



## Identity-related autobiographical memories and cultural life scripts in patients with Borderline Personality Disorder

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### ABSTRACT

Disturbed identity is one of the defining characteristics of Borderline Personality Disorder manifested in a broad spectrum of dysfunctions related to the self, including disturbances in meaning-generating self-narratives. Autobiographical memories are memories of personal events that provide crucial building-blocks in our construction of a life-story, self-concept, and a meaning-generating narrative identity. The cultural life script represents culturally shared expectations as to the order and timing of life events in a prototypical life course within a given culture. It is used to organize one's autobiographical memories. Here, 17 BPD-patients, 14 OCD-patients, and 23 non-clinical controls generated three important autobiographical memories and their conceptions of the cultural life script. BPD-patients reported substantially more negative memories, fewer of their memories were of prototypical life script events, their memory narratives were less coherent and more disoriented, and the overall typicality of their life scripts was lower as compared with the other two groups.

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### 1. Introduction

Identity diffusion is one of the defining characteristics of Borderline Personality Disorder (BPD) and the essential symptoms and behavioral dysfunctions in BPD can be related to diffusion of identity (Jørgensen, 2006, 2010). Identity disturbance, manifested in sudden and dramatic changes in self-concept, goals, personal values, career plans and religious beliefs, is one of the DSM-IV diagnostic criteria for BPD (American Psychiatric Association, 2000). Patients with BPD are characterized by impulsivity, affective and behavioral instability, and severe interpersonal problems. According to Kernberg (2004), one of the key features differentiating neurotic personality organization (milder forms of character pathology) and borderline personality organization (more severe character pathology) is “the presence of normal identity integration as opposed to the syndrome of identity diffusion” (p. 61). Research on autobiographical memory has shown that the ability to remember our personal past is essential for providing a sense of identity and continuity in life (e.g., see Conway & Pleydell-Pearce, 2000, for a review). However, surprisingly little is known about the possible effects of identity disturbances as observed in BPD on autobiographical memory. In the present study, we examined characteristics of autobiographical memory in patients with BPD as an attempt to learn more about the relationship between identity diffusion and autobiographical memory in BPD.

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### 1.1. Identity diffusion and autobiographical memory

Jørgensen (2010) has related human identity to a number of features, including “a sense of the self as a relatively delimited, coherent, and stable center of behavior or autonomous acts” (p. 347) and the conception of oneself as an individual “with specific, distinct, and stable traits, boundaries, needs, and characteristics, and a unique life-story (self-narrative)” (Jørgensen, 2010, p. 347). Jørgensen differentiates between four levels of identity: ego, personal, social, and collective identity. This implies a distinction between, on the one hand, structural and primarily unconscious levels of identity and, on the other hand, mainly conscious aspects of identity. Contemporary conceptions of narrative identity (e.g., McAdams, 1988) include conscious aspects of identity which are related to personal and social identity, whereas unconscious aspects of identity, related to the integration of inner object relations and conceptualized as ego-identity (cf. Kernberg’s concept of personality organization), are understood as a structural precondition for the construction of a coherent and meaning-generating self-narrative or narrative identity. In accordance with Kernberg’s object relations theory (Kernberg, 1976), it is assumed that the quality of generated self narratives is related to the level of integration of structural ego-identity and that individuals with disturbed ego-identity (such as BPD-patients) have trouble constructing a coherent and mature narrative identity.

McAdams (1988) proposed that one way in which individuals make sense of their lives and construct their identity is through the use of narratives. Such identity-serving life stories often vary in terms of coherence and consistency. McAdams and Pals (2006) defined the ability to construe one’s life as an ongoing story as an essential part of the adaptive personality. They state that an ongoing life story “that incorporates the reconstructed past and the imagined future into a more or less coherent whole” (p. 209) provides one’s life with a sense of unity, purpose and meaning. Following this view, it seems reasonable to assume that deficits in this ability are related to personality pathology.

The ability to construct a coherent life narrative relies on memory, notably autobiographical memory. Therefore, the qualities of one’s autobiographical memories – such as their emotionality, specificity, level of detail, and coherence may also play a key role in identity-construction. Singer and Salovey (1993) also suggest that autobiographical memories may play a key role in identity construction, in particular, self-defining memories. These are defined as a subset of autobiographical memories that are particularly central to the person’s life story and identity. Such memories are expected to be affectively intense, vivid, repetitive, linked to other memories, and to focus on enduring concerns or unresolved conflicts. Similarly, according to Conway and Pleydell-Pearce (2000), one of the essential functions of autobiographical memory is to ground the self and provide a sense of identity. In summary, a number of models of autobiographical memory suggest that these types of memory may play a central role in meaning making and identity construction.

### 1.2. Possible characteristics of autobiographical memories in BPD

Given the importance of autobiographical memory for identity and the central role of identity diffusion in BPD, surprisingly little is known about autobiographical memory in BPD. Earlier studies have focused on the specificity of autobiographical memories, that is, whether or not autobiographical remembering refers to a particular event taking place on a specific day in the past (e.g., Kremers, Spinhoven, & Van der Does, 2004; Kremers, Spinhoven, Van der Does, & Van Dyck 2006a, 2006b). The goal of the present study is to examine autobiographical memory in BPD on a number of dimensions that are all central to, but probe different aspects of, autobiographical memory. Four key aspects of autobiographical memories and self-narratives are addressed: their emotional valence, specificity, relation to cultural life scripts, and narrative structure (coherence).

