Children sometimes receive misinformation after being formally interviewed about their experiences in cases of suspected abuse. Following decades of research, many guidelines have been produced for interviewers so they can obtain reliable statements in children, like, for example, the NICHD protocol. One might expect that completing an early interview following research-based guidelines might guard against the incorporation of misinformation encountered later. The goal of the current experiments was to examine whether following research-based guidelines such as the NICHD protocol might protect child witnesses against follow-up ‘misinformation’ or make them more vulnerable to misinformation. This increased vulnerability to misinformation has been referred to as retrieval-enhanced suggestibility. Methods: In two experiments, children viewed a video and half of them were interviewed using the NICHD protocol, while the other half were not interviewed. The children received misinformation and a final memory test either immediately after being interviewed (Experiment 1) or 1 week later (Experiment 2). Results: Retrieval-enhanced suggestibility was observed when misinformation was presented immediately but not when it was provided after 1 week. Conclusions: The current experiments indicate that a well-

established interview protocol can, under some circumstances, amplify levels of suggestibility in children.

Otgaar, H., & Baker, A. (2018). [When lying changes memory for the truth](#). *Memory*, 26(1), 2-14. DOI:10.1080/09658211.2017.1340286

In the legal field, victims and offenders frequently lie to avoid talking about serious incidents, such as past experiences of sexual abuse or criminal involvement. Although these individuals may initially lie about an experienced event, oftentimes these same people eventually abandon their lies and are forthcoming with what truly happened. To date, it is unclear whether such lying affects later statements about one's memory for the experienced event. The impetus of the present review is to compile the current state of knowledge on the effects of lying on memory. Based on existing literature, we will describe how deceptive strategies (e.g., false denials) regarding what is remembered may affect memory in consequential ways, such as forgetting of details, falsely remembering features that were not present, or a combination of both. It will be argued that the current literature suggests that mnemonic outcome is contingent on the type of lie and we will propose a theoretical framework outlining which forms of lying likely result in certain memory outcomes. Potential avenues of future research also will be discussed.

Otgaar, H., Howe, M. L., Merckelbach, H., & Muris, P. (2018). [Who is the better eyewitness? Sometimes adults but at other times children](#). *Current Directions in Psychological Science*, 27(5), 378–385. DOI:10.1177/0963721418770998

Suggestibility is regarded as a major issue when children testify in court. Many legal professionals and memory researchers view children as inferior witnesses. Although differences in suggestibility exist between children and adults, they are much more complex than is usually assumed. We show that under certain conditions, adults are more susceptible than children to suggestion and false memories. We provide evidence that age-related shifts in suggestibility and false memory appear contingent on how quickly and automatically children and adults make associations when experiencing events. Specifically, when confronted with suggestive information about a related but nonexperienced detail, adults more frequently automatically generate links between items experienced and those already in memory, making them more susceptible to suggestion than children.

Romeo, T., Otgaar, H., & Landström, S. (2018). [Coping with sexual abuse](#). *Psychological Research on Urban Society*, 1(1), 13. DOI:10.7454/proust.v1i1.11

General consensus exists in the psychological literature with regard to what constitutes child sexual abuse (CSA) and the negative implications for victims of CSA throughout the course of their lives. Recently, different types of cognitive strategies that victims may use to cope with CSA and the possible effects of these coping strategies on memory have received considerable empirical attention. The first aim of this paper is to provide an overview of the current literature about why, how, and when victims of CSA use the cognitive coping strategies of false denial, disclosure, and recantation to cope with psychological, emotional, and even interpersonal implications of their abuse. Over the years, disclosure is the one strategy that has been researched extensively, whereas research on false denial and recantation has barely just begun. The second aim is to provide a recent overview of the relationship between coping strategies and memory in the context of CSA. Specifically, we will discuss how false denials may have the potential to negatively affect a victim's memory. Finally, we present an argument for the need to undertake research into insufficiently examined coping strategies such as false denial and recantation.

Alberts, H. J., Otgaar, H., & Kalagi, J. (2017). Minding the source: The impact of mindfulness on source monitoring. *Legal and Criminological Psychology*, 22, 302-313.
DOI:10.1111/lcrp.12102

This study addressed the impact of mindfulness on source monitoring. Participants engaged in a brief mindfulness meditation or received no intervention. Next, all participants watched a video of a crime and were then exposed to misinformation regarding this video. Using a source monitoring test, participants' memory performance was measured. Participants who performed the mindfulness meditation showed better source monitoring compared to controls. Mindfulness practice was not found to enhance memory performance. Mindfulness practice may entail an effective way to circumvent memory distortions due to incorrect source monitoring.

Brackmann, N., Otgaar, H., Roos af Hjelmsäter, E., & Sauerland, M. (2017). [Testing a new approach to improve recall in different ages: Providing witnesses with a model statement](#). *Translational Issues in Psychological Science*, 3(2), 131-142.
DOI:10.1037/tps0000116

Obtaining an elaborate witness statement is essential for police investigations. Free recall, however, sometimes lacks richness of detail, especially in younger witnesses. Drawing from deception detection and educational psychological literature, we tested the beneficial value of a model statement to enhance recall quantity without decreasing accuracy in 48 adults (Experiment 1), and in 110 7- to 10-year-old children and 14- to 17-year-old adolescents (Experiment 2). Participants either listened to an unrelated account (i.e., model statement) or performed a filler task prior to recalling a target event witnessed 1 week earlier. We replicated age increases in statement quantity and age-related decreases to suggestive follow-up questions. No effect of model statement was found. Reasons for why a model statement was ineffective and recommendations are discussed.

Merckelbach, H., & Otgaar, H. (2017). [De duizend – of tweeduizend? – onschuldigen van Derksen](#). *Nederlands Juristenblad*, 7, 450-453.

Otgaar, H., de Ruiter, C., Howe, M. L., Hoetmer, L., & van Reekum, P. (2017). [A case concerning children's false memories of abuse: Recommendations regarding expert witness work](#). *Psychiatry, Psychology and Law*, 24(3), 365-378.
DOI:10.1080/13218719.2016.1230924

Expert witnesses can play a major role in legal cases concerning the reliability of statements. Abuse cases frequently contain only the memories of eyewitnesses/victims without the presence of physical evidence. Here, it is of the utmost importance that expert witnesses use scientific evidence for their expert opinion. In this case report, a case is described in which 20 children reported being sexually abused by the same teachers at their elementary school. The investigative steps that were taken by the police and school authorities are reviewed, including how they probably affected memory. In order to provide a sound expert opinion regarding the reliability of these statements, three recommendations are proposed. To reduce the effect of confirmation bias and increase objectivity, it is argued that expert witnesses' reports should contain alternative scenarios, be checked by another expert, and focus on the origin and context of the first statement.

Otgaar, H., Howe, M. L., Brackmann, N. & van Helvoort, D. (2017). [Eliminating age differences in children's and adults' suggestibility and memory conformity effects](#). *Developmental Psychology*, 53(5), 962-970. DOI:10.1037/dev0000298

We examined whether typical developmental trends in suggestion-induced false memories (i.e., age-related decrease) could be changed. Using theoretical principles from the spontaneous false memory field, we adapted two often-used false memory procedures: misinformation (Experiment 1) and memory conformity (Experiment 2). In Experiment 1, 7/9-year old children (n = 33) and adults (n = 39) received stories containing associatively-related details. They then listened to misinformation in the form of short narrative preserving the meaning of the story. Children and adults were equally susceptible to the misinformation effect. In Experiment 2, younger (7/8-year olds, n = 30) and older (11/12-year-olds, n = 30) children and adults (n = 30) viewed pictures containing associatively-related details. They viewed these pictures in pairs. Although the pictures differed, participants believed they had viewed the same pictures. Participants had to report what they could recollect during collaborative and individual recall tests. Children and adults were equally susceptible to memory conformity effects. When correcting for response bias, adults' false memory scores were even higher than children's. Our results show that age trends in suggestion-induced false memories are not developmentally invariant.

Otgaar, H., Howe, M. L., & Muris, P. (2017). [Maltreatment increases spontaneous false memories but decreases suggestion-induced false memories in children](#). *British Journal of Developmental Psychology*, 35(3), 376–391. DOI:10.1111/bjdp.12177

We examined the creation of spontaneous *and* suggestion-induced false memories in maltreated and non-maltreated children. Maltreated and non-maltreated children were involved in a Deese–Roediger–McDermott false memory paradigm where they studied and remembered negative and neutral word lists. Suggestion-induced false memories were created using a misinformation procedure during which both maltreated and non-maltreated children viewed a negative video (i.e., bank robbery) and later received suggestive misinformation concerning the event. Our results showed that maltreated children had higher levels of spontaneous negative false memories but lower levels of suggestion-induced false memories as compared to non-maltreated children. Collectively, our study demonstrates that maltreatment both increases and decreases susceptibility to memory illusions depending on the type of false memory being induced.

