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The mental regulation of autobiographical recollection in the aftermath of trauma

Tim Dalgleish

Medical Research Council Cognition and Brain Sciences Unit, Cambridge, U.K.

Beatrijs Hauer

University of Maastricht, The Netherlands

Willem Kuyken

University of Exeter, U.K.

Address Correspondence to:

Tim Dalgleish

Emotion Research Group

Medical Research Council Cognition and Brain Sciences Unit

15 Chaucer Road

Cambridge CB7 2EF

U.K.

E-mail: tim.dalgleish@mrc-cbu.cam.ac.uk

Abstract

Survivors of psychological trauma are frequently troubled by intrusive recollection of the traumatic event. We describe research showing that attempts to suppress such trauma memories can be associated with paradoxically enhanced remembering of the trauma, enhanced access to other negative personal material, and a lack of specificity in the recollection of the personal past. This suggests that attempted suppression is generally a counter-productive approach to the regulation of traumatic memories. Working with trauma memories, rather than suppressing them, is more adaptive.

Keywords: trauma, mental control, suppression, memory, PTSD

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The majority of us at some point in our lives will experience a psychologically traumatic event (e.g. Breslau & Kessler, 2001). The American Psychiatric Association defines such events as involving “actual or threatened death or serious injury or a threat to the physical integrity of self or others”, eliciting “intense fear, helplessness, or horror” (APA, 2000). Examples include accidents, disasters, combat trauma, and abuse.

For many, experiencing trauma represents a formidable existential challenge, violating conceptualizations of the world and the self. Psychological turmoil ensues as survivors struggle to integrate and contextualize their experience within existing mental representations of the self and reality (Dalgleish, 2004). The cardinal marker of such turmoil is the intrusive re-experiencing of the trauma in different ways. These include: intrusive images and bodily sensations that mirror those experienced during the original event; ‘reliving’, where survivors feel that they have been transported back to the time of the trauma; and nightmares. These reexperiences are often highly distressing and, at their worst, they lie at the heart of the psychiatric conditions of Acute Stress Disorder and Posttraumatic Stress Disorder (PTSD)(APA, 1994).

Why is trauma reexperienced in these ways? For cognitive theorists such as ourselves (e.g. Brewin, Dalgleish & Joseph, 1996; Dalgleish, 2004; Ehlers & Clark, 2000), the answer lies in a suggested mismatch between the trauma and the survivor’s pre-trauma conceptualizations of the self and world, alluded to above. It is proposed that highly threatening events therefore need to be gradually assimilated within world and self views, such that any mismatches of meaning and existential implication are minimized. It is important to note that assimilation is therefore more than simply mentally locating the event in its appropriate historical autobiographical context. Until such assimilation occurs, it is argued, the representations of traumatic events

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necessarily remain active and ‘prepotent’ such that trauma memories intrude into consciousness with the slightest provocation from internal or external cues.

On the back of such theorizing, cognitive behavior therapy (CBT) approaches to posttraumatic stress conditions revolve around the notion of addressing trauma memories ‘head on’. CBT following trauma includes techniques that involve voluntarily bringing trauma memories to mind, elaborating them, changing one’s stance towards them, and addressing the thoughts and feelings to which they give rise. This facilitates assimilation of the memories into the survivor’s existing mental representational repertoire, with the rationale that assimilated memories will be reexperienced less frequently and with markedly less distress (Harvey, Bryant & Tarrier, 2003).

However, because traumatic memories are so aversive, in day-to-day life trauma survivors rarely seem to naturally adopt this philosophy of approaching their memories ‘head on’. Rather, most survivors routinely institute behavioral avoidance of anything trauma-related. Indeed, the symptoms of PTSD include not talking about the trauma, avoiding reminders of the trauma, and social withdrawal (APA, 2000). Our own research has focused on a close corollary of such behavioral strategies – the *mental* control of traumatic recollection. It is these processes and their consequences that are the focus of the current article.