#### 1.2.1. Emotional valence

Multiple studies of autobiographical memory in normal adults have shown a marked dominance of emotionally positive compared to emotionally negative memories (see Walker, Skowronski, & Thompson, 2003, for review). One possible explanation for this is the fading of affect bias—that is, the finding that the emotional intensity of emotionally negative events fades more quickly in memory than does the intensity of emotionally positive memories, at least in non-depressed individuals (Walker et al., 2003). A complementary explanation may be that autobiographical memory is primarily organized in terms of positively biased cultural life scripts (Berntsen & Rubin, 2004) and/or that autobiographical memory in normal individuals works to maintain a positive self-image (Conway & Pleydell-Pearce, 2000). The increased accessibility of positive relative to negative memories is absent in depression (e.g., Williams & et al., 2007) and it is likely that a similar lack of positivity bias is also present in BPD. Firstly, because of the high comorbidity of depression in BPD (Zanarini et al., 1998), and similarly to depressed individuals, individuals with BPD also experience high levels of emotional dysphoria (Korner, Gerull, Meares, & Stevenson, 2008) as well as dysfunctional emotion regulation (Domes et al., 2006; Linehan, 1993). Second, patients with BPD also present a highly unstable and negative self-image which is related to preoccupied and disorganized attachment (Bartholomew, Kwong, & Hart, 2001).

#### 1.2.2. Specificity

Typically, autobiographical memories refer to specific events located in a particular time and space. In contrast to specific memories, categorical or overgeneral autobiographical memories lack important details and do not refer to specific episodes that took place at a specific time and location. Overgeneral memories have been frequently observed in depression,

especially in response to emotionally positive cue words (Williams et al., 2007). Overgeneral memory has also been reported in a number of other clinical disorders, such as posttraumatic stress disorder (McNally et al., 1995), bipolar disorder (Scott, Stanton, Garland, & Ferrier, 2000), autism (Crane, Goddard, & Pring, 2010), and Obsessive Compulsive Disorder (Wilhelm, McNally, Baer, & Florin, 1997).

Being able to understand and generate solutions to experienced problems in daily life requires an ability to access one's memory and retrieve specific memories of how one has coped with similar situations and problems in the past (e.g., Pillemer, 2003). Memories function "to make life as we are currently meeting it more familiar and easier to adapt to" (Stern, 2004, p. 199). Similarly, the ability to create vivid, detailed and realistic conceptions of future situations and the future in general – partly based on memories for the past – is essential for one's ability to anticipate and make adaptive preparations to solve future problems (e.g., Schacter, Addis, & Buckner, 2007). On the other hand, the retrieval of distressing memories can provoke emotional dysregulation and give rise to dysfunctional interpersonal behavior which, in some cases, will compromise relationships and the recognition of one's identity by others.

Prior findings concerning the specificity of autobiographical memories in BPD are mixed. Some studies have found that BPD-patients produce significantly less specific and more general autobiographical memories compared to normal controls (Jones et al., 1999; Maurex et al., 2010). Other studies have found no differences (Arntz, Meeren, & Wessel, 2002; Renneberg, Theobald, Nobs, & Weisbrod, 2005) or differences that could be explained by comorbid depressive symptomatology (Kremers et al., 2004, 2006a, 2006b). Efforts to understand the psychological processes involved have related overgeneral memories to a number of factors, including avoidant coping styles (Hermans, Defranc, Raes, Williams, & Eelen, 2005), the tendency to dissociate in an effort to avoid unbearable feelings activated when specific traumatic events are recalled (Williams, 1996), rumination and reduced executive control (see Williams et al., 2007, for a review).

### 1.2.3. Cultural life script

Life scripts are culturally shared expectations as to the order and timing of life events in a prototypical life course within a given culture. They are used to process life stories and organize one's autobiographical memories temporally and thematically. Life scripts function as prescriptive time-tables for major life events, typically role transitions (Berntsen & Rubin, 2004). Internalization of the cultural life script, that is, the construction of an individual life script in general accordance with the dominant cultural life script, is part of the normal socialization process. Knowledge of cultural life scripts are communicated not only through one's lived experience but primarily transmitted from older to younger generations, for example through literature, movies and other narratives circulating in one's culture. Cultural life scripts are assumed to be important for socially adaptive behavior, self-development and identity development. A mature identity is anchored in a stable identification with common ideas about a 'normal life' within a given culture. Cultural life scripts represent such shared ideas of a 'normal life' and help to establish coherence in individual self-narratives and narrative identities (Habermas & Bluck, 2000). The life script is used to process life stories, organize personal memories in time, and works as a point of reference when evaluating one's past and present life and imagining one's future (Berntsen & Bohn, 2010). Findings reported by Bohn and Berntsen (2008) suggest that the acquisition of a cultural life script is an important precondition for the ability to tell a coherent life story in childhood. Individuals who have not internalized the cultural life script are thus lacking an important source for structuring their life-story, and developing an adaptive narrative identity.

### 1.2.4. Narrative structure of generated memories

The construction of vivid and coherent autobiographical memories and self-narratives requires the capacity to connect and make sense of lived experiences both at specific points in time and across the life span (Thorne, 2000). The process of analyzing life stories and personally significant autobiographical memories "reveals how people construct meaningful accounts of their lives, selecting from a myriad of experiences those events that are most important" (p. 46), and linking aspects of these events into coherent and meaningful stories.

