

Fullness of Feeling: reflection, rumination, depression and the specificity of autobiographical memories

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Abstract

Overgeneral memories are associated with a history of depression, and are produced even when a person is not currently depressed. Whether they are antecedent or scar of depression, they are linked to poor prognosis and are thought to be markers of underlying causal processes. Such processes include difficulties experienced in depression with executive function and truncated searches in remembering to minimize affective arousal. We provided cues of differing imageability and valence using the autobiographical memory test [AMT] to see whether less imageable cues were especially likely to be associated with overgeneral memories in those with depression history. Are personality dispositions linked to a curiosity about inner affective experience (reflection) linked to more specific memories? We also explored whether rumination, alexithymia and shame-proneness were highly linked to overgeneral memories. Using a logistic regression analysis it was found that only depression history was significantly linked to overgeneral memory production ($p < .04$). Neither current dysphoria nor any other affective dispositions were significantly related to overgeneral memory. There was also a significant interaction in specificity of memory production with cue valence, cue imageability and depression history. Less specific memories were produced by all subjects in response to low-imageable negative cues. However, with positive cues only those with a history of depression significantly failed to provide specific memories to a low imageable positive cue. Implications for procedures inducing a sensory focus to remedy overgeneral memory are discussed.

Keywords: reflection, rumination, overgeneral memory, visualisable cues, personality.

Emotions shape perception of inner and outer world

Since Bower's (1981) remarkable finding of mood-congruent memory effects, whereby one recollects faster and more frequently memories congruent with one's current affective state, there have been many refinements in our theories as to how emotions influence our memories. Emotion state shapes what we sample of the world - inner and outer - contributing to the formation of our autobiographical memories. Westen et al (1997) suggest that "just as selection pressures naturally select organisms,

emotional responses 'naturally select' behavioural and mental processes that are pleasurable and select against those that are aversive" (p. 430). In perceiving the outer world, curiosity opens us up to novelty (Ashby, Isen & Turken, 1999; Frederickson & Joiner, 2002) and the recent use of curiosity and wonder in mindfulness research suggests they do the same to our perception of our inner world (Lau et al, 2006). Anxiety, in contrast, makes us vigilant to threat (Carretié et al, 2004). In addition to transient emotion state, affective personality dispositions like being shame-prone (Claesson, Birgegård & Sohlberg, 2007), or envy-prone (Smith et al, 1999) also shape perception and recollection. Having personality dispositions like being high on motives of communion (concerned with interdependency, relationships and others) or agency (being concerned with personal power, achievement, and independence), shapes not only the content of what is remembered, but also the structure of reported memories (Wojke & Polo, 2001).

So both emotion states and personality dispositions can influence the "transitory dynamic mental constructions generated from an underlying knowledge base" (Conway & Pleydell-Pearce, 2000, p. 261) that form autobiographical memory. Autobiographical remembering entails three levels: locating the memory in a life period, a general category of events and event specific knowledge [ESK] (Conway & Pleydell-Pearce, 2000). Since emotions determine salience of events, they can influence what ESK is primed, while other personality features influence whether avoidance occurs and to what degree. Avoidance relates to an individual's incapacity to tolerate full emotional arousal. It is an attempt to cut short emotional experience, or minimise the intensity of that experience and is thought to characterise depression and rumination. We see reflection as a capacity to tolerate full emotional arousal and suggest this capacity determines whether ESK is primed at all or whether memories are recollected at a general level only. Recent research shows that depression and dysphoria influence memory by determining the level of specificity of memories accessed.

The overgeneral memory phenomenon was found by Williams and Broadbent in 1986, when people who had recently attempted suicide were slower to respond to

positive cues and gave no specific memories to positive and negative cue words, while controls were specific in 80% of the cases. Overgeneral memories are defined by Williams and Dritschel (1992) as being either categorical (a summary of repeated memories eg. doing yoga weekly) or extended memories (taking place over more than one day). Williams et al (2007) have explored the specificity of memory in those with depression which they define as 'persistent and unreactive low mood accompanied by a range of symptoms' (Williams et al, 2007). Overgenerality has been found with major depressive disorder characterised by extreme sadness and hopelessness, cognitive changes in manner of appraising events, low self-esteem, guilt and difficulties with memory and concentration. It is however evident between depressive episodes and does not need to be activated by low mood. Overgenerality may be a scar or an antecedent of having a history of depression, but even if it is a scar, it has been associated with future adversity – poorer prognosis, deficits in interpersonal problem-solving, hopelessness and difficulty imagining the future (Watkins & Teasdale, 2001). Overgeneral memories have also been found with subclinical depression (termed dysphoria) but are relatively specific to depression and post-traumatic stress disorder [PTSD] rather than anxiety disorders. Overgeneral memory in those with a history of depression is not merely a marker, but is linked to processes causally involved in depression. Processes which are viewed as likely to underlie overgeneral memory production include: truncated search to avoid negative affect arousal, stimulus capture, rumination, and deficient executive functioning (Williams et al, 2007; Hermans, Raes, Philippot & Kremers, 2006).