Otgaar, H., Merckelbach, H., Jelicic, M., & Smeets, T. (2017). [The potential for false memories is bigger than what Brewin and Andrews suggest](#). *Applied Cognitive Psychology*, 31(1), 24-25. DOI:10.1002/acp.3262

Brewin and Andrews (2016) reviewed the literature on false memory propensity for childhood events. In this commentary, we critically evaluate their basic claim that proneness to false memories of childhood experiences is more limited than has been articulated in the literature. We show that Brewin and Andrews were selective in their inclusion of false memory studies, thereby ignoring relevant research related to autobiographical false memories. Equally important, and in contrast to what Brewin and Andrews claim, we show that implanted false memories elicited by misinformation are characterized by high confidence.

Otgaar, H., Moldoveanu, G., Wang, J., & Howe, M. L. (2017). [Exploring the consequences of nonbelieved memories in the DRM paradigm](#). *Memory*, 25(7), 922-933. DOI:10.1080/09658211.2016.1272701

In the current experiments, we attempted to elicit nonbelieved memories (NBMs) using the Deese/Roediger–McDermott (DRM) false memory paradigm. Furthermore, by using this approach, we explored the consequences of nonbelieved true and false memories. In Experiments 1 and 2, participants received several DRM wordlists and were presented with a recognition task. After the recognition task, participants' statements were contradicted by giving them feedback about true and false items. In this way, we succeeded in eliciting nonbelieved true and false memories. In Experiment 2, participants were also involved in a modified perceptual closure task after receiving belief-relevant feedback. In this task, participants received degraded visual representations of words (e.g., false and true) that became clearer over time. Participants had to identify them as fast as possible. We also measured dissociation, compliance, and social desirability. We found that undermining belief had contrasting consequences for true and false memories. That is, nonbelieved true memories were identified more slowly whereas nonbelieved false memories were identified more quickly. We did not find any relation between our individual differences measures and the formation of NBMs.

Otgaar, H., Scoboria, A., & Mazzoni, G. (2017). [Theoretical and applied issues regarding autobiographical belief and recollection](#). *Memory*, 25(7), 865-868. DOI:10.1080/09658211.2017.1305094

Smeets, T., Merckelbach, H., Jelicic, M., & Otgaar, H. (2017). [Dangerously neglecting courtroom realities](#). *Applied Cognitive Psychology*, 31(1), 26-27. DOI:10.1002/acp.3263

Brewin and Andrews recently argued that expert witnesses should be cautious when informing the legal arena about the potential for false memories. We argue that memory researchers—whose studies often were inspired by miscarriages of justice due to erroneous statements provided by witnesses, victims, or defendants—can and should emphasize the base rates of false memories. After all, even if Brewin and Andrews' estimate of 15% is an accurate higher bound estimate of false memories in real life cases, neglecting the science of false memories could lead to many more unnecessary miscarriages of justice.

Wang, J., Otgaar, H., Howe, M. L., Smeets, T., Merckelbach, H., & Nahouli, Z. (2017). [Undermining belief in false memories leads to less efficient problem-solving behaviour](#). *Memory*, 25(7), 910-921. DOI:10.1080/09658211.2016.1249888.

Memories of events for which the belief in the occurrence of those events is undermined, but recollection is retained, are called nonbelieved memories (NBMs). The present experiments examined the effects of NBMs on subsequent problem-solving behaviour. In Experiment 1, we challenged participants' beliefs in their memories and examined whether NBMs affected subsequent solution rates on insight-based problems. True and false memories were elicited using the Deese/Roediger–McDermott (DRM) paradigm. Then participants' belief in true and false memories was challenged by telling them the item had not been presented. We found that when the challenge led to undermining belief in false memories, fewer problems were solved than when belief was not challenged. In Experiment 2, a similar procedure was used except that some participants solved the problems one week rather than immediately after the feedback. Again, our results showed that undermining belief in false memories resulted in lower problem solution rates. These findings suggest that for false memories, belief is an important agent in whether memories serve as effective primes for immediate and delayed problem-solving.

Brackmann, N., Otgaar, H., Sauerland, M., & Howe, M. L. (2016). [The impact of testing on the formation of children's and adults' false memories](#). *Applied Cognitive Psychology*, 30(5), 785-794. DOI:10.1002/acp.3254

Witnesses are frequently questioned immediately following a crime. The effects of such testing on false recall are inconclusive: Testing may inoculate against subsequent misinformation or enhance

false memory formation. We examined whether different types of processing can account for these discrepancies. Drawing from Fuzzy-trace and Associative-activation theories, immediate questions that trigger the processing of the global understanding of the event can heighten false memory rates. However, questions that trigger the processing of specific details can inoculate memories against subsequent misinformation. These effects were hypothesized to be more pronounced in children than in adults. Seven/eight-, 11/12-, 14/15-year-olds, and adults (N = 220) saw a mock-theft film and were tested immediately with meaning or item-specific questions. Test results on the succeeding day replicated classic misinformation and testing effects, although our processing hypothesis was not supported. Only adults who received meaning questions benefited from immediate testing and, across all ages, testing led to retrieval-enhanced suggestibility.

Brackmann, N., Otgaar, H., Sauerland, M., & Jelicic, M. (2016). [When children are the least vulnerable to false memories: A true report or a case of autosuggestion?](#) *Journal of Forensic Sciences*, 61(S1), S271–S275. DOI:10.1111/1556-4029.12926

In this case report, a legal case revolving around the reliability of statements given by a 6-year-old girl is described. She claimed to have witnessed her mother being murdered by her father. Two psychological experts provided diametrically opposed opinions about the reliability of her statements. One expert, a clinician, opined that the girl's statements were based on autosuggestion whereas the other expert, a memory researcher, stated that autosuggestion was unlikely to have played a role. This case and the analysis of the experts' opinions illustrate what may happen when experts in court are unaware of the recent literature on (false) memory. That is, recent studies show that autosuggestion is less likely to occur in young children than in older children and adults. The current case stresses the importance and implications of relying on memory experts in cases concerning the reliability of eyewitness statements.

Muris, P., Otgaar, H., & Petrochhi, N. (2016). Protection as the mirror image of psychopathology: Further critical notes on the Self-Compassion Scale. *Mindfulness*, 7(3),787-790. DOI:10.1007/s12671-016-0509-9

Comments on an article by K. D. Neff et al.. Self-compassion can be defined as the tendency to be caring, warm, and understanding towards oneself when faced with personal shortcomings, problems, or failures. Kristin Neff certainly should be applauded for her seminal work on self-

compassion. That is, she was the first putting this self-related construct on the scientific agenda and publishing a considerable amount of theoretical and empirical articles on this topic. The research is showing that the inclusion of negative components in the SCS is unfortunate and not in agreement with the protective nature of the self-compassion construct. For those who intend to use the scale in future studies, our urgent advice would be to analyze the six subscales separately. Especially within the context of psychopathology, we consider this as the only way to examine the contribution of true self-compassion components beyond the tautological influence of the negative components.

Otgaar, H., van Ansem, R., Pauw, C., & Horselenberg, R. (2016). [Improving children's interviewing methods? The effects of drawing and practice on children's memories for an event.](#) *Journal of Police and Criminal Psychology*, 31(4), 279-287. DOI:10.1007/s11896-016-9190-0

In the present experiment, we were interested in the effects of drawings and practice on children's memory performance. Younger (6/7-year-olds; n = 37) and older (11/12-year-olds; n = 44) children were presented with two videos that differed in complexity. Half of the children had to practice recalling an experienced event (i.e., last holiday) before remembering the two videos. The other half was not presented with such practice. Then, all children had to tell what they could still recollect about the first video. For the second video, all children were allowed to draw and tell during the recollection of the event. As expected, we found that for the complex video, making a drawing increased the completeness of children's statements, but also reduced the accuracy of their statements. Although we found that including practice reduced the completeness of statements, it did not negatively impact the accuracy of children's memory reports. Taken together, our results imply that interviewers should be cautious in using drawings as an interviewing method as it might elevate the production of incorrect information.

Otgaar, H., Howe, M.L., Brackmann, N., & Wang, J. (2016). When children are the worst and best eyewitnesses: Factors behind the development of false memory. In R.Nash & J.Ost. (Eds). *False and Distorted Memories* (pp. 23-38). New York: Routledge.

In the first part of this chapter, we discuss several false memory methods and theories that have frequently been employed to study and explain false memories and their development. Then, we direct our attention to relevant precursors of children's false memories. After this, we focus on the

developmental aspects of the formation of different types of false memories. Our conclusion will revolve around the legal implications of this new line of investigation into children's proneness to false memory.

