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The impact of perceived self-efficacy on mental time travel and social problem solving

Adam D. Brown [a,*], Michelle L. Dorfman [b], Charles R. Marmar [a], Richard A. Bryant [b]

[a] New York University School of Medicine, United States
[b] School of Psychology, University of New South Wales, Sydney, Australia

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ABSTRACT

Current models of autobiographical memory suggest that self-identity guides autobiographical memory retrieval. Further, the capacity to recall the past and imagine one's self in the future (mental time travel) can influence social problem solving. We examined whether manipulating self-identity, through an induction task in which students were led to believe they possessed high or low self-efficacy, impacted episodic specificity and content of retrieved and imagined events, as well as social problem solving. Compared to individuals in the low self efficacy group, individuals in the high self efficacy group generated past and future events with greater (a) specificity, (b) positive words, and (c) self-efficacious statements, and also performed better on social problem solving indices. A lack of episodic detail for future events predicted poorer performance on social problem solving tasks. Strategies that increase perceived self-efficacy may help individuals to selectively construct a past and future that aids in negotiating social problems.

1. Introduction

Mental time travel (MTT), the cognitive capacity to subjectively recall and re-experience episodes from our past or 'pre-experience' our lives in the future through imagination and simulation, is a pervasive part of everyday life. Although debate surrounds whether or not this mental capacity is uniquely human (Suddendorf & Corballis, 2007), converging evidence from neuropsychological, clinical, developmental, and neuroimaging studies indicates that the processes and neuroanatomical structures underlying the reconstruction of autobiographical memories and the projection and simulation of personal future events are closely linked (for a review see Schacter, Addis, & Buckner, 2008; Szpunar, 2010). For example, brain imaging studies demonstrate extensive overlap in neural activation when individuals are asked to recall autobiographical memories and imagine personal future events (e.g. Addis, Wong, & Schacter, 2007). Moreover, autobiographical memories and imagined future events respond similarly to experimental manipulations (Berntsen & Jacobsen, 2008; D'Argembeau & Van Der Linden, 2004) and individuals with clinical disorders tend to exhibit similar deficits and biases when asked to generate past and future events (e.g. D'Argembeau et al., 2008; Moore & Zoellner, 2007; Williams et al., 1996).

Converging theory and empirical findings suggest that a core function of MTT is the use of memories to navigate present and future concerns, decisions, and behaviors. The capacity to retrieve specific autobiographical memories allows individuals to draw on past personal experiences, which in turn serve as important guides for problem solving (Beaman et al., 2007; Williams, 2006). Similarly, Schacter et al. (2008) propose that the capacity to project and simulate one's self in the future

* Corresponding author. Address: PTSD Research Program, Department of Psychiatry, NYU School of Medicine, 145 E. 32nd St., 8th Floor, United States. Fax: +1 646 754 2300.
E-mail address: adam.brown@nyumc.org (A.D. Brown).

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is likely to aid in the negotiation of current and anticipated future problems. In contrast, studies show that in patients with depression, posttraumatic stress disorder (PTSD), and complicated grief, deficits in episodic specificity (overgeneral autobiographical memory) is linked with poor social problem solving (Evans, Williams, O'Loughlin, & Howells, 1992; Maccallum & Bryant, 2010; Sutherland & Bryant, 2008).

Based on current models of autobiographical memory, we propose that the extent to which an individual recalls the past and imagines the future with episodic specificity, and in turn their performance in social problem solving, will vary with one's current representations of self-identity. Although self-identity is multi-dimensional (e.g. Conway, Singer, & Tagini, 2004; McAdams, 2001), it appears to overlap with MTT insofar as they both provide temporal coherence and continuity between one's personal past, present, and future (e.g. Markus & Nurius, 1986; McAdams, 2001; Schacter et al., 2008). Furthermore, Conway and Pleydell-Pearce (2000) propose that autobiographical memories are retrieved within the context of a self-memory-system (SMS) to support "the working self," which involves active representations of one's current and future goals. Conway (2005) argues that the current and future goals of the working self may inhibit or facilitate knowledge that is discrepant or may threaten ideal views of the self.

