



## Self-defining memories and self-defining future projections in hypomania-prone individuals

Claudia Lardi Robyn<sup>a,\*</sup>, Paolo Ghisletta<sup>b,c</sup>, Martial Van der Linden<sup>a,d,e</sup>

<sup>a</sup> Cognitive Psychopathology and Neuropsychology Unit, University of Geneva, Geneva, Switzerland

<sup>b</sup> Methodology and Data Analysis Unit, University of Geneva, Geneva, Switzerland

<sup>c</sup> Distance Learning University, Switzerland, Sierre, Switzerland

<sup>d</sup> Cognitive Psychopathology Unit, University of Liège, Liège, Belgium

<sup>e</sup> Swiss Center for Affective Sciences, University of Geneva, Geneva, Switzerland

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### ABSTRACT

Mania and hypomania involve dysfunctional beliefs about the self, others, and the world, as well about affect regulation. The present study explored the impact of these beliefs on self-defining memories and self-defining future projections of individuals with a history of hypomanic symptoms. The main findings showed that a history of hypomanic symptoms was related to enhanced retrieval of memories describing positive relationships and to reduced future projections about relationships, suggesting both a need for social bonding and a striving for autonomy. Moreover, hypomania-prone individuals tended to describe more recent events and to produce self-defining memories with references to tension that were more integrated in their self-structure. All of these findings support the presence of conflicting dysfunctional beliefs and the importance of memories containing references to tension in hypomania.

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### 1. Introduction

Mania and hypomania are personality dimensions that are typically characterized by elevated, expansive, or irritable mood; grandiosity; decreased need for sleep; racing thoughts; increased talkativeness; distractibility; goal-directed activities; and excessive involvement in risky activities. What differentiates hypomania from mania is an absence of significantly impaired functioning (*DSM-IV-TR*; American Psychiatric Association, 2000). Mania and hypomania symptoms are common in the general population (e.g., Mangelli, Benazzi, & Fava, 2005; Udachina & Mansell, 2007). For example, in a large epidemiological study conducted on a community sample, Angst (1998) found a prevalence of 5.5% for *DSM-IV* (hypo)mania, 2.8% for brief hypomania (symptoms lasting less than 3 days), and 11.3% for subdiagnostic hypomanic symptoms. These studies suggest that the severity of hypomanic symptoms is located on a continuum, ranging from the absence of symptoms, through the presence of episodic symptoms, to mania at the opposite extreme.

The aim of an interesting cognitive model of bipolar disorder, developed by Mansell, Morrison, Reid, Lowens, and Tai (2007), was to provide an explanation of the emergence and the maintenance of important manifestations of hypomania, notably manic episodes, but also depressive episodes. In fact, (hypo)mania is habitually conceptualized as one of the two affective forms of bipolar disorder (depression is the other affective form). Therefore, most of the studies on hypomania have been conducted more largely in the framework of bipolar disorder. Because the studies having explored beliefs in

\* Corresponding author. Address: Cognitive Psychopathology and Neuropsychology Unit, FPSE, University of Geneva, Boulevard du Pont d'Arve 40, 1205 Geneva, Switzerland. Fax: +41 22 379 93 59.

E-mail address: [Claudia.Lardi@unige.ch](mailto:Claudia.Lardi@unige.ch) (C. Lardi Robyn).

hypomania, considered as a personality dimension and not as a psychopathological state, are rare, we decided to rely on the bipolar disorder literature, in which mania is considered an extreme manifestation of hypomania.

In their model of bipolar disorder, Mansell et al. (2007) propose that dysfunctional beliefs about internal state changes play a core role in the emergence or maintenance of manic or depressive episodes. Specifically, they argue that, when individuals with a bipolar disorder experience an internal state change (related to cognition, behavior, physiology, or mood; e.g., increased arousal due to several cups of coffee), they interpret it as having an extreme personal meaning. Such appraisals are multiple, extreme, and conflicting (positive and/or negative). The appraisals that will be expressed vary depending on the current social situation and the current internal state and will lead to behavioral responses that try to enhance or control the internal state in some way. For instance, a self-activating belief may trigger ascent behaviors (e.g., goal-directed activities), while a catastrophic appraisal may trigger descent behaviors (e.g., withdrawal from others). Consequently, these behaviors can heighten or lower the mood state, contributing to the development of manic or depressive symptoms, respectively. The appraisal of the internal state and the choice of the subsequent behavioral responses are determined by underlying beliefs about the self, others, and the world, as well as about affect regulation. These beliefs originate in early life experiences, but they can be changed or reinforced by behavioral responses and the experience of a manic or depressive episode, forming a vicious cycle.

In this context, several studies have confirmed that individuals with a bipolar disorder have conflicting positive and negative extreme dysfunctional beliefs (see Mansell and Scott (2006) for a review). For instance, they may show high levels of sociotropy (i.e., dependence on relationships with others) and autonomy (i.e., independence and achievement) (Scott, Stanton, Garland, & Ferrier, 2000), or high negative and positive self-esteem (Scott & Pope, 2003). In a recent study, Dodd, Mansell, Morrison, and Tai (2011) characterized the dysfunctional beliefs associated with bipolar disorder in an undergraduate sample. These beliefs reflected extreme social aspirations and positive appraisals of idea generation, extreme optimism and self-confidence, a need to remain active to avoid failure, unfavorable opinions of the self and perceived criticism from others when excited, appraisals about being unable to regulate mood, and a need to regain autonomy. It is important to note that individuals with a bipolar disorder often report a history of stressful childhood events, such as sexual or physical abuse (e.g., Grandin, Alloy, & Abramson, 2007; Hyun, Friedman, & Dunner, 2000), which could account for the development of dysfunctional beliefs.

In sum, from the perspective of a cognitive model of (hypo)mania, dysfunctional beliefs about the self, others, and the world, as well as about affect regulation seem to be important factors involved in (hypo)mania (Mansell et al., 2007). Previous studies showed that some personality dimensions, such as proneness to repression (Lardi, Ghisletta, & Van der Linden, *in press*) and attachment style (Sutin & Gillath, 2009), are related to how individuals define themselves through their important autobiographical memories. Thus, the present study aimed to explore the impact of dysfunctional beliefs observed in hypomania on the functioning of individuals by analyzing their representations of their most important life experiences related to the self. These important autobiographical memories, called self-defining memories (SDMs, Singer & Salovey, 1993), ground the self-concept in remembered life experiences. Hence, they occupy an important position within an individual's life story, providing a sense of identity and continuity (Conway, Singer, & Tagini, 2004). Moreover, they contain fundamental cognitive-affective-motivational information, helping to give a sense of what we have experienced and to guide future actions (Singer & Blagov, 2004). SDMs are defined by several characteristics, such as vividness, affective intensity, high levels of rehearsal, linkage to thematically similar memories, and connection to enduring concerns or unresolved conflicts in the individual's life (Singer & Salovey, 1993). Prior studies of SDMs have highlighted several dimensions along which individuals' SDMs may vary: memory structure (which reflects the level of narrative specificity; Blagov & Singer, 2004), autobiographical reasoning (i.e., the cognitive process associated with self-reflective thinking about past experiences; e.g., Blagov & Singer, 2004; Thorne, McLean, & Lawrence, 2004), affective responses to memory retrieval (Blagov & Singer, 2004), memory content (which reflects one of the person's primary concerns; Thorne et al., 2004), tension (i.e., an explicit reference to the discomfort, disagreement, or unease of one of the characters; Thorne et al., 2004), and redemption (i.e., an explicit transformation in the memory narrative from a demonstrably negative affective state to a demonstrably positive affective state; McAdams, Reynolds, Lewis, Patten, & Bowman, 2001).