Memory suppression

Attempts to exert mental control over the recollection of trauma memories fall under the umbrella term ‘memory suppression’ (Daggleish & Yiend, 2006), where individuals subscribe to a rule of the kind ‘I must not think about or remember x’ where x is the distressing event they are trying not to recall - for example, ‘I must not remember being attacked’. A critical aspect of ‘suppression rules’ is their explicit

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reference to the very thing the person is trying not to remember, and we return to why this is important later. Implicit endorsement of memory suppression rules is common following trauma. For example, the symptoms of PTSD include trying to avoid thoughts associated with the trauma, and many survivors describe a chronically activated mental set to try to avoid remembering what happened to them.

Two key questions concerning memory suppression are: is it an adaptive strategy following trauma? And, if not, what are its dysfunctional consequences? Relevant research falls into two methodological camps. The first comprises naturalistic studies examining how individual differences in self-reported mental suppression in the day-to-day influence the evolution of post-traumatic stress following trauma, using prospective-longitudinal designs. The emerging consensus, in our own research and that of others, has been that greater mental suppression is associated with higher current and subsequent levels of posttraumatic stress, including, paradoxically, greater reexperiencing of the trauma (e.g. Joseph et al., 1996; Mayou, Ehlers & Bryant, 2002). For example, in our study of the survivors of the Herald of Free Enterprise ferry sinking (Joseph et al., 1996) we found that self-reported suppression of thoughts and memories of the trauma predicted more significant post-traumatic distress 2 years later.

The second research approach examines suppression in the laboratory using experimental paradigms (e.g. Dalgleish & Yiend, 2006; Shipherd & Beck, 1999). In such studies, participants try to either not think about or not remember an identified past distressing event (such as a trauma) for a circumscribed period of time (usually a few minutes) and researchers assess the effects of such attempts to suppress, both during the period of attempted suppression, and afterwards. To illustrate, in one such study (Dalgleish & Yiend, 2006) we asked participants high in negative affect to

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identify a traumatic event from their childhood. We asked half of them to try not to recall this event during a 9 minute ‘suppression period’, while the other half – the controls - were given no such constraints. Results (Figure 1a) showed that participants instructed to suppress paradoxically reported more intrusions of the memory during the suppression period than controls.

Immediately following the suppression period, we presented participants with emotional word cues (e.g. *death, party*) and asked them to tell us about the first autobiographical memory that came to mind (The Autobiographical Memory Test [AMT]; Williams et al., 2007). Those instructed to suppress an identified distressing memory during the preceding suppression period were faster than controls to generate other, different distressing personal memories to the negative (but not positive) word cues immediately afterwards (Figure 1b).

Results such as these mirror the findings from the naturalistic, longitudinal studies in suggesting that suppression is an ineffective and counter-productive approach for distressed individuals to take to the non-remembering of highly emotive events. Attempting to suppress can make remembering the event more likely, and can lead to subsequent facilitated access to other distressing material. Yet other studies have shown that, even when suppression is relatively successful, there is a ‘rebound effect’ whereby suppressed material becomes more intrusive once suppression efforts are relaxed (e.g. Shipherd & Beck, 1999).

Why is mental suppression in distressed individuals generally counter-productive? We noted earlier that a critical component of suppression rules is their explicit reference to the not-to-be-remembered event – e.g., ‘I must not remember the assault’. Theoretical accounts of mental suppression grounded in control theory argue that it is the presence of this referent that drives the paradoxical effects (Wegner,

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1994). Such accounts apply to suppressing any material, not just traumatic memories. According to this approach, suppression involves, firstly, whatever processes are employed not to think about the target material. In most cases this consists of trying to actively think about something else (i.e., distraction). Secondly, and critically, however, suppression involves automatically monitoring mental content to check adherence to the suppression rule. In other words, suppression involves checking for conscious awareness of the to-be-suppressed material. Monitoring, therefore, necessarily involves ongoing activation of the representation of that material, thus increasing the chances of it intruding into consciousness. This relative activation also accounts for why such memories tend to 'rebound' once suppression is lifted (e.g., Shipherd & Beck, 1999). When mental control is working effectively, the activation effects resulting from such mental monitoring are easily offset by the processes employed not to think about the target material and suppression can be effective. However, the probability of intrusions and of rebound effects is significantly elevated when the efficiency of those processes employed to not think about the target material is compromised by an individual's distressed state or by an experimentally imposed mental load (Wegner, 1994).