Avoiding the sensory specific

The process of remembering, affectively, may be like getting small electrical charges which some tolerate better than others. If rummaging through specific experiences from the past is painful some may find the search truncated at a more general level. Those with a history of depression and those with a ruminative style take the stepping stones across the stream of feelings, missing details vital for sensory, specific autobiographical memory of unique events. Their recollections remain at the level of general categories, as if they have learned not to get their feet wet in the sensory specifics in life, to avoid ESK. Staying general may have been negatively reinforced, avoiding the aversive activation of specific memories. Truncating retrieval at a general, category level addressing a whole class of events such as walks through sea spray on the shore in summer or temporally extended experiences such as fixing up an old house, avoids short-term affective disturbance at a long-term cost. Avoidance is linked to intrusive memories, fragmented narratives (Rassin, Merckelbach & Muris, 1997) and rumination (Nolen-Hoeksema, 2000). Being able to remember without avoiding the affective intensity has implications for detailed autobiographical remembering and a textured access to the past.

The capacity to tolerate inner states

We suggest that to truly learn from past experience, one cannot just focus on what one knows of the world. One also needs to know what aspects of one's own personality might have contributed to that sampling of the world; including one's state and manner of attending to emotion; one's dispositions, appraisals, and chronically-accessible schemas. These factors powerfully shape emotions' role in perception and memory.

Lambie and Marcel (2002) distinguish between the bodily broadcast of emotion (Emotion State [ES]) and emotion experience [EE]. The bodily broadcast underdetermines emotional experience. Ability and manner of attending to ES shape how it translates into EE which in turn influences the causal consequences of the bodily clout of emotion.

So, the role of bodily broadcast in emotion experience depends on a number of factors: the person's capacity and willingness to attend to it, ability to recognise it as emotional and to chunk it in ways that fit available language, willingness to put it into language and willingness to tell a particular person. Disjunctures occur between bodily broadcast of emotion, non-verbal expression and verbal avowal of emotion. Examples of this are those high on Alexithymia - an inability to chunk, verbally label and avow emotions and repressors, who have the behavioural signals of anxiety available to observers but report no anxiety themselves.

The Philosopher and the Neurotic: Reflection & Rumination

We are interested in reflection and rumination as two dispositional styles of attending to self-relevant emotional experience – styles we dub 'the philosopher' and 'the neurotic' respectively.

Some research initially blurred what it is one is attending to (emotion, self or the why questions – the background causality to occurrences) with how one attends to it; with an experiential focus or an analytic focus. Watkins and his colleagues have recently attempted to disentangle these attributes in research inducing different styles of accessing inner experience (Watkins, Teasdale & Williams, 2000; Watkins & Teasdale, 2001; Watkins & Baracaia, 2002; Watkins & Teasdale, 2004). We are interested in dispositional tendencies rather than inducing recollective strategies.

Reflection

Having full awareness of one's feelings and *then* gaining a reflective perspective on them is, we suggest, optimal for allowing a fullness of feeling without being biased by one's emotion state nor captured in ruminative cycles. The temporality of reflection is vitally important. To arrive at a cognitively-driven, abstract level of recollection without experiencing concrete, hot, emotionally-aroused states is not true reflection – it is avoidance of feeling. So, what we call 'reflection' is a fullness of feeling, plus an analytic

awareness of the object of perception and one's response to it. We suggest it is characterised by an openness to experiencing (even) negative feelings, having a sensory focus (body and world), which will reveal clear emotions. When attended to in this way it becomes apparent that emotion states change and pass. There is a transience to emotions. If they are unpleasant, reflection provides the possibility of contemplating strategies for alleviating unpleasant feelings after one is aware that one has them. A key feature of reflection is awareness of feelings, not judgement of feelings such as one might find in cases of guilt or self-reflective shame. Reflection is a kind of 'epistemic curiosity' (Campbell & Trapnell, 1999, p.285). Reflecting on feelings produces mood-incongruent memories, while ruminative focus produces mood-congruent recollections (McFarland & Buehler, 1998).

