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Self-defining future projections: Exploring the identity function of thinking about the future

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The act of projecting oneself into meaningful future events may significantly contribute to a person's sense of self and identity. Yet if the role of memories, in particular self-defining memories (SDMs), in grounding the self is now well established, the identity function of anticipated future events has received comparatively little attention. This article introduces the construct of self-defining future projection (SDFP) to address this issue. Two studies show that people can readily identify significant future events that they frequently think about and that convey core information about who they are as individuals. Furthermore, a person's particular style of constructing SDMs is similarly manifested in SDFPs, suggesting that both types of events can be used to ground the self. Notably, people who display a stronger tendency to extract meaning from their past experiences also reflect more about the potential implications of imagined future events. The results further demonstrate that SDMs and SDFPs both give rise to a strong sense of personal continuity over time and are meaningfully related to self-esteem. Together these findings lend support to the idea that a person's sense of self and identity is in part nourished by the anticipation of significant future events.

Keywords: Autobiographical memory; Self-defining memories; Future thinking; Identity.

People spend a great deal of time thinking about all sorts of situations that might happen in their personal future. Experience-sampling studies show that future-oriented thoughts are frequent in daily life (Berntsen & Jacobsen, 2008; D'Argembeau, Renaud, & Van der Linden, 2011; Klingler & Cox, 1987) and also occur spontaneously on a regular basis while performing various tasks in the laboratory (Smallwood, Nind, & O'Connor, 2009; Stawarczyk, Majerus, Maj, Van der Linden, & D'Argembeau, 2011). While most of these thoughts refer to the near future and serve everyday problem solving and action planning (D'Argembeau et al., 2011; Stawarczyk et al., 2011), some future scenarios

likely relate to more significant themes and concerns in people's lives, for example their career, family life, or health condition. The process of creating and elaborating mental representations of such meaningful future events may significantly contribute to a person's sense of self and identity. The purpose of this study is to explore this identity function of thinking about the future.

One's sense of sense of self and identity is intimately tied to autobiographical memories (Addis & Tippett, 2004; Bluck & Habermas, 2000; Conway, 2005; McAdams, 2001; Wilson & Ross, 2003). A growing number of studies have revealed, in particular, that the understanding of

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who one is as a person is supported by a set of highly significant, “self-defining” memories (Blagov & Singer, 2004; Lardi, D’Argembeau, Chanal, Ghisletta, & Van der Linden, 2010; Singer & Moffitt, 1991–1992; Sutin & Robins, 2005; Thorne, McLean, & Lawrence, 2004). These vivid and frequently accessed memories represent the dominant themes and concerns in a person’s life and are thought to anchor identity in remembered reality (Conway, Singer, & Tagini, 2004; Singer & Blagov, 2004). Research has shown that self-defining memories are related to important dimensions of the self, such as self-esteem and other personality characteristics (e.g., Sutin & Robins, 2005).

In addition to being supported by significant memories, people’s sense of self and identity may also be fostered by the imagination of meaningful events that they anticipate to happen in the future. Several studies have shown that imagined future events are, on average, considered as even more important to the self than memories for past events (Addis, Wong, & Schacter, 2008; Berntsen & Bohn, 2010; D’Argembeau & Van der Linden, 2004, 2006). To date, however, whether and how some envisioned future events contribute to one’s sense of self and identity has not been directly investigated. In this article we introduce the construct of “self-defining future projection” to address this issue.

The idea that people form representations of themselves in the future is in itself not new. More than a century ago, William James (1890) was already contrasting remote and potential selves with immediate and actual selves. More recently Markus and Nurius (1986) introduced the construct of possible selves to refer to people’s ideas of what they might become, would like to become, and are afraid of becoming in the future. What people describe as possible selves, however, can include a variety of different kinds of mental representations that do not necessarily refer to future *events*. Some possible selves consist of abstract, semantic representations of the self in the future—for example, abstract representations of traits (e.g., “I will be a confident person”), social roles (e.g., “I will be a mother”), and occupations (e.g., “I will be a lawyer”)—while other possible selves include details that specify how and when the imagined future state of the self will be attained (for review see, e.g., Oyserman & James, 2009; Packard & Conway, 2006).