The first broad assumption of the present study is that the dysfunctional beliefs concerning the self, others, and the world of individuals with a history of (hypo)manic symptoms should impact the thematic content of their SDMs. As Conway (2005) suggests, SDMs are constructed to be coherent with the person's self-images, core beliefs, values, and attitudes and are linked to experienced events. Accordingly, previous authors found that individuals retrieve SDMs with themes that appear to be closely associated with their specific enduring concerns (e.g., Thorne et al., 2004). Therefore, hypomania-prone individuals should define themselves with memories that are in accordance with their dysfunctional beliefs or with memories that challenge a specific belief. Considering that people with a bipolar disorder are characterized by extreme optimism, self-confidence, and ambitious goals (Dodd et al., 2011; Johnson, 2005), we expected to find in the SDMs of hypomania-prone individuals a particular focus on striving to achieve challenging personal goals (i.e., SDMs of achievement events). Moreover, considering that individuals with a bipolar disorder present high levels of both sociotropy and autonomy (Scott et al., 2000); perceive themselves to be vulnerable and others to be hostile, critical, or controlling, and are concerned with achieving a socially oriented positive self-concept, as Mansell and Hodson (2009) suggest, we hypothesized that hypomania-prone individuals would be particularly concerned with relationships.

The second broad assumption of the present study is that dysfunctional beliefs about how to regulate negative affect (Mansell et al., 2007) should also impact the characteristics of individuals' SDMs. One affect regulation strategy that has been

observed in the literature on autobiographical memory is reduced memory specificity. Williams et al. (2007) noted that individuals with several affective disorders (mainly associated with the depression spectrum) retrieve autobiographical memories in a less specific way, which probably helps to protect against negative affect (Williams, 1996). The few studies of autobiographical memory in bipolar disorder suggest that this affect regulation strategy is also present in the bipolar spectrum (Tzemou & Birchwood, 2007). Specifically, Scott et al. (2000) compared the performances of a group of euthymic bipolar individuals with those of a group of healthy adults on the Autobiographical Memory Test (Williams & Broadbent, 1986). Their results showed that the bipolar group retrieved a lower ratio of specific to general memories compared with the control group in response to both positive and negative cue words. These results were replicated and extended in further studies. In particular, Mansell and Lam (2004) found reduced memory specificity in a bipolar disorder group compared with a unipolar depression group. Moreover, they found an interesting dissociation between negative and positive memories, with negative memories being less specific than positive ones. Consequently, Mansell and Hodson (2009) concluded that negative memories probably play a key role in bipolar disorder. Therefore, the present study aimed to focus specifically on negative memories. The negative memories were conceptualized as memories containing references to tension. On the basis of the above-mentioned studies of autobiographical memory and the bipolar spectrum, we expected that beliefs about the coping style involved in (hypo)mania would impact memory specificity. In particular, hypomania-prone individuals should report less specific SDMs, especially in the case of SDMs containing tension, and fewer SDMs with tension overall. Moreover, considering the possible history of stressful life events in childhood (Grandin et al., 2007), another affect regulation strategy that we expected to observe in hypomania-prone individuals was a reduced retrieval of SDMs describing old events from childhood. We posited that individuals would try to protect themselves from the negative affect associated with those stressful life events by avoiding their retrieval.

In further exploratory analysis, the present study aimed to investigate the characteristics of the future counterpart of SDMs, the so-called self-defining future projections (SDFPs). The concept of SDFP was introduced by D'Argembeau, Lardi, and Van der Linden (2012); it is defined as a mental representation of future events that provide core information on self-understanding. The capacity to remember our past experiences and to project ourselves into possible future events, called mental travel (e.g., Atance & O'Neill, 2001; Suddendorf & Corballis, 1997; Szpunar, 2010), helps to ground the sense of self and of personal continuity through time (D'Argembeau et al., 2012). Thus, self-concepts are supported by significant past experiences but also by representations of the self in the future. Previous studies showed that mental travel is impaired in schizophrenia (D'Argembeau, Raffard, & Van der Linden, 2008) and depression (Williams et al., 1996). To the best of our knowledge, the capacity of (hypo)manic individuals to project themselves into the future is still unexplored. Thus, the present study aimed to investigate the impact of a history of hypomanic symptoms on the envisioning of important future events. It is difficult to advance any specific hypotheses because of the novelty of the concept of SDFP. On one hand, considering that healthy individuals displayed similar characteristics in their SDFPs and their SDMs (particularly regarding specificity and integrative meaning; D'Argembeau et al., 2012), one could expect to observe that a history of hypomania symptoms would affect SDFPs similarly to SDMs. On the other hand, one might observe some dissociation between SDMs and SDFPs resulting from the regulation of conflicting dysfunctional beliefs. For instance, it is possible to imagine that the positive dysfunctional beliefs (such as extreme self-confidence) underlying the ascent into mania could trigger positive representations of the self in the future. Therefore, hypomania-prone individuals might display more SDFPs that are positively toned than other people do. No matter what the actual results prove to be, SDFPs may provide important information about what hypomania-prone individuals expect from themselves in the future.

Finally, the present study focused on the impact that state and trait affect could have on the remembering and imagining of self-defining (SD) events. To this end, we evaluated the participants' current mood to find out whether they were in a more manic or a more depressed state, and we included this measure in the analyses. Indeed, Lam and Mansell (2008) showed in a case study that the cognitive style of a young man with a bipolar disorder varied as a function of his mood state. In particular, they observed that, during the mania episodes, the young man recalled autobiographical memories that were more specific and rated them as more pleasant at the time of recall than during the depression episodes. Moreover, during mania he was less dependent on others, rejecting support and ignoring information that could lower his mood. In addition, we included in the analyses a measure of the more stable affective dispositions of participants, notably their levels of positive or negative general affectivity. In fact, the negative affectivity involved in several emotional disorders has been shown to impact autobiographical memory, for instance by reducing memory specificity (e.g., Williams et al., 2007).

## 2. Method

### 2.1. Participants

Seventy-nine volunteers (40 women and 39 men) participated in this study. Participants were recruited from the general population, by means of advertisements and personal contacts, and received no compensation for their participation. Most of them were undergraduates (75%, but no psychology students). Their average age was 23.29 years ( $SD = 2.44$ , range = 19–31) and mean years of education was 15.99 ( $SD = 1.96$ , range = 12–21). A difference in the mean age of women ( $M = 22.65$ ,  $SD = 2.29$ ) and men ( $M = 23.95$ ,  $SD = 2.44$ ) was observed,  $t(77) = -2.44$ ,  $p < .05$ . As a result, age and gender were controlled in further multilevel analysis.