Important characteristics of BPD, such as an unstable and primarily negative self-image, poor self-regulation (impulsivity, affective instability, dysphoria, etc.) and compromised mentalization are likely to be related to the quality of personal memories. Mentalization (Bateman & Fonagy, 2004) is important for the creation of a coherent identity and coherent autobiographical memories. It is an imaginative mental activity by which the individual interprets the behavior of the self and others as being meaningful (Holmes, 2006, pp. 31–32). When mentalizing, one creates meaning- and coherence-generating narratives and intentional narratives. Through this process the past and present behavior of the self and others is related to internal mental states (in oneself and in others), including intentions, feelings, and conceptions of reality. Mentalization is thus required to make sense of events and to form coherent personal narratives. Consequently, one might assume that compromised mentalization, seen in most BPD-patients (Bateman & Fonagy, 2004), will manifest itself in incoherent and impoverished self-narratives and autobiographical memories.

Habermas and Bluck (2000, p. 749) introduced the related concept of autobiographical reasoning, which is a self-reflective process through which the person links his or her own concrete life experiences to the self and attempt to relate their personal past and present. This process introduces a biographical perspective that frames one's individuality and identity in terms of specific personal memories and a specific life-story. It integrates the memories of the individual with *the cultural concept of biography* which refers to culturally shared expectations about the content and structure of a normal life story. In this way, autobiographical reasoning is related to the concept of the cultural life script (Berntsen & Rubin, 2004). Like the ability to mentalize, the development of autobiographical reasoning is a likely precondition for the construction of

elaborated and coherent self-narratives and is intimately related to a mature ego-identity. Thus, an incoherent ego-identity or identity diffusion, an essential characteristic of BPD (Kernberg, 2004), is likely to manifest itself in incoherent and confusing autobiographical memory- and self-narratives.

## 2. The study

We examined the emotional valence, specificity, life script correspondence and narrative organization of autobiographical memories among BPD-patients and two control groups: a non-clinical control group and a second, clinical control group of Obsessive Compulsive Disorder (OCD) patients expected to have a normally integrated identity.

OCD is a relatively severe symptom disorder characterized by stressful obsessive thoughts and impulses, and/or repetitive compulsive behaviors carried out in an effort to reduce anxiety or distress (American Psychiatric Association, 2000). Normally, patients with OCD have a neurotic personality organization rather than a severe character pathology and therefore have considerably fewer problems with identity integration as compared to individuals with BPD (Kernberg & Caligor, 2005). Consequently, they provide a useful comparison with BPD patients in the context of identity disturbance and autobiographical memory. One prior study directly compared autobiographical memory retrieval in OCD patients and healthy controls (Wilhelm et al., 1997). This study focused on memory specificity and found that patients with OCD retrieved a higher frequency of overgeneral autobiographical memories as compared with non-clinical controls (Wilhelm et al., 1997). The study also found that OCD alone was insufficient to account for the deficits in memory and that the tendency to recall overgeneral memories was attributable to the presence of comorbid depression. Lower levels of memory specificity have also been found in patients with Obsessive–Compulsive Personality Disorder (OCD-PD) (Spinhoven, Bamelis, Molendijk, Hari-ngsma, & Arntsz, 2009). In Spinhoven et al. (2009) the relationship between OCD-PD and memory specificity was mediated by depression and ‘worry’.

We used The Identity Style Inventory (ISI) (Berzonsky, 1989) to detect identity diffusion, which is expected to be dominant in the BPD group. The ISI-questionnaire is based on a social-cognitive conceptualization of identity and differentiates between three identity styles: (I) Information oriented style, characterized by the ability to examine and revise parts of identity when faced with feedback that does not accord with one’s established self-concept, (II) normative style, characterized by a tendency to accommodate to normative standards and expectations of others, and (III) diffuse identity style, characterized by avoidance, impulsive problem-solving and disorganized exploration of information concerning the self. An earlier study (Jørgensen, 2009) found that the ISI differentiated identity-functioning in BPD-patients from non-clinical controls. The autobiographical memory task used in the present study was chosen for its relevance to probing identity related memories (Rubin, Berntsen, & Hutson, 2009).

### 2.1. Material and methods

#### 2.1.1. Subjects

Seventeen SCID-II (Structured Clinical Interview for DSM-IV Personality Disorders) diagnosed BPD patients (First, Spitzer, Gibbon, & Williams, 1996), 14 ADIS-IV (Anxiety Disorders Interview Schedule, Adult Version) diagnosed OCD patients (Brown, DiNardo, & Barlow, 1994), and 23 psychology students (non-clinical controls) participated in the study. All participants were of Scandinavian descent and thus represented an ethnically homogeneous group socialized into the same Nordic culture. The OCD patients were chosen as a less disturbed clinical group, typically with a neurotically organized personality (Kernberg, 1984). Both patient groups were recruited from Aarhus University Hospital, Risskov. The BPD patients were included in a 2-year psychotherapeutic treatment program at the Clinic for Personality Disorders (Jørgensen et al., 2009). The OCD patients were part of an ongoing three months treatment program at the Clinic for Obsessive Disorders. Three of the OCD patients had a (SCID-II diagnosed) non-BPD PD (obsessive–compulsive PD or avoidant PD). All BPD patients except one met the third (identity-disturbance) DSM-IV diagnostic criteria for BPD. None of the BPD patients had a co-morbid OCD. Table 1 shows the characteristics of the three groups.