Another important question, of course, is why other negative autobiographical material is also rendered more accessible in distressed individuals who have tried to suppress a target memory (Figure 1b). One account of this finding (Dalgleish & Yiend, 2006) is that when individuals who are markedly distressed try to avoid a target upsetting memory by distracting themselves with thoughts of other things, the other things that most readily come to mind are themselves likely both to be negatively valenced and to include personal memories, as a result of mood-congruent

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memory (Blaney, 1986). Such negative material is thus more likely to be recalled to word cues following the suppression effort.

Reduced memory specificity

We have already seen how, for distressed individuals, trying to suppress a particular upsetting memory can render other upsetting personal material more accessible (Daggleish & Yiend, 2006). However, another consequence of such repeated attempts at suppression of a target memory seems to be that access to the *specific details* of the broader personal past becomes more difficult. For instance, in the study reported above (Daggleish & Yiend, 2006), although suppression led to facilitated access to negative personal memories more generally, these negative memories lacked specificity; i.e. they were not uniformly about circumscribed events occurring on a given day, but instead frequently comprised summaries of the personal past that conflated across several specific events. Research suggests that such broad difficulties in accessing specific autobiographical memories are problematic. For example, reduced specificity is associated both with poorer social-problem solving that depends on access to the details of past problem solutions, and with a reduced ability to envisage how specific future events might occur which impacts on planning ability (see Williams et al, 2007, for a review).

In terms of mechanisms, it may be that a natural consequence of repeated attempts to suppress specific, distressing aspects of the personal past is that non-specific recollection generalizes into a broader retrieval 'style' that affects all efforts at recalling emotion-related autobiographical material (Williams et al., 2007). We first demonstrated this relationship in a study showing that depressed women with a history of childhood abuse found it harder than depressed women with no abuse history to generate specific autobiographical memories of events other than the abuse

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to cue words on the AMT (Kuyken & Brewin, 1995; Figure 2). Since this initial study, a plethora of similar findings has been published (see Moore & Zoellner, 2007; Williams et al., 2007).

If, as we are proposing, repeated attempts to suppress specific distressing memories are likely to lead, on the one hand, to chronic activation of those memories but, on the other hand, to reduced access to the specific details of *other* emotion-related memories, then these two outcomes should be associated. One prediction would be that trauma survivors with more marked reductions in specific memory access for general emotion-related events would nevertheless show higher levels of reexperiencing of their specific trauma in the day-to-day (e.g. intrusive memories, images, flashbacks and nightmares) and this is indeed what we and others have found in various correlational studies (e.g., Hauer, Wessel, Geraerts, Merckelbach & Dalgleish, in press; Kuyken & Brewin, 1995; see Moore & Zoellner, 2007, Williams et al., 2007, for reviews).

We have also recently investigated this prediction in an experimental context with a sample of bereaved individuals experiencing a traumatic grief reaction (Complicated Grief [CG]) that involves intrusive memories from the life of their deceased loved one (Golden, Dalgleish, & Mackintosh, 2007). Participants completed the AMT along with comparable Biographical Memory Tests (BMTs) cueing them to recall episodes from the lives of either the deceased or a loved one who is not deceased. The results (Figure 3) showed that the CG group were, as expected, less specific than non-CG bereaved controls in recalling both autobiographical memories unrelated to the bereavement and biographical memories involving a loved one who was not deceased, in response to negative word cues. In contrast, CG participants were *more* specific than controls in recalling material related to their ‘trauma’; i.e.,

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emotion-related episodes from the life of the deceased. These data therefore support the prediction outlined above and suggest that although recall of the past is generally less specific in individuals with a traumatic grief reaction, this is not true for memories about the deceased that are the source of their distress.

Summary and future directions

In summary, mental suppression to regulate memory for traumatic events in distressed survivors appears to be counterproductive by at least three means: paradoxically increasing the probability that those events will be remembered; enhancing access to other negative personal material; and compromising the ability to access specific aspects of the broader personal past beyond the memory of the trauma itself.