## 2.2. Procedure

Participants were interviewed individually in a quiet setting. The experiment was presented orally; participants were told that they would have to write down some important personal memories and some imagined important future events, as well as to fill out some written questionnaires. After that, each participant signed a written informed consent form. They were also informed that the events generated would be coded and the data would be analyzed by a researcher who had access only to personal identification codes. Anonymity was therefore preserved. Participants completed the questionnaires in four fixed orders, where the order of the presentation of the SDM and SDFP tasks was counterbalanced.

## 2.3. Material

### 2.3.1. Self-defining memory and self-defining future projection tasks

Three SDMs were collected with the Self-defining memory task (Singer & Blagov, 2000–2001; Thorne & McLean, 2001) and three SDFPs were collected with a recent adaptation of the SDM task developed by D'Argembeau et al. (2012). Both tasks were presented with an oral definition of an SD event, which explained that they are personal events (memories or future events) with certain specific attributes. First, the temporal distance from the present of an SD event should be at least 1 year. Second, an SD event should be important and vividly represented. Third, it should be an event that helps oneself and significant others to explain who one is as an individual. Fourth, it should be an event related to an important and enduring theme, issue, conflict, or concern from one's life and linked to other events sharing the same theme. Fifth, it could be either a positive or a negative event; the only important aspect is that it generates strong feelings. Finally, it should be an event that participants have thought about many times. While listening to this description, participants had a sheet of paper in front of them summing up the principal points. After this definition, participants had to imagine a situation where they met someone they liked very much and, during a walk, each one agreed to help the other get to know the "Real Me." In the course of the conversation, several personal events, past or future, are evoked, events that convey powerfully how one has become the person one currently is. Participants were told that these are SD events. Then, they were given six sheets of paper on which they had to write down three SDMs and three SDFPs. For each event, they were asked to write down a title or a one-sentence summary and a description of the event with enough details to help the imagined friend to see and feel as they did or as they thought they would in the future. Thereafter, participants had to rate the affective response while remembering/imagining the event on a 7-point rating scale ( $-3 = \text{very negative}$ ,  $0 = \text{neutral}$ ,  $3 = \text{very positive}$ ). Finally, they had to estimate the temporal distance of the event from the present (in years and months), in order to obtain a measure of the time frame (months between the event described and the retrieval day) for each SDM and each SDFP.

### 2.3.2. Mood Disorder Questionnaire (MDQ)

The MDQ (Hirschfeld et al., 2000) is a self-report inventory that screens for a lifetime history of (hypo)manic symptoms. The first portion includes 13 yes-or-no statements related to the (hypo)manic symptoms derived from the *DSM-IV* criteria, such as racing thoughts, decreased need for sleep, and increased self-confidence. Each sentence begins with: "Has there ever been a period of time when you were not your usual self and. . . ." The second portion consists in a yes-or-no question asking whether several of any reported (hypo)manic symptoms were experienced during the same period of time. The third portion evaluates the level of functional impairment due to these symptoms on a 4-point rating scale ( $1 = \text{no problem}$  to  $4 = \text{serious problem}$ ). In the present study, only the first portion was retained for the analyses. The French version of the MDQ has been translated and validated in an adult clinical population by Weber Rouget et al. (2005). This scale was used as an index of proneness to hypomania.

### 2.3.3. Current mood

Participants' current mood was assessed by asking them to describe how they had felt in the last 24 h. They had to complete the sentence "Today, I feel. . .," rating their current mood on an 11-point rating scale, ranging from  $0 = \text{depressed/down}$  to  $10 = \text{manic/up}$  ( $5 = \text{normal}$ ).

### 2.3.4. Positive and Negative Affect Schedule (PANAS)

Participants responded to the dispositional form of the PANAS (Watson, Clark, & Tellegen, 1988), a measure of tendencies to experience negative and positive affects ("to what extent you generally feel this way, that is, how you feel on the average"). The questionnaire is composed of two 10-item positive affect (PA) and negative affect (NA) scales and answers are rated on a 5-point scale ( $1 = \text{very slightly or not at all}$  to  $5 = \text{extremely}$ ). The French version of the PANAS was translated and validated by Gaudreau, Sanchez, and Blondin (2006).

## 2.4. Scoring

### 2.4.1. Specificity

Singer and Blagov's (2000–2001) manual was used to assess narrative specificity. A narrative event was considered to be specific if it contained at least one single event statement with a unique occurrence and a duration of less than 1 day. On the other hand, memory narratives that did not contain at least one single event statement were considered nonspecific. A

nonspecific memory could be a generalized narrative of sequential events forming a story or could be composed of many similar events that occurred many times over a long time frame.

#### 2.4.2. Content

The content of the event narrative was evaluated with [Thorne and McLean's \(2001\)](#) manual. According to this classification, we retained four mutually exclusive categories: life-threatening event, leisure, relationship, and achievement. Events were coded in the life-threatening category if themes of basic safety, physical well-being, or mortality emerged; leisure events were events describing exploration or recreational activities; relationship events concerned positive and negative interpersonal relationships; and achievement events described effortful mastery or attempts to achieve goals (regardless of the outcome). Events that did not fit into one of these categories were considered as nonclassifiable events.

#### 2.4.3. Integrative meaning

Following [Singer and Blagov's \(2000–2001\)](#) manual, narrative integrative meaning analyses consisted in an assessment of the presence of a statement about what the event taught the participant about himself or herself, someone else, or life in general. An event narrative was considered to be integrated if the individual stepped back from the event description and added a statement about the significance or meaning of the event to him or her. If the narrative contained only an event description (without a meaning), it was considered as a nonintegrative event.

#### 2.4.4. Tension

Following [Thorne et al. \(2004\)](#), narratives were also coded for the presence or absence of tension. Tension was defined as an explicit reference to the discomfort, disagreement, or unease of one of the characters.

#### 2.4.5. Redemption

Narratives were also coded for the presence or absence of a redemption sequence. According to the manual provided by the [Foley Center for the Study of Lives \(1999\)](#), a redemption sequence was defined as an explicit transformation in the event narrative from a demonstrably negative affective state to a demonstrably positive affective state.

#### 2.4.6. Affective response

The valence (i.e., positive, neutral, or negative) and the intensity (i.e., the absolute value of the rating) of the affective response to each event was obtained.

#### 2.4.7. Reliability

An independent rater blind to the hypotheses scored all of the 237 SDMs and 231 SDFPs. The SDFPs of two participants were removed from the analysis because they did not respect the temporal distance of 1 year (between the future event and the retrieval day). The first author scored 20% of the event narrations and interrater reliability was calculated by using percentage agreement and Cohen's  $\kappa$  ([Cohen, 1960](#)). Interrater reliability was good for specificity (% agreement = 89,  $\kappa = 0.77$ ), integrative meaning (% agreement = 90,  $\kappa = 0.79$ ), content (% agreement = 82,  $\kappa = 0.76$ ), tension (% agreement = 88,  $\kappa = 0.75$ ), and redemption (% agreement = 88,  $\kappa = 0.65$ ). The reliability coefficients (Cronbach's  $\alpha$ ) were 0.66 for the MDQ, 0.77 for the PA scale of the PANAS, and 0.73 for the NA scale of the PANAS.