Here we propose the construct of *self-defining future projection* to distinguish more clearly the imagination of future events that are relevant to one’s identity from more abstract (semantic) representations of future selves. We conceive of self-defining future projections (SDFPs) as the future counterparts of self-defining memories (SDMs); that is, mental representations of plausible and highly significant future events that provide with core information for one’s understanding of self. In the same way as SDMs support semantic knowledge about present and past selves (Conway, 2005; Conway et al., 2004), SDFPs may ground and exemplify people’s conceptions of themselves in the future. For example, an envisioned future self as a father may be nourished by the construction of future scenarios that incarnate this possible state of the self, such as picturing oneself playing with one’s child in the backyard. As with autobiographical memories (Conway, 2005; Conway et al., 2004), the relationship between SDFPs and self-conceptions may be a reciprocal one in which SDFPs ground self-conceptions and self-conceptions influence the construction of SDFPs.

In this article we report two studies in which we explored the construct of SDFP. In Study 1 we used an individual differences approach to investigate whether a person’s particular style of constructing SDMs is similarly manifested in SDFPs, which would support the view that both types of events can be used to foster one’s sense of self and identity. In Study 2 we sought to investigate the identity function of SDFPs more directly by assessing the extent to which SDFPs provide people with a sense of personal continuity over time and by examining whether the characteristics of SDFPs are meaningfully related to self-esteem.

STUDY 1

The aim of Study 1 was to investigate the characteristics of SDFPs and their relationship to SDMs. All SDMs share common features such as their vividness, affective intensity, frequency of recall, and linkage to other similar memories (Singer & Blagov, 2004). Yet SDMs also differ from each other on several important dimensions (e.g., specificity, integrative meaning) and there is evidence that these dimensions vary widely across individuals (Blagov & Singer, 2004). Taking these individual differences into account, we reasoned

that if people foster their sense of self and identity not only with memories of significant past events but also with representations of important future events, an individual's particular style of constructing self-defining information should be manifested in a similar way for past and future events. Consequently, inter-individual variations in the characteristics of SDMs should be related to inter-individual variations in the characteristics of SDFPs. We tested this hypothesis in Study 1 by assessing the degree of specificity and integrative meaning of SDMs and SDFPs.

Of particular interest for our purpose was the dimension of integrative meaning. When evoking SDMs, people may not only remember past experiences but also take the additional step of ascribing meaning to their memories by extracting lessons about the self, important relationships, or life in general (Blagov & Singer, 2004; Thorne et al., 2004). This reflective process plays a crucial role in the construction of a sense of personal continuity over time, by providing coherent links between past events and the present self (Bluck & Habermas, 2000). In Study 1 we sought to examine whether people derive integrative meaning when they think about significant future events and we investigated whether the tendency to extract meaning from past events correlates with the tendency to extract meaning from future events. In so far as the construction of a sense of self-continuity relies on integrated representations of both remembered events and anticipated future events, individuals who display a stronger tendency to draw meaning from their memories should also reflect more on the personal significance of possible future happenings.

Method

Participants. A total of 72 undergraduate or graduate students (40 women) participated in this study. They were aged between 18 and 29 years ($M = 21$ years, $SD = 2.6$ years) and had completed between 12 and 18 years of education ($M = 14$ years, $SD = 1.6$ years).

Materials and procedure. Participants were asked to write down three self-defining memories (SDMs) according to the standard self-defining memory instructions developed by Singer and colleagues (Blagov & Singer, 2004; Singer & Moffitt, 1991–1992). In addition we adapted these instructions to future events and asked

participants to write down three self-defining future projections (SDFPs). The criteria used to define self-defining events were exactly the same for the past and the future: they should be events (1) that feel important and that help oneself and significant others to understand who one is as a person; (2) that can be vividly represented; (3) that reflect an enduring theme, issue, or conflict in one's life and that connect to other events pertaining to similar themes; (4) that are associated with strong feelings, either positive or negative; (5) that have been thought about many times; and (6) whose temporal distance from the present is of at least 12 months.

For each self-defining event, participants were first asked to describe the event with enough details to help someone else see and feel as they did during the past event or as they would do if the imagined future event happened. Then they rated their emotional response while remembering/imagining the event on a 7-point Likert scale ($-3 =$ very negative, $0 =$ neutral, $3 =$ very positive) and estimated the temporal distance of the event from the present (in years and months). The order of presentation of SDMs and SDFPs was counterbalanced across participants.

