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The Structure of Past and Future Events in Borderline Personality Disorder, Eating Disorder and Obsessive Compulsive Disorder

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Abstract

The narrative structure and episodic richness of self-generated past and future events were examined in patients diagnosed with Borderline Personality Disorder (BPD), Eating Disorders (ED), Obsessive Compulsive Disorder (OCD), respectively, and a non-clinical control group. The three patient groups generated fewer events characterized by a classic narrative structure, with the event narrative building up to a high point followed by an evaluation. The narrative structures demonstrated by the BPD and ED groups were most deviant from the control group in terms of more frequently involving an impoverished narrative structure for past events and in terms of generating fewer future events with specific episodic contents. These deficits were more marked in the BPD group. The findings show that the ability to construct coherent past and future events is compromised across clinical diagnoses, but more so in patients diagnosed with BPD.

The Structure of Past and Future Events in Borderline Personality Disorder, Eating Disorder and Obsessive Compulsive Disorder

Over the past 15 years, researchers have studied the behavioral and neural characteristics of the ability to mentally travel backwards or forwards in time in order to remember one's past or imagine one's future across different domains and across non-clinical and clinical populations (e.g., Addis, Wong & Schacter, 2007; 2008; Atance & O'Neill, 2001; Berntsen & Bohn, 2010; Rubin, 2014; Williams, Ellis, Tyers, Healy, Gillian & MacLeod, 1996; for reviews see D'Argembeau, 2012; Szpunar, 2010). Although mental time travel is important for maintaining a stable sense of identity and continuity of self (e.g., Atance & Meltzoff, 2005; Schacter & Addis, 2007; Suddendorf & Corballis, 1997; Tulving, 2002), surprisingly little is known about this ability in Borderline Personality Disorder (BPD) and in personality disorders more generally. This lack of knowledge is surprising, because identity disturbance and fragmentation is one of the main diagnostic criteria for BPD, as manifested in sudden and dramatic changes in identity, self-concept, personal beliefs, affect, and interpersonal relationships (American Psychiatric Association, 2013). According to prevalent views (e.g., Jørgensen, 2006; Kernberg, 2004), the absence of a normally integrated identity is a key feature of a borderline personality organization (i.e., a more severe character pathology) that differentiates it from a neurotic personality organization (i.e., a milder form of character pathology). Hence, the structure and coherence of past and future event representations is likely to be compromised in patients with BPD.

Jørgensen and colleagues (2012) examined the written narratives of identity-related autobiographical memories (i.e., past mental time travel or past events) in patients with BPD, Obsessive Compulsive Disorder (OCD) and a non-clinical control group (Jørgensen, Berntsen, Beck, Kjølbye, Bennedsen & Ramsgaard, 2012). The narrative structure was analyzed using Peterson and McCabe's (1993) high-point analysis, which bases the structure of an event narrative on whether it includes and builds up to a meaningful high-point in the story-line or not. This approach focuses on the macrostructure and coherence of personal narratives as well as the structural organization of the narratives used to convey events and their meaning to others (Celinska, 2004, p. 85; see also Jørgensen et al., 2012). A "classic" narrative builds up to a high-point and evaluatively dwells on it before finding a resolution. Other patterns are seen as deviations from the classic pattern with varying degrees of structural disruption. The "ending-at-high-point"

pattern contains a high-point but no evaluation, whereas the “leap-frogging”, “chronological,” “impoverished,” and “disoriented” patterns have no high-points and are poorly structured, whereby the way content and meaning are conveyed to others may seem disturbed. Consistent with the view that the narrative structure and coherence of important life story memories are compromised in BPD-patients, Jørgensen et al. (2012) found that the memories in the BPD group were characterized by a “leap-frogging” and “disoriented” structure without a meaningful high- point, whereas the memories in the OCD-group were dominant with respect to the “ending-at-high point” pattern with no evaluation. The memories in the non-clinical control group were dominant with respect to the normative “classic” pattern.

These findings are consistent with the view that an ongoing life story that incorporates the reconstructed past as well as the imagined future into a coherent whole is an essential part of an adaptive personality (McAdams and Pals, 2006) and that identity-related autobiographical memories and future events in patients characterized by both milder and more severe forms of personality pathology may be compromised in a way that interferes with adaptive identity construction (Jørgensen, et al., 2012, for related views, see Conway & Pleydell-Pearce, 2000; Singer and Salovey, 1993). The findings are also consistent with the idea that the compromised mentalization seen in most BPD-patients (Jørgensen et al., 2012) manifests in incoherent and impoverished self- narratives and autobiographical memories. Mentalization is a psychological process whereby the individual interprets the behavior of self and others as being meaningful and thereby contributes to the creation of a coherent identity and coherent autobiographical memories (Bateman & Fonagy, 2004; Holmes, 2006). Mentalization is thus required in order to make sense of the events one experiences and to form coherent personal narratives of these events.