If the working self serves as a critical guide in the construction of past and future events, then changes in the working self will likely correspond with changes in episodic specificity. Williams (2006) argues that the capacity to retrieve specific autobiographical memories is determined not by encoding, but rather one's "current state of mind" during retrieval. Studies show that following cognitive behavioral therapy (CBT), an intervention aimed in part at changing maladaptive views of one's self, individuals with depression and PTSD exhibit increased autobiographical memory specificity (McBride, Segal, Kennedy, & Gemar, 2007; Sutherland & Bryant, 2007; Williams et al., 2000). In addition, the three mechanisms that Williams (2006) posits underlie overgeneralized autobiographical memory are likely to be influenced by current self views. For example, he suggests that depressed individuals are susceptible to overgeneralized autobiographical memories, in part, because they terminate their retrieval search at intermediate levels as a means of avoiding recalling negative episodic details that are at odds with current self-views and may cause distress. Further, ruminating on negative abstract statements impairs specificity (Nolen-Hoeksema, 1991). In addition, depressed patients characterized by their negative self-views are less cognitively motivated (Hertel, 2000), which may also limit the executive functions underlying the capacity to successfully retrieve specific autobiographical memories. Interestingly, the reduced accessibility of specific personal events observed in these psychiatric disorders may offer a partial explanation for some autobiographical memory deficits observed in disorders characterized by depression or posttraumatic stress (e.g. Hermans, Raes, Iberico, & Williams, 2006).

Given the close link between self-identity and autobiographical memory, Williams (2006) predicted that interventions that reduce negative self-schemas would correspond with an increase in autobiographical memory specificity. The current study tested whether experimentally manipulating self-identity can impact (a) MTT and (b) social problem solving. We manipulated participants' perception of self-efficacy because this feature of one's working self has been shown to shape one's sense of agency and planning (Bandura, 2001). One could hypothesize that a working self that is characterized by greater self-efficacy will correspond with increased accessibility for autobiographical memories and imagined future events that are consistent with an efficacious self, which in turn would lead to an increased performance in social problem solving. Further, this efficacious self should retrieve more specific memories because there should be reduced rumination and avoidance tendencies disrupting the retrieval search (Williams, 2006).

2. Methods

2.1. Participants

Thirty-three undergraduate students (23 females and 10 males) with a mean age of 19.66 (*SD* = 2.84) from the University of New South Wales (UNSW) who had previously completed a battery of questionnaires in an introductory psychology course participated in this study. Participants either received course credit or $20AUD for their participation.

2.2. Materials

2.2.1. Demographics

Participants provided self-report information on their age, gender, years of education, whether they were currently receiving mental health treatment, or had a present or past diagnosis of mental illness.

2.2.2. Visual Analogue Scales (VAS) for mood and self-efficacy

Visual analogue scales were used to measure mood (*Distraction*, *Excitement*, *Positive Mood*, *Negative Mood*) and perceived self-efficacy (*Self-Confident*) before and after the experimental induction. Each VAS had anchors ranging from 1 to 10 (e.g. 1 = *not at all self-confident*, 10 = *extremely self-confident*).

2.2.3. Depression Anxiety Stress Scales (DASS; Lovibond & Lovibond, 1995)

Participants completed the 21-item self-report DASS to assess current levels of depression and anxiety symptoms prior to the experimental induction.

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2.2.4. Resilience Appraisals Scale (RAS; Johnson, Gooding, Wood, & Tarrier, 2010)

Participants completed this 12-item self-report measures assessing appraisals of perceived ability to cope with emotions, perceived ability to cope with difficult situations, and perceived ability to gain social support. The scale was constructed to measure positive self-appraisals similar to those underlying self-efficacy.