Rumination

Rumination is where one's feelings seem threatening, confusing and inescapable (Nolen-Hoeksema, 2000; Campbell & Trapnell, 1999). We view rumination as an attempt to learn from past experience which goes wrong by getting 'captured' by repetitive recollection at the wrong level of abstraction to be truly helpful. It is characterised by an inclination to focus repetitively on the causes and consequences of one's distress rather than take a sensory focus on what happened, to recognise that it happened in the past and to reflectively bracket what it felt like then with the current state one is in while reflecting (McIlwain, 1999, 2001; Kross, Ayduk & Mischel, 2005).

Rumination has been linked to dysphoria, which is also characterised by negative mood states and a chronic self-focus (Nolen-Hoeksema, 2000). Depression is characterised by judgement of inner states (e.g. shame, guilt, low self-esteem) and has been linked to rumination which is a tendency to experience one's emotions as confusing and uncontrollable and to focus on background causality issues - "why?" and "why me?" questions about emotional experience, about self and the past (Nolen-Hoeksema, 2000). People who are depressed or dysphoric are also likely to have chronically accessible self-constructs which emphasise personal inadequacy. There are difficulties in retrieving specific memories if a person has chronically accessible negative self-schemas and a tendency to be 'captured' by engrained views of self. So there are a number of features of depression which may contribute to the overgeneral memory phenomenon. In both rumination and depression there is a suggestion that functional avoidance occurs where the rememberer gets 'captured' at a general level. Williams et al (2007) call this 'mnemonic interlock', where there is the elaboration of the associative retrieval process but it remains at a general level. So attempting to control vivid emotional experience by truncating the search at a general level does not ensure successful release from rumination. Depressive rumination leads to a roiling of introspection along 'same old, same old' lines, which might confer a sense of inescapable, uncontrollable emotions. Williams et al (2007)

note that affective fading (where negative events provoke less negative affect as time passes) is less pronounced with dysphoria. It is as if the paint never dries. It may be that being curious about one's inner state (rather than pre-emptively judging one's emotion state) opens up mental processes to perceptual novelty. This reflection may derail ruminative roiling, preventing the capture of thought processes at a general, categoric level.

Watkins and colleagues have been exploring overgeneral remembering as a function of inducing different states and priming different styles of recollection like rumination and distraction. We wish to focus on dispositional differences in the manner of attending to one's emotions, styles of access that the rememberer habitually uses. Like Campbell and Trapnell (1999), we wish to give a positive account of reflection, complementing their emphasis on inner experience with our scale which more specifically addresses reflection on feelings. We see the fullness with which emotions are habitually experienced as an important consideration for research on autobiographical memory. Attempting to avoid full, specific awareness of one's inner state (the 'bodily clout' of feelings) has short-term advantage in controlling aversive arousal, but long-term disadvantages. Truncated retrieval may exacerbate rumination, leave the rememberer unable to inhibit chronically accessible schemas, and may result in intrusive experiences as well as less coherent life narratives. Avoidance is linked with an absence of narrative linkage in memories due to truncated search processes (Rassin, Merckelbach & Muris, 1997), and with symptoms of PTSD, with recurrent intrusive images or 'flashbacks' which make emotions feel uncontrollable. Trauma can result in dissociation or disaggregation of component processes of emotion experience in ways that may be adaptive, as Negrao et al's (2006) longitudinal empirical evidence shows. They show how the physiological, expressive, and avowed aspects of emotion can come apart, noting that such dissociation can be adaptive for certain people who have experienced past trauma. We view emotion experience as multi-layered assemblages of dissociable component processes.

Not everyone is able to attend fully to feelings or to integrate all features of emotion experience. The effects on memory depend on which parts of emotional and motivational experience are suboptimal. Depressed people have persistent unreactive low mood, deficiencies in motivation and executive function. Interestingly enough, the procedure used to elicit memories in the Autobiographical Memory Test [AMT] is to provide general categories as cues, which Williams et al (2007) note is the most common point of entry into the memory system. This is a top-down process; the cues are cognitive and general and require recollection of experiential evidence to complete the task which is effortful and requires executive control thought to be lacking in those with depression. Most studies use a standard list which varies positive and negative cues. Interestingly, overgeneral memories also occur with positive

cues; eight out of nine studies cited by Williams et al (2007) found more overgeneral memories in depressed people to positive cues. Positive words might just as easily trigger negative memories – a cue like ‘confidence’ might remind one that one does not have any and so one can snatch defeat from the jaws of success. If one wants to be sure not to prime painful episodic memories, one has to be non-specific about all memories. So, one can become a stranger to joyful and to anger-filled specific memories alike.