### 2.5. Analyses

Scores on the MDQ, the one-item current mood scale, and the PANAS were considered as continuous variables. The impact of proneness to hypomania on SDMs and SDFPs – controlling for current mood, positive and negative affectivity (PANAS), age, and gender – was tested in several regression models. To account for the data dependence structure (237 repeated memories or 231 repeated future projections at level 1 nested within 79 individuals at level 2, with exactly three SDMs and three SDFPs per person), hierarchical models were performed. Analyses were performed with the lme4 library of the R statistical package ([R Development Core Team, 2009](#), version 2.11.1). For continuous dependent variables, we specified a linear hierarchical model (where level-1 residuals are normally distributed). For dichotomous dependent variables, we specified a logistic hierarchical model (with the logit link function and level-1 residuals distributed according to the binomial distribution – we also checked for under- and overdispersion, neither of which occurred; [Pinheiro & Bates, 2000](#)).

In order to facilitate the interpretation of the effects, the continuous predictor variables (i.e., MDQ, current mood, PA scale, NA scale, and age) were centered around their means. To test for dependence among the memories and future projections of any single person, we first computed the so-called empty hierarchical model for each dependent variable ([Snijders & Bosker, 1999](#)). This model constitutes the first step in any hierarchical-type analysis and simply provides separate estimates of variability at each level of the data hierarchy. The results showed that multilevel models were necessary for our data given that significant amounts of the total variance in SDMs and SDFPs were attributed to the individuals, which confirms the dependence of a person's repeated SDMs and SDFPs. Consequently, we computed hierarchical models on all dependent variables. In all these analyses, we used the  $\alpha$  level of .01 for statistical decisions to reduce type I errors due to multiple tests.

### 3. Results

#### 3.1. Descriptive analysis

Table 1 shows the characteristics of the SDMs and SDFPs. Overall, the characteristics of the SDMs were similar to those obtained in previous studies (e.g., Blagov & Singer, 2004; Lardi, D'Argembeau, Chanal, Ghisletta, & Van der Linden, 2010). In addition, as in the study by D'Argembeau et al. (2012), SDFPs were less specific and more positive than SDMs.

On the MDQ, participants reported a history of hypomanic symptoms ranging from no symptoms to all 13 of the symptoms listed in the questionnaire ( $M = 5.94$ ,  $SD = 2.63$ ). In addition, participants' current mood ranged from depressed to manic ( $M = 5.17$ ,  $SD = 1.26$ , range = 1–9). Finally, means in the PANAS showed that participants had higher PA ( $M = 34.30$ ,  $SD = 4.91$ , range = 20–45) than NA ( $M = 21$ ,  $SD = 4.92$ , range = 10–34). All continuous variables were normally distributed.

Regarding the association between the MDQ and the other mood scales, the results showed that proneness to hypomania was not associated with a current elevated or depressed state ( $r = .01$ ,  $p = .92$ ). Moreover, the association between the MDQ and the PA scale was not significant ( $r = .08$ ,  $p = .50$ ), while the MDQ tended to be significantly associated with the NA scale ( $r = .25$ ,  $p < .05$ ).

#### 3.2. Relationships between SDMs and proneness to hypomania

The effect of participants' history of hypomanic symptoms on their SDM dimensions was tested with several hierarchical models. The current mood, positive and negative affectivity, age, and gender were also added in the models as predictors. Thus, the hierarchical models allowed us to highlight the relative importance and specific effect of proneness to hypomania on the SDMs and SDFPs, controlling for all other predictors. Concretely, the models tested the effect on each SDM dimension of the MDQ, the current mood, the PA scale, the NA scale, age, and gender (setting men at 1 and women at 0). One participant did not fill out the current mood scale. Consequently, the models with predictors were conducted on 234 SDMs and 228 SDFPs of 78 participants.

To test whether proneness to hypomania has an impact on the content of SDMs, four models were tested. In accordance with our hypothesis, the model with relationship events as the outcome variable showed a significant association with proneness to hypomania. Specifically, the hierarchical model implemented (see Model 2a in Table 2) showed that higher scores on the MDQ predicted a greater probability of retrieving SDMs containing a description of relationship events. At this point, we wished to explore whether this association between proneness to hypomania and the presence of more relationship events in the SDMs varied according to the presence of tension in those memories. The results of two models, using the relationship events with and without tension as outcome variables, showed that the MDQ was only significant in the model based on relationship SDMs without tension (estimate = 0.30,  $SE = 0.09$ ,  $z = 3.47$ ,  $p < .001$ ). These results suggest that hypomania-prone individuals are concerned with relationships, particularly relationships without tension.

In contrast, the model with achievement events as the outcome variable showed only a trend-level significant association with proneness to hypomania. In particular, high MDQ scores tended to be negatively related to the probability of retrieving achievement SDMs (estimate =  $-0.15$ ,  $SE = 0.07$ ,  $z = -2.26$ ,  $p = .02$ ), and especially achievement SDMs without tension

**Table 1**  
Descriptive analyses – frequencies or mean and SD – of all the dimensions of SDMs and SDFPs (Level 1).

	SDMs (%)	SDFPs (%)
Specificity	65	32
Content		
Life-threatening events	14	8
Relationship events	32	28
Achievement events	29	47
Leisure events	16	14
Nonclassifiable events	9	3
Integrative meaning	23	36
Tension	52	25
Redemption	22	3
	SDMs <i>M</i> (SD)	SDFPs <i>M</i> (SD)
Affective response		
Valence	0.75 (2.36)	2.00 (1.61)
Intensity	2.32 (0.85)	2.45 (0.77)
No. of words	134.76 (59.91)	95.03 (47.73)
Time frame	69.19 (54.41)	81.09 (122.43)

Note.  $N_{SDM} = 237$ ,  $N_{SDFP} = 231$  for all the dimensions except affective response ( $N_{SDM} = 233$ ,  $N_{SDFP} = 225$ ) and time frame ( $N_{SDM} = 232$ ,  $N_{SDFP} = 229$ ).

SDFP: self-defining future projection; SDM: self-defining memory.

**Table 2**

Estimates from hierarchical models of the effects of proneness to hypomania, current mood, positive and negative affectivity, age, and gender on SDMs (Model 2a) and SDFPs (Model 2b) describing relationship events.

	Model 2a				Model 2b			
	SDMs with relationship events				SDFPs with relationship events			
	Estimate	SE	z	p	Estimate	SE	z	p
Intercept	−0.38	0.21	−1.88	.061	−0.78	0.21	−3.74	<.001
MDQ	0.22	0.07	3.33	<.001	−0.18	0.06	−2.85	.004
Current mood	−0.48	0.14	−3.46	<.001	0.05	0.12	0.42	.673
PA scale	−0.01	0.03	−0.41	.683	0.02	0.03	0.59	.557
NA scale	−0.08	0.04	−2.14	.032	0.03	0.04	0.93	.350
Age	−0.003	0.07	−0.04	.968	0.02	0.06	0.24	.807
Gender	−1.06	0.32	−3.25	.001	−0.42	0.32	−1.33	.183

Note.  $N_{SDM} = 234$  and  $N_{SDFP} = 228$  for level 1;  $N_{SDM} = 78$  and  $N_{SDFP} = 76$  for level 2.