The findings also fit well into several theories concerning the link between autobiographical memory and the self (e.g., Conway & Pleydell-Pearce, 2000; Prebble, Addis & Tippet, 2013; Tulving, 2002), and how this link may be affected in certain psychological disorders such as schizophrenia (e.g., Berna, Bennouna-Green, Potheegadoo, Verry, Conway & Danion, 2011; Berna, Potheegadoo, Aouadi, Ricarte, Allé, Coutelle et al., 2016; Raffard, D'Argembeau, Lardi, Bayard, Boulenger & Van der Linden, 2009; 2010) and autism (e.g., Berna, Göritz, Schröder, Coutelle, Danion, Cuervo-Lombard & Mortiz, 2016; Lind, 2010). Building on previous theories (i.e., Conway & Pleydell-Pearce, 2000; Tulving, 2002), Prebble et al., (2013) posit a two-dimensional model, in which sense of self is delineated along two dimensions: Subjective versus objective sense of self and present versus temporally extended sense of self. Of particular relevance to the current study is

the temporally extended sense of subjective and objective self, which relates to autobiographical memory and future thinking in different ways. The temporally extended sense of subjective self involves the phenomenological continuity and autonoetic consciousness that is inherent to Tulving's (1985, 2002) original conceptualization of mental time travel, whereas the temporally extended sense of objective self encompasses semantized autobiographical memory and narrative continuity (e.g., Conway & Pleydell-Pearce, 2000; Habermas & Bluck, 2000). Following this model, disturbances in self and identity may be associated with phenomenological and narrative discontinuity, potentially resulting in poorly structured event narratives, which further may inhibit the ability to make thematic links and extract meaning and insights from central autobiographical memories and future projections (Prebble et al., 2013). Hence, the classic structural pattern may express a healthy temporal sense of self, whereas the other patterns may be viewed as reflecting varying degrees of disruption in phenomenological and narrative continuity as well as lack of episodic richness.

In the present study, we examine the structure of past and future events in BPD-patients as compared to patients diagnosed with OCD, and eating disorders (ED), respectively, and a non-clinical control group. The present work extends the findings by Jørgensen et al. (2012) in several important ways. First, Jørgensen et al. (2012) did not include a future condition, but only examined the structure of narratives for past events. However, including a future dimension is important in that BPD-patients are characterized by impairments in self-direction involving thoughts about the future, such as instability in goals, aspirations, and career plans (American Psychiatric Association, 2013). It is likely that such instabilities may influence the ability to imagine personal future events. Previous research on processes involved in remembering past and imagining future events have demonstrated that the two temporal directions are intimately related and draw upon many of the same underlying neurocognitive structures (e.g., Addis et al., 2007; 2008; Atance & O'Neill, 2001; Tulving, 1985; Williams et al., 1996; see Berntsen & Bohn, 2010; D'Argembeau & Mathy, 2011; Rasmussen & Berntsen, 2013 for reviews). However, the construction of future events may be more cognitively demanding than the construction of past events (e.g., Addis et al., 2007; 2008) and seems to draw more upon higher order knowledge relevant for self, goals and identity (e.g., Berntsen & Bohn, 2010; Rubin, 2014). For these reasons, it is likely that some of the deficits shown by BPD patients in relation to the construction of narratives of personal events will be especially pronounced for events imagined to happen in the future.

Second, Jørgensen et al., (2012) included BPD and OCD patients, whereas patients with ED

were not included. OCD-patients typically do not display severe character pathology, and were used as a clinical control group with little or no identity disruption in Jørgensen et al. (2012). In contrast, ED-patients have been shown to exhibit problems in relation to self-discrepancy and identity impairment, although these problems are secondary to their primary diagnosis. For instance, researchers have shown that self-discrepancies in areas such as self-control (i.e., actual versus ideal), as well as perceived deficits in one's own physical attractiveness relative to that of others', predict bulimic symptomatology over and above depression (Deming & Lynn, 2010-2011; Matthews & Lynn, 2008), whereas disturbances in overall self-development have been linked to bulimia nervosa as well as anorexia nervosa (Stein & Corte, 2007). It is possible that the discrepant self and identity often seen in these patients, especially in terms of a distorted body image (i.e., fear of appearing overweight when in fact being normal or underweight; e.g., American Psychiatric Association, 2013; Horne, John, VanVactor, & Emerson, 1991), may influence how they construct their personal narratives. Previous work has shown that their memories are compromised with regard to specificity (e.g., Dalgleish, Tchanturia, Serpell, Hems, De Silva & Treasure, 2003; Dalgleish, Williams, Golden, Perkins, Barrett, Yeung, & Watkins, 2007), for which reason the narrative structure of their personal memories and future events may also be affected. In the present study, we included BPD and OCD as well as ED patients, which is unprecedented in the literature on past and future event construction. Thus, our design allows us to compare the construction of future and past events across a range of clinical disorders with varying levels of identity disruption as well as against non-clinical controls.

Finally, the data reported by Jørgensen et al. (2012) were based on written narratives of past events, which may confound narrative abilities with written language proficiency. In order to overcome this problem, we here obtain event narratives with the use of structured interviews.

The Structure and Episodic Richness of Past and Future Events in Clinical Disorders

Previous research comparing the construction of future and past events in clinical populations is sparse, has focused almost exclusively on the level of specificity for the constructed events, and revolves around one central finding: Patients with a broad range of different diagnostic profiles generate fewer specific (or less episodically detailed) events in both temporal directions, when compared to non-clinical control groups. Reduced specificity in both temporal directions has been found in patients diagnosed with autism spectrum disorder (Lind & Bowler, 2010; Lind, Williams, Bowler & Peel, 2014; but see Crane, Lind & Bowler, 2013), major depression (Williams

et al., 1996), posttraumatic stress disorder (i.e., PTSD; Brown, Root, Romano, Chang, Bryant & Hirst, 2013; but see Blix and Brennen, 2011), and schizophrenia (D'Argembeau, Raffard & Van der Linden, 2008) as well as in subclinical samples, such as in individuals with a dysphoric profile (Dickson & Bates, 2007; but see Anderson & Evans, 2014).