Abstract cues require more executive function than readily imageable cues. Williams, Healy, & Ellis (1999) and Williams et al (2007) suggest that low imageable stimuli produce more general memories. We thought that if the AMT is a cognitively costly ‘top-down test’, and if depressed people are low on executive function then those with a history of depression, would be more likely to provide general memories to positive and negative cues. Further, if low imageable cues are cognitively costly then depressed people should be more likely to produce general level memories with such cues. We selected cues so we had a highly imageable positive and negative cue, and a less readily imageable positive and negative cue. We held emotional intensity of the cues constant (see Table 1 below).

Table 1: Selection of cues: imageability, emotion valence [goodness] & intensity [emotionality]

Word [frequency]	Image- ability	Goodness	Emotion -ality
Baby (1055)	608 [hi]	5.77 [hi]	5.21
Confidence (22)	371 [lo]	5.68 [hi]	5.29
Accident (557)	593 [hi]	2.0 [lo]	5.04
Crisis (15)	375 [lo]	2.05 [lo]	5.89

We invited the participation of 54 first year students (in their break, so that their stress levels were not excessively high), with an age range of 17-69 years, and an average age of 23. We did not provide students with training in the concept of specificity, but instructed them in a way that sought a single, unique event: “I am interested in your memory for events that have happened in your life. You will see a number of words. For each one, I want you to remember an event from your life that the word reminds you of. The event can have occurred at any time in your life and may be trivial or important” (Williams, Healy & Ellis, 1999, p.560).

We asked students to write their memories directly to computer. The overgeneral memory phenomenon is robust across presentation format; Antz et al (2002) also used self-paced responding to cues and written memories. We did not use a large array of stimuli. We used new stimuli rather than using those outlined in the AMT – since the uniformity of list has been seen as a problem by Williams et al, (2007). We used the same 4 stimuli listed in Table 1 with all subjects. Memories were coded for specificity defined as a particular event having occurred in a 24 hour period (Williams et al, 2007). This distinguishes specific from general memories (categorical or extended).

We were interested in whether generality of memories is linked to a person’s tendency to ruminate, an inability to reflect on feelings, and whether or not the person has had a history of depression. We assessed rumination and reflection using scales developed by Campbell and Trapnell (1999). We supplemented their measure of reflection which addresses the manner in which one approaches self-reflection with a scale which assesses more directly a capacity to attend to and reflect on the bodily clout of emotion, called the Reflecting on Feelings Scale [ROF] (McIlwain & Galati, 2007). To assess depression we devised self-report questions about a person’s history of depression (four items; Cronbach’s alpha = .74). We assessed history of depression since the overgenerality effect is supposed to occur whether or not the person is currently depressed. We also assessed subclinical, current levels of dysphoria, anxiety and stress [DASS-21] (Lovibond & Lovibond, 1995). In addition we addressed some subsidiary hypotheses as to whether memory generality was linked to an inability to: be specific in labelling emotions (alexithymia, using the 20-item version of Bagby, Parker & Taylor’s 1993 Toronto Alexithymia Scale, the TAS-20), reflect on one’s private self-consciousness (using Fenigstein, Scheir & Buss’ (1975) Private Self-consciousness Scale) and a tendency to feel shame (Feelings about self scale [FASS] assessing shame, McIlwain & Warburton, 2005). We also assessed the students’ current mood state using Watson & Tellegen’s (1985) Positive Affect Negative Affect scale [PANAS].

Statistical method

We used a random effects logistic regression analysis, which deals appropriately with multiple observations from each person, can work with correlated observations, and creates its own dummy variables. The model implemented in Stata version 10 was used in this instance. The odds ratios derived from logistic regression equations show the ratio of the odds of a target outcome (e.g., saying ‘yes’) occurring under one condition (e.g. experimental) versus the odds of it occurring under another condition (eg, control). More generally the ratio shows the effect of a one-unit increase in the predictor on the odds of the target outcome occurring.