Scoring of event narratives. All of the 216 SDMs and 216 SDFPs were scored for specificity and integrative meaning by the first author, on the basis of the Singer and Blagov (2000) scoring manual. Each narrative was coded as specific when attention was clearly focused on a unique event happening at a particular time and place and lasting less than a day, and was coded as non-specific when it referred to a category of repeated events or to a summary of a series of events occurring over an extended period of time (i.e., over more than a day). Each narrative was also coded for integrative meaning. Narratives were coded as integrative when there was a stepping back from the narrated event to make additional statements about the significance or meaning of the event to the individual (e.g., statements about what the event teaches the individual about himself or herself) and were coded as non-integrative when they did not contain such statements (Singer & Blagov, 2000). Examples of SDFPs with and without integrative meaning are provided in Table 1.

Finally, to get an idea of the thematic content of SDMs and SDFPs, both types of events were scored according to the Thorne and

TABLE 1
Examples of SDFPs with and without integrative meaning

SDFPs with integrative meaning	<p>I plan to be in an exchange student program next year. I imagine I'll go to study abroad in England. I can picture myself having a chat with my new English friends. I try to integrate myself in their culture. In addition to improving my English, studying abroad will allow me to develop my sociability and self-confidence. This is an important future step in my life that will enable me to fully develop myself.</p> <p>I imagine the day when I will give birth to a baby. I can see my family visiting us at the hospital. I imagine my husband and can picture his reaction; he will be touched, happy, and intimidated at the same time. Personally, I think that this event will bring a strong feeling of increased meaning in my life. I am sure that family life will be very fulfilling to me, although I am aware that raising a child is also filled with difficulties.</p>
SDFPs without integrative meaning	<p>I imagine my wedding. It will take place in a beautiful place, at the end of summer. I can picture a beautiful garden with flowers, and white tables and chairs made of wood. My family and all my friends are present, but it will still be an intimate wedding. I will be happy and anxious at the same time. Being at the centre of attention will make me feel a bit uncomfortable.</p> <p>I would like to work in the domain of renewable energies. I can picture myself in a company which sells renewable energies. I see myself with colleagues and we work together on the same project. There is a good atmosphere and people are supportive of each other. We are all working together to improve the current environmental situation on earth.</p>

Integrative statements are indicated in bold.

McLean (2001) manual. The narratives were classified into seven content categories: life-threatening events (events in which issues of life and death, or physical well-being, structure the narrative), recreation/exploration (narratives that centre on recreational activities, such as hobbies, parties, leisure activities, travelling, vacation, or sports), relationship (events in which a particular interpersonal relationship is emphasised), achievement (events that emphasise one's own or group/family effortful attempts at mastery or accomplishment with regard to physical, material, social, or spiritual goals, regardless of the outcome), guilt/shame (events in which the issue of one's doing wrong or right is emphasised more so than any of the prior concerns), drug/alcohol/tobacco use (events that centre on the use of drug, alcohol, or tobacco for recreational, thrill, or possible suicidal purposes), and unclassifiable (events that do not fit well into any of the previous categories). Following Thorne and McLean (2001), each narrative was coded into only one category, which reflected the primary concern that was emphasised in the narrative. Narratives that included multiple concerns were classified into the "unclassifiable" category.

A random selection of 50% of the SDMs and SDFPs was independently scored by the second author in order to quantify inter-rater agreement. SDMs and SDFPs were scored separately, such that the rater was blind as to which participant the SDMs and SDFPs being rated

came from. Agreement between the two raters was good for specificity (Cohen's $K = 0.82$), integrative meaning (Cohen's $K = 0.81$), and thematic content (Cohen's $K = 0.73$).

Results and discussion

There were no gender differences in the characteristics of SDMs and SDFPs, so we report data collapsed across men and women. We first report descriptive statistics for thematic content to give an idea of the kinds of past and future events that participants generated. In line with previous findings (e.g., Blagov & Singer, 2004; Lardi et al., 2010), most SDMs referred to relationships (32%), achievements (30%), or life-threatening events (23%); 10% of SDMs were related to recreation/exploration, 1% to guilt/shame themes, and 4% were unclassifiable. For SDFPs, achievement was by far the most common theme (57%), followed by relationships (21%); 10% of SDFPs were related to recreation/exploration, 5% to life-threatening events, and 7% were unclassifiable.