Importantly, researchers have not compared the specificity of both past and future events across the three patient populations included in the present study. Previous studies typically have compared one of these clinical groups with a non-clinical control group. Using this approach, reduced specificity has been documented for past events (i.e., without the future comparison) among patients diagnosed with BPD (e.g., Jones, Heard, Startup, Swales, Williams & Jones, 1999; Maurex, Lekander, Nilsson, Andersson, Åsberg & Öhman, 2010; Reid & Startup, 2010), although the findings are inconsistent, or related to comorbid depressive symptomatology (e.g., Arntz, Meeren & Wessel, 2002; Jørgensen et al., 2012; Kremers, Spinhoven & Van der Does, 2004; Kremers, Spinhoven, Van der Does & Van Dyck, 2006a; b; Renneberg, Theobald, Nobs & Weisbrod, 2005; Van den Broeck, Glaes, Pieters & Raes, 2012; see Bech, Elklit & Simonsen, 2015 for a review). In contrast, the findings of reduced specificity in the past events among ED-patients are quite consistent (Dalgleish et al., 2003; 2007; Laberg & Andersson, 2004; Nandrino, Doba, Lesne, Christophe & Pezard, 2006), whereas findings for OCD are sparse and inconsistent (Wilhelm, Baer, McNally & Florin, 1997; Jørgensen et al., 2012). Because of the inconsistencies in previous findings as well as the well-established relationship between depression and overgeneral memory (William, Barnhofer, Crane, Hermans, Raes, Watkins, & Dalgleish, 2007), we control for depression-levels in all analyses in the current study.

Furthermore, in the present study, we analyzed both the narrative structure and specificity (or episodic richness) of the future and past events. We used an adapted version of the life story task developed by Rubin, Berntsen and Hutson (2009) to elicit life story memories and future events in an interview setting. By choosing a task involving patients' reports of events perceived as important to their life stories, we maximized the likelihood of tapping into identity relevant material, which is pertinent to the theoretical questions regarding event structure that we aim to address. We also chose this sampling strategy, instead of the more commonly used word cue task (e.g., Williams et al., 2007), because we reasoned that asking the participants to recount events that were important to their lives, would render them more likely to develop more extensive narratives addressing identity related material – especially for the future condition, because of the increased cognitive effort involved in imagining such events. This approach was important because we were especially

interested in the coherence and structure of the resulting narratives and not simply in whether the patient groups were able to generate specific episodic memories to the same extent as a healthy sample.

To our knowledge, narrative structure has not been compared between past and future events in clinical populations, although it has been examined in past events alone (i.e., Adler, Chin, Kolissety & Oltmanns, 2012; Jørgensen et al., 2012; Raffard et al., 2010). As measures of specificity, we applied an adapted version of the criteria introduced by Williams et al. (1996), in which a specific event is defined as an event that took place within 24 hours, whereas a non-specific event can be either extended (i.e., a single event that took more than 24 hours) or categorical (i.e., a summarization of several single events). As a measure of frequency of episodic richness, we applied the scoring system for internal and external details introduced by Levine, Svoboda, Hay, Winocour and Moscovitch (2002). In this framework, internal details are details directly related to the main event, specific to time and place, and considered to reflect episodic thinking, whereas external details do not pertain directly to the main event, nor do they map onto a specific time and place. Moreover, we asked the participants to rate the generated events on emotional valence, importance, and rehearsal as well as to estimate the temporal distance of the events from the present moment. By asking for central life story events, including events expected to happen in the future, by analyzing the narrative structures of these events in addition to spatiotemporal specificity, by examining these questions across several clinical groups, and by including clinical groups that have rarely been studied in this context, the present study addresses questions that have been left unexamined by prior research.

Aim and Hypotheses

The purpose of the present study was to examine the narrative structure and level of specificity of past and future event constructions in three clinical populations, characterized by very distinct diagnostic profiles. Based on the mixed findings from the limited literature comparing past and future events in clinical populations (e.g., Anderson & Evans, 2014; Blix & Brennen, 2011; Brown et al., 2013; Crane et al., 2013; Dalgleish et al., 2010; D'Argembeau et al., 2008; Lind & Bowler, 2010; Williams et al., 1996) as well as the findings from the literature on past events in BPD (e.g., Adler et al., 2012; Bech et al., 2015), ED (e.g., Dalgleish et al., 2003; Nandrino et al., 2006) and OCD patients (Jørgensen, et al., 2012; Wilhelm et al., 1997), we expected that the BPD and ED groups would generate fewer specific and less coherent events relative to the control group,

and that the ratio of internal versus external details would be lower in these two groups as compared with the control group. We expected to find fewer differences between the OCD group and the control group, but we predicted that the OCD group would generate events that were less coherent, consistent with previous work on past events (Jørgensen et al., 2012). We expected the BPD group to show the most pronounced structural deficits as compared to all the three other groups, reflecting their compromised identity constructs and mentalization abilities. We expected this deficit to be especially pronounced for the construction of future events. Given the moderately severe identity disturbance found in ED-patients, we also expected to see pronounced deviations from the non-clinical control group – especially with regard to specificity and episodic detail.

Across all four groups we expected that the construction of future relative to past events would show more evidence of constructive effort and therefore rely more on scripted knowledge and positively biased self-schemata (e.g., Addis et al., 2007; 2008; Berntsen & Bohn, 2010; Rasmussen & Berntsen, 2013; Rubin, 2014). Thus, we expected future as compared with past events to be rated as more emotionally positive, less specific, and to contain fewer internal relative to external details (e.g., for reviews see D'Argembeau, 2012; Rasmussen & Berntsen, 2013; Szpunar 2010).