**Table 1**  
Age, depression and dominant identity style for BPD, OCD and normal controls.

Variable	BPD	OCD	Control
Females (percent)	17 (100%)	7 (50%)	23 (100%)
Mean age (SD)	29.41 (6.67)	26.79 (5.35)	22.39 (2.17)
Mean BDI-score (SD)	25.50 (14.85)	11.08 (8.40)	4.65 (6.58)
<i>Dominant identity style</i>			
Information seeking	3 (20%)	4 (29%)	10 (59%)
Normative	2 (13%)	6 (43%)	6 (35%)
Diffuse	10 (67%)	4 (29%)	1 (6%)

Note: Ns for BDI scores were BPD = 16, OCD = 13, control = 17. Ns for Identity style was BPD = 15, OCD = 14, control = 17. Due to a clerical error, the ISI and the BDI-II were not included in the questionnaires for six of the control participants. Two of the BPD patients refused to answer the ISI. One BPD patient and one OCD patient declined answering the BDI-II.

### 2.1.2. Procedure and coding

Depressive symptoms were measured using the Beck Depression Inventory (BDI-II) (Beck, Ward, Mendelson, Mock, & Erbaugh, 1961). Identity style was examined using The Identity Style Inventory (ISI) (Berzonsky, 1989). Acceptable internal and test–retest reliability have been reported for the ISI (Berzonsky, 1989). Raw-scores from the three ISI-subcales – information oriented-, normative-, and diffuse identity style – were converted into z-scores. Based on the highest z-score each participant was classified as information-oriented, normative or diffuse in identity style.

We employed a modified version of the life story event task introduced by Rubin et al. (2009) to elicit the life story memories. In answering the life story event task, the participants were asked to imagine “that you are to tell your life story to a new friend, whom you have just met and who therefore doesn’t know anything about your past. It is a (fictitious) friend with whom you are absolutely confident and with whom you can be completely honest. Your task is to write down the three memories about events from your own personal life – from your birth to your present age – that you think are most central to your life story.” Additionally, for each of the autobiographical memories participants indicated the emotional valence of the memory (–3, ‘very negative’, to +3, ‘very positive’) and the importance of the event for their life today (1, ‘unimportant’, to 7, ‘of outmost importance’) on a seven point Likert scale. Emotional intensity was calculated by adding the absolute value of the ratings on the emotional valence, thus, the mean score for emotional intensity could vary between 0 and 3.

Two independent judges rated the level of specificity of each generated memory as well as its possible overlap with the 35 events in the standard Danish life script listed by Berntsen and Rubin (2004, Table 3). Level of specificity was coded according to the following categories: A memory was coded as specific if it referred to a single event that occurred on a particular day in the person’s past. A memory was coded as non-specific if it was either a summary of many similar occasions (e.g., many times of driving home from work in contrast to a particular occasion) or an extended event, which is an event that is longer than one day, so that a longer period of time has blended together (Williams et al., 2007). The two judges agreed in 87% of the cases regarding level of specificity and in 84% of the cases regarding overlap with life script events. Cases of disagreement were resolved by discussion.

To analyze the structure of the generated autobiographical memory narratives, we used Peterson and McCabe’s (1983) high-point analysis. This approach focuses on the macrostructure of personal narratives, the structural organization of the narratives used to convey events and their meaning to others (Celinska, 2004, p. 85). Two independent raters classified the generated memories in one of six categories (Peterson & McCabe 1983, pp. 36–39): (I) classic pattern, a narrative that builds up to a high point, evaluatively dwells on it and then resolves it, (II) ending-at-the-high-point, where the narrative “builds up to a high point, and then ends, there is no resolution”, (III) leap-frogging pattern, a narrative that “jumps from one event to another within an integrated experience, leaving out major events that must be inferred by the listener”, (IV) chronological pattern, where the narrative “is a simple description of successive events,” (V) impoverished pattern, that typically consists of very few sentences and forms no analyzable pattern, and (VI) disoriented pattern, a narrative that is “too confused or disoriented for the listener to understand”. In our analyses, Patterns III (leapfrogging) and VI (disoriented) were recoded into one category; ‘leapfrogging/disoriented’, because the raters had difficulties keeping these two patterns distinct and because of their conceptual similarities. The narrative structure of the reported memories was coded by one of the authors (MB) and an independent judge who was blind to the hypothesis of the study. Both were blind to group membership. The two independent raters agreed in 77% of the cases. Kappa interrater reliability was 0.67, indicating a reasonable level of agreement. Subsequently, discrepancies were solved by discussion. Verbatim transcripts of BPD-narratives from each of the five categories can be found in the [Appendix](#).