2.2.5. Modified Autobiographical Memory Interview (M-AMT)

The stimulus material and methodology were based on a modified Crovitz Technique (Crovitz & Schiffman, 1974); and similar to studies examining autobiographical memory and future thinking (e.g. Addis, Wong, & Schacter, 2008). Individuals were presented with 20 positive (e.g. *joy*, *pride*, *love*) and negative (e.g. *blame*, *sad*, *stress*) cue words and were instructed to generate personal past and future events. All cue words were affective nouns selected from Bradley and Lang's (1999) affective norms for English words. The conditions were blocked and the 20 words were randomly divided into four lists of five words, and the order of presentation and temporal direction was counterbalanced. Word cues were presented in the center of a computer monitor, with the task (''recall past event'' or'' imagine future event'') displayed underneath the cue, as well as a reminder to supply as much detail as possible. Following stimulus presentation, participants then described the event in detail into a digital recorder. The events participants were to report were to be personally relevant, occurring within a 24-h time period, realistic, and for future events, not previously experienced by the participants. A series of practice trials were completed before beginning each task. There were no time constraints on the verbal description. Responses were later transcribed.

Responses were audio recorded and coded as 'specific' if it referred to an event that took place within a 24 h time period, 'categoric' if it reflected a series of repeated events or 'extended' if it described an event that last more than 1 day. Responses were coded as 'omissions' if a participant failed to generate a response. Each response was coded by a primary rater as well as a second independent rater who coded 20% of the responses. The mean kappa reliability coefficient was .90 for specificity.

For each episode a coder created sums for the total number of positive words, the total number of negative words, and the total number of self-efficacy statements. Self-efficacy statements included actions that an individual took or might take to resolve a personal or interpersonal problem (e.g. ''expressed why I felt my grade was unfair'', ''began exercising to lose weight''). A second independent rater coded 20% of the responses for valence and self-efficacy. The mean kappa reliability coefficient for was .78 for positive words, .86 for negative words, and .80 for self-efficacious words.

2.2.6. Means-End Problem Solving Task (MEPS, Platt, Spivack, & Bloom, 1975)

The MEPS was administered to measure problem-solving ability. Participants were presented with the beginning and the end of a problem situation and were asked to provide a step-by-step (relevant means) strategy for achieving the goal/outcome described. Participants were presented with two problem scenarios. These included (a) resolving an argument with a partner, and (b) making friends in a new neighborhood (see Maccallum and Bryant (2010) for details). The order of presentation for these scenarios was counterbalanced. The experimenter read each problem out loud. Participants were given 2 min to respond verbally to each scenario. Responses were audio recorded and scored in terms of number of relevant means (i.e. number of relevant discrete steps taken to reach the stated outcome, Platt et al., 1975). Effectiveness (i.e. the extent to which it maximized positive and minimized negative personal and social short- and long-term consequences; Marx, Williams, & Claridge, 1992) was rated on a seven-point Likert-type scale (1 = *not at all effective*, 7 = *very effective*). The inter-rater reliability was sound for number of means (r = .83) and effectiveness (r = .75).

2.3. Procedures

2.3.1. Baseline measures

After participants provided written informed consent (approved by the UNSW human ethics committee), individuals completed baseline ratings of mood and self-efficacy on the VAS, and symptoms on the DASS.