Method

Participants

The participant demographics are described in Table 1. The participants from the three patient groups were all clinically diagnosed at specialized psychiatric clinics at Aarhus University Hospital. There were no differences between the groups with respect to age and ethnicity (92 % were native Danes). The groups, however, differed on their educational level ($\chi^2(9) = 18.06, p < .0005$, Cramer's $v = .278$). As seen in Table 1, this difference was largely due to more participants in the control and OCD groups undergoing or having completed at least five years of post high school education, whereas more participants in the three patient groups (especially in the BPD group) reported zero years of education after high school graduation. Only female patients participated in the study due to an extreme scarcity of available male patients from the BPD and ED clinical populations. Each participant had signed a written consent form informing them that their responses were anonymous and that they were free to withdraw at any point during the procedure. Each participant received two movie tickets in return for her participation.

The non-clinical control group consisted of three groups of healthy young females undergoing different levels of post high school education as measured in education length (i.e., 1-2 years; 3-4 years; > 5 years). These were eight social and health care trainees (i.e., 1-2 years), six public school teacher students (i.e., 3-4 years) and six university undergraduates (i.e., > 5 years). The patients were categorized similarly into groups of different educational levels, although unlike the participants in the control group who were all students, some of the patients had completed a post high school education degree. In addition, a few patients had no formal education and were categorized as having 0 years of education (see Table 1).

Procedure (Phases 1-4)

The study consisted of four phases. 1) The recruitment of patients from specialized psychiatric clinics at Aarhus University Hospital (i.e., the personality disorder clinic, the eating disorder clinic and the clinic for OCD and anxiety). Diagnostic interviews and checks for comorbidity were conducted during this phase by trained clinicians. Presence of severe and life threatening anorexia nervosa based on the patients' Body Mass Index (i.e., BMI < 16) was used as exclusion criteria in the ED group. This decision was made for ethical reasons and due to the cognitive problems sometimes associated with low BMI. The non-clinical control group was screened for psychiatric history in this phase. 2) The background questionnaires related to the study were sent out to the participants within the first three months of treatment or when the participants were on the waiting list for treatment. The BPD patients were all part of a two year treatment program, whereas the length of the ED treatment program depended on the diagnosis of the patient (i.e., anorexia nervosa or bulimia nervosa) and the severity of the condition. The patients in the OCD group were all on the waiting list for a three month treatment program at the OCD clinic at Aarhus University Hospital. The participants in the non-clinical control group received the baseline questionnaire during sign-up as part of the information package. 3) The interviews concerning past and future event narratives and identity diffusion was conducted a few weeks after by the second and third authors as well as a smaller group of psychology master students, who were trained specifically for the task. 4) Finally, in the fourth phase, the interviews were transcribed and coded by trained coders.

Materials for Recruitment and Diagnostics (Phase 1)

All diagnostic assessments were conducted by trained clinicians at the psychiatric clinics in

the following ways. The BPD patients were diagnosed using the Structured Clinical Interview for DSM-IV Personality Disorders (SCID-II; First, Spitzer, Gibbon, & Williams, 1996). The interrater reliability was satisfactory as demonstrated by the intra-class coefficient found in earlier studies ($ICC = .84$; Jørgensen, Freund, Bøye, Jordet, Andersen & Kjølbbye, 2013). The ED patients were diagnosed firstly by diagnostic interviews as well as based on their BMI-scores. Patients with a BMI lower than 17.5 automatically were categorized as anorexic. Follow-up differentiation between anorexia nervosa, bulimia nervosa and other EDs were performed using the Eating Disorder Examination 16.0D (EDE; Fairburn, Cooper & O'Connor, 2008), which is a semi-structured interview with good discriminant validity and high interrater reliability (i.e., coefficients from .65-.99; Berg, Peterson, Frazier & Crow, 2011). Since preliminary analyses across variables showed no difference between the patients diagnosed with anorexia and bulimia nervosa (i.e., 7 anorexic and 13 bulimic patients), we collapsed the data into one group of patients with ED. The OCD patients were diagnosed with the Anxiety Disorders Interview Schedule, Adult Version (ADIS-IV; Brown, DiNardo, & Barlow, 1994), which is a semi-structured interview to assess and differentiate anxiety disorders. Good to very good interrater reliability for OCD-diagnosis has been obtained in previous work (kappas from .80-.85; DiNardo, Moras, Barlow, Rapee & Brown, 1993; Grisham, Brown & Campell, 2004) as well as good discriminant validity (Grisham et al., 2004). Comorbidity with one or more of the other diagnoses examined in the study was used as exclusion criteria. Comorbidity with BPD was checked for with SCID-II in the ED group, but not in the OCD group. However, OCD-patients were referred to the personality disorder clinic if personality disorder was suspected by the clinician who conducted the diagnostic interview. Comorbidity with the other disorders included in the present study (i.e., ED and OCD) was checked for with the Present State Examination (PSE; Wing, Cooper & Sartorius, 1974) in all patient groups. The PSE is a semi-structured interview, which allows for a broad screening of axis I disorders, but it was used specifically to exclude patients with comorbid ED or OCD in the present study.

Self-reported information of previous diagnoses or treatment of mental disorders as well as a sum-score above the cut-off scores for mild depression on Beck's Depression Inventory (i.e., $BDI > 13$; Beck, Steer & Brown, 1996 see below) were used as exclusion criteria for the control group (see Table 1). The BDI was only used as a screening instrument for depression (see the description of the baseline questionnaire below) and not as a formal diagnostic tool.