After generating the life story memories, participants were given the standard life script task (Berntsen & Rubin, 2004), asking them to list the seven most important events “in a prototypical life course within their culture” (p. 435). They were instructed to “imagine a quite ordinary infant, not a specific infant that you know, but a prototypical infant in our culture with a quite ordinary life course ahead” (cf. Berntsen & Rubin, 2004, p. 435). Participants were then asked to write down the seven most important events that one would imagine are highly likely to take place in this prototypical infant’s life, from birth until death. The participants were asked to give each event a short title that specifies its content and to indicate at what age the event is expected to take place (estimated in years). The generated events were coded by two independent judges regarding the correspondence with the 35 life script events in Berntsen and Rubin (2004). The two judges agreed in 89% of the cases. Disagreement was solved by discussion. Following Rubin et al. (2009), we generated a life script typicality score for each participant. The typicality score measures how well the seven life script events generated by the participant match the life script frequency norms obtained in previous work (Berntsen & Rubin, 2004). Each of the seven generated events received a score based on the life script frequency norms from Berntsen and Rubin (2004, Table 3). These scores were then summed for the seven events generated by each participant and this sum is the overall typicality score for the life script generated by the person.

## 2.2. Results

Table 1 shows the gender distribution, mean ages, level of depression and dominant identity style for the three groups. Significant differences in age were identified between the groups ( $F(2,51) = 10.79, p < .001$ ). Bonferroni corrected post hoc tests (this method is used in all subsequent reports of post hoc tests) showed that the BPD and the OCD participants were older than the control group ( $ps < .05$ ) but did not differ from each other ( $p > .4$ ). We address the potential effects of this group difference by including age as a covariate in all subsequent analyses of variance and by including age as a predictor

**Table 2**  
Measures of autobiographical memories and life script for BPD, OCD and normal controls.

Variable	BPD		OCD		Control		Group effects <i>F</i> (2,51–2,48)
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	
<i>Memory measures</i>							
Emotional valence	–1.02	1.82	0.71	1.87	1.24	1.07	10.72***
Emotional intensity	2.39	0.59	2.81	0.25	2.29	0.51	5.19**
Importance	5.55	1.49	5.88	1.03	5.49	0.70	0.59
Proportion specific	0.37	0.33	0.52	0.31	0.61	0.30	2.82†
<i>Life script measures</i>							
Memories of life script events	0.39	0.29	0.69	0.33	0.63	0.26	4.95*
Normative events in life script	0.70	0.28	0.88	0.13	0.86	0.11	4.85*
Life script typicality	245.73	60.45	325.31	56.00	292.65	52.03	7.33**

†  $p < .07$ .  
\*  $p < .05$ .  
\*\*  $p < .01$ .  
\*\*\*  $p < .001$ .

variable in our regression analyses. Furthermore, the OCD group included 50% males, whereas the other two groups included only women (see Table 1). This was due to difficulties in recruiting OCD patients. We examined whether this gender difference might have affected the characteristics of the OCD group relative to the other two groups, by conducting a series of *t*-tests on all our dependent measures within the OCD group with gender as a grouping variable. This series of analyses showed a significant effect of gender for two of the 13 included variables: Males in the OCD group had more life story memories overlapping with life script events ( $t(12) = 3.11, p < .01$ ), and rated their memories as more important than did the female OCD patients ( $t(12) = 2.27, p < .05$ ). No other differences were observed. Because the effects of gender were few and by necessity limited to the OCD group (and thus were conflated with this diagnosis), it was not conceptually meaningful to control for gender in the subsequent analyses.<sup>1</sup>

Overall, the level of depressive symptoms differed between the three groups ( $F(2,42) = 11.26, p < .001$ ). The BPD participants scored significantly higher on the BDI-II than the other two groups (Bonferroni corrected post hoc tests:  $ps < .01$ ), whereas OCD participants did not differ from the control participants (Bonferroni corrected post hoc tests:  $p > .3$ ). Table 1 also shows clear differences between the three groups with regard to their dominant identity style. In the BPD group the diffuse style was most frequent, whereas information seeking was the most frequent style in the control group, and the normative style was most common among the OCD patients. The pattern of identity style was reliably different between the three groups ( $\chi^2(4) = 15.05, p < .005$ ).

There was an association between age and the presence of a diffuse identity style, in that participants with this identity style were older than those without ( $M_s = 23.87$  versus  $30.53$  years;  $t(44) = 4.14, p < .001$ ). To disentangle the association between BPD and age, on the one hand, and diffuse identity style, on the other, we conducted a logistic regression analysis with the presence versus absence of diffuse identity style as the dependent variable and membership in the BPD group as a categorical predictor and age as a continuous predictor variable. Both predictor variables showed a significant effect (BPD: *Wald statistics*(1) = 5.05,  $p < .05$ ; Age: *Wald statistics*(1) = 5.01,  $p < .05$ ). Thus, BPD was reliably associated with a diffuse identity style, independent of age. Similar analyses conducted with the OCD and control groups showed no effects of groups (OCD: *Wald statistics*(1) = .54,  $p > .4$ ; Control: *Wald statistics*(1) = 2.11,  $p > .1$ ) but showed consistent effects of age in both analyses ( $ps < .05$ ). Thus, consistent with our predictions, only BPD appears to be reliably associated with identity diffusion.

Table 2 shows the characteristics of the autobiographical memories and life scripts of the three groups as well as the results of a series of analyses of covariance, controlling for potential age effects. Significant differences among groups were obtained for both emotional valence and emotional intensity, with a marginally significant group effect for proportion specific. The three groups did not differ, however, in importance. BPD patients reported substantially higher numbers of negative memories (self-rated emotional valence below zero) than the other two groups (Bonferroni corrected post hoc tests:  $ps < .01$ ), whereas the OCD patients did not differ from the non-clinical control group (Bonferroni corrected post hoc test:  $p > .9$ ).