MDQ: Mood Disorder Questionnaire; NA: negative affect; PA: positive affect; SDFP: self-defining future projection; SDM: self-defining memory.

(estimate =  $-0.19$ ,  $SE = 0.08$ ,  $z = -2.40$ ,  $p = .016$ ). Thus, hypomania-prone individuals tend to define themselves with less positive achievement memories than do individuals without a history of hypomanic symptoms.

In addition, we hypothesized that hypomania-prone participants should report fewer SDMs containing tension, while we made no hypotheses about redemption events or the affective response to memory retrieval. The model with the presence of tension in the SDMs as the outcome variable found only a nonsignificant effect of the MDQ (estimate =  $-0.11$ ,  $SE = 0.06$ ,  $z = -1.85$ ,  $p = .06$ ). The direction of the effect was, however, in accordance with our expectation. Moreover, models with redemption (estimate =  $-0.05$ ,  $SE = 0.07$ ,  $z = -0.73$ ,  $p = .47$ ) and the affective response (estimate =  $0.06$ ,  $SE = 0.06$ ,  $t = 1.05$ ,  $p = ns$  for affect valence, and estimate =  $0.02$ ,  $SE = 0.02$ ,  $t = 0.95$ ,  $p = ns$  for affect intensity) as outcome variables did not reveal significant effects of the MDQ. Taken together, the latter results suggest that hypomania-prone individuals do not cope in a specific way with negative events (i.e., redemption) and their affective responses to event retrieval are similar to those of non-hypomania-prone people.

In order to test whether hypomania-prone participants described more recent events in their SDMs, a model with time frame as the outcome variable was tested. Again, the results confirmed our expectations. In particular, the MDQ was the only significant predictor in the model (estimate =  $-3.89$ ,  $SE = 1.40$ ,  $t = -2.78$ ,  $p < .01$ ). Thus, it is possible to argue that proneness to hypomania influences the temporal distance of the event retrieved, which is not due to participants' age; the age effect was not significant (estimate =  $-0.03$ ,  $SE = 1.53$ ,  $t = -0.02$ ,  $p = ns$ ).

Further analyses to test the remaining SDM dimensions did not reveal other relationships with proneness to hypomania. In particular, the models with memory specificity (estimate =  $-0.07$ ,  $SE = 0.10$ ,  $z = -0.72$ ,  $p = .47$ ), integrative meaning (estimate =  $0.07$ ,  $SE = 0.08$ ,  $z = 0.91$ ,  $p = .37$ ), and number of words (estimate =  $1.05$ ,  $SE = 2.28$ ,  $t = 0.46$ ,  $p = ns$ ) as outcome variables did not show significant effects of the MDQ. This suggests that proneness to hypomania seems not to contribute to the reduction or enhancement of memory specificity, meaning making, and narrative length.

The final analysis performed on the SDMs focused on only those that contained references to tension. Sixty-eight individuals reported at least one SDM containing tension (specifically, 30, 20, and 18 persons reported, respectively, 1, 2, and 3 SDMs with tension). Of all SDMs, 52% were coded as containing tension. We hypothesized that individuals with high scores on the MDQ should report fewer specific SDMs with tension. This hypothesis was confirmed in a model with memory specificity as the outcome variable, though only at a trend level of significance (estimate =  $-0.25$ ,  $SE = 0.13$ ,  $z = -1.89$ ,  $p = .05$ ). Further analysis of this subset of data showed that high scores on the MDQ were associated with more integrated SDMs with tension (estimate =  $0.30$ ,  $SE = 0.11$ ,  $z = 2.67$ ,  $p < .01$ ). This interesting finding suggests that hypomania-prone individuals preferentially integrate the SDMs containing tension into their self-structure.

### 3.3. Relationships between SDFPs and proneness to hypomania

Regarding the SDFPs, we expected the same overall associations with proneness to hypomania as we found with SDMs. Therefore, several hierarchical models were tested. Surprisingly, only one model showed a significant effect of the MDQ, specifically when SDFPs with relationships were the outcome (see Model 2b in Table 2). In particular, the result indicated that hypomania-prone participants reported fewer SDFPs describing relationship events. Moreover, contrary to our expectations, the models with affective response as the outcome variable did not reveal significant effects of the MDQ (estimate =  $-0.02$ ,  $SE = 0.04$ ,  $t = -0.51$ ,  $p = ns$  for affect valence, and estimate =  $0.002$ ,  $SE = 0.02$ ,  $t = 0.11$ ,  $p = ns$  for affect intensity).

### 3.4. Other findings

Additional significant effects emerged from the models tested, which were not related to proneness to hypomania but were interesting nonetheless. First, the results showed that a manic current mood predicted the retrieval of fewer SDMs involving relationships (see Model 2a, Table 2). Second, the PA scale was the only significant predictor of memory specificity

(estimate = 0.16,  $SE = 0.05$ ,  $z = 3.07$ ,  $p < .01$ ), suggesting that individuals with reduced positive affectivity are more likely to retrieve less specific SDMs. Finally, some interesting gender differences emerged in the SDMs. Specifically, women were more concerned than men with relationships (see Model 2a, Table 2), reported more SDMs containing tension (estimate =  $-0.95$ ,  $SE = 0.32$ ,  $z = -2.93$ ,  $p < .01$ ), and reported longer narratives (estimate =  $-33.31$ ,  $SE = 11.95$ ,  $t = -2.79$ ,  $p < .01$ ). In contrast, men reported more SDMs generating positive affect than women did (estimate = 0.97,  $SE = 0.32$ ,  $t = 3.07$ ,  $p < .01$ ).

#### 4. Discussion

This study aimed to improve our understanding of how hypomania-prone individuals define themselves. To this end, we analyzed the impact that a history of hypomanic symptoms has on mental representations of the past and the future that are related to the self-concept (i.e., SDMs and SDFPs) in individuals from the general population. The main findings showed that, compared with those of other participants, the SDMs of hypomania-prone individuals contained more relationship events, tended to contain fewer achievement events, and, overall, described more recent events. In addition, hypomania-prone individuals' SDMs with tension were more integrated into their self-structure and tended to be less specific. Finally, the anticipations of meaningful future events (i.e., SDFPs) contained fewer relationship events. All of these results were obtained after controlling for the potential influence of current mood, negative and positive affectivity, age, and gender.