Materials for the Baseline Questionnaire (Phase 2)

All participants received the baseline questionnaire during sign up and were instructed to fill it out at home and bring it to the later scheduled interview (phase 3). The first part of the baseline questionnaire addressed demographic and socioeconomic information (e.g., age, ethnicity, education-level; see O'Connor, 2010). These introductory questions were followed by Beck's Depression Inventory, second edition (i.e., BDI-II; Beck et al., 1996) and a larger battery of questionnaires, which are not included in the present study. The BDI-II is a standard measure for depressive symptoms. It consists of 21 items rated on four point scales (0-3). The cut-off sum-scores are 0-12 for no depression, 13-20 for mild depression, 21-30 for moderate depression and 30 or above for severe depression (Beck et al., 1996). The internal reliability as measured by Chronbach's alpha was good across the four groups in the present study ($\alpha = .923$).

Materials for the Interview (Phase 3)

The Life Story Interview. All participants generated two past and two future event narratives. The order of the future and past event tasks was randomized across participants with half of the participants in each group generating past events first, and future events second, and vice versa for the other half. We employed the life story event task introduced by Rubin et al. (2009) to elicit the event narratives. The instructions were modified in order to also generate future events. 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/potential future*. It is a (fictitious) friend with whom you are absolutely confident and with whom you can be completely honest. Your task is to tell about *the two most important events from your own personal life/two most important events in your potential personal future* that you think are most central to your life story." The participants received 0-2 prompts in order to assist them in generating specific events, which were defined as an event that took place at a specific time and place within 24 hours. If they were unable to generate a specific event after the initial instructions, they were first prompted to once again choose an event from a specific time and place. They were prompted a second time to provide additional information, if they were still unable to generate a specific event.

After generating the events, the participants were asked to indicate their age in the event (in years), the emotional valence of the event (-3 = extremely negative; 0 = neutral; 3 = extremely positive), how much they previously had rehearsed (i.e., had talked and/or thought about) the event (1 = not at all; 7 = to a very high degree) and how important the event was (1 = not at all; 7 = to a very high degree). These questions were derived from the more extended autobiographical memory

questionnaire (AMQ) used in previous research (e.g., Rubin, Schrauf & Greenberg, 2003).

The Structured Interview for Identity Diffusion (SIID). The final part of the interview consisted of the *Structured Interview for Identity Diffusion* (SIID) developed for the purpose of the present study. The SIID assesses the theoretical construct of identity diffusion (e.g., Jørgensen et al., 2012) by way of 11 questions, which are rated by independent coders on a 5-point scale (i.e., 0 = not at all present; 4 = present to a very high degree). The questions address fluctuations in occupational, relational, emotional, behavioral and gender-related aspects of identity as well as issues of personal boundaries and feelings of emptiness (see Appendix 1). For instance, Question 1 addressing occupational identity (“Have your education and career plans changed repeatedly over time?”) is scored as a zero, if the participant answers no to this initial question, whereas an answer indicating several times every year over many years, suggesting pathological levels of identity diffusion, would be scored as a four. The second author (CRS) and an independent rater scored 25 % of the interviews together. The inter-correlations between the two rates were acceptable for each of the 11 questions ($.782 < r < .989$). Disagreement was resolved by discussion, and the independent rater scored the remaining interviews alone. The raters were blinded to group membership at all times. The reliability as measured by Cronbach's alpha was good across the four groups ($\alpha = .893$).

Coding (Phase 4)

Coding of Specificity and Narrative Structure. The specificity and narrative structure of the events were coded by objective raters, who were blinded with regard to group membership. The first author (ASR) and an independent rater coded 25 % of the events together (i.e., 40 past events and 40 future events). Disagreement was solved by discussion. Because sufficient inter-rater reliability was achieved after this point for all objective ratings, the independent rater was allowed to continue the coding process alone. An event was defined as specific if the event description contained an event that took place at a specific time and place within 24 hours (Williams et al., 1996). Since very few extended events could be identified (less than 1 %), the remaining non-specific events were all classified as categorical (see Williams et al., 1996). The inter-rater agreement was 100 % for the past condition and 92.5 % for the future condition.

To analyze the structure and coherence of the generated autobiographical memory narratives, we used Peterson and McCabe's (1983) high-point analysis. The generated past and future events

were classified into one of seven 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”, (VI) *disoriented pattern*, a narrative that is “too confused or disoriented for the listener to understand”, and (VII) *miscellaneous pattern*, a narrative that did not fit any of the other categories.

The classic and ending-at-high-point patterns are considered to be the more advanced patterns, because they include a high-point. However, the ending-at-high-point pattern is viewed as a slight deviation from the normative classic pattern, because it lacks an evaluation and hence meaning is reduced. The leap-frogging and chronological patterns are less advanced, because they lack a high- point, but meaning can still be inferred by the listener. Finally, the impoverished and disoriented patterns are the least advanced patterns, since they contain either too little or too confusing information about the target-event to be meaningful, but at the same time they may also contain a substantial amount of off-target information, which is unrelated or only tangentially related to the chosen event narrative. The inter-rater reliability was very good for past events ($\kappa = .81$) and good for future events ($\kappa = .73$). Importantly, the ratings of structural pattern were not independent from each other. The raters first aimed at identifying a high point in the narrative and then decided whether the narrative could be categorized as classic or not. The other categories were only considered, if the classic pattern was excluded.

Coding of Internal and External Details. The coding of internal and external details followed the standardized procedure developed by Levine et al. (2002). The event descriptions were first divided into bits of detail, typically expressed as a grammatical clause defined by a subject and a predicate. Next, the bits of detail were scored as either internal or external. Internal details were defined as those that were directly related to the main event, were specific to time and place, and thus were considered to represent episodic details of the event. External details were defined as those that did not pertain directly to the main event, and did not map onto a specific time and place. Internal details were further divided into five mutually exclusive categories (event details, time,

place, perceptual or sensory information and thought/emotion related to the event), whereas external details were divided into four categories (event specific details not unique to the main event, semantic details such as general knowledge or ongoing events, repetitions of detail and other). Two trained raters who were blinded with regard to group membership and who had previous experience with the coding procedure coded the event narratives. They first coded 25 % of the event descriptions together. Since sufficient interrater agreement was established ($r = .98$ for internal details; $r = .97$ for external details), they were permitted to code the remaining event descriptions independently of each other. Disagreement was solved by discussion.