Otgaar, H., Scoboria, A., Howe, M.L., Moldoveanu, G., & Smeets, T. (2016). Challenging memories in children and adults using an imagination inflation procedure. *Psychology of Consciousness: Theory, Research, and Practice*, 3, 270-283. DOI:10.1037/cns0000087

Research on how people respond to social challenges to existing memories indicates that they sometimes defend belief in the veridicality of the memory, and sometimes relinquish belief in memories. In some instances, they report retaining a strong sense of recollection despite the loss of belief. The current research explored how adults and children respond to social challenges to recalled events using an adaptation of Goff and Roediger's (1998) imagination inflation procedure. Adult participants performed, imagined, or heard action statements (e.g., break the toothpick), imagined actions multiple times, and 2 weeks later completed a recognition test in which they made source monitoring judgments for 113 actions. For actions indicated by participants as "performed," randomly selected items were challenged via verbal feedback suggesting that the action was not originally performed. Study 1 included 30 adult participants who received a total of 142 challenges. The memory was defended for 61.3% (retaining believed memories) and belief or recollection was relinquished for 38.7% of challenged items. In Study 2, 31 children aged 7 to 8 years received 187 challenges. The memory was defended for 48.9% and belief or recollection was relinquished for 51.1% of challenged items. The method elicited both defense and memory relinquishment of memories in a majority of participants. In both experiments, challenges to true memories were less likely to be accepted than challenges to false memories.

Otgaar, H., Cleere, C., Merckelbach, H., Peters, M., Jelicic, M., & Lynn, S.J. (2016). On the alleged memory-undermining effect of daydreaming. *Consciousness & Cognition*, 39, 8-17. DOI:10.1016/j.concog.2015.11.004

In three experiments, we examined the memory-undermining effects of daydreaming for (un)related stimuli. In Experiments 1 and 2, we tested whether daydreaming fosters forgetting of semantically interrelated material and hence, catalyzes false memory production. In Experiment 3, we examined the memory effects of different daydreaming instructions. In Experiment 1, daydreaming did not undermine correct recall of semantically interrelated words, nor did it affect

false memories. In Experiment 2, we again failed to find that daydreaming exerted memory-undermining effects. In Experiment 3, no memory effects were obtained using different daydreaming instructions. Together, our studies fail to show appreciable memory-undermining effects of daydreaming.

Otgaar, H., Howe, M. L., Brackmann, N., & Smeets, T. (2016). [The malleability of developmental trends in neutral and negative memory illusions](#). *Journal of Experimental Psychology: General*, 145(1), 31-55. DOI:10.1037/xge0000127

Among many legal professionals and memory researchers there exists the assumption that susceptibility to false memory decreases with age. In 4 misinformation experiments, we show that under conditions that focus on the meaning of experiences, children are not always the most susceptible to suggestion-induced false memories. We begin by presenting a short overview of previous developmental false memory studies, the majority of which have found that the susceptibility to misinformation decreases with age. In Experiment 1, 6/7-year-olds, 11/12-year-olds, and adults received a video and were confronted with misinformation about related but nonpresented details. Older children and adults had higher misinformation acceptance rates than younger children. In Experiment 2, we replicated this finding adding a younger child group (4/6-year-olds). In Experiments 3 and 4, we used new material and again found that susceptibility to misinformation increased with age. Together, these experiments show that children's memory accuracy is not necessarily inferior to that of adults.

Otgaar, H., Howe, M.L., Smeets, T., & Wang, J. (2016). [Denial-induced forgetting: False denials undermine memory, but external denials undermine belief](#). *Journal of Applied Research in Memory and Cognition*, 5(2), 168-175. DOI:10.1016/j.jarmac.2016.04.002

We examined the mnemonic effects of false denials. In a previous experiment (Otgaar, Howe, Memon, & Wang, 2014), false denials resulted in participants denying that they talked about details with the experimenter when in fact they did. This denial-induced forgetting (DIF) was further examined. In Experiment 1, participants received pictures and their belief and memory for details were tested. In the false denial group, participants had to falsely deny in response to each question. In the external denial group, an experimenter falsely denied to the participants that certain details were present. The control group had to answer the questions honestly. We found evidence for DIF. In Experiment 2, we used a video and again found DIF. Moreover, when the experimenter

provided external denials, nonbelieved memory rates increased. Together, our experiments suggest that false denials undermine memory while external denials appear to reduce belief.

Quas, J. A., Rush, E. B., Yim, I. S., Edelstein, R. S., Otgaar, H., & Smeets, T. (2016). Stress and emotional valence effects on children's versus adolescents' true and false memory. *Memory, 24*(5), 696-707. DOI:10.1080/09658211.2015.1045909

Despite considerable interest in understanding how stress influences memory accuracy and errors, particularly in children, methodological limitations have made it difficult to examine the effects of stress independent of the effects of the emotional valence of to-be-remembered information in developmental populations. In this study, we manipulated stress levels in 7–8- and 12–14-year-olds and then exposed them to negative, neutral, and positive word lists. Shortly afterward, we tested their recognition memory for the words and false memory for non-presented but related words. Adolescents in the highstress condition were more accurate than those in the low-stress condition, while children's accuracy did not differ across stress conditions. Also, among adolescents, accuracy and errors were higher for the negative than positive words, while in children, word valence was unrelated to accuracy. Finally, increases in children's and adolescents' cortisol responses, especially in the high-stress condition, were related to greater accuracy but not false memories and only for positive emotional words. Findings suggest that stress at encoding, as well as the emotional content of to-be-remembered information, may influence memory in different ways across development, highlighting the need for greater complexity in existing models of true and false memory formation.

Sauerland, M., Raymaekers, L.H.C., Otgaar, H., Memon, A., Waltjen, T., Nivo, M., Slegers, C., Broers, N., & Smeets, T. (2016). [Stress, stress-induced cortical responses, and eyewitness identification performance](#). *Behavioral Sciences & the Law, 34*(4), 580-594. DOI:10.1002/bsl.2249

In the eyewitness identification literature, stress and arousal at the time of encoding are considered to adversely influence identification performance. This assumption is in contrast with findings from the neurobiology field of learning and memory, showing that stress and stress hormones are critically involved in forming enduring memories. This discrepancy may be related to methodological differences between the two fields of research, such as the tendency for immediate testing or the use of very short (1–2 hours) retention intervals in eyewitness research, while

neurobiology studies insert at least 24 hours. Other differences refer to the extent to which stress-responsive systems (i.e., the hypothalamic–pituitary–adrenal axis) are stimulated effectively under laboratory conditions. The aim of the current study was to conduct an experiment that accounts for the contemporary state of knowledge in both fields. In all, 123 participants witnessed a live staged theft while being exposed to a laboratory stressor that reliably elicits autonomic and glucocorticoid stress responses or while performing a control task. Salivary cortisol levels were measured to control for the effectiveness of the stress induction. One week later, participants attempted to identify the thief from target-present and target-absent line-ups. According to regression and receiver operating characteristic analyses, stress did not have robust detrimental effects on identification performance.

Van Can, S., Dodier, O., Otgaar, H., & Verkampt, F. (2016). The benefits of multiple recollection strategies on adolescents' testimonies: Quality versus within-statement consistency. *Journal of Forensic Practice, 18*, 118-130. DOI:10.1108/JFP-01-2015-0007

The purpose of this paper is to examine the beneficial effect of a modified cognitive interview (MCI) on adolescents' testimonies in case of a negative emotional event. Furthermore, the authors were interested in assessing the impact of a MCI on within-statement consistency. In total, 37 adolescents (12-15 years) watched a emotionally negative video and were interviewed, seven days later, with a MCI or a structured (control) interview (SI). Results showed that adolescents interviewed with the MCI reported significantly more correct and tended to report more incorrect information than those interviewed with the SI. Nonetheless, this rise in incorrect details did not impair the accuracy of statements gathered with the MCI (vs SI). Moreover, consistent, reminiscent, and forgotten information within a statement was positively linked to overall accuracy. In conclusion, testimonies gathered with the MCI might be perceived as more complete and detailed than the ones gathered with the SI. The improvement of interview techniques helps solving criminal cases. The innovative aspect of this work is that the benefits of the cognitive interview (CI) and the absence of an effect of inconsistency on accuracy are now also seen among adolescents.

Brackmann, N., Otgaar, H., Sauerland, M., & Merckelbach, H. (2015). [Children are poor witnesses. Or are they?](#) *In Mind*, 24, 1-6.

It is a widely held opinion among lay persons and legal practitioners that children's testimony is inferior to that of adults. Even though previous research and cases have shown that children can develop false memories, we argue that this does not imply that their eyewitness reports are necessarily poor. In fact, there are circumstances in which children are less vulnerable to false memories than adults. This is also true for a subset of situations that sometimes become the focus of criminal investigations and in which children appear in court as eyewitnesses. In fact, different types of false memories increase with age including false memory types that are at the foreground of many legal cases concerning the reliability of children's statements. Legal professionals should be aware of the conditions under which children are competent and those under which they are less reliable as witnesses.