2.3.2. Self-efficacy Induction

Seventeen participants were then randomly assigned to the HSE and 16 were participants were assigned to the LSE. In order to induce self-efficacy conditions, HSE participants were verbally instructed as follows: ''*. . .based on the way in which you responded to items on the questionnaire during your introduction to psychology course, we were able to derive a highly accurate measure of how you cope in stressful situations. In fact, according to our analyses, you are in the top 1% of* ''*copers.*'' *Although like most people you may experience some negative emotions during and after a stressful event, in general you have fewer negative emotions and recover much more quickly, and you feel capable of overcoming difficult life events in the future. That is, compared to the general population you feel a greater sense of control and confidence when managing adverse and stressful events.*'' In contrast, participants in the LSE condition were told that ''*. . .based on the way in which you responded to items on the questionnaire during your introduction to psychology course, we were able to derive a highly accurate measure of how you cope in stressful situations. According to our analyses, you are in the lower 50–30%ile of* ''*copers.*'' *Like most people you may experience some negative emotions during and after a stressful event, but at times may find that it takes you much longer than others to recover, and in general, you are often concerned with your ability to overcome difficult life events in the future. That is, you tend to feel a lack of control or confidence when dealing with adverse and stressful life events.*'' Individuals in both conditions were then asked if this description is consistent with how they view themselves, and were asked to provide up to three of their own words describing how they cope with stressful events.

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2.3.3. Post-induction measures

Following the induction, participants were re-administered the VAS as well as the RAS to provide an additional measure of self-efficacy. Following the post-induction measures, individuals first completed the M-AMT followed by the MEPS.

3. Results

3.1. Demographics

HSE and LSE groups did not differ by age [$t(31) = .96$, $p = .35$], years of education [$t(31) = .72$, $p = .48$], gender [χ^2 (1, $N = 33$) = .41, $p = .52$], or DASS scores [$t(31) = 1.25$, $p = .22$]. None of the participants were currently receiving any behavioral or psychopharmacological mental health treatment.

3.2. Induction checks

A series of 2 (Condition: HSE and LSE) × 2 (Pre-induction and Post-induction) repeated measures analyses of variance (ANOVAs) on Distraction, Excitement, Positive Mood, Negative Mood, and Self-Efficacy scales (see Table 1) indicated a significant main effect for Condition, $F(1,31) = 8.04$, $p < .01$, $\mu = .32$ and a Condition × Induction interaction, $F(1,31) = 13.35$, $p < .01$, $\mu = .30$. Individuals in the HSE condition reported higher levels of self-efficacy following the induction than individuals in the LSE condition, $t(31) = 2.84$, $p < .001$, $d = .97$. Whereas individuals in the HSE condition showed a significant increase in perceived self-efficacy from baseline to post-induction ratings [$t(16) = 3.45$, $p < .001$, $d = .80$], those in the LSE condition demonstrated a significant decrease in perceived self-efficacy [$t(15) = 2.39$, $p < .05$, $d = .67$]. Further, individuals in the HSE condition self-reported higher levels of positive coping self-appraisals on the RAS compared to individuals in the LSE condition, $t(31) = 3.22$, $p < .01$, $d = 1.11$.

3.3. MTT specificity

A 2 (Direction: past, future) × 2 (Valence: negative, positive) × 2 (Condition: HSE, LSE) repeated measures ANOVA on the number of specific narratives (see Table 2) found significant main effects for Valence $F(1,31) = 34.07$, $p < .001$, $\mu = .52$, Condition $F(1,31) = 16.19$, $p < .001$, $\mu = .34$, and an interaction between Distance and Valence, $F(1,31) = 41.90$, $p < .001$, $\mu = .56$. Individuals in the HSE group generated past and future events with greater specificity compared to those in the LSE condition, $t(31) = 3.92$, $p < .001$, $d = 1.39$. Episodes generated in response to negative cues were more specific than in response to positive cues, $t(32) = 5.91$, $p < .001$, $d = .30$. In terms of the Direction × Valence interaction, memories elicited with negative cue words were recalled with greater specificity than memories elicited with positive cue words, $t(32) = 8.23$, $p < .001$, $d = .75$. The opposite pattern emerged in the future condition, in which future events for positive cue words were generated with greater specificity than future events for negative cue words, $t(32) = 2.03$, $p = .05$, $d = .16$. Whereas negative memories were recalled with greater specificity than negative imagined future events [$t(32) = 4.13$, $p = .001$, $d = .58$], imagined positive future events were generated with more specificity than positive memories, $t(32) = 2.60$, $p < .05$, $d = .30$.

Table 1
Self-report summary before and after self-efficacy induction.