Despite these problems, it is important to note that some survivors are relatively good at the mental regulation of trauma recollection and report minimal reexperiencing, while others seem to experience great difficulty in remembering the trauma at all (see McNally, 2003). An unresolved research question, with potential clinical benefits for survivors who do have trouble regulating their trauma memories, is how such effective non-remembering develops.

One possibility is via 'memory diversion', wherein retrieval processes are diverted (e.g. towards benign or positive material) in situations that are likely to elicit recollection of the trauma; for instance, in the presence of trauma reminders (e.g., a motor vehicle accident survivor encountering a vehicle of the same make as the one involved in his or her trauma). Memory diversion does not involve explicit activation of the trauma representation in the way that the monitoring process in suppression arguably does (see above; Wegner, 1994) and consequently should not lead to paradoxically enhanced access of the trauma memory. Anderson and colleagues have

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shown, using a 'think/no-think task', that memory diversion can therefore be a successful route to forgetting in an experimental context (Anderson et al., 2000), and researchers have consequently suggested diversion as a putative route to effective non-remembering of trauma (e.g. McNally, 2003). Important research questions therefore concern whether trauma survivors do indeed use diversion in the aftermath of trauma? In other words, do some trauma survivors implicitly subscribe to 'diversion rules' rather than 'suppression rules'. Furthermore, does memory diversion lead to adaptive non-remembering or does it too have dysfunctional psychological consequences?

If memory diversion does turn out to be adaptive it could be potentially integrated into CBT for posttraumatic stress. However, as noted, current therapeutic approaches involve working with trauma memories rather than trying to suppress or divert them. These approaches include straightforward exposure to the memory to bring about habituation of emotional responses, rescripting of memories to construct less distressing trauma narratives, and changing one's mental stance to the memory to promote acceptance of it as a mental event rather than as a reality (Harvey et al., 2003). Important clinical research questions concern the differential effectiveness of these approaches following different types of trauma (Dalgleish & Power, 2004), and the downstream effects of these approaches on other cognitive operations.

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Recommended readings

Dalgleish, T. (2004). See References.

A comprehensive review of cognitive theories of PTSD that goes into more detail than is possible in the current paper.

Kuyken, W., & Brewin, C. R. (1995). See References.

The prototypical study demonstrating the association between trauma and difficulting accessing specific autobiographical memories.

Wegner, D. M. (1994). See References.

An accessible and theoretical review of ironic mental control theory and research.

Williams, J. M. G., Barnhofer, T., Crane, C., Hermans, D., Raes, F., Watkins, E., et al. (2007). See References.

A comprehensive review of autobiographical memory specificity, its theoretical underpinnings and clinical implications.

Golden, A. J., Dalgleish, T., & Mackintosh, B. (2007). See References

The first study to show a differentiation between highly specific memories tied to the source of the person's distress in the context of a broader overgeneral autobiographical memory style.

References

- Anderson, M.C. & Green, C. (2001). Suppressing unwanted memories by executive control. *Nature*, *410*, 131-134.
- American Psychiatric Association. (2000). *Diagnostic and Statistical Manual of Mental Disorders* (4th ed.- Text revision). Washington D.C.: American Psychiatric Association.
- Blaney PH. (1986). Affect and memory: A review. *Psychological Bulletin*, *99*, 229-46.
- Breslau, N., & Kessler, R. C. (2001). The stressor criterion in DSM-IV posttraumatic stress disorder: an empirical investigation. *Biological Psychiatry*, *50*, 699-704.
- Brewin, C. R., Dalgleish, T., & Joseph, S. (1996). A dual representation theory of post-traumatic stress disorder. *Psychological Review*, 670-686.
- Dalgleish, T. (2004). Cognitive approaches to Posttraumatic Stress Disorder (PTSD): The evolution of multi-representational theorizing. *Psychological Bulletin*, *130*, 228-260.
- Dalgleish, T., & Power, M. J. (2004). Emotion-specific and emotion-non-specific components of Posttraumatic Stress Disorder (PTSD): Implications for a taxonomy of related psychopathology. *Behaviour Research and Therapy*, *42*, 1069-1088.
- Dalgleish, T., & Yiend, J. (2006). The effects of suppressing a negative autobiographical memory on concurrent intrusions and subsequent autobiographical recall in dysphoria. *Journal of Abnormal Psychology*, *115*, 467-473.
- Ehlers, A., & Clark, D. (2000). A cognitive model of posttraumatic stress disorder. *Behaviour Research and Therapy*, *38*, 319-345.