Hagger, M. S., Chatzisarantis, N. L. D., Alberts, H., Anggono, C. O., Batailler, C., Birt, A. R., Brand, R., Brandt, M. J., Brewer, G., Bruyneel, S., Calvillo, D. P., Campbell, W. K., Cannon, P. R., Carlucci, M., Carruth, N. P., Cheung, T., Crowell, A., De Ridder, D. T. D., Dewitte, S., Otgaar, H.,...Zwienenberg, M. (2015). [A multi-lab pre-registered replication of the ego-depletion effect](#). *Perspectives on Psychological Science*, 11(4), 546-573. DOI:10.1177/1745691616652873

Good self-control has been linked to adaptive outcomes such as better health, cohesive personal relationships, success in the workplace and at school, and less susceptibility to crime and addictions. In contrast, self-control failure is linked to maladaptive outcomes. Understanding the mechanisms by which self-control predicts behavior may assist in promoting better regulation and outcomes. A popular approach to understanding self-control is the strength or *resource depletion* model. Self-control is conceptualized as a limited resource that becomes depleted after a period of exertion resulting in self-control failure. The model has typically been tested using a *sequential-task experimental paradigm*, in which people completing an initial self-control task have reduced self-control capacity and poorer performance on a subsequent task, a state known as *ego depletion*. Although a meta-analysis of ego-depletion experiments found a medium-sized effect, subsequent meta-analyses have questioned the size and existence of the effect and identified instances of possible bias. The analyses served as a catalyst for the current Registered Replication Report of the ego-depletion effect. Multiple laboratories ($k = 23$, total $N = 2,141$) conducted replications of

a standardized ego-depletion protocol based on a sequential-task paradigm by Sripada et al. Meta-analysis of the studies revealed that the size of the ego-depletion effect was small with 95% confidence intervals (CIs) that encompassed zero ($d = 0.04$, 95% CI $[-0.07, 0.15]$). We discuss implications of the findings for the ego-depletion effect and the resource depletion model of self-control.

Meyer, T., Otgaar, H., & Smeets, T. (2015). Flashbacks, intrusions, mind-wandering – instances of an involuntary memory spectrum: A commentary on Takarangi, Strange, and Lindsay (2014). *Consciousness and Cognition*, 33, 24-29. DOI:10.1016/j.concog.2014.11.012

In their paper, Takarangi, Strange, and Lindsay (2014) showed in two experiments that participants who had witnessed a shocking film frequently “mind-wandered without awareness” about the content of the film. More importantly, they equated this effect with the occurrence of traumatic intrusions. In this commentary, we argue that the authors adhered to conceptually ambiguous terms, and thereby unintentionally contribute to an already existing conceptual blur in the trauma-memory field. We postulate that clear definitions are urgently needed for phenomena such as intrusions, flashbacks, and mind-wandering, when using them in the context of trauma memory. Furthermore, our proposal is that these phenomena can fall under a spectrum of different involuntary memory instances. We propose that by adopting stricter definitions and viewing them as separate, but interrelated phenomena, different lines of trauma-memory research can be reconciled, which would considerably advance the field. © 2014 Elsevier Inc. All rights reserved.

Otgaar, H., Howe, M. L., Van Beers, J., Van Hoof, R., Bronzwaer, N., & Smeets, T. (2015). [The positive ramifications of false memories using a perceptual closure task](#). *Journal of Applied Research in Memory and Cognition*, 4(1), 43-50. DOI:10.1016/j.jarmac.2014.12.001

The negative features of false memories are frequently at the foreground of false memory research. However, it has become increasingly apparent that false memories also have positive consequences. In two experiments, we examined the positive consequences of false memories. Participants were visually presented with false memory word lists and received a recognition task. In a modified perceptual closure test, participants received degraded visual representations of words (false, true, and unrelated items) that became clearer over time. Participants had to identify

them as fast as possible. Identifications based on false memories were significantly faster than those based on true memories and (un)related items. A roughly similar pattern was observed when no recognition task was used and when critical lures were replaced with other items (Experiment 2). Our results indicate that false memories can be beneficial for problem-solving tasks and counter the standard perspective that false memories are inherently negative in nature.

Otgaar, H., Howe, M. L., Memon, A., & Wang, J. (2015). [The development of differential mnemonic effects of false denials and forced confabulations](#). *Behavioral Sciences & the Law*, 32(6), 718-731. DOI:10.1002/bsl.2148

The current experiment was designed to assess the mnemonic consequences of false denials and forced confabulations. Children (6- to 8- and 10- to 12-year-olds) and adults viewed a video and their memory and belief about the event were tested. Participants were then divided into three groups. In the Cued Recall condition, participants were asked to answer true- and false-event questions, but could choose not to respond if they did not know the answer. In the Forced Confabulation group, participants received the same set of questions, but were forced to answer all of them. In the False Denial group, participants were instructed to falsely deny in response to each question. One week later, participants received a source memory test, and they had to provide memory and belief ratings once more. Forced confabulations resulted in false memories in the youngest group. Moreover, our analyses showed that repeated false denials led to children and adults to be highly inclined to falsely deny that they had talked to the experimenter about certain presented details when in fact they had done so. Furthermore, false denial and nonbelieved memory rates were more pronounced in younger than in older children and adults. Our results imply that denying experienced events is not a good strategy in an interviewing setting as it adversely affects memory statements about the interview.

Otgaar, H., Howe, M. L., Clark, A., Wang, J., & Merckelbach, H. (2015). [What if you went to the police and accused your uncle of abuse? Misunderstanding concerning the benefits of memory distortion: A commentary on Fernandez](#). *Consciousness and Cognition*, 33, 286-290. DOI:10.1016/j.concog.2015.01.015

In a recent paper, Fernández (in press) argues that memory distortion can have beneficial outcomes. Although we agree with this, we find his reasoning and examples flawed to such degree

that they will lead to misunderstandings rather than clarification in the field of memory (distortion). In his paper, Fernández uses the terms belief and memory incorrectly, creating a conceptual blur. Also, Fernández tries to make the case that under certain circumstances, false memories of abuse are beneficial. We argue against this idea as the reasoning behind this claim is based on controversial assumptions such as repression. Although it is true that memory distortions can be beneficial, the examples sketched by Fernández are not in line with recent documentation in this area.

Otgaar, H., Jelicic, M., & Smeets, T. (2015). Adaptive memory: Identifying the proximate roots of the survival processing advantage. *The Journal of Psychology: Interdisciplinary and Applied*, 149(4), 339-355. DOI:10.1080/00223980.2013.879848

The current study examined the role of item-specific, relational, and elaborative processing on adaptive memory. Younger and older adults received the standard survival processing, a survival-short, or a pleasantness processing instruction. The survival-short condition was specifically included to lead to fewer possibilities to engage in elaborative processing. Furthermore, half of the presented words were categorized words to boost relational processing. Younger adults demonstrated the typical survival recall advantage in that standard survival processing instructions resulted in superior free recall performance than that of the survival-short and the pleasantness processing groups. Among older adults, no mnemonic benefit of standard survival processing relative to the survival-short or pleasantness processing groups was found. Furthermore, reducing the probability of elaborative processing (i.e., through the survival-short processing instructions) abolished the survival recall advantage. Our results thus provide further evidence for the role of item-specific, relational, and elaborative processing in the survival processing advantage.

Wang, J., Otgaar, H., Howe, M. L., Smeets, T., & Merckelbach, H. (2015). [Can you nonbelieve it: What happens when you do not believe in your memories?](#). *In-Mind*, 11(28).

Memories are usually believed to represent genuine past events. While previous researches mainly focus on believed memories, a recent research line has discovered that memories can exist without accompanying beliefs. That is, one can have vivid images or recollections of an event that he knows never happened. Vivid memories of non-existent events are called nonbelieved memories and in fact, 25% of people hold these kinds of memories. By using techniques such as memory implantation technique and faked videos, nonbelieved memories for certain events can be elicited

in the labs. With the discovery and study of this new memory phenomenon, we point out that research on nonbelieved memories can help reveal whether our belief, recollection, or both determine our behaviour and has implications on a broad range of topics in areas such as psychopathology and legal psychology.

Otgaar, H., & Howe, M. L. (2014). [What kind of memory has evolution wrought?](#) *Memory*, 22(1), 1-8. DOI:10.1080/09658211.2013.800355

It is without question that our memory system evolved through a process of natural selection. However, basic research into the evolutionary foundations of memory has commenced with earnest only recently. This is quite peculiar as the majority, perhaps even all, of memory research relates to whether memory is adaptive or not. In this Special Issue, we have assembled a variety of papers that represent the cutting edge in research on the evolution of memory. These papers are centered on issues about the ultimate and proximate explanations of memory, the development of the adaptive functions of memory, as well as the positive consequences that arise from the current evolutionary form that our memory has taken. In this article we briefly outline these different areas and indicate why they are vital for a more complete theory of memory. Further, we argue that by adopting a more applied stance in the area of the evolution of memory, one of the many future directions in this field could be a new branch of psychology that addresses question in evolutionary legal psychology.

Otgaar, H., Howe, M. L., Peters, M., Smeets, T., & Moritz, S. (2014). [The production of spontaneous false memories in childhood.](#) *Journal of Experimental Child Psychology*, 121, 28-41. DOI:10.1016/j.jecp.2013.11.019

We found evidence that the usual developmental trends in children's spontaneous false memories were eliminated using novel stimuli containing obvious themes. That is, children created more false memories than adults when scenes had to be remembered. In Experiment 1, 7/8-year-olds had higher false memory rates than adults when using visual scenes. Experiment 2 showed that gist cuing could not account for this effect. In Experiment 3, children and adults received visual scenes and story contexts in which these scenes were embedded. For both types of stimuli, we found that children had the highest false memory rates. Our results indicate that the underlying theme of these scenes is easily identified resulting in our developmental false memory trend.