The study produced an interesting finding that should be discussed: hypomania-prone individuals' SDMs containing references to tension also contained more integrative meanings than did those of other participants. Integrative meanings refer to statements in the narratives about how the events reported have contributed to the understanding of oneself, one's relationships, or the world. Thus, our finding supports earlier suggestions that the SDMs with tension are important for the definition of the self and the sense of identity (e.g., Thorne et al., 2004), and that they may play a major role in bipolar disorder (Mansell & Hodson, 2009). A question that arises at this point concerns the nature of these integrated SDMs with tension presented by hypomania-prone individuals. One possibility is that these SDMs refer to events involved in the formation of a negative self-concept and of dysfunctional beliefs. Recall that previous studies suggested that individuals with a bipolar disorder have often experienced more stressful life events during childhood (e.g., Grandin et al., 2007; Hyun et al., 2000), which are related to the emergence of dysfunctional beliefs (Mansell et al., 2007). Moreover, it is possible that hypomania-prone individuals have also integrated into their self-structure episodes related to the experience of hypomanic symptoms. In fact, these events might be integrated precisely because they threaten self-continuity and self-concept, becoming part of the current identity. Incidentally, Berntsen and Rubin (2006) noted that the traumatic events experienced by the participants in their study were seen as a central component of their life story and identity. Their study also showed that, the more the traumatic events were evaluated as being central in their lives, the more likely the participants were to present symptoms of posttraumatic stress disorder. Therefore, it is possible that the hypomania-prone participants in the present study considered memories of (hypo)manic episodes and childhood memories of stressful events as important for their self-definition.

To elucidate the nature of the integrated SDMs containing references to tension, we performed a descriptive analysis on SDMs produced by the participants who reported the highest number of past (hypo)manic symptoms on the MDQ. In particular, we analyzed nine integrated SDMs with tension from seven participants presenting a history of 9–13 (hypo)manic symptoms. Five of these SDMs referred to relationships (disrupted romantic relationships, conflicts with peers, or integration concerns), three to life-threatening events (death of grandfather or car accident), and one to an achievement event (moving house). Moreover, five of those SDMs described recent events (2–3 years before) and three described older events (9–11 years before). This brief illustration highlights the heterogeneity of the thematic content (there is, however, a particular focus on relationships) and of the period of life from which the SDMs come. Further studies should be conducted to better characterize the integrated SDMs with tension described by hypomania-prone individuals.

Another interesting finding that emerged from the analyses performed on the hypomania-prone individuals' SDMs containing tension was that these memories tended to be less specific than the tension-filled SDMs produced by other participants. This result is compatible with the findings of previous studies on general autobiographical memories, which showed that bipolar individuals reported less specific autobiographical memories, especially for negative events (e.g., Mansell & Lam, 2004; Tzemou & Birchwood, 2007). We consider that this result should be interpreted in light of the association that memory integration generally displays with memory specificity. In particular, several studies have shown that, when a memory contains references to meanings, it tends to be retrieved at a less specific level because it contains more abstractions or generalizations (e.g., Blagov & Singer, 2004; Lardi et al., 2010).

An aspect of our results that should be noted is that these less specific SDMs with tension were not associated with more intense affective responses. This seems to be inconsistent with Philippot, Schaefer, and Herbertte's (2003) study of the relationships between memory specificity and affect regulation. In particular, these authors state that individuals presenting a deficit in their capacity for affect regulation will also have difficulties retrieving an emotional memory at a specific level because of the emotional arousal triggered by the retrieval of that memory. Consequently, emotional memories tend to be reported in less detail, although they are more emotionally intense during the process of remembering. Thus, considering that the retrieval of SDMs with tension might arouse emotions (Singer & Salovey, 1993) and that those memories are retrieved at a less specific level, they also should be associated with an enhanced affective response. Nevertheless, our analysis showed

that a history of (hypo)manic symptoms was not a significant predictor of enhanced intensity of affective responses. This could be attributed to the measure that we used for evaluating affect intensity after memory retrieval. Recall that participants had to rate their affective responses on a 7-point scale (ranging from  $-3 = \textit{very negative}$  to  $3 = \textit{very positive}$ ). Thus, the scale did not offer many choices for the rating. In addition, all participants' mean affective responses to SDM retrieval was already high (mean = 2.32 of a possible range of 0–3). In summary, to better assess the intensity of the affective responses related to SDM retrieval, a Likert scale with more points should be used in future studies.

Another finding of the present study is that, overall, hypomania-prone individuals did not provide preferentially redemptive sequences in their narratives compared with other participants. This indicates that they do not tend to transform the negative affective state related to the event into a positive one (McAdams et al., 2001). In addition to the fact that they define themselves with memories that contain tension and evaluate them as central to their identity, hypomania-prone people do not redeem their narratives. Hence, one would expect them to experience more negative affect. This was in fact observed in our results, which showed a trend for positive association between a history of (hypo)manic symptoms and negative general affectivity.

The presence of negative affectivity leads us to ask how hypomania-prone individuals try to regulate their negative affect related to memories. A result that we expected to observe was an overall reduced retrieval of SDMs containing references to tension. Although the effect of the history of (hypo)manic symptoms on the number of SDMs with tension was not statistically significant, we observed a trend indicating that our findings tended to support our expectation. This result should, however, be confirmed in further studies. Another affect regulation strategy used by hypomania-prone individuals that emerged from our findings is a control over the temporal distance of the SDMs retrieved. In particular, we found that hypomania-prone individuals usually described more recent events in their SDMs. On the basis of previous studies showing that individuals with bipolar disorder have experienced more stressful events during childhood (e.g., Grandin et al., 2007; Hyun et al., 2000), our finding suggests that hypomania-prone individuals prefer to avoid retrieving old memories in order to protect themselves from negative affect. However, this result could also be interpreted differently: it may be that hypomania-prone individuals attribute particular importance to the life events associated with the (hypo)manic episodes that they have recently experienced. As mentioned earlier, these events probably play an important role in self-definition because they confirm personal beliefs and the self-concept.

Another possible way of regulating negative affect that we had expected to observe in hypomania-prone individuals consisted in an enhanced positive projection of the self in the future. However, our results did not confirm this hypothesis. One possible reason could be the general positive tendency of all SDFPs. In fact, the present study showed that on average the SDFPs generated positive affect (mean = 2.00 on a  $-3$  to  $3$  scale). This positive bias in representing the future had been observed in some past studies (e.g., Berntsen & Bohn, 2010; Newby-Clark & Ross, 2003). Specifically, individuals spontaneously tended to imagine more positive events in the future than negative ones, and their future projections were in general more positive than their memories of the past. Hence, this overall positive tone of SDFPs could be partly responsible for the difficulty in differentiating the SDFPs of individuals, depending on their proneness to hypomania. In summary, no clear evidence on the affect regulation strategy adopted by hypomania-prone individuals emerged from our study.

Regarding the content of the SDMs and SDFPs, our findings suggested that hypomania-prone individuals define themselves more by memories of relationship events, especially positive ones, while, at the same time, they anticipate themselves in their SDFPs as being less concerned with relationships. Moreover, a manic current mood also predicted fewer relationship SDMs. These differing findings on the relationship content of SDMs and SDFPs suggest that hypomania-prone individuals are simultaneously concerned with autonomy and a need for social bonding, which is compatible with Mansell et al.'s (2007) model proposing that bipolar individuals present conflicting dysfunctional beliefs. In fact, our results on SDMs support the view of Mansell and Hodson (2009), who suggested that individuals with a bipolar disorder were concerned with achieving a socially oriented positive self-concept in a context where they perceived themselves as vulnerable and others as critical, controlling, or hostile. In addition, the reduced future projection about relationship events is in accordance with the striving of hypomania-prone individuals to achieve independence from others. In fact, individuals with a mood state that is elevated manifest an enhanced autonomy with respect to the pursuit of personal goals (Lam, Wright, & Smith, 2004; Scott et al., 2000). Reduced retrieval of relationship events also emerged in the SDMs of participants who were in a manic current mood. This result fits with Lam and Mansell's (2008) observations regarding the variation in their subject's cognitive style depending on his mood state. During mania episodes, the young man was less dependent on others than he was in depression episodes. However, we did not find all the characteristics that this young man displayed during the manic state, such as retrieval of more specific memories that were rated as more positive.