An OR greater than one indicates that the odds of the target outcome increase with the increase in the predictor, while an OR less than one indicates that the odds of the target outcome decrease with an increase in the predictor. An OR of one thus indicates that an increase in the predictor has no effect on the outcome, so that a statistically significant OR is one which shows a departure from one in either direction which is greater than would be expected by chance. The percentage increase (or decrease) in the odds of the target outcome can be calculated as $(OR - 1) * 100$.

Results

In terms of our primary hypotheses, we found that specificity of memories was not significantly related to: capacity habitually to reflect on feelings [ROF], or current levels of Dysphoria [DASS]. We did find a link with self-reported history of depression which we discuss in more detail below. In terms of our subsidiary hypotheses, specificity of memories was not significantly related to: Alexithymia, Private self-consciousness, shame or current mood state [PANAS].

Self-reported history of depression was found to be significantly linked to overgeneral memories ($p < .04$). The findings showed that generality of memory and self-reported history of depression interacted complexly with cue valence and imageability, as expected, with low imageable cues and positive cues being linked to less specific memories for those with a history of depression. To explore this in detail we looked at what was happening at different levels of depression: at the mean of depression, as well as one standard deviation above and below the mean. We found that the effects of imageability are consistent when negative stimuli are considered (see the blue lines in Fig.1, below) with less specific memories being produced in response to our low imageable negative cue 'crisis' regardless of level of history with depression. The difference in specificity of memories to low-imageable negative cue was non-significant across depression levels.

However, the picture was quite different regarding positive cues. For those who had low or average levels of depression, the same level of specificity of memories were recalled to positive cues regardless of whether those were readily imageable or not. Those below average or average in avowed depression history (see top and middle third of Fig 1 respectively) produced significantly more specific

memories for the highly imageable negative cue 'accident' than for the highly imageable positive cue 'baby' ($p < .000$). Those below average or average in avowed depression history (see top and middle third of Fig 1 respectively) produced significantly less specific memories for the low imageable negative cue 'crisis' than for the low imageable positive cue 'confidence' ($p < .008$, $p < .03$ respectively).

Those above average in depression history (see lower third of Fig 1) produced significantly more specific memories for the highly imageable negative cue 'accident' than for the imageable positive cue 'baby' ($p < .04$). However, with low-imageable cues differences in specificity of memory due to cue valence were non-significant ($p < .84$, ns).

While the low imageable, positive cue 'confidence' produced specific memories in those without a history of depression, those with more history of depression produce less ESK in response to this cue. Depressed people produce fewer specific memories in response to positive cues in the balance of studies (Williams et al, 2007).

With the full sample we found that there was a highly significant interaction in the specificity of memories offered by subjects according to the imageability x valence of cues ($p < .0001$). We observed a trend whereby with low imageable cues (crisis, confidence), the positive prompt produced more specific memories ($p < .051$). We found significant differences with the high imageable cues (accident, baby): the negative prompt produced significantly more specific memories ($p < .0001$). Do high imageable cues produce more specific memories? No. As can be seen from Figure 2 (below), with positive cues imageability makes no difference ($p = .22$), (as seen from the slope of green line from 0 = low imageable to 1 = highly imageable). With low imageable cues there was a trend for the positive cue 'confidence' to produce more specificity than 'crisis'

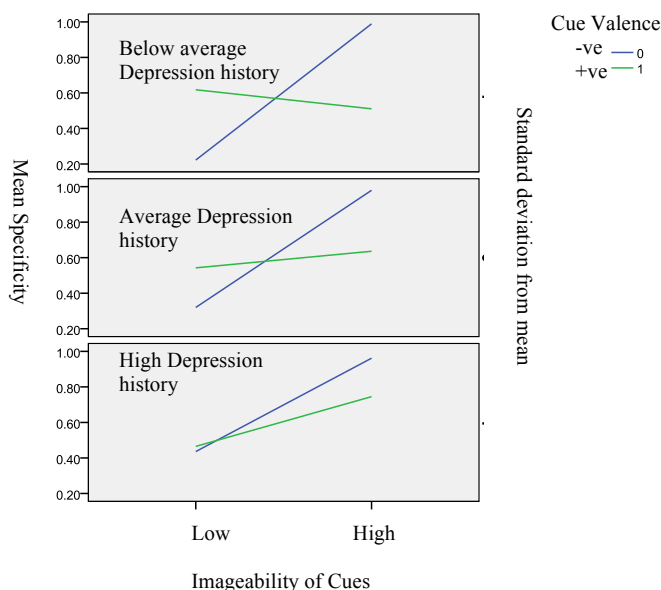


Figure 1: Specificity of memory at different depression levels varying cue imageability & valence