Word Count and Prompts. The word count of each narrative was analyzed using the Linguistic Inquiry and Word Count program (LIWC2007) designed by Pennebaker and colleagues (Pennebaker, Booth & Francis, 2007). A research assistant who read through the transcripts recorded the number of prompts necessary to generate each event.

Results

We first describe differences in depression and demographic characteristics among the four groups. We then compare the four groups with regard to structural pattern, level of specificity, episodic details, and other event characteristics. We follow up with planned contrasts and more specific analyses to compare each clinical group with the control group. Finally, we explore the relationships among the measures of narrative structure and measures of specificity across the four groups.

Group Differences in Identity Diffusion and Depression

As shown in Table 1, there were no differences among the four groups with respect to age. Statistically significant group differences were found for level of identity diffusion as addressed by the SIID ($F(76) = 44.33$, $p < .0005$, $\eta_p^2 = .64$; see Table 1). Tukey adjusted post hoc tests showed that the BPD group scored reliably higher on identity diffusion than all of the three other groups ($ps < .0005$), whereas the ED group scored higher than the control group on identity diffusion ($p < .0005$). There were no differences between the ED and the OCD group or between the OCD and the control group.

Statistically significant group differences were also found for depression symptoms

measured by the BDI-II ($F(76) = 17.33, p < .0005, \eta_p^2 = .41$; see Table 1). The mean BDI-II score for the BPD group indicated severe depression (see Table 1), whereas the corresponding scores for the three other groups indicated moderate depression for the ED group, mild depression for the OCD group and no depression for the control group. Tukey adjusted post-hoc tests showed that all groups differed statistically from each other ($p < .05$) with the exception of the ED and OCD groups that did not differ from each other. Because of the well-established relationship between depression and event specificity from the clinical literature (Williams et al., 2007), we controlled for depression in all of the remaining analyses.

The Narrative Structure of Past and Future Events in the Four Groups

Table 2 shows the results from a series of 2 (temporal direction: past/future) by 4 (group: BPD/ED/OCD/Control) mixed design ANCOVAs on the narrative structure codings^{1,2}. Depression scores on the BDI-II were used as a covariate. As shown in Table 2, there were significant group effects for the classic, chronological and impoverished patterns, which are analyzed in more detail below (but see Appendix 2, cf. Footnote 1). There were no statistically significant main effects of temporal direction as well as no statistically significant interactions.

Specificity, Event Details and AMQ measures in the Four Groups

Table 3 shows the results from a series of 2 (temporal direction: past/future) by 4 (group: BPD/ED/OCD/Control) mixed design ANCOVAs on the measures of specificity, internal and external details, and other event characteristics with depression as a covariate. Group effects were found for specificity and ratio of internal to external detail, which will be analyzed in more detail below (see Appendix 2, cf. Footnote 1). A number of main effects for temporal direction were also found. In agreement with previous findings suggesting a more schema driven construction for future as compared with past events (e.g., Addis et al., 2007, 2008; Berntsen & Bohn, 2010; Rubin, 2014), future events were rated as being less specific, more emotionally positive, and were estimated to take place closer in time to the present moment than their past counterparts. Similarly, past as compared with future events contained more internal details as well as a higher ratio of internal versus external details. Past events required less prompting, and they were longer in terms of word count (see Appendix 2, cf. Footnote 1).

Specific Comparisons of each Clinical Group with the Control Group

Because our a priori hypotheses addressed specific differences between each clinical group versus the control group, we conducted a series of planned comparisons using simple contrasts, comparing each of the three clinical groups with the control group for past and future events, respectively, again with depression used as a covariate. The clearest group differences involved the narrative structural patterns, whereby the three patient groups consistently showed fewer events with a classical pattern (cf. Table 2). Within the deviations from this pattern, statistical group effects were seen for the chronological and impoverished patterns (see Figure 1 as well as Appendix 2, cf. Footnote 1). More specifically, as shown in Figure 1, the events in the control group more frequently demonstrated a classic pattern, when compared to events generated in all three clinical groups in both temporal directions (all $ps < .008$ in the past condition; all $ps < .02$ in the future condition). In addition, compared with the control group, the BPD group reported past events that were more impoverished ($p = .022$), and more miscellaneous ($p = .002$), and less specific ($p = .002$) and rated lower on internal details ($p = .047$) in the future condition. Compared with the control group, the ED group reported past events that were rated higher on the ending-at-high-point ($p = .032$) and impoverished patterns ($p = .021$), and less specific ($p = .011$) in the future condition. Finally, compared with the control group, the OCD group reported more events with a chronological pattern in both temporal directions ($p = .006$ for past events; $p = .010$ for future events, see Figure 1).

We also ran the analyses without co-varying for depression. Importantly, the results regarding structural pattern remained the same when removing BDI-scores from the model, whereas the results regarding specificity remained the same in the BPD-group, but was reduced to marginally statistically significant ($p = .066$) in the ED-group. The group effects for internal details disappeared when BDI-scores were removed from the model.