Variable	High self-efficacy		Low self-efficacy	
	M	*SD*	*M*	*SD*
Pre-induction				
Positive Mood	5.82	1.29	5.56	1.59
Negative Mood	7.24	1.14	6.69	1.70
Self-Confident	6.35[d]	1.11	6.12[e]	1.67
Distracted	2.59	1.46	2.81	1.56
Excited	4.71	1.86	5.13	1.41
Post-induction				
Positive Mood	6.00	1.62	5.63	1.78
Negative Mood	6.94	1.20	6.31	1.66
Self-Confident	7.23[b,d]	1.09	4.75[b,e]	2.38
Distracted	2.53	1.50	3.43	2.19
Excited	4.94	1.81	5.06	1.48
RAS[a]	50.71[c]	6.29	42.44[c]	8.39

Note: RAS = Resilience Appraisal Scale.
[a] Administered post-induction only.
[b] $p < .001$.
[c] $p < .01$.
[d] $p < .01$.
[e] $p < .05$.

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Table 2
Memory and Future Specificity Averages for High and Low Self-Efficacy Conditions.

Variable	High self-efficacy		Low self-efficacy		*t*
	M	*SD*	*M*	*SD*	
Positive memory	2.37	.20	1.63	.74	4.01***
Negative memory	2.78	.29	2.21	.85	2.64*
Positive future	2.57	.30	1.83	.78	3.64**
Negative future	2.52	.41	1.66	.75	4.13***

* $p < .05$.
** $p < .01$.
*** $p < .001$.

Table 3
Memory and future content for high and low self-efficacy conditions.

Variable	High self-efficacy		Low self-efficacy		
	M	*SD*	*M*	*SD*	*t*
Memory					
Negative words	3.55	.64	3.98	.29	2.40*
Positive words	3.68	.52	3.14	.39	3.42**
Self-efficacy statements	4.62	.59	4.07	.60	2.69*
Future					
Negative words	3.14	.35	3.24	.54	.69
Positive words	4.45	.57	4.10	.35	2.13*
Self-efficacy statements	4.73	.43	4.19	.54	3.19**

* $p < .05$.
** $p < .01$.

Table 4
Summary of hierarchical regression models for MEPS indices.

Variable	*B*	*SE* B	*β*
MEPS relevant means			
Age	−.06	.09	.14
Education	−.13	.23	−.12
RAS	.04	.03	.31
Overgeneralized memories	.82	.82	.19
Overgeneralized future Events	−1.42	.66	−.41*
MEPS effectiveness			
Age	−.01	.10	−.01
Education	.22	.25	.19
RAS	.02	.03	.10
Overgeneralized memories	.49	.90	.11
Overgeneralized future Events	−.179	.72	−.48*

Notes: RAS = Resilience Appraisal Scale; overgeneralized = combined categoric and extended and responses.
* $p < .05$.

3.4. Content ratings

Table 3 presents the mean number of negative and positive emotion words, and statements reflecting self-efficacy when recalling past or imaging future events. Repeated measures ANOVAs conducted on negative emotion words revealed significant main effects for Direction [$F(1,31) = 43.36$, $p < .001$, $\mu = .58$], and Condition [$F(1,31) = 3.48$, $p = .07$, $\mu = .10$], and a marginal Direction X Condition interaction [$F(1,31) = 3.23$, $p = .08$, $\mu = .09$]. Participants generated more negative words for memories than future events, $t(32) = 6.32$, $p < .001$, $d = 1.15$. A similar analysis for positive emotion words found main effects for Direction [$F(1,31) = 76.56$, $p < .001$, $\mu = .71$] and Condition [$F(1,31) = 12.02$, $p < .01$, $\mu = .28$]. Individuals used more positive words when describing imagined future events than memories, $t(32) = 8.72$, $p < .001$, $d = 1.67$. Individuals in the HSE included more positive words when generating past and future events, $t(31) = 3.47$, $p < .01$, $d = 1.24$. In terms of the use of statements reflecting self-efficacy, we found a main effect for Condition, $F(1,31) = 14.45$, $p < .001$, $\mu = .32$. Compared with

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individuals in the LSE condition, individuals in the HSE, used more statements reflecting self-efficacy when describing past and future events, $t(31) = 3.80$, $p < .001$, $d = 1.32$.