Otgaar, H., Howe, M. L., Smeets, T., & Garner, S. (2014). [Developmental trends in adaptive memory](#). *Memory*, 22(1), 103-117. DOI:10.1080/09658211.2013.781653

Recent studies have revealed that memory is enhanced when information is processed for fitness-related purposes. The main objective of the current experiments was to test developmental trends in the evolutionary foundation of memory using different types of stimuli and paradigms. In Experiment 1, 11-year-olds and adults were presented with neutral, negative, and survival-related DRM word lists. We found a memory benefit for the survival-related words and showed that false memories were more likely to be elicited for the survival-related word lists than for the other lists. Experiment 2 examined developmental trends in the survival processing paradigm using neutral, negative, and survival-related pictures. A survival processing advantage was found for survival-related pictures in adults, for negative pictures in 11/12-year-olds, and for neutral pictures in 7/8-year-olds. In Experiment 3, 11/12-year-olds and adults had to imagine the standard survival scenario or an adapted survival condition (or pleasantness condition) that was designed to reduce the possibilities for elaborative processing. We found superior memory retention for both survival scenarios in children and adults. Collectively, our results evidently show that the survival processing advantage is developmentally invariant and that certain proximate mechanisms (elaboration and distinctiveness) underlie these developmental trends.

Otgaar, H., Mazzoni, G., & Scoboria, A. (2014). [On the existence and implications of nonbelieved memories](#). *Current Directions in Psychological Science*, 23(5), 349-354. DOI:10.1177/0963721414542102

In this paper, we review the state of knowledge about a previously assumed to be rare memory phenomenon called nonbelieved memories. Nonbelieved memories refer to a counterintuitive phenomenon in which vivid autobiographical memories are no longer believed to have happened although vivid recollective features remain present. Such memories stand in contrast to the more typical situation that when events are recollected they are also believed to have genuinely occurred. Data regarding the frequency, characteristics, and factors that contribute to the development of naturally occurring and laboratory induced nonbelieved memories is reviewed. Relationships of nonbelieved memories to theories of autobiographical remembering and the study of remembering in applied domains are discussed.

Raymaekers, L., Otgaar, H., & Smeets, T. (2014). The longevity of adaptive memory: Evidence for mnemonic advantages of survival processing 24 and 48 hours later. *Memory*, 22(1), 19-25. DOI:10.1080/09658211.2013.791321

Prior studies have convincingly demonstrated that survival-related processing of information enhances its subsequent retention. This phenomenon, known as the survival recall advantage, generalises to other stimuli, memory domains, and research populations, thereby underscoring its reliability. As previous studies used only short retention intervals between survival processing and the memory test, an important yet hitherto unanswered issue is whether this effect persists over time. The present experiment therefore examined whether survival processing also produces mnemonic benefits when retention is tested after longer delay periods. Participants ($N = 81$) rated the relevance of words according to a survival and a moving scenario, and were then randomly assigned to the typical immediate (3-minute delay) retention test condition or conditions that included a 24- or 48-hour interval between survival processing and memory testing. In each of these conditions survival processing led to higher surprise free recall and recognition rates than processing words according to the moving scenario. Thus this study provides evidence that illustrates the longevity of survival processing advantages on memory performance.

Sauerland, M., Sagana, A., Otgaar, H., & Broers, N. (2014). [Self-relevance does not moderate choice blindness in adolescents and children](#). *PLOS One*, 9(6), 1-9. DOI:10.1371/journal.pone.0098563

In two experiments we tested the choice blindness phenomenon in adolescents aged 11–16 years (Experiment 1, $N=87$) and children aged 7–10 years (Experiment 2, $N=117$) for the first time. Analogous to previously reported findings with adult participants, we expected to replicate the robust effect in these age groups. Furthermore, we investigated the hypothesis that self-relevance of choices, defined as the extent to which the self is implicated in a choice, moderates the choice blindness effect in adolescents and children. To this end, we directly compared high and low self-relevance conditions. As expected, the choice blindness effect was robust across age groups. Little support was found for the idea that self-relevance moderates the choice blindness effect. Specifically, no effect of self-relevance on choice blindness was found in adolescents, while the findings in the child sample were inconsistent. Different possible interpretations of the results as well as the possible role of ambiguity for the choice blindness effect are discussed.

Howe, M. L., & Otgaar, H. (2013). [Proximate mechanisms and the development of adaptive memory](#). *Current Directions in Psychological Science*, 22(1), 16-22.
DOI:10.1177/0963721412469397

The scientific study into the functional properties of memory has recently undergone a rapid increase. These studies reveal that processing stimuli for its survival value results in superior memory performance in children and adults. In the current article, we critically evaluate this claim and conclude that survival-processing advantages in childhood and adulthood are not an indication that fitness-relevant information has adaptive priority. Instead, we argue that general memory principles (e.g., item-specific and relational processing, self-reference, elaboration and distinctiveness) are more probative explanations of the functional engineering of memory. We stress the importance of these memory processes because these are the processes that comprise our memory adaptation, are present early in life, and are developmentally invariant.

Otgaar, H., Scoboria, A., & Smeets, T. (2013). Experimentally evoking nonbelieved memories for childhood events. *Journal of Experimental Psychology: Learning, Memory & Cognition*, 39(3), 717-730. DOI:10.1037/a0029668

We report on the first experimental elicitation of nonbelieved memories for childhood events in adults and children (Study 2) using a modified false memory implantation paradigm. Participants received true (trip to a theme park) and false (hot air balloon ride) narratives and recalled these events during two interviews. After debriefing, 13% of adults and 15% of children reported nonbelieved memories. While phenomenal ratings were higher for true than for nonbelieved memories immediately after the debriefing, after a month nonbelieved memories behaved as true memories. Also following debriefing, 23% of adults and 15% of children retracted their false memory claims. Prior to debriefing, participants with nonbelieved memories were most likely to indicate remembering the event while participants with false memories who retracted their claim were most likely to endorse believing but not remembering the event. This research suggests that debriefings in previous false memory studies can lead to the development of nonbelieved memories. Additional findings regarding the correspondence between subjective belief, subjective memory, and objective memory judgments prior to and following debriefing are discussed.

Otgaar, H., Howe, M.L., T., Peters, M., Sauerland, M., & Raymaekers, L. (2013).

[Developmental trends in different types of spontaneous false memories: Implications for the legal field.](#) *Behavioral Sciences & the Law*, 31(5), 666-682. DOI:10.1002/bsl.2076

An emerging area of memory research is showing that a certain type of false memory called spontaneous false memories follows a developmental trajectory that is the opposite of what is commonly assumed in false memory research. That is, spontaneous false memories are more likely to occur in adults than in children. The present study focused on developmental trends of different types of spontaneous false memories. Specifically, in the current study, 6-8- year-olds, 10-12-year-olds, and adults were presented with two methods to induce spontaneous false memories. That is, participants were presented with semantically-related words lists that are commonly used to evoke spontaneous false memories (i.e, Deese/Roediger-McDermott (DRM) paradigm). Furthermore, they were presented with a video in which related details were not shown but were presented during a recognition task. Our results showed that children were more likely to form false memories than adults in the video false memory paradigm whereas DRM false memories were more evident in adults than in children. Furthermore, we found that on a general level, DRM false memories were positively related to video spontaneous false memories. We explain that stimuli that contain obvious themes attenuate or even reverse developmental trends in spontaneous false memories.

Otgaar, H., Sauerland, M., & Petrila, J. (2013). Novel shifts in memory research and their impact in the legal process. *Behavioral Sciences & the Law*, 31(5), 531-540.
DOI:10.1002/bsl.2095

The functioning and frailties of memory are frequently at the centerpiece of much expert testimony about the reliability of eyewitness accounts. Although we have much knowledge about how false memories and suggestibility can affect testimonies, the contributions in this special issue show that when using a sound theoretical framework, novel directions in this field can surface. The papers in this issue can broadly be divided into contributions that are related to: (1) the exact determinants of false memory and suggestibility; (2) new paradigms in legal psychology; (3) positive consequences of memory illusions; and (4) developmental false memory research. Collectively, these contributions have the potential to provide novel shifts in memory research and push this field beyond its current boundaries. Copyright © 2013 John Wiley & Sons, Ltd.

Schwartz, B., Howe, M. L., Toggia, M., & Otgaar, H. (Eds.). (2013). *What is adaptive about adaptive memory?* Oxford University Press.

Human memory, like other biological systems, has been subject to natural selection over the course of evolution. However, cognitive systems do not fossilize, which means that current researchers must infer evolutionary influences on human memory from current human behavior rather than from fossils or artifacts. Examining the potential for cognition as adaptation has often been ignored by cognitive psychology. Recently, a number of researchers have identified variables that affect human memory that may reflect these ancestral influences. These include survival processing, future-oriented processing, spatial memory, cheater detection, face memory, and a variety of social influences on memory. The current volume grew out of discussion at the symposium on survival processing at the SARMAC conference in June 2011 in New York City. The goal of this volume will be to present the best theoretical and empirical work on the adaptive nature of memory. It features the most current work of a number of cognitive psychologists, developmental psychologists, comparative psychologists, and cognitive neuroscientists who have focused on this issue. This is important because much of this work is necessarily interdisciplinary and is therefore spread out across a range of journals and conferences.