In healthy participants, usually a 2–1 dominance of positive versus negative memories is seen (Walker et al., 2003). Dominance of positive memories was found both for the OCD (62% positive vs. 38% negative) and for the non-clinical control participants (71% positive vs. 25% negative) in the present study (6 memories [4%] rated as neutral were not included in the analysis). However, this bias was not seen among the BPD participants for whom a marked dominance of negative events was found (25% positive vs. 67% negative). An analysis of covariance (again controlling for age) based on the number of

<sup>1</sup> None of the conclusions were affected when all the following analyses were conducted with only female participants. However, a few of the effects were reduced: Without the male participants, the OCD group did not have reliably more emotionally intense memories (although a numerical difference was still found) and their memories did not show a dominance of emotionally positive relative to negative memories. These effects most likely reflected reduced power in the statistical analyses, and were irrelevant to the main findings.

**Table 3**  
Frequencies of narrative styles for BPD, OCD and controls.

Narrative style	BPD		OCD		Control	
Classic pattern	10	20%	13	31%	34	49%
Ending at high point	4	8%	17	41%	22	32%
Leap-frogging/disoriented	24	47%	1	2%	8	12%
Chronological	1	2%	2	5%	3	4%
Impoverished	12	24%	9	21%	2	3%

memories rated as negative confirmed the dominance of negative memories in the BPD group relative to the other two groups ( $F(2,50) = 10.49, p < .001$ ).

Significant differences between the groups were identified with regards to emotional intensity. The OCD participants reported higher levels of emotional intensity than control participants (Bonferroni corrected post hoc test:  $p < .01$ ) and also tended to report higher levels of emotional intensity than the BPD participants (Bonferroni corrected post hoc test:  $p < .06$ ). These differences were primarily driven by a high percentage (52%) of extremely positive memories (i.e., +3 on the rating scale) in the OCD-group. Although the number of autobiographical memories coded as specific was lower for the BPD group than for the other two groups, overall differences between the three groups only approached significance (see Table 2).

The BPD patients had fewer memories that corresponded with life script events, their life script contained fewer normative events and the overall typicality of their life script was lower as compared to the scores for the other two groups, see Table 2. For all three measures, the BPD patients differed significantly from the other two groups (Bonferroni corrected post hoc tests:  $ps < .05$ ), whereas the OCD patients did not differ from the control participants (Bonferroni corrected post hoc tests:  $ps > .2$ ).

Table 3 shows the frequency of narrative styles present across the three groups. These analyses are based on the three memory narratives that each participant generated in response to the life story memory task. An analysis of covariance with the number of memories following the classical pattern across the three groups as the dependent variable and age as covariate found no differences between the three groups ( $F(2,50) = 1.42, p > .2$ ). As also shown in Table 3, a substantial number of memory narratives in the Control group and OCD group ended at high point, whereas this was the case for only 8% of the memory narratives in the BPD group ( $F(2,50) = 7.13, p < .01$ ). Further, the leap-frogging/disoriented style was identified in 47% of the BPD participants' memory narratives whereas this style was only present in 2% of the narratives in the OCD group and 12% of the narratives in the control group. An analysis of covariance with the number of memories classified as leapfrogging/disoriented across the three groups as the dependent variable and age as a covariate, showed a significant effect of group ( $F(2,50) = 13.24, p < .0001$ ). Chronological narrative style was found in only 2% of the narratives in the BPD group, in 5% of the narratives in the OCD group and in 4% of the narratives of the control group. Finally, 24% of the memory narratives in the BPD group and 21% of the narratives in the OCD group were rated as impoverished, compared with only 3% in the control group. An analysis of covariance with the number of memories classified as impoverished as the dependent variable and age as a covariate, showed a significant effect of group ( $F(2,50) = 3.65, p < .05$ ). This might suggest that both patient groups experienced some problems with producing elaborated memory narratives.

As shown in Table 1, the BPD patients differed from the other two groups both with regard to dominance of a diffuse identity style and a higher level of depression. They were also older than the control group. In order to clarify if any of these factors might account for the current findings, we conducted a series of multiple regression analyses with the following dependent measures: number of negative memories, proportion of memories overlapping with life script events, proportion of normative events in the cultural life script, life script typicality, and number of memories classified as leapfrogging/disoriented (see Table 4 for the correlations among these measures). Each analysis had three predictor variables: age, the BDI-II score, and a dichotomous variable indicating whether the dominant identity style was diffuse. For the frequency of negative events, all predictor variables showed a significant effect (Age:  $t(41) = -2.34, BETA = -.34, p < .05$ ; BDI:  $t(41) = 2.95, BETA = .39, p < .01$ ; Identity diffusion:  $t(41) = 4.00, BETA = 0.56, p < .001; R^2 = .43$ ). For proportion of memories overlapping with life script events, identity diffusion showed a significant effect ( $t(41) = -2.09, BETA = -.35, p < .05$ ), whereas age and depression both showed a trend (BDI:  $t(42) = -1.79, BETA = -.28, p < .09$ ; Age:  $t(41) = 1.93, BETA = .33, p < .06; R^2 = .19$ ). None of the remaining regression analyses were significant. Thus, also when controlling for age of participant and level of depression, participants with a diffuse identity style had more negative memories and fewer memories whose content corresponded to life script events. In addition, level of depression and age of participant independently predicted frequency of negative life story events.