3.5. Social problem solving

Separate one-way ANOVAs on MEPS responses indicated that HSE participants scored higher than the LSE participants on both the number of relevant means $F(1,31) = 5.95$, $p < .05$, $\mu = .16$ and ratings of effectiveness, $F(1,31) = 7.62$, $p < .05$, $\mu = .12$.

To explore the relative contribution of overgeneralized autobiographical memory and imagined future events to performance on the MEPS task, separate hierarchical multiple regressions were conducted for relevant means and efficacy solutions (see Table 4). We entered age at Step 1, years of education at Step 2, the total post-induction resiliency score on the RAS at Step 3, the number of combined categoric and extended responses (overgeneralized responses) for autobiographical memories on Step 4, and the number of overgeneralized responses for future events on Step 5. The total number of overgeneralized responses to future events significantly predicted MEPS performance, accounting for 13% of the variance for relevant means and 17% for efficacy solutions.

4. Discussion

The current study shows for the first time how autobiographical memories and imagined future events are aligned, in terms of specificity and content, with the working self. Individuals in the HSE condition recalled past and imagined future events with greater episodic specificity than those in LSE condition. Moreover, individuals in the HSE condition used more self-efficacious descriptions when recalling past and imagining future events relative to those individuals in the LSE condition. Similarly, those individuals in the HSE condition were more likely to describe past and future events with positive words, as compared to those in the low LSE condition, whereas those in the LSE condition were more likely to use negative words when describing past and future events.

This pattern of findings may be explained by the SMS model of Conway and Pleydell-Pearce (2000), insofar as the working self influences the nature of the memories and future imaginings. These findings suggest that changes in self-identity may play a role in how memories and future simulations are accessed and constructed. From the perspective of the SMS model, individuals may be increasingly motivated to retrieve specific episodic details that support a "healthier" self (or ignore those that would contradict this self-view). That is, although an individual's autobiographical knowledge base will include a wide range of positive and negative experiences, positive changes in self-identity that occur, for example as a result of psychotherapy, may motivate an individual to selectively retrieve or generate detailed episodic events that promote positive self-appraisals.

According to the CaRFAX model (Williams, 2006), the greater specificity observed in those with a self-efficacious 'self' may be attributed to the individuals with high self-efficacy exerting greater persistence of effort (Bandura, 2001), thereby exerting great executive control than those in the low self-efficacy group. Alternatively, individuals with high self-efficacy may be less likely to ruminate about negative experiences or truncate their retrieval search at intermediate levels. According to the CaRFAX model, all three mechanisms would enhance the retrieval search to allow specific details to be retrieved from the autobiographical past or the imagined future. Future studies could experimentally manipulate these variables in the context of high and low self-efficacy to determine their relative contributions to retrieval patterns.

Although theoretical and empirical work suggests that autobiographical memories play a key role in problem solving (e.g. Bluck, Alea, Habermas, & Rubin, 2005), we found that the extent to which individuals were deficient in imagining future events predicted poorer performance on both indices of the social problem solving task. This finding is consistent with suggestions that the ability to project and simulate one's self in the future serves as important guide for problem solving (Schacter et al., 2008). These data further support studies showing that simulating future events may be a useful method for coping, emotion regulation, and problem solving (Brown et al., 2002; Taylor et al., 1998; Taylor & Schneider, 1989). For example, Taylor and colleagues (1998) found that individuals who simulated the details of an ongoing stressful event were more likely to adopt proactive coping strategies and seek social support compared to individuals who simulated the alleviation of stress resolving once the stressor ended or who did not engage in simulation (Taylor et al., 1998). These findings also suggest that deficits in imagining the future found in a number of clinical disorders (e.g. D'Argembeau et al., 2008; Williams et al., 1996) may underlie symptom maintenance, and in turn, social problem solving. Further, although recalling the past (e.g. exposure therapy) has proven to be an effective intervention for alleviating symptoms in certain clinical disorders (e.g. PTSD, complicated grief), interventions aimed at helping individuals construct specific future simulations may also help to promote psychological well-being.