Next we compared the narrative structure (i.e., the dimensions of specificity and integrative meaning) of SDMs and SDFPs. The three observations of each participant were summed for each event condition for use in the statistical analyses. The mean number of specific and integrative SDMs and SDFPs reported by the participants are presented in Table 2. Wilcoxon

TABLE 2

Characteristics of self-defining memories and self-defining future projections in Studies 1 and 2

	SDMs		SDFPs	
	M	SD	M	SD
<i>Study 1</i>				
Number of specific events	1.71	1.16	1.11	1.11
Number of integrative narratives	1.28	1.10	0.76	0.96
Rating for emotion	0.51	1.35	1.94	0.92
Temporal distance (in months)	61	32	80	62
<i>Study 2</i>				
Number of specific narratives	1.36	1.25	0.56	0.89
Number of integrative narratives	1.15	1.12	1.06	1.06
Rating for emotion	0.53	1.52	1.64	1.08
Temporal distance (in months)	124	100	57	61
Sense of continuity	5.19	1.22	5.30	1.31

SDMs: self-defining memories; SDFPs: self-defining future projections.

signed-rank tests showed that participants reported significantly more specific ($Z = 3.96$, $p < .001$) and more integrative ($Z = 3.86$, $p < .001$) narratives for SDMs than for SDFPs. Table 2 also shows the mean ratings of emotion and evaluations of temporal distance. The analyses revealed that SDFPs were associated with more positive emotions than SDMs ($Z = 5.79$, $p < .001$); on the other hand, there was no significant difference between the two types of events with regard to temporal distance ($Z = 1.61$, $p = .11$).

Our main interest was to examine whether an individual's particular style of constructing SDMs is similarly manifested in SDFPs. To do so we assessed whether inter-individual variations in the narrative structure of SDMs correlated with inter-

individual variations in the structure of SDFPs. For both the dimensions of specificity and integrative meaning, we calculated the correlation between the number of SDMs and the number of SDFPs reported by participants, using Spearman's rank correlation coefficients. There was a significant positive correlation between the structure of SDMs and the structure of SDFPs, both for specificity ($r_s = .46$, $p < .001$) and for integrative meaning ($r_s = .61$, $p < .001$) (see Figure 1).

Finally we examined whether SDMs and SDFPs show a similar internal structure and, specifically, whether the dimensions of specificity and integrative meaning are similarly related with each other. In line with previous observations (e.g., Lardi et al., 2010; Singer, Rexhaj, & Baddeley, 2007), we found that the specificity of SDMs was inversely related to the presence of integrative meaning ($r_s = -.33$, $p < .005$). In the same vein, there was a negative correlation between specificity and integrative meaning for SDFPs ($r_s = -.31$, $p < .01$).

In summary, Study 1 shows that people can readily identify significant future events that they frequently think about and that convey core information about who they are as individuals. Most of these events refer to themes of high importance for most young adults (i.e., imagined future achievements and significant relationships). The results further demonstrate that an individual's particular style of constructing self-defining events is manifested in a similar way for past and future events, and the narratives of both types of events show a similar internal structure. These findings thus provide preliminary support for the idea that in addition to memories for

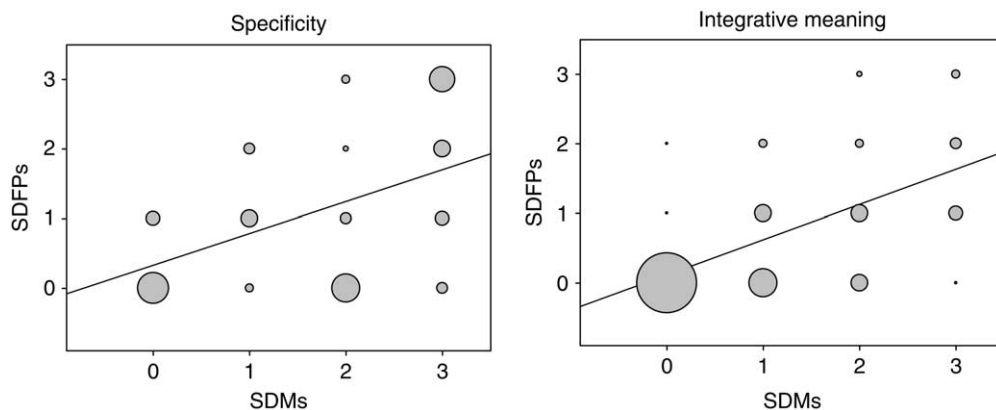


Figure 1. Bubble plots showing the correlation between self-defining memories (SDMs) and self-defining future projections (SDFPs) for the dimensions of specificity (left panel) and integrative meaning (right panel) in Study 1. Circle size is weighted by number of observations at each data point.

important past experiences, a person's sense of self and identity is in part fostered by the imagination of meaningful future events.