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- Golden, A. J., Dalgleish, T., & Mackintosh, B. (2007). Levels of specificity of autobiographical memories and of biographical memories of the deceased in bereaved individuals with and without complicated grief. *Journal of Abnormal Psychology, 116*, 786-795.
- Hauer, B. J. A., Wessel, I., Geraerts, E., Merckelbach, H., & Dalgleish, T. (in press). Autobiographical memory specificity after manipulating retrieval cues in adults reporting childhood sexual abuse. *Journal of Abnormal Psychology*.
- Harvey, A. G., Bryant, R. A., & Tarrier, N. (2003). Cognitive behaviour therapy for posttraumatic stress disorder. *Clinical Psychology Review, 23*, 501-522.
- Joseph, S., Dalgleish, T., Thrasher, S., Yule, W., Williams, R., & Hodgkinson, P. (1996). Chronic emotional processing in survivors of the Herald of Free Enterprise Disaster: The relationship of intrusion and avoidance at three years to distress at 5 years. *Behaviour Research and Therapy, 34*, 357-360.
- Kuyken, W., & Brewin, C. R. (1995). Autobiographical memory functioning in depression and reports of early abuse. *Journal of Abnormal Psychology, 104*, 585-591.
- McNally, R. J. (2003). *Remembering trauma*. Cambridge: Belknap Press of Harvard University Press.
- Moore, S. A., & Zoellner, L. A. (2007). Overgeneral autobiographical memory and traumatic events: An evaluative review. *Psychological Bulletin, 133*, 419-437.
- Shipherd, J. C., & Beck, J. G. (1999). The effects of suppressing trauma-related thoughts on women with rape-related posttraumatic stress disorder. *Behaviour Research and Therapy, 37*, 99-112.
- Wegner, D. M. (1994). Ironic processes of mental control. *Psychological Review, 101*, 34-52.

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Williams, J. M. G., Barnhofer, T., Crane, C., Hermans, D., Raes, F., Watkins, E., et al.

(2007). Autobiographical memory specificity and emotional disorder.

Psychological Bulletin, 133, 122-148.

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Figures

Figure 1a: Mean (S.E.M) numbers of memory intrusions during the suppression phase in the suppress versus control high-affect participants in Dalgleish and Yiend (2006).

Figure 1b: Mean (S.E.M) latencies to retrieve autobiographical memories to positive and negative cue words in the suppress and control high-affect participants in Dalgleish and Yiend (2006).

Figure 2: Mean (S.E.M) numbers of inappropriately general memories produced to cue words by the abused and non-abused depressed groups in Kuyken and Brewin (1995)

Figure 3: Mean (S.E.M) numbers of specific memories retrieved to negative cue words on the Autobiographical Memory Test (AMT), and on Biographical Memory Tests (BMT) with reference to either the deceased or to a living person, in Golden et al. (2007).