Thijssen, J., Otgaar, H., Howe, M. L., & De Ruiter, C. (2013). [Emotional true and false memories in children with callous-unemotional traits](#). *Cognition & Emotion*, 27(4), 761-768. DOI:10.1080/02699931.2012.744300

Several studies have found that children with callous-unemotional (CU) traits have a deficit in processing emotionally negative material. The present study examined whether this deficit also affects emotional memory. Twenty-two children with low CU traits and 24 children with high CU traits between 8 and 12 years of age were selected from a community sample and presented with neutral and negative emotional words, using the Deese-Roediger-McDermott paradigm. On true recall, there was no difference between the groups. Both groups had higher true recall rates for the neutral word lists than for the negative lists. However, on false recall, although there were no group differences for neutral word lists, the high CU group recalled significantly fewer critical lures on the negative word lists than the low CU group. Furthermore, the high CU group had significantly less false recall on the negative word lists compared to the neutral word lists, while the low CU group showed no difference in false recall between the word lists. These results indicate that

children with high CU traits have no deficiencies in true memory performance, yet are less susceptible to developing false memories concerning emotionally negative material.

Otgaar, H., Alberts, H., & Cuppens, L. (2012). Ego depletion results in an increase in spontaneous false memories. *Consciousness and Cognition*, 21(4), 1673-1680. DOI:10.1016/j.concog.2012.09.006

The primary aim of the current study was to examine whether depleted cognitive resources might have ramifications for the formation of neutral and negative spontaneous false memories. To examine this, participants received neutral and negative Deese/Roediger– McDermott false memory wordlists. Also, for half of the participants, cognitive resources were depleted by use of an ego depletion manipulation (solving difficult calculations while being interfered with auditory noise). Our chief finding was that depleted cognitive resources made participants more vulnerable for the production of false memories. Our results shed light on how depleted cognitive resources affect neutral and negative correct and errant memories.

Otgaar, H., Alberts, H., & Cuppens, L. (2012). [How cognitive resources alter our perception of the past: Ego depletion enhances the susceptibility to suggestion](#). *Applied Cognitive Psychology*, 26(1), 159-163. DOI:10.1002/acp.1810

Studies show that engaging in self-control results in deteriorated performance on subsequent tasks. In legal settings, witnesses and/or suspects are probably involved in self-control (e.g. controlling their emotions). The current study tested whether such involvement in self-control would lead to increased suggestibility levels. We found direct evidence for this. Forty-four participants were randomly divided into a high level of depletion condition (regulation of attention) or a low level of depletion condition (no regulation of attention). Also, they were presented with a suggestibility measure (Gudjonsson Suggestibility Scale). We showed that depleted participants were significantly more suggestible than non-depleted participants. Our findings are relevant in situations in which suggestive practices may take place.

Otgaar, H., Horselenberg, R., van Kampen, R., & Lalleman, K. (2012). [Clothed and unclothed human figure drawings lead to more correct and incorrect reports of touch in children.](#) *Psychology, Crime & Law*, 18(7), 641-653. DOI: 10.1080/1068316X.2010.532129

The purpose of the current study was to examine the effect of clothed and unclothed human figure drawings (HFDs) on children's reports of touch. Eighty 4/5-year-olds and 80 9/10-year-olds participated in a staged event in which measurements of their body parts (e.g., waist-line) were taken. Specifically, they were touched on ten different locations. Immediately or three weeks after the event, they had to report where they had been touched. Half of the children received a clothed HFD while the other half was provided with an unclothed HFD to assist children in their recall. When we compared children's recall before and after the presentation of a HFD, we found that clothed and unclothed HFDs significantly decreased the accuracy of children's reports of touch. So, although children reported more correct touches after the presentation of a HFD, they were also more likely to include more incorrect information in their reports of touch.

Otgaar, H., Peters, M., & Howe, M.L. (2012). [Dividing attention lowers children's but increases adults' false memories.](#) *Journal of Experimental Psychology: Learning, Memory, and Cognition*, 38(1), 204-210. DOI:10.1037/a0025160

The present study examined the impact of divided attention on children's and adults' neutral and negative true and false memories in a standard Deese/Roediger–McDermott paradigm. Children (7- and 11-year-olds; n = 126) and adults (n = 52) received 5 neutral and 5 negative Deese/Roediger–McDermott word lists; half of each group also received a divided attention task. The results showed that divided attention affected children's and adults' false memory levels differently but did not alter true memory differently. Our results revealed a developmental shift in that divided attention lowered children's false memory rates but increased adults' false memory rates, regardless of the nature of the material (i.e., neutral or negative). Our study indicates that manipulations that target conscious processing (e.g., divided attention) result in marked qualitative and quantitative differences between children's and adults' false memories but not true memories.

Otgaar, H., Verschuere, B., Meijer, E. H., & van Oorsouw, K. (2012). [The origin of children's implanted false memories: Memory traces or compliance?](#) *Acta Psychologica*, 139(3), 397-403. DOI:10.1016/j.actpsy.2012.01.002

A longstanding question in false memory research is whether children's implanted false memories represent actual memory traces or merely result from compliance. The current study examined this question using a response latency based deception task. Forty-five 8-year-old children received narratives about a true (first day at school) and false event (hot air balloon ride). Across two interviews, 58/32% of the participants developed a partial/full false memory. Interestingly, these children also showed higher false recall on an unrelated DRM paradigm compared to children without a false memory. The crucial finding, however, was that the results of the deception task revealed that children with partial and full false memories were faster to confirm than to deny statements relating to the false event. This indicates that children's implanted false memories reflect actual memory traces, and are unlikely to be explained by mere compliance.

Otgaar, H., Smeets, T., & Peters, M. (2012). Children's implanted false memories and additional script knowledge. *Applied Cognitive Psychology*, 26(5), 709-715. DOI:10.1002/acp.2849

The present study examined whether repeatedly providing additional script knowledge of an event would boost the development of children's implanted false memories. Seventy-two 7- to 9-year-old children listened to a true narrative about their first day at school and a false narrative describing that they went to a burns centre when they were four years old. Children were randomly allocated to one of three groups: one group without additional script knowledge and two groups that received a video about the two events to promote additional event-related script knowledge of which one group had to view the video repeatedly (i.e. once a day). Across two interviews, children were encouraged to tell everything they remembered about the events. Results showed that at the second interview, children who were presented with the additional script knowledge were more likely to develop a false memory than the children who did not receive additional script knowledge.

Peters, M.J.V., Engel, M., Hauschildt, M., Morizt, S., Jelinek, L., & Otgaar, H. (2012). [Investigating the corrective effect of forewarning on memory and meta-memory in schizophrenia patients](#). *Journal of Experimental Psychopathology*, 3(4), 673-687. DOI:10.5127/jep.022011

A number of recent studies investigating (meta-)memory have detected that memory accuracy is decreased in schizophrenia and that at the same time patients hold false information with strong conviction. The aim of the present study was to test whether increasing meta-memory awareness (i.e., forewarning) could attenuate this pattern of results. Forty-seven schizophrenia patients and 47 healthy controls were administered two pictures of a visual false memory paradigm, one with forewarning and the second without. After both pictures, a recognition task required participants to make old-new discriminations along with confidence ratings. Results showed that, although the standard memory and meta-memory response patterns were replicated in this study, in which schizophrenia patients show decreased memory accuracy and knowledge corruption, the initial forewarning did not influence the robustness of these meta-memory deficits within schizophrenia patients.

Raymaekers, L., Smeets, T., Peters, M.J.V., Otgaar, H., & Merckelbach, H. (2012). The classification of recovered memories: A cautionary note. *Consciousness & Cognition*, 21(4), 1640-1643. DOI:10.1016/j.concog.2012.09.002

Traditionally, recovered memories of childhood sexual abuse (CSA) have been classified as those emerging spontaneously versus those surfacing during the course of suggestive therapy. There are indications that reinterpretation of memories might be a third route to recovered memories. Thus, recovered memories do not form a homogeneous category. Nevertheless, the conceptual distinctions between the various types of recovered memories remain difficult for researchers and clinicians. With this in mind, the current study explored whether recovered memories can be reliably classified. We found that classification is rather problematic in a subset of cases. To reduce potential bias, we urge for the development and subsequent use of a more reliable classification system and multiple expert raters in research on recovered memories.