It could be argued, however, that the observed correlations between the characteristics of SDMs and SDFPs may simply be due to the influence of one task (e.g., recalling SDMs) on the other (e.g., generating SDFPs). Previous studies have indeed shown that the specificity with which people imagine future events can be influenced by the specificity with which they had retrieved past events in an immediately preceding task (Williams et al., 1996). In the present study, however, the characteristics of SDMs and SDFPs were unaffected by the order of presentation of the tasks: the number of specific and integrative narratives reported for SDMs did not differ as a function of whether SDMs were generated first or after SDFPs and, similarly, the characteristics of SDFPs did not differ as a function of whether they were generated first or after SDMs (all $ps > .16$). Thus the observed correlations between the characteristics of SDMs and SDFPs are unlikely to simply result from a carry-over effect. Nevertheless, in Study 2 we addressed this issue more directly by having participants generate SDMs and SDFPs in two separate sessions 2 weeks apart.

STUDY 2

Study 1 revealed that an individual's particular style of constructing SDMs is similarly manifested in SDFPs, suggesting that both types of self-defining representations can be used to foster one's sense of self and identity. In Study 2 we aimed to replicate Study 1 while minimising the possibility that the observed correlations between the characteristics of SDMs and SDFPs were simply due to the influence of one task on the other. To do so we investigated the correlations between the characteristics of SDMs and SDFPs when the two types of events were generated in two separate sessions 2 weeks apart. Furthermore, in order to increase the generalisability of the findings, Study 2 used a sample of adults from the general population instead of exclusively college students.

In Study 2 we also assessed the contribution of SDFPs to the sense of self and identity in a more direct way. First, we investigated to what extent generating SDFPs provides people with a sense of personal continuity over time, an important

aspect of identity (Vignoles, Manzi, Regalia, Jemmolo, & Scabini, 2008). Second, we examined the relationship between the characteristics of SDFPs and self-esteem. Previous research has shown that high self-esteem individuals retrieve SDMs that are infused with more positive emotions (Sutin & Robins, 2005). If the imagination of future events is used to maintain self-conceptions, then people's self-esteem should also be related to the affective valence of SDFPs.

Method

Participants. A total of 110 adults from the general community were recruited by advertisement posters and word of mouth to participate in an online survey. A total of 32 participants failed to complete the second session, such that the final sample consisted of 78 individuals (47 women). They were aged between 18 and 57 years ($M = 32$ years, $SD = 9.1$ years) and had completed between 10 and 19 years of education ($M = 14.9$ years, $SD = 2.2$ years).

Materials and procedure. Participants were provided with a personal login and password to access an online survey consisting of two sessions 2 weeks apart. One of the sessions consisted in reporting three SDMs and the other session consisted in reporting three SDFPs. The instructions were exactly the same as in Study 1, except that the time period from which the self-defining events should belong was left unspecified. We decided not to constrain the time period in order to allow participants to report important events that might possibly happen in the near future (i.e., within the next year). For each self-defining event, participants were first asked to describe the event in detail and then to rate their emotional response on a 7-point Likert scale ($-3 =$ very negative, $0 =$ neutral, $3 =$ very positive) and to estimate the temporal distance of the event from the present. Furthermore, they also rated the extent to which remembering or imagining the event gave them a sense of continuity—between past, present, and future—in their life, using a 7-point Likert scale ranging from 1 (not at all) to 7 (extremely much) (Vignoles et al., 2008). Half of the participants reported SDMs in the first session and SDFPs in the second session, whereas the other half of the participants reported SDFPs in the first session and SDMs in the second session. Within each

session, participants reported the three events in a row (i.e., the session could not be interrupted).

Participants also completed the Rosenberg Self-Esteem (RSE) scale (Rosenberg, 1965; French adaptation by Vallières & Vallerand, 1990). The 10-item RSE scale assesses global self-esteem and was rated on a 4-point Likert scale ranging from 1 (strongly disagree) to 4 (strongly agree). Half of the participants completed the RSE in the first session, whereas the other half completed the RSE in the second session. In the present sample the RSE had a mean of 30.2 ($SD = 5.01$) and an alpha reliability of .87.