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Figure 1a

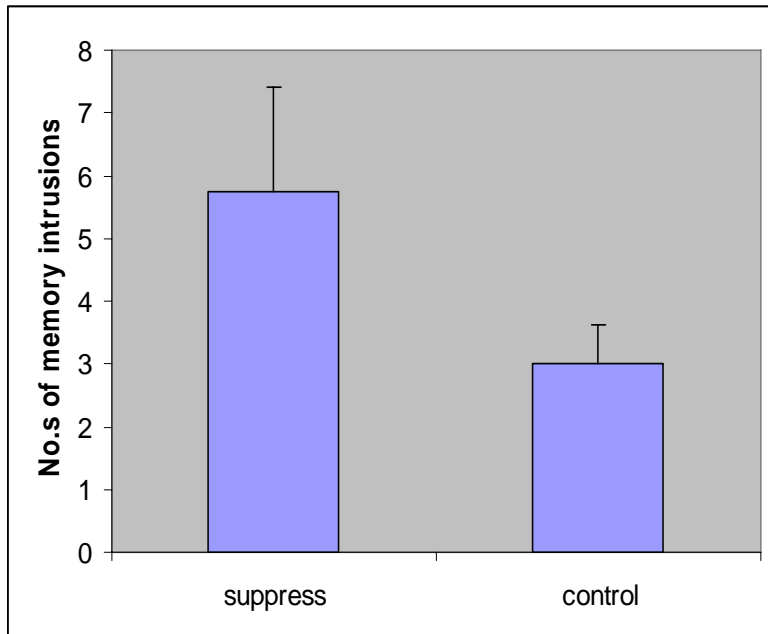
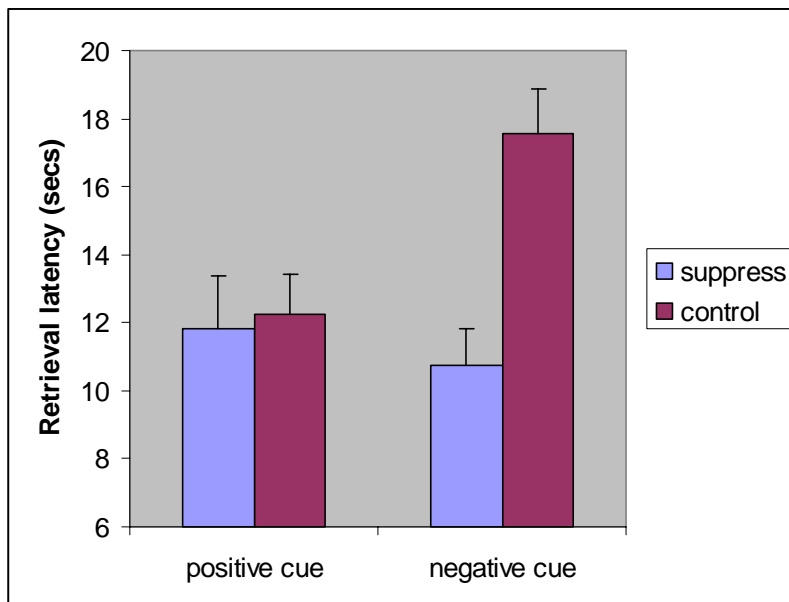
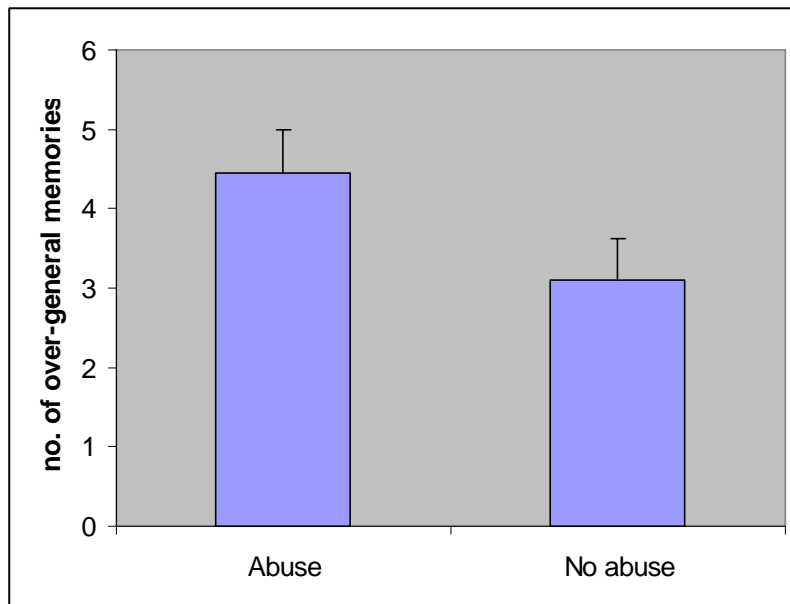


Figure 1b



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Figure 2



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Figure 3