The content of the SDMs also showed that hypomania-prone individuals tended to report fewer SDMs describing positive events related to striving to achieve personal goals. Our result seems to suggest that these individuals had experienced fewer positive achievement events in their lives. In fact, individuals with a history of hypomanic symptoms present excessive goal-attainment behaviors promoted by unrealistically high confidence of success in their pursuit of their goals (for a review, see Johnson, 2005). It is possible that these behaviors often lead to negative outcomes. Thus, in order to protect themselves from the retrieval of memories describing difficulties in goal attainment, hypomania-prone individuals tend to define themselves less by such events. However, this result was only at a trend level of significance, and so it should be tested in future studies.

Finally, some other findings not related to hypomania emerged from the analysis we performed. First, we observed that reduced positive affectivity was a significant predictor of lack of memory specificity. This result is compatible with the overgeneral autobiographical memories observed in depressive symptomatology (see Williams et al. (2007) for a review).

Moreover, in the present study, women reported more SDMs describing relationships, longer SDM narratives, and more SDMs that contained tension and evoked negative affect. In contrast, men preferentially retrieved SDMs giving rise to positive affect. Past studies of SDMs did not show strong evidence of gender differences in narrative characteristics (e.g., Blagov & Singer, 2004; Thorne & McLean, 2002). However, some differences between males and females did emerge in studies focusing on the development of narrative skills in childhood and on adult life story narratives (e.g., Buckner & Fivush, 1998; McAdams et al., 2004), which are compatible with our findings. In particular, these studies showed that females tell life stories that focus more on relationships and on emotions (particularly on negative emotions, such as sadness), while males focus more on individual achievement and report fewer emotions overall. Moreover, females' narratives are longer and more detailed than those of males. However, the population in our study displayed a significant age difference between men and women, and so our results on gender differences should be viewed with caution.

To conclude, the findings of the present study are compatible with the view that dysfunctional beliefs about the self, others, and the world, as well as about affect regulation, emerge in the representations of self-concept (as provided by the SDMs and SDFPs). Nevertheless, it should be emphasized that SDMs and SDFPs are not individual psychological functioning dimensions that fixedly determine outcomes (e.g., manic episodes). In fact, the results that emerged from our analyses (performed with multilevel models) do not represent casual linkages but only cross-sectional associations between a history of hypomanic symptoms and some characteristics of how an individual defines his/herself through autobiographical memories and future projections in a specific moment of his/her life. Therefore, as SDMs and SDFPs vary across life, depending on life experiences and changes in values, roles, and life goals (Conway et al., 2004; Singer & Salovey, 1993), longitudinal studies are necessary. Moreover, the pattern of the SDMs and SDFPs that we found in hypomania-prone individuals interacts with many other factors and psychological processes, leading to an individualized expression of psychological functioning.

In summary, the present study found that relationships and memories with tension are central to the self-definition of hypomania-prone individuals. The findings highlighted in the analyses seem to be specifically related to self-definition and are not accounted for (or only poorly) by general affective dispositions or the participants' current state. Therefore, this study describes new elements associated with the identity of hypomania-prone individuals. These findings may lead to a better understanding of their characteristics and should be considered in further studies and in clinical interventions.

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## References

- American Psychiatric Association (2000). *Diagnostic and statistical manual of mental disorders. Text revision* (4th ed.). Washington, DC: Author.
- Angst, J. (1998). The emerging epidemiology of hypomania and bipolar II disorder. *Journal of Affective Disorders*, 50, 143–151.
- Atance, C. M., & O'Neill, D. K. (2001). Episodic future thinking. *Trends in Cognitive Sciences*, 5, 533–539.
- Berntsen, D., & Bohn, A. (2010). Remembering and forecasting: The relation between autobiographical memory and episodic future thinking. *Memory and Cognition*, 38, 265–278.
- Berntsen, D., & Rubin, D. C. (2006). The centrality of event scale: A measure of integrating a trauma into one's identity and its relation to post-traumatic stress disorder symptoms. *Behaviour Research and Therapy*, 44, 219–231.
- Blagov, P. S., & Singer, J. A. (2004). Four dimensions of self-defining memories (specificity, meaning, content, and affect) and their relationships to self-restraint, distress, and repressive defensiveness. *Journal of Personality*, 72, 481–511.
- Buckner, J. P., & Fivush, R. (1998). Gender and self in children's autobiographical narratives. *Applied Cognitive Psychology*, 12, 407–429.
- Cohen, J. (1960). A coefficient of agreement for nominal scales. *Educational and Psychological Measurement*, 20, 37–46.
- Conway, M. A. (2005). Memory and the self. *Journal of Memory and Language*, 53, 594–628.
- Conway, M. A., Singer, J. A., & Tagini, A. (2004). The self and autobiographical memory: Correspondence and coherence. *Social Cognition*, 22, 491–529.
- D'Argembeau, A., Lardi, C., & Van der Linden, M. (2012). Self-defining future projections: Exploring the identity function of thinking about the future. *Memory*, 20, 110–120.
- D'Argembeau, A., Raffard, S., & Van der Linden, M. (2008). Remembering the past and imagining the future in schizophrenia. *Journal of Abnormal Psychology*, 117, 247–251.
- Dodd, A. L., Mansell, W., Morrison, A. P., & Tai, S. (2011). Factor structure of the Hypomanic Attitudes and Positive Predictions Inventory and associations with analogue bipolar symptoms in a student sample. *Personality and Individual Differences*, 50, 349–354.
- Foley Center for the Study of Lives (1999). *Coding narrative accounts of autobiographical scenes for redemption sequences*. Northwestern University, Evanston. <<http://www.sesp.northwestern.edu/docs/RedemptionCodingSch.pdf>>.
- Gaudreau, P., Sanchez, X., & Blondin, J. (2006). Positive and negative affective states in a performance-related setting: Testing the factorial structure of the PANAS across two samples of French-Canadian participants. *European Journal of Psychological Assessment*, 22, 240–249.
- Grandin, L. D., Alloy, L. B., & Abramson, L. Y. (2007). Childhood stressful life events and bipolar spectrum disorders. *Journal of Social and Clinical Psychology*, 26, 460–478.
- Hirschfeld, R. M. A., Williams, J. B. W., Spitzer, R. L., Calabrese, J. R., Flynn, L., Keck, P. E., et al (2000). Development and validation of a screening instrument for bipolar spectrum disorder: The mood disorder questionnaire. *American Journal of Psychiatry*, 157, 1873–1875.
- Hyun, M., Friedman, S. D., & Dunner, D. L. (2000). Relationship of childhood physical and sexual abuse to adult bipolar disorder. *Bipolar Disorders*, 2, 131–135.
- Johnson, S. L. (2005). Mania and dysregulation in goal pursuit: A review. *Clinical Psychology Review*, 25, 241–262.
- Lam, D., & Mansell, W. (2008). Mood-dependent cognitive change in a man with bipolar disorder who cycles every 24 hours. *Cognitive and Behavioral Practice*, 15, 255–262.
- Lam, D., Wright, K., & Smith, N. (2004). Dysfunctional assumptions in bipolar disorder. *Journal of Affective Disorders*, 79, 193–199.
- Lardi, C., D'Argembeau, A., Chanal, J., Ghisletta, P., & Van der Linden, M. (2010). Further characterisation of self-defining memories in young adults: A study of a Swiss sample. *Memory*, 18, 293–309.
- Lardi, C., Ghisletta, P., & Van der Linden, M. (in press). What is the nature of the self-defining memories of repression-prone individuals? *Self and Identity*.
- Mangelli, L., Benazzi, F., & Fava, G. A. (2005). Assessing the community prevalence of bipolar spectrum symptoms by the mood disorder questionnaire. *Psychotherapy and Psychosomatics*, 74, 120–122.