Overall, events generated to negative cues were accompanied with more detail than positive events. Numerous studies find that negative stimuli are better recalled than positive stimuli (Dewhurst & Parry, 2000; Kensinger, Garoff-Eaton, & Schacter, 2006; Ochsner, 2000). In addition, when valence differences are observed in clinical studies, they tend to find a lack of specificity for positive memories (for a review see Williams et al., 2007). Although it might be expected that individuals in the HSE condition would recall and imagine positive events with greater specificity than negative events, given their increased use of positive words for past and future events, we believe that there is a distinction between specificity and content. That is, although individuals in the HSE may have been more likely to view their past through a most positive and

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efficacious lens, they are still capable of remembering negative past events in detail. Further, cue valence does not necessarily mean that the memories or future events generated are consistent with the valance of the word. For example, individuals in the HSE condition may have been more likely to remember a positive memory or include positive elements of a memory or future event in response to a negative word. In addition, future events generated more detail than memories. Again, this is consistent with studies suggesting that whereas memories are composed of a mix of positive and negative events, future events tend to be imagined with a greater positive bias (Berntsen & Bohn, 2010; Newby-Clark & Ross, 2003; Taylor & Brown, 1988). However, recent findings suggest that this does not necessarily generalize to clinical populations, such as those with PTSD (Brown, Buckner, & Hirst, 2011).

These findings have implications for understanding the role of maladaptive self-views in limiting one's capacity to plan for the future. Projecting one's self in the future as lacking agency and an inability to cope with adverse life events may contribute to emotional vulnerability and even symptom maintenance in various clinical disorders. Clinical disorders are often characterized by individuals who may reconstruct memories (e.g. Moore & Zoellner, 2007; Williams et al., 2007) or imagine future events (D'Argembeau et al., 2008; Williams et al., 1996) that promote maladaptive views of one's self. Although this has been demonstrated repeatedly in a descriptive manner in clinical disorders, here we show that this pattern is causally influenced by engaging in a negative self-construct.

Several limitations must be acknowledged. First, it is possible that the self-efficacy manipulation was associated with a mood induction, which may influence memories and future imaginings; future studies should disentangle the effects of mood and self-identity in relation to MTT. However, we believe that mood did not contribute to the current findings as we did not observe self-reported changes in mood from baseline to post-induction. Secondly, given the achievement-oriented context in which the present participants (college students) are immersed, it is not clear if these findings would generalize to other populations that are not in as efficacy-salient environments or prone to self-assessment and evaluation. Third, the applicability of these data to clinical populations is limited until comparable studies are done with clinical populations. Additionally, future studies warrant the examination how other classes of memories interact with self-efficacy, MTT, and social problem solving. For example, semantic memories, abstract knowledge and factual information about the past, are likely to shape how an individual might recall and anticipate their capacity to cope with adverse life events.

In conclusion, through an experimental induction we successfully manipulated the working self by increasing or decreasing perceived self-efficacy. This transient change in self-view led to important differences in the way in which individuals recalled autobiographical memories, imagined future events, and solved problems. Strategies that help individuals view themselves as highly efficacious, such as Cognitive Behavioral Therapy (CBT) that promote a sense of agency or sense of mastery (e.g. Maccallum & Bryant, 2011; Sutherland & Bryant, 2007), may help to treat a wide range of emotional disorders as they may help individuals selectively remember their past and imagine their future in more adaptive ways, which in turn will promote better current and future functioning.

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