Scoring of event narratives. All of the 234 SDMs and 234 SDFPs were scored for specificity and integrative meaning by the first author, using the same criteria as in Study 1. A random selection of 50% of the SDMs and SDFPs was independently scored by the second author in order to quantify inter-rater agreement. SDMs and SDFPs were scored separately, such that the rater was blind as to which participant the SDMs and SDFPs being rated came from. Agreement between the two raters was good, both for specificity (Cohen's $K = 0.90$) and for integrative meaning (Cohen's $K = 0.78$).

Results and discussion

There were no gender differences in the characteristics of SDMs and SDFPs, so we report data collapsed across men and women. The mean values for the characteristics of SDMs and SDFPs are shown in Table 2. In line with Study 1,

participants described more specific events for SDMs than for SDFPs ($Z = 4.54, p < .001$), and SDFPs were associated with more positive emotions than SDMs ($Z = 5.05, p < .001$). On the other hand, contrary to Study 1, the proportion of integrative events did not differ between the past and the future ($Z = 0.56, p = .57$), and SDMs were judged to be more distant in time compared to SDFPs ($Z = 5.11, p < .001$). The latter finding might simply be due to differences in participants' age between the two studies. Indeed, combining data from the two samples we found that participants' age correlated positively with the temporal distance of SDMs ($r = .67, p < .001$) and correlated negatively with the temporal distance of SDFPs ($r = -.24, p = .003$).

Of importance, SDMs and SDFPs were both associated with a strong sense of personal continuity (see Table 2) and there was no significant difference between past and future events in this regard ($Z = 0.97, p = .33$). Of the 234 SDMs reported in this study, 71% were rated above average (i.e., a rating superior or equal to 5) and 32% received the maximum rating for the sense of personal continuity. Similarly, 70% of SDFPs were rated above average and 35% received the maximum rating.

Next we examined whether inter-individual variations in the narrative structure of SDMs were significantly related to inter-individual variations in the structure of SDFPs. In line with Study 1 there was a significant positive correlation for both specificity ($r_s = .29, p < .05$) and integrative meaning ($r_s = .57, p < .001$) (see Figure 2). Furthermore, as in Study 1, we found that specificity was inversely related to integrative

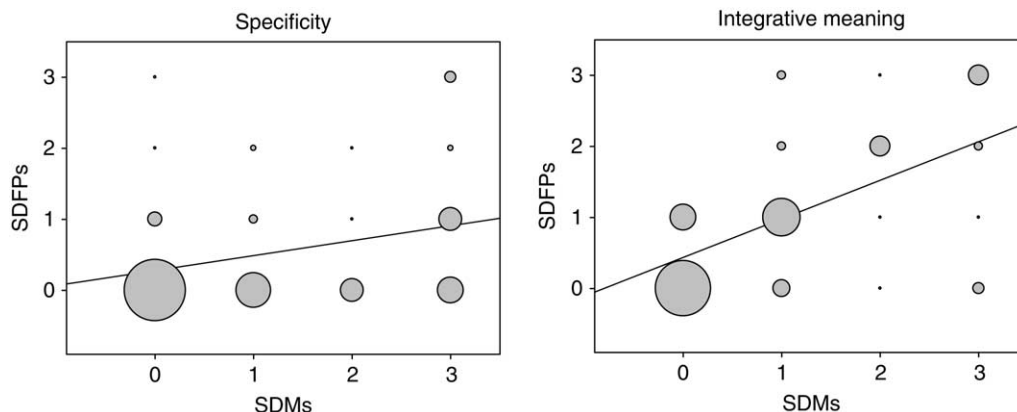


Figure 2. Bubble plots showing the correlation between self-defining memories (SDMs) and self-defining future projections (SDFPs) for the dimensions of specificity (left panel) and integrative meaning (right panel) in Study 2. Circle size is weighted by number of observations at each data point.

meaning, although for past events the correlation just failed to reach conventional statistical significance ($r_s = -.21$, $p = .06$, for SDMs, and $r_s = -.29$, $p < .05$, for SDFPs).