To examine the possible effects of cultural life scripts, we conducted two additional multiple regression analyses with number of negative memories and number of memories classified as leapfrogging/disoriented as dependent measures. Each analysis had age, the proportion of memories overlapping with life script events, and the proportion of normative life script events in the cultural life script calculated for each participant as predictor variables. For negative memories, only the proportion of memories overlapping with life script events was a significant predictor ( $t(50) = -5.66, BETA = -.64, p < .0001, R^2 = .44$ ). For number of memories classified as leapfrogging/disoriented, all predictor variables showed a significant effect (Age:  $t(50) = 2.54, BETA = .30, p < .05$ ; life story memories corresponding to life script events:  $t(50) = -2.41, BETA = -.30, p < .05$ ; normative events in life script:  $t(50) = -2.09, BETA = -.26, p < .05; R^2 = .33$ ). Thus, participants with more memories

**Table 4**

Correlations among the variables included in the multiple regression analyses.

	1	2	3	4	5	6	7
1. Age							
2. Diffuse identity	.50						
3. Depression	.38*	.32*					
4. Negative memories	.07	.50	.39**				
5. Memories of life script events	.07	-.26	-.24	-.64***			
6. Normative events in life script	-.16	-.10	-.02	-.17	.35**		
7. Life script typicality	-.22*	-.24	-.14	-.15	.11	.57***	
8. Leapfrogging/disorganized	.38*	.26	.32*	.39**	-.45***	-.40**	-.24

Note:  $N = 43$ .\*  $p < .05$ .\*\*  $p < .01$ .\*\*\*  $p < .0001$ .

corresponding to life script events had fewer negative memories. Furthermore, participants with a higher number of memories corresponding to life script events and more conventional life scripts reported fewer memories classified as leapfrogging/disoriented in style, suggesting that the integration of the cultural life script helps to render autobiographical memories coherent and emotionally positive. Alternatively, normative cultural life scripts and coherent autobiographical memories which are generally positive in content could all be interpreted as indications of high levels of psychological wellbeing and/or low levels of psychopathology. In addition, the age of the participants independently predicted the frequency of memories classified as leapfrogging/disoriented.

### 3. Discussion

The present study examined autobiographical memory in BPD along a number of central dimensions. Overall the findings suggest that autobiographical memory is disturbed in BPD-patients. The life story memories of the BPD patients as well as their life script showed marked differences in comparison to both the OCD patient group and the control group. Two competing, but complementary, explanations may account for these findings. According to one, the findings reflect identity disturbances associated with BPD patients relative to the other two groups. Alternatively, the findings may simply reflect the fact that the BPD participants had different life experiences than the other two groups. In evaluating these two types of explanations, it should be remembered that the participants were asked to generate the three memories that they considered to be of most central importance to their life story. Thus, they were asked to be highly selective, in contrast to what had been the case had we used a more random sampling strategy such as triggering autobiographical memories in response to word cues (Crovitz & Schiffman, 1974). We should therefore expect the reported memories to belong to a subset of identity constituting (or self-defining) autobiographical memories, which has implications for the interpretation of the results.

The memories reported by the BPD group were more negative than those of the other two groups. The tendency of BPD patients to report emotionally negative memories is a reversal of the well-established positivity bias in autobiographical memory (Walker et al., 2003). Similar findings have been reported for PTSD patients who were more inclined to report negative and trauma related self-defining memories (Sutherland & Bryant, 2005). The negativity bias in BPD patients may be the result of a number of factors. As stated above, although the higher numbers of memories reported as negative in emotional valence to some extent may reflect a higher number of negative life events experienced by the BPD group, it is likely that the BPD-patients' inclination to report more negative identity-defining memories can compromise their identity. Their self-concept and identity is dominated by memories of negative experiences that deviate from cultural norms and which therefore may be associated with stigmatization and self-devaluation. Furthermore, although the BPD-patients are likely to have encountered more negative life events than the other groups, it is unlikely that they would not have had at least 2–3 important positive events in their life, which they could have brought up in the life story task. Their choice to focus on negative life experiences are therefore also to some extent a likely reflection of their psychopathology, such as dysfunctional emotion regulation, memory disturbances, and a negative self-image.

When compared to the other two groups, the autobiographical memories and life scripts of the BPD-group referred less often to normative life script events. Again, this could be interpreted as an indication of the BPD-patients having lived less coherent, more disrupted, unconventional, and in effect more confusing lives with potentially negative implications for their identity development. However, the fact that the BPD-patients chose to nominate more idiosyncratic or less normative life story memories as central to their life story and identity may also be an indication of more severe difficulties and disturbances of identity. The autobiographical memories they identified as central and important to their identity were partly atypical and idiosyncratic. These differences in autobiographical retrieval may contribute to the experience of being 'different' or even 'deficient', often identified in BPD patients.

Finally, the memory narratives of the BPD patients more frequently showed a disorganized pattern. To some extent, their self-nominated, most central life story memories were ill-formed, incoherent and atypical. It seems likely that these dysfunctions in autobiographical remembering are related to disturbances in elements of human identity, particularly the narrative

and more conscious elements of identity. One could make the case that the disorganized life story memories, found in the BDP patients, also reflect diffusions in ego-identity (a more general inability to establish coherence, etc.) as described by Kernberg (2004).