Sauerland, M., Sagana, A., & Otgaar, H. (2012). Theoretical and legal issues related to choice blindness for voices. *Legal and Criminological Psychology, 18*(2), 371-381.
DOI:10.1111/j.2044-8333.2012.02049.x

The purpose of this study was to examine whether choice blindness occurs for auditory stimuli, namely voices. One hundred participants listened to three pairs of voices and had to decide each time which one they found more sympathetic or sounded more criminal. After they made a choice, participants were presented with the chosen voice again and had to match it to a face. However, during the second trial, participants were actually presented with the voice they had previously not chosen. Only 19% of the participants detected this change concurrently, an additional 10% detected it retrospectively. This indicates that choice blindness transfers to auditory stimuli. Whether participants had previously evaluated sympathy or criminality of the voices had no effect on choice blindness. The study shows that choice blindness is a robust phenomenon that can also be elicited when auditory stimuli are employed. Implications for eyewitness testimony and expert witnesses in the context of forensic speech analysis are discussed.

Scoboria, A., Wysman, L., & Otgaar, H. (2012). Credible suggestions affect false autobiographical belief. *Memory, 20*(5), 429-442. DOI:10.1080/09658211.2012.677449

False memory implantation studies are characterised by suggestions indicating that specific unremembered events occurred, attributing suggested events to a knowledgeable source (e.g., parents), and including true events that provide evidence that this source was consulted. These characteristics create a particular retrieval context that influences how individuals come to believe that false events occurred. Two studies used a variant of implantation methods to vary the proportion of events attributed to parents and the presence of true events within the suggestion. In Study 1 participants received six false events, and were told that *all* or *some* events came from parents. Participants told that all of the events came from parents formed more and stronger false beliefs. In Study 2 participants also received two true events, and a third group was told that *half* of the events came from their parents. Participants given the specific ratio (“half”) endorsed more false beliefs, and beliefs between the other groups no longer differed. Across both studies participants told that some events came from parents reported stronger memory phenomenology. The effect of suggestions on false beliefs in implantation studies depends partly on the credibility of suggestions derived from providing information about the source of suggested events.

Smeets, T., Otgaar, H., Peters, M.J.V., Raymaekers, L., & Merckelbach, H. (2012). [Survival processing in times of stress](#). *Psychonomic Bulletin & Review*, 19(1), 113-118. DOI:10.3758/s13423-011-0180-z

Recent studies have found that processing information according to an evolutionary relevant (i.e., survival) scenario improves its subsequent memorability, potentially as a result of fitness advantages gained in the ancestral past. So far, research has not revealed much about any proximate mechanisms that might underlie this so-called survival processing advantage in memory. Intriguingly, research has shown that the memorability of stressful situations is enhanced via the release of stress hormones acting on brain regions involved in memory. Since survival situations habitually involve some degree of stress, in the present study, we investigated whether stress serves as a proximate mechanism to promote survival processing. Participants rated words for their relevance to either a survival or a neutral (moving) scenario after they had been exposed to a psychosocial stressor or a no-stress control condition. Surprise retention tests immediately following the rating task revealed that survival processing and acute stress independently boosted memory performance. These results therefore suggest that stress does not serve as a proximate mechanism of the survival processing advantage in memory.

Thijssen, J., Otgaar, H., Meijer, E., Smeets, T., & De Ruiter, C. (2012). [Emotional memory for central and peripheral details in children with callous-unemotional traits](#). *Behavioral Sciences & the Law*, 30(4), 506-515. DOI:10.1002/bsl.2021

A limited number of studies have shown that adults and adolescents with psychopathic traits suffer from emotional memory impairment. The present study examined whether this finding could be replicated in a sample of children between 8 and 12 years of age with callous-unemotional (CU) traits. Children with high CU traits (n= 24) were compared with children with low CU traits (n= 18) with regard to performance on a peripheral memory recognition test that examined memory for central and peripheral components of neutral and negative pictures. Results showed that overall recognition rates did not differ between the high- and low-CU groups. For negative pictures, both groups demonstrated better recognition of the central component at the expense of the peripheral component, while for neutral pictures, the peripheral component was better recognized than the central component. This study is the first to demonstrate that children with high CU traits do not suffer from an impaired emotional memory.

Otgaar, H., & Candel, I. (2011). Children's false memories: Different false memory paradigms reveal different results. *Psychology, Crime & Law*, 17(6), 513-518.
DOI:10.1080/10683160903373392

The aim of the present study was to examine whether two different false memory paradigms (DRM vs suggestion) produce similar results. In Experiment 1, 100 children from four age groups (5/6-year-olds, 7/8-year-olds, 9/10-year-olds, and 11/12-year-olds) were instructed to remember lists of semantically related words (DRM paradigm) and to complete a children's suggestibility measure (i.e. BTSS-NL). Results showed that children's false memories for non-presented words increased with age while accepting suggestive information decreased with age. Moreover, no significant relation was found between children's susceptibility to the DRM illusion and concurring to suggestive information. In Experiment 2, DRM false recall and recognition was compared between children with ($n=20$) and without ($n=20$) false memories for entire events. Children with implanted false memories did not falsely recall and recognize more critical lures than children without implanted false memories. This study shows that children's DRM intrusions are not related to their acceptance of suggestive information.

Otgaar, H., Smeets, T., Merckelbach, H., Jelicic, M., Verschuere, B., Galliot, A., & van Riel, L. (2011). [Adaptive memory: Stereotype activation is not enough](#). *Memory & Cognition*, 39(6), 1033-1041. DOI:10.3758/s13421-011-0091-2

Studies have shown that survival processing leads to superior memorability. The aim of the present study was to examine whether this survival recall advantage might result from stereotype activation. To test this hypothesis, we conducted a pilot study and two experiments in which participants were primed with stereotypes (Experiment 1, professor and elderly person; Experiment 2, survival-stereotype). In Experiment 1, 120 undergraduates were randomly assigned to a survival, professor stereotype, elderly person stereotype, or moving scenario and rated words for their relevance to the imagined scenario. In Experiment 2, 75 undergraduates were given a survival, survival-stereotype (based on our pilot study), or moving scenario. Both experiments showed that survival processing leads to a greater recall advantage over the stereotype groups and control group. These data indicate that the mere activation of stereotypes cannot explain the survival recall advantage.

Verschuere, B., Spruyt, A., Meijer, E., & Otgaar, H. (2011). [The ease of lying](#). *Consciousness & Cognition*, 20(3), 908-911. DOI:10.1016/j.concog.2010.10.023

Brain imaging studies suggest that truth telling constitutes the default of the human brain and that lying involves intentional suppression of the predominant truth response. By manipulating the truth proportion in the Sheffield lie test, we investigated whether the dominance of the truth response is malleable. Results showed that frequent truth telling made lying more difficult, and that frequent lying made lying easier. These results implicate that 1) the accuracy of lie detection tests may be improved by increasing the dominance of the truth response and that 2) habitual lying makes the lie response more dominant.

Howe, M., Candel, I., Otgaar, H., Malone, C., & Wimmer, M.C. (2010). [Valence and the development of immediate and long-term false memory illusions](#). *Memory*, 18(1), 58-75. DOI:10.1080/09658210903476514

Across five experiments we examined the role of valence in children's and adults' true and false memories. Using the Deese/Roediger-McDermott paradigm and either neutral or negative emotional lists, both adults' (Experiment 1) and children's (Experiment 2) true recall and recognition was better for neutral than negative items and although false recall was also higher for neutral items, false recognition was higher for negative items. The last three experiments examined adults' (Experiment 3) and children's (Experiments 4 and 5) one-week long-term recognition of neutral and negative-emotional information. The results replicated the immediate recall and recognition findings from the first two experiments. More important, these experiments showed that although true recognition decreased over the one-week interval, false recognition of neutral items remained unchanged whereas false recognition of negative-emotional items increased. These findings are discussed in terms of theories of emotion and memory as well as their forensic implications.

Otgaar, H. (2010). Het gevaar van geheugenillussies bij kinderen in de rechtzaal [The danger of children's memory illusions in court]. *Asega*, 29, 11.

Otgaar, H. (2010). Het ontstaan van pseudo-herinneringen van kinderen. Over de rol van plausibiliteit, valentie en kennis [The development of children's false memories. The role of plausibility, valence, and knowledge]. *Ars Aequi*, 7, 513-517.

Otgaar, H., Candel, I., Memon, A., & Almerigogna, J. (2010). Differentiating between children's true and false memories using Reality Monitoring criteria. *Psychology, Crime & Law*, 16(7), 555-566. DOI: 10.1080/10683160902926166

The present study examined the efficacy of the reality monitoring (RM) criteria in differentiating between children's true and false memories. Two independent judges rated 190 transcripts of children's true and false memory reports along the RM criteria. Results showed that, overall, the RM criteria failed to distinguish between children's accounts of true and false events. However, when examining each RM criterion separately, we found that more visual details were present in children's true memories than in their false memories. Results also showed that more RM criteria were present at the second interview than at the first interview.

Otgaar, H., Candel, I., Scoboria, A., & Merckelbach, H. (2010). [Script knowledge enhances the development of children's false memories](#). *Acta Psychologica*, 133(1), 57-63. DOI:10.1016/j.actpsy.2009.09.002

We examined whether script knowledge contributes to the development of children's false memories. Sixty 7-year-old and 60 11-year-old children listened to false narratives describing either a high-knowledge event (i.e., fingers being caught in a mousetrap) or a low-knowledge event (i.e., receiving a rectal enema) that were similar in terms of plausibility and pleasantness. Moreover, half of the children in each condition received additional suggestive details about the false events. Across two interviews, children had to report everything they remembered about the events. Script knowledge affected children's false memories in that both younger and older children developed more false memories for the high-knowledge event than for the low-knowledge event. Moreover, at the first interview, additional suggestive details inhibited the development of children's images into false memories.