We also examined whether people who experienced a stronger sense of continuity over time when recalling SDMs also experienced a higher sense of continuity when generating SDFPs. To do so we calculated the correlation between the ratings of continuity obtained for SDMs and SDFPs and found that the two sets of ratings were positively correlated across participants ($r_s = .25$, $p < .05$).

Finally, we examined whether individual differences in self-esteem were related to the affective dimension of SDMs and SDFPs. Across all participants there was a positive correlation between self-esteem and ratings for emotional response, both for SDMs ($r_s = .28$, $p < .05$) and SDFPs ($r_s = .29$, $p < .05$), indicating that individuals with higher self-esteem generated past and future events that were more positive.

In summary, Study 2 replicated the main findings of Study 1. Notably, inter-individual variations in the characteristics of SDMs were significantly related to inter-individual variations in the characteristics of SDFPs, even when the two types of events were generated in two separate sessions 2 weeks apart. Of importance, Study 2 further demonstrated that SDMs and SDFPs both gave rise to a strong sense of personal continuity over time, and the strength of continuity for SDMs and SDFPs was positively correlated across participants. Finally, the results also showed that individual differences in self-esteem were similarly and meaningfully correlated with the affective dimension of SDMs and SDFPs.

GENERAL DISCUSSION

While most of the future thoughts that people form in their minds serve to plan and organise relatively mundane, everyday activities (D'Argembeau et al., 2011; Stawarczyk et al., 2011), the present study shows that people can readily identify a set of significant future events that they frequently think about and that convey core information about the self. The results further demonstrate that a person's particular style of constructing self-defining narratives is similarly manifested for past and future events and that both types of events give rise to a strong

sense of personal continuity over time. Overall, these observations support the idea that in addition to memories for significant past experiences, one's sense of self and identity is in part nourished by the imagination of meaningful, self-defining future events. We will now speculate further on the nature of the knowledge structures that support such self-defining future projections and how they relate to other components of self-representation.

Self-representation is multifaceted and includes not only knowledge about life events, but also more abstract, general representations of personal attributes (e.g., conceptual knowledge about one's personal traits and abilities; Markus, 1977; Neisser, 1988). Conway and colleagues (Conway, 2005; Conway et al., 2004) have proposed an account of the structure of self-relevant knowledge that posits a tripartite distinction between abstract self-conceptions (the conceptual self), general knowledge about the periods and experiences of one's life (the autobiographical knowledge base), and memories for specific episodes (the episodic memory system). According to this scheme, abstract self-conceptions exist independently of knowledge about temporally defined life events, and substantial evidence from both healthy individuals and patients suffering amnesia indeed indicates that semantic knowledge about one's traits is represented separately from autobiographical memories (for reviews see, e.g., Kihlstrom, Beer, & Klein, 2003; Klein, Robertson, Gangi, & Loftus, 2008). Nevertheless, the conceptual self connects to autobiographical knowledge and episodic memory to generate self-defining memories that exemplify, contextualise, and ground abstract self-views (Conway et al., 2004; Rathbone, Moulin, & Conway, 2008).

This framework can be extended to account for the role of future-oriented cognition in self-representation. We propose that part of the conceptual self consists in abstract knowledge about possible states of the self in the future (e.g., anticipated traits, social roles, activities, and other personal attributes) and, in the same vein, that the autobiographical knowledge base includes representations of anticipated lifetime periods and general events (on the other hand, the same pool of episodic details might be used to mentally represent specific past and future events; see D'Argembeau & Mathy, 2011, for further elaboration of this idea). The future-oriented elements of the conceptual self might then be supported and exemplified by a set of

future event representations (referred here as self-defining future projections) that are constructed on the basis of the future components of the autobiographical knowledge base, as well as details stored in the episodic memory system (in cases where a specific future event is generated). For example, a woman who holds a view of her future self as “a mother” might have a representation of a lifetime period (e.g., “when I’ll be graduated from university”) and images of general events (e.g., “being in the maternity ward”, “celebrating my child’s birthdays”) that support this self-view, and might sometimes generate simulations of future scenarios that incarnate her self-view into specific situations (e.g., “playing football with my child in the backyard”). In line with this view a recent study has shown that representations of future events that incarnate an imagined future self are temporally distributed around the time period which participants believed this future self will become a stable part of their identity, a clustering effect that is highly similar to the clusters of memories around past self-images (Rathbone, Conway, & Moulin, 2011).