The BPD patients reported higher levels of depressive symptoms and more frequently had a diffuse identity style when compared to both OCD patients and healthy controls. The dominance of a diffuse identity style in BPD patients relative to non-clinical control participants is in line with earlier findings (Jørgensen, 2009). We replicated and extended these findings here by showing that the frequency of diffuse identity style was significantly higher in the BPD group, not only when compared to non-clinical controls, but also when compared with another clinical group (OCD patients). The positive relation between age and identity diffusion that we also found in the present study is likely to reflect that older patients in some cases have more severe (possibly self-perpetuating) disturbances than younger individuals, most likely because the debilitating effects of psychopathology increase with prolongation of the symptoms (Cohen, Crawford, Johnson, & Kasen, 2005; Jørgensen, 2010, p. 352), cf. the basic ideas of developmental psychopathology (Kobak, Cassidy, Lyons-Ruth, & Ziv, 2006).

The OCD-group differed from the BPD group but did not differ from the control participants on most measures. This is consistent with our assumption that they form a group with less severe levels of psychopathology and relatively normal identity integration. The fact that they produced more emotionally intense memory narratives and that this effect was largely driven by the selection of highly positive events might suggest a tendency to idealize the past in this group. Still, their overall rating of emotional valence was more negative in OCD patients than in the control participants, which seems to contradict this possibility. The present findings should not be taken to mean that OCD is associated with no or little autobiographical memory disturbances, only that the memory tasks used here did not detect them. Other autobiographical memory tasks, such as studies on intrusive images of past or future personal events might yield different results.

Multiple regression analyses showed that both depression and the dominance of a diffuse identity style were significantly associated with the frequency of negative memories as well as with the number of life story events corresponding to the cultural life script. The number of memories with disorganized narrative pattern was predicted by how well the person's memories corresponded with cultural life script events as well as by the number of normative events in the person's cultural life script. In short, depression, diffuse identity style and (weak) internalization of the cultural life script appear to be important mechanisms underlying the dominance of negative and disorganized memory narratives in the BPD group. This is consistent with the view that identity diffusion is an important aspect of BPD that differentiates this disorder from others, such as OCD.

Questions concerning the specific causal relationship between identity diffusion and incoherent autobiographical memories cannot be answered in this study and should be addressed in future research. Eliciting autobiographical episodes and making these episodes the object of progressively elaborated and advanced reflections is an essential part of most forms of psychotherapy. Thus, the quality (sophistication, specificity, emotional valence, level of coherence, etc.) of autobiographical memories might be included as a meaningful measure of therapeutic outcome in BPD-patients in future studies.

### 3.1. Limitations

The following limitations should be considered when evaluating the present findings. Due to small sample sizes across the three groups, only large differences could be identified. This limitation may explain why no group differences in memory specificity were identified.

In the present study participants were asked to write their memory narrative rather than employing an interview-based methodology. Although some participants may prefer writing when providing personal and potentially private memory records, one potential limitation should also be considered. Higher levels of psychopathology are often associated with lower levels of education and educational failures. The request to write about their most important memories may have been perceived as a 'test-like' situation, and therefore associated with bad experiences in the past for some of our clinical participants. Future research should seek to replicate the present findings using interviews.

Finally, one could argue that the design of the present study involves a potential danger of circularity. If the BPD-diagnosis to some extent is related to the presence of a confused and disorganized self-concept/self-narrative (identity diffusion) it may not be surprising that, when asked to provide narratives of autobiographical memories, the BPD-patients perform at a lower level than individuals who do not carry a diagnosis related to disorganized identity. On the other hand, a disorganized life narrative is not part of the diagnostic criteria for BPD (American Psychiatric Association, 2000) and previous research has not examined such autobiographical memory deficits in BPD, which is important to do in order to attain a deeper understanding of this debilitating disorder.

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## Appendix A. Verbatim transcripts of selected narratives generated by BPD-patients

**Classic pattern:** (Female, 22 years) “After the death of my father I got into an abuse, was in this abuse for about 8 years. Through my abuse I got a violent boyfriend whom I was with for 3 years. It has been very hard to get out of my abuse since I never had gotten to really talk about my father’s death and therefore used drugs to escape my emotions”.

**Ending at high point:** (Female, 30 years) “My father was run down, while he was out running with his club. My mother was in Los Angeles on a business trip when it happened so me (11 years) and my sister (16 years) was alone when we were told about our father’s death. However family and friends came and stayed with us until my mother was able to get on a plane the next day”.

**Leap-frogging/disoriented:** (Female, 28 years) “At the boarding school, I meet Lars who becomes my big love. Get very dependent on him and on his recognition. We fight a lot, hit each other, are completely in love, split up many times. We are together on and off for 3 years. When he finds another girlfriend at the boarding school I try to commit suicide. He apparently didn’t regret a thing. It is not spoken about in my home. The relationship definitively ends when I find another boyfriend when I’m age 21”.

**Chronological:** (Female, 27 years) “I got married to my boyfriend whom I had been together with for 2 years. When we had been married for about 7 months, I was unfaithful to him with another guy and subsequently we got divorced”.

**Impoverished:** (Female, 20 years) “When my husband proposed to me on Christmas Eve 2009, he believed he would not give up on me for the rest of his life. I was happy”.

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