Otgaar, H., Candel, I., Smeets, T., & Merckelbach, H. (2010). "You didn't take Lucy's skirt off": The effect of misleading information on omissions and commissions in children's memory reports. *Legal & Criminological Psychology*, 15(2), 229-241. DOI:10.1348/135532509X471951

The current study explored how misleading information affects children's omissions and commissions over time. Fifty-nine younger children were instructed to remove three pieces of clothing from a puppet. Half of them were provided with false evidence that they had removed

only two items, while the other half were provided with false evidence that they had removed a fourth piece of clothing. In three neutral interviews separated by 1-week intervals, children had to report which pieces of clothing they had removed. Overall, omission and commission errors significantly decreased over time, although this pattern was more pronounced for omission errors. Younger and older children were equally likely to make omission errors, whereas commission errors were more typical for younger than for older children. Also, we found that commission errors more readily occur than omission errors. Even when children's memory reports pertain to an event in which they actively participated, misleading information may elicit omission and commission errors, with especially the latter category being very persistent over time.

Otgaar, H., Meijer, E.H., Giesbrecht, G., Smeets, T., Candel, I., & Merckelbach, H. (2010). [Children's suggestion-induced omission errors are not caused by memory erasure.](#) *Consciousness and Cognition*, 19(1), 265-269. DOI:10.1016/j.concog.2009.09.015

We explored whether children's suggestion-induced omission errors are caused by memory erasure. Seventy-five children were instructed to remove three pieces of clothing from a puppet. Next, they were confronted with evidence falsely suggesting that one of the items had not been removed. During two subsequent interviews separated by one week, children had to report which pieces of clothing they had removed. Children who during both interviews failed to report that they had removed the pertinent item (i.e., omission error; $n = 24$) completed a choice reaction time task. In this task, they were presented with different clothing items. For each item, children had to indicate whether or not they had removed it. Significantly more errors were made for those removed items that children failed to report than for those they had not removed. This indicates that children's suggestion-based omission errors are not due to erasure of memories. 2009 Elsevier Inc. All rights reserved.

Otgaar, H., & Smeets, T. (2010). [Adaptive memory: Survival processing increases both true and false memory in adults and children.](#) *Journal of Experimental Psychology: Learning, Memory, and Cognition*, 36(4), 1010-1016. DOI:10.1037/a0019402

Research has shown that processing information in a survival context can enhance the information's memorability. The current study examined whether survival processing can also decrease the susceptibility to false memories and whether the survival advantage can be found in children. In Experiment 1, adults rated semantically related words in a survival, moving, or

pleasantness scenario. Even though the survival advantage was demonstrated for true recall, there also was an unexpected increase in false memories in the survival condition. Similarly, younger and older children in Experiment 2 displayed superior true recall but also higher rates of false memories in a survival condition. Experiment 3 showed that in adults false memories were also more likely to occur in the survival condition when categorized lists instead of Deese-Roediger-McDermott (DRM)-like word lists were used. In all three experiments, no survival recall advantage was found when net accuracy scores that take the total output into account were used. These findings question whether survival processing is an adaptive memory strategy per se, as such processing not only enriches true recall but simultaneously amplifies the vulnerability to false memories.

Otgaar, H., Smeets, T., & van Bergen, S. (2010). [Picturing survival memories: Enhanced memory after fitness-relevant processing occurs for verbal and visual stimuli](#). *Memory & Cognition*, 38(1), 23-28. DOI:10.3758/MC.38.1.23

Recent studies have shown that processing words according to a survival scenario leads to superior retention relative to control conditions. Here, we examined whether a survival recall advantage could be elicited by using pictures. Furthermore, in Experiment 1, we were interested in whether survival processing also results in improved memory for details. Undergraduates rated the relevance of pictures in a survival, moving, or pleasantness scenario and were subsequently given a surprise free recall test. We found that survival processing yielded superior retention. We also found that distortions occurred more often in the survival condition than in the pleasantness condition. In Experiment 2, we directly compared the survival recall effect between pictures and words. A comparable survival recall advantage was found for pictures and words. The present findings support the idea that memory is enhanced by processing information in terms of fitness value, yet at the same time, the present results suggest that this may increase the risk for memory distortions.

Otgaar, H., Candel, I., Merckelbach, H., & Wade, K.A. (2009). [Abducted by a UFO: Prevalence information affects young children's false memories for an implausible event](#). *Applied Cognitive Psychology*, 23(1), 115-125. DOI:10.1002/acp.1445

This study examined whether prevalence information promotes children's false memories for an implausible event. Forty-four 7–8 and forty-seven 11–12 year old children heard a true narrative about their first school day and a false narrative about either an implausible event (abducted by a UFO) or a plausible event (almost choking on a candy). Moreover, half of the children in each condition received prevalence information in the form of a false newspaper article while listening to the narratives. Across two interviews, children were asked to report everything they remembered about the events. In both age groups, plausible and implausible events were equally likely to give rise to false memories. Prevalence information increased the number of false memories in 7–8 year olds, but not in 11–12 year olds at Interview 1. Our findings demonstrate that young children can easily develop false memories of a highly implausible event.

Otgaar, H. P. (2009). [Children's memory: treasure or teachery of the mind?](#) [Doctoral Thesis, Maastricht University]. Datawyse / Universitaire Pers Maastricht. DOI:10.26481/dis.20090913ho

Otgaar, H. (2009). Not all false memory paradigms are appropriate in court. In L. Strömwall & P. A. Granhag (Eds.), *Memory: Reliability and personality* (pp. 37-46). Göteborg: Göteborg University.

Otgaar, H.P., Candel, I., & Merckelbach, H. (2008). [Children's false memories: Easier to elicit or a negative than a neutral event](#). *Acta Psychologica*, 128(2), 350-354. DOI:10.1016/j.actpsy.2008.03.009

The present study examined the role of valence in the development of children's implanted false memories. Seventy-six 7-year-old children listened to two true and one false narrative. The false narrative was either neutral (“moving to another classroom”) or emotional negative (“being accused by the teacher for copying off your neighbor”). In addition, half of the children were presented with their class photograph while listening to the narratives. During two interviews, children recalled as many details as possible from the true and false events. Results showed that the negative event elicited more false memories than the neutral event. The presentation of a true

photograph did not promote the development of false memories. © 2008 Elsevier B.V. All rights reserved.

Candel, I., & Otgaar, H. (2008). De (on)mogelijkheden van de getuige-deskundige in zedenzaken [The (im)possibilities of the expert witness in child sexual abuse cases]. *Expertise en Recht*, 3, 83-86.

Smeets, T., Otgaar, H., Candel, I., & Wolf, O.T. (2008). True or false? Memory is differentially affected by stress-induced cortisol elevations and sympathetic activity at consolidation and retrieval. *Psychoneuroendocrinology*, 33(10), 1378-1386.
DOI:10.1016/j.psyneun.2008.07.009

Adrenal stress hormones released in response to acute stress may yield memory-enhancing effects when released post-learning and impairing effects at memory retrieval, especially for emotional memory material. However, so far these differential effects of stress hormones on the various memory phases for neutral and emotional memory material have not been demonstrated within one experiment. This study investigated whether, in line with their effects on true memory, stress and stress-induced adrenal stress hormones affect the encoding, consolidation, and retrieval of emotional and neutral false memories. Participants (N = 90) were exposed to a stressor before encoding, during consolidation, before retrieval, or were not stressed and then were subjected to neutral and emotional versions of the Deese—Roediger— McDermott word list learning paradigm. Twenty-four hours later, recall of presented words (true recall) and non-presented critical lure words (false recall) was assessed. Results show that stress exposure resulted in superior true memory performance in the consolidation stress group and reduced true memory performance in the retrieval stress group compared to the other groups, predominantly for emotional words. These memory-enhancing and memory-impairing effects were strongly related to stress-induced cortisol and sympathetic activity measured via salivary alpha-amylase levels. Neutral and emotional false recall, on the other hand, was neither affected by stress exposure, nor related to cortisol and sympathetic activity following stress. These results demonstrate the importance of stress-induced hormone-related activity in enhancing memory consolidation and in impairing memory retrieval, in particular for emotional memory material.

Otgaar, H.P., & Candel, I. (2007). Kinderen en valse herinneringen: de rol van valentie [Children and false memories: The role of valence]. *Kind en Adolescent*, 28, 236-247.
DOI:10.1007/BF03061034

Children are quite often involved in legal cases, in which they have to testify about unpleasant events. To determine the accuracy of these testimonies, we must rely on scientific research. Surprisingly, however, studies about this topic are scarce. If we examine all the studies that have been conducted on this topic, we can conclude that children are highly susceptible to developing false memories, especially about negative events. (PsycINFO Database Record © 2017 APA, all rights reserved)