Of interest, the present study shows that the majority of SDFPs do not refer to specific events (of the total number of SDFPs reported in Studies 1 and 2, only 28% referred to specific events). People may flexibly draw to different degrees on the autobiographical knowledge base and the episodic memory system to construct representations of self-defining future events. Most of the time, representing self-defining events at the level of general events may be sufficient to provide the individual with a sense of continuity and purpose in his or her personal life. On some occasions, however, more specific event simulations might be generated; for example, to elaborate more concrete plans and to increase one’s motivation and efforts in attaining desired future states (Karniol & Ross, 1996; Taylor, Pham, Rivkin, & Armor, 1998). The precise circumstances under which general versus specific SDFPs are constructed (and possible differences in their functional significance) should be investigated further.

An important finding of this study is that, for a non-negligible amount of SDFPs, participants not only envisioned possible future happenings but also reflected on their broader meaning and potential implications. Furthermore, individuals who extracted more meaning from their past experiences also reflected more about imagined future events. This reflective process may be key

to one’s sense of identity. According to a narrative approach, people constitute their own identity by formulating autobiographical narratives or life stories that provide their life with an overall sense of unity and purpose (McAdams, 2001). The process of reflecting on the broader meaning and implications of life experiences plays an important role in this respect, as it helps linking discrete events with each other and with current self-views (Bluck & Habermas, 2000; Thorne et al., 2004). By showing that people extract meaning from both past and future events, the present findings provide support for McAdams’s (2001) claim that “life stories are based on biographical facts, but they go considerably beyond the facts as people selectively appropriate aspects of their experience and imaginatively construe both past and future to construct stories that make sense to them and to their audiences, that vivify and integrate life and make it more or less meaningful” (p. 101).

In line with previous observations (Berntsen & Bohn, 2010; Berntsen & Jacobsen, 2008; D’Argembeau et al., 2011; D’Argembeau & Van der Linden, 2006; Newby-Clark & Ross, 2003), we found that representations of future events were on average rated as more positive than memories of past events. It has been argued that the tendency to construct favourable images of the self in the future is part of the arsenal of psychological mechanisms by which people strive to increase or maintain the positivity of their self-concept (Sedikides & Gregg, 2008; Taylor & Brown, 1988). The present finding that individuals with higher self-esteem generated future events that were more positive is in line with this view. Needless to say, such an idyllic view of the personal future is not necessarily accurate. Indeed there is substantial evidence that people are biased in predicting their future affective responses (for review, see Gilbert & Wilson, 2007). Nevertheless, seeing one’s personal future through rose-coloured glasses may provide some advantage in terms of psychological well-being and perhaps even physical health (Taylor & Brown, 1988; Taylor, Kemeny, Reed, Bower, & Gruenewald, 2000). There is evidence, for example, that a positivity bias in future thought is positively related to different measures of well-being (MacLeod & Conway, 2007) and inversely related to neuroticism, hopelessness, and depression (MacLeod & Byrne, 1996; MacLeod et al., 2005; Quidbach, Hansenne, & Mottet, 2008). It is likely that the relationship

between future-oriented thoughts, well-being, and psychopathological symptoms is particularly pronounced when these thoughts refer to self-defining events, although this awaits further investigation.

Finally, the present findings may also have important implications for understanding disturbances of identity in more severe psychopathological conditions. Individuals with schizophrenia present with difficulties in extracting meaning from self-defining memories (Raffard et al., 2009, 2010), which might significantly contribute to problems with narrative identity in this pathology (Gallagher, 2003). In addition, recent research indicates that schizophrenic participants show deficits in constructing specific images of their personal future (D'Argembeau, Raffard, & Van der Linden, 2008). It would be interesting to investigate further whether schizophrenia is also associated with difficulties in reflecting on the broader meaning and implications of imagined future events, and whether these difficulties provide a unique contribution (i.e., beyond the role of SDMs) to disturbances of identity in this pathology.

In conclusion, the present study lends support to the idea that people's sense of self and identity is in part nourished by the imagination of significant events that they anticipate to happen in their personal future. Additional research should now examine to what extent future-oriented thoughts contribute to different aspects of self and identity, such as self-complexity, implicit self-knowledge, and other relevant constructs (Swann & Bosson, 2010). By introducing the concept of self-defining future projection we hope to inspire further research on this identity function of thinking about the future.

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