Correlations between the Classical Pattern and Measures of Specificity

We performed a series of partial correlations on the different indices of mental time travel abilities, controlling for depression. The frequency of events with a classical pattern correlated

positively with the overall number of internal details ($r = .323, p < .005$ for past events; $r = .429, p < .0005$ for future events) and with the internal versus external detail ratio in the future ($r = .388, p < .001$), but not in the past condition ($r = .196, p < .1$). The frequency of events with a classical pattern also correlated positively with the measure of specificity ($r = .318, p < .005$ for past events; $r = .376, p < .001$ for future events). In addition, and as expected, specificity correlated positively with the number of internal details ($r = .276, p < .02$ for past events; $r = .603, p < .0005$ for future events), the internal versus external detail ratio ($r = .527, p < .0005$ for past events; $r = .556, p < .0005$ for future events) but negatively with the number of external details ($r = -.363, p < .001$) for past although not for future events ($r = -.181, ns$). In short, the included measures of narrative structure and episodic richness appear to tap into related dimensions of mental time travel abilities.

Finally, we ran a set of correlation analyses between the narrative measures of classic pattern and specificity with the clinical measures of depression and identity diffusion, but there were no statistically significant correlations between the narrative and clinical measures (all $ps > .15$). Only the correlation between the BDI-score and the sumscore for identity diffusion reached statistical significance ($r = .573, p < .001$)

Discussion

Most existing research on mental time travel in psychopathology has focused on autobiographical memories for past events. Furthermore, most research comparing past and future events in clinical populations has focused almost exclusively on overgeneral memory, and most research has involved just one patient group in comparison with healthy controls. Here we go beyond previous research by examining the narrative structure, specificity, level of episodic details and subjectively rated characteristics of past and future events in patients diagnosed with BPD, ED and OCD in comparison with a non-clinical control group. The three patients groups consistently differed from the control group with respect to the narrative structure of the reported events. The non-clinical control group generated events dominant on the normative, classic pattern, whereas the three patient groups all reported substantially fewer events characterized by this narrative structure. This effect was present for both the past and future conditions, and no interactions were seen. The three clinical groups tended to differ from one another with regard to their favored (non-classic) narrative pattern. The events generated by the BPD group were most frequently characterized by an impoverished and miscellaneous (i.e., non-classifiable) structure in the past condition. Compared

with the control group, events generated by the ED group were significantly more frequently characterized by an impoverished and ending-at-high-point structure in the past condition. Finally, compared with the control group, the events generated by the OCD group were dominant on the chronological pattern in the past as well as in the future condition (see Figure 1). We also found group differences with respect to the measures of specificity and episodic details. Most notably, compared with the control group, the BPD-patients generated fewer specific events in the future condition, and the events contained fewer internal details. The ED-patients also generated fewer specific future events, but the mean values were numerically higher than for the BPD-patients and the effect did not extend to the level of internal episodic detail.

The findings that the BPD- narratives are more impoverished and miscellaneous in the past condition as well as less specific and containing less internal, episodic detail in the future condition are consistent with our hypothesis that the BPD group would show the most pronounced structural deficits as compared to the three other groups, reflecting their compromised self and identity constructs and mentalization abilities. However, the structural deficits observed in the ED-group were also quite severe, and specifically expressed in terms of more past narratives with an ending-at high-point structure. Future studies should address the relationship between identity impairment and central life story narratives in this population. Finally, the OCD-group reported past as well as future narratives, which were dominant on the chronological pattern, reflecting temporal order and continuity, but with limited information on what is the central point to be extracted from the narrative. One way of interpreting these differences in relation to Prebble et al.'s (2013) model of the relationship between sense of self and autobiographical memory is to posit that the impoverished pattern may reflect a severe disruption of temporally extended sense of self, whereas the chronological pattern shows milder disruptions of phenomenological and narrative continuity.

For all four groups, future events were rated as more emotionally positive and closer in time to the present moment, whereas past events were more specific and richer in terms of word count and episodic detail. These findings are consistent with previous work on the construction of past and future events in healthy individuals (e.g., Addis et al., 2007; 2008; Berntsen & Bohn, 2010; Rasmussen & Berntsen, 2013; Rubin, 2014) and show that these differences generalize across clinical groups, which underscores the robustness of the effects. Thus, the standard positivity bias for future as compared with past events may serve the primary function of providing an overarching schematic default framework for an optimistic view on the future (e.g., Berntsen & Bohn, 2010; Rasmussen & Berntsen, 2013). However, this framework is only meaningful if the individual is able

to extract the relevant meaning from the narratives, which may be hindered due to maladaptive and insufficient structural organization. Hence, one clinical implication of the present findings may be that of helping patients to restore the narrative structure and specific episodic content of central life story events and assist these patients in regaining the ability to construct and interpret relevant meaning so that they can convey it to themselves and others.

The present findings on narrative structure largely agree with Jørgensen et al (2012), who also used Peterson and McCabe's (1993) high-point analysis to code for structural pattern of the written memories of past events and found that the control group much more frequently demonstrated a classic narrative pattern, consistent with the present study. However, the nature of the deviations for the BPD and OCD groups were slightly different from the ones observed in the present study. Jørgensen et al. (2012) found that the BPD narratives were dominant on the leap-frogging and disoriented pattern, whereas the OCD-narratives were dominant on the ending-at-high-point pattern. In contrast, an impoverished narrative structure was more prevalent for the BPD-group in the present study, whereas the OCD-narratives were dominant on the chronological pattern. The differences between Jørgensen et al. and the present study may have been due to Jørgensen et al. instructing their participants to generate written narratives, whereas the present study used interviews in order to allow more elaborated narratives as well as controlling for potential differences in written language abilities between participants. It is possible that the written narratives used by Jørgensen et al. (2012) provided the participants with more constraints, whereas the method used in the present work, although enabling the participants to generate more detailed and extensive narratives, also allowed them to generate more off-target information about the event, and thus potentially affecting the structural pattern. Future research should look into differences between written versus verbal recordings of event narratives in clinical samples.