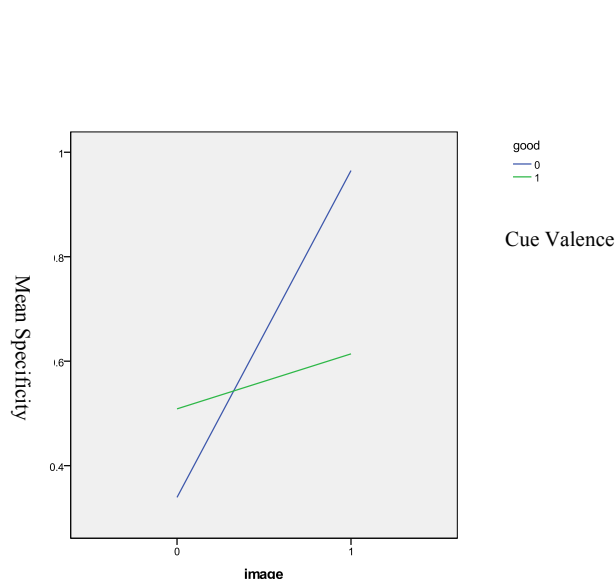


Figure 2: Specificity of memory varying cue imageability & valence

($p < .051$). So, for the words we chose, low imageability doesn't guarantee general memory production, but interacts with cue valence, at least for the cues we used.

Attempts to remedy overgenerality

Our results tentatively suggest that visualisable cues may aid more sensory focus on world and self, and may avoid the general self focus consistent with depression, dysphoria and rumination. Our findings are hostage to the particular cue words used. This is of particular concern given the highly significant finding that those with the greatest history of depression were uniquely unable to produce specific memories to our somewhat abstract cue 'confidence'. This finding is comprehensible in the light of a comment by Williams et al (2007) that "the more any cue in an autobiographical memory task maps onto abstract self-related concerns, the more the cue will tend to elicit an overgeneral response" (p.137). It is highly possible that confidence maps onto self-concerns of those with a history of depression.

The fact that dispositional reflection was not linked to specificity of memory was an interesting surprise. We had expected that either Campbell and Trapnell's measure or our more specifically feeling-centred measure of reflection [ROF] would relate to more specific memories. The two measures of reflection were significantly correlated ($r = .43$, $p < .001$) to each other, but neither had any relationship to specificity of memory. Fenigstein's measure of private self-consciousness was similarly unrelated.

Our research considered tendencies that were dispositionally present in individuals. Only self-reported history of depression was linked to overgeneral memories. None of the measures relating to current dysphoria, current affective state, or affective personality dispositions like alexithymia or shame-proneness were linked to overgenerality of memories. This is in keeping with previous research which suggests that the effects of generality of memory persist regardless of current mood state. It may be that the elements of depression that contribute to the overgeneral effect are the motivational aspects related to executive function, or the capture of remembering by chronically-accessible self-schemas. Certainly we found very little specificity in response to the self-relevant cue 'confidence'. To remedy overgeneral memory some attempt to address underlying appraisal schemas may be required, or managing the manner in which self-reflection occurs.

The fact that highly imageable cues promoted specific memories even in those with a depression history lends indirect support to attempts to promote an experiential and sensory focus as Watkins and Teasdale (2004) do. Watkins, Teasdale and Williams (2000) found that decentring prompts reduced overall generality of memories relative to control prompts, while distraction reduced overgenerality relative to being actively instructed to ruminate. While Watkins and Teasdale's (2004) study lacked a non-dysphoric control group, they show that overgenerality is

not set in stone, that it may be dynamically maintained by a particular state, or by a particular mode of processing.

Whether cue visualisability evokes a more sensory style of attending to the personal past requires more research directly addressing this question. Research suggests that induced memory strategies like decentring, (reminding subjects of the transience of mood states), and distraction (where subjects focus attention on an external event) are linked to more specific memories. Future research might address how memory strategies produced as a result of such instructions interact with cue imageability and valence. Whether such induced memory strategies interact with existing affective personality dispositions also requires further research. From our experience we suggest using a broader array of cues, taking care to avoid cues likely to trigger self-relevant schema prevalent in depression.

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