- Mansell, W., & Scott, J. (2006). Dysfunctional beliefs in individuals with bipolar disorders. In S. H. Jones & R. P. Bentall (Eds.), *The psychology of bipolar disorder: New developments and research strategies* (pp. 73–90). New York: Oxford University Press.
- Mansell, W., & Hodson, S. (2009). Imagery and memories of the social self in people with bipolar disorders: Empirical evidence, phenomenology, theory and therapy. In L. Stoppa (Ed.), *Imagery and the threatened self: Perspectives on mental imagery in cognitive therapy*. East Sussex, UK: Routledge.
- Mansell, W., & Lam, D. (2004). A preliminary study of autobiographical memory in remitted bipolar and unipolar depression and the role of imagery in the specificity of memory. *Memory*, 12, 437–446.
- Mansell, W., Morrison, A. P., Reid, G., Lowens, I., & Tai, S. (2007). The interpretation of, and responses to, changes in internal states: An integrative cognitive model of mood swings and bipolar disorders. *Behavioural and Cognitive Psychotherapy*, 35, 515–539.
- McAdams, D. P., Anyidoho, N. A., Brown, C., Huang, Y. T., Kaplan, B., & Machado, M. A. (2004). Traits and stories: Links between dispositional and narrative features of personality. *Journal of Personality*, 72, 761–784.
- McAdams, D. P., Reynolds, J., Lewis, M., Patten, A. H., & Bowman, P. J. (2001). When bad things turn good and good things turn bad: Sequences of redemption and contamination in life narrative and their relation to psychosocial adaptation in midlife adults and in students. *Personality and Social Psychology Bulletin*, 27, 474–485.
- Newby-Clark, I. R., & Ross, M. (2003). Conceiving the past and future. *Personality and Social Psychology Bulletin*, 29, 807–818.
- Philippot, P., Schaefer, A., & Herbette, G. (2003). Consequences of specific processing of emotional information: Impact of general versus specific autobiographical memory priming on emotion elicitation. *Emotion*, 3, 270–283.
- Pinheiro, J. C., & Bates, D. M. (2000). *Mixed-effect models in S and S-PLUS*. New York: Springer.
- R Development Core Team (2009). *R: A language and environment for statistical computing*. Vienna, Austria: R Foundation for Statistical Computing.
- Scott, J., & Pope, M. (2003). Cognitive styles in individuals with bipolar disorders. *Psychological Medicine*, 33, 1081–1088.
- Scott, J., Stanton, B., Garland, A., & Ferrier, I. N. (2000). Cognitive vulnerability in patients with bipolar disorder. *Psychological Medicine*, 30, 467–472.
- Singer, J. A., & Blagov, P. S. (2000–2001). *Classification system and scoring manual for self-defining autobiographical memories*. New London: Connecticut College (Unpublished manuscript).
- Singer, J. A., & Blagov, P. S. (2004). The integrative function of narrative processing: Autobiographical memory, self-defining memories, and the life story of identity. In D. R. Beike, J. M. Lampinen, & D. A. Behrend (Eds.), *The self and memory* (pp. 117–137). New York: Psychology Press.
- Singer, J. A., & Salovey, P. (1993). *The remembered self: Emotion and memory in personality*. New York: Free Press.
- Snijders, T. A. B., & Bosker, R. J. (1999). *Multilevel analysis: An introduction to basic and advanced multilevel modeling*. London: Sage.
- Suddendorf, T., & Corballis, M. C. (1997). Mental time travel and the evolution of the human mind. *Genetic, Social, and General Psychology Monographs*, 123, 133–167.
- Sutin, A. R., & Gillath, O. (2009). Autobiographical memory phenomenology and content mediate attachment style and psychological distress. *Journal of Counseling Psychology*, 56, 351–364.
- Szpunar, K. K. (2010). Episodic future thought. *Perspectives on Psychological Science*, 5, 142–162.
- Thorne, A., & McLean, K. C. (2001). *Manual for coding events in self-defining memories*. University of California, Santa Cruz (Unpublished manuscript).
- Thorne, A., & McLean, K. C. (2002). Gendered reminiscence practices and self-definition in late adolescence. *Sex Roles*, 46, 267–277.
- Thorne, A., McLean, K. C., & Lawrence, A. M. (2004). When remembering is not enough: Reflecting on self-defining memories in late adolescence. *Journal of Personality*, 72, 513–542.
- Tzemou, E., & Birchwood, M. (2007). A prospective study of dysfunctional thinking and the regulation of negative intrusive memories in bipolar 1 disorder: Implications for affect regulation theory. *Psychological Medicine*, 37, 689–698.
- Udachina, A., & Mansell, W. (2007). Cross-validation of the mood disorders questionnaire, the internal state scale, and the hypomanic personality scale. *Personality and Individual Differences*, 42, 1539–1549.
- Watson, D., Clark, L. A., & Tellegen, A. (1988). Development and validation of brief measures of positive and negative affect: The PANAS scales. *Journal of Personality and Social Psychology*, 54, 1063–1070.
- Weber Rouget, B., Gervasoni, N., Dubuis, V., Gex-Fabry, M., Bondolfi, G., & Aubry, J. (2005). Screening for bipolar disorders using a French version of the Mood Disorder Questionnaire (MDQ). *Journal of Affective Disorders*, 88, 103–108.
- Williams, J. M. G. (1996). Depression and the specificity of autobiographical memory. In D. Rubin (Ed.), *Remembering our past: Studies in autobiographical memory* (pp. 244–267). New York: Cambridge University Press.
- Williams, J. M. G., Barnhofer, T., Crane, C., Herman, D., Raes, F., Watkins, E., et al (2007). Autobiographical memory specificity and emotional disorder. *Psychological Bulletin*, 133, 122–148.
- Williams, J. M. G., & Broadbent, K. (1986). Autobiographical memory in suicide attempters. *Journal of Abnormal Psychology*, 95, 144–149.
- Williams, J. M. G., Ellis, N. C., Tyers, C., Healy, H., Rose, G., & MacLeod, A. K. (1996). The specificity of autobiographical memory and imageability of the future. *Memory and Cognition*, 24, 116–125.