Group effects in specificity and level of episodic detail were found only in future events in the present study. One potential explanation is that participants were instructed to generate their most important life story events, whereas participants in previous studies comparing past and future events in clinical samples typically have been asked to generate events in response to emotional word-cues (e.g., Brown et al., 2013; D'Argembeau et al., 2008; Dickson and Bates, 2007; Williams et al., 1996) or specific time periods (e.g., Brown et al., 2013; Lind & Bowler, 2010). It is possible that most people, regardless of clinical status, are able to generate a specific memory of an important life story event, because such events tend to be more rehearsed and more distinctive than other events (e.g., Berntsen & Bohn, 2010), whereas the construction of important future events

may be more vulnerable to clinical disturbances, due to added cognitive effort and the absence of actual experience of the event.

The fact that consistent group effects were found for narrative structure suggests that such measures may be more sensitive than measures of specificity to deficits regarding identity-related future and past event construction. Nonetheless, the fact that the prevalence of the classic pattern correlated positively with scores of specificity and level of episodic detail suggests that these different measures probe related aspects of the construction of mental events. Finally, it should also be noted that previous work on autobiographical memories in BPD has found inconsistent results with respect to overgeneral memory (see Bech et al., 2015 for a review), whereas findings from ED patients have proved more consistent (Dalgleish et al., 2003; 2007; Laberg & Andersson, 2004; Nandrino et al., 2006).

Some limitations should be noted. First, the study included only women. Although this was due to low availability of male patients with BPD and ED, this does not imply that male patients with these disorders are non-existent. Future studies should aim at including male patients in their samples. Second, we did not include a personality disorder control group (i.e., a patient group with a different personality disorder than BPD). Although milder character pathologies are part of ED as well as OCD, these diagnoses are not primarily characterized by personality disturbances. Third, the participants generated only two future and two past events. Some previous studies on central life story events have asked participants to generate up to five significant memories and five future projections. However, because of the sensitive nature of some of the populations in the present study (i.e., severe psychopathologies), we chose to limit the number of events for ethical reasons. Still, future studies should aim at examining a broader range of events. Fourth, the OCD patients as well as the control group were not screened for personality disorders with the SCID-II interview. However, all groups were screened for identity diffusion, which is one of the defining features of BPD. The BPD patients scored markedly higher on the SIID than any of the other groups, suggesting that identity diffusion was uniquely associated with this patient group. Moreover, although it is a limitation of the study that different strategies were used to screen for personality disorders and comorbid disorders in some of the included groups, all clinical participants had undergone an extensive diagnostic interview with an experienced clinician at psychiatric clinics, specialized for their respective disorders. Thus, for example, any suspicion of BPD in a patient who originally was referred to the OCD clinic would automatically lead to a re-evaluation of the patient's symptomatology at the personality disorder clinic. Fifth, although the sample size was

based on previous studies (Jørgensen et al., 2012), future studies should aim at obtaining larger samples sizes, allowing smaller differences to be detected.

In summary, we have presented findings from a unique study comparing the narrative structure as well as episodic richness of past and future events across psychiatric patients diagnosed with personality disorders (i.e., BPD) and patients diagnosed with milder forms of character pathologies (i.e., ED and OCD) as well as non-clinical controls. We hypothesized that the compromised mentalization generally seen in BPD-patients would manifest in impoverished and overgeneral narratives of future and past events. The findings lend partial support to this view.

Compared with the non-clinical control group, the past events of BPD patients to a greater extent were characterized by impoverished narratives, whereas the future events to a greater extent showed reduced episodic specificity and contained fewer internal details. While the BPD-narratives predominantly were structured according to an impoverished pattern, they had the same word-count as the narratives generated by the other groups, suggesting that they may contain a great deal of information of little relevance to the target event. Given that people use narratives of autobiographical events to make sense of their identity and life story (e.g., McAdams and Pals, 2006), the present findings are consistent with, and may help to explain, the fact that identity disturbance and fragmentation is one of the main diagnostic criteria for BPD.

In addition, we hypothesized that patients with a neurotic personality organization (e.g., OCD-patients, Kernberg & Caligor, 2005) as well as patients with a distorted sense of body identity (e.g., ED-patients, Horne et al., 1991) would also manifest some level of incoherence in the narratives of autobiographical events. The findings supported this assumption, since the narratives generated by all the included clinical groups deviated meaningfully from the non-clinical control-group as well as from each other. The present data do not speak about the causal relationship between disorganized identity structures and the narrative structure of important past and future life story events. It is possible that being unable to (or never having been taught to) structure important life story events is the key to the disorganized identity seen in BPD-patients as well as other patients groups, rather as the other way around. Future research should aim at resolving this relationship. Future research should also examine possible benefits of working therapeutically with the narrative structure of central life story events in BPD-patients as well as in patients with milder forms of character pathologies. In addition to narrative structures of past events, we have here shown the relevance of also including a future temporal dimension.

Author contributions

The study was designed by CRJ and DB with help and suggestions from ASR and MOC. ASR and MOC organized different stages of the data collection. BEB, KDG and RB provided the link to the different patient populations. ASR wrote up the first manuscript drafts and conducted the statistical analyses. DB commented on the early drafts and suggested changes to text and analyses. CRJ, and MOC commented critically on later versions of the manuscript. All authors read through and approved the final version of the manuscript before submission.

Author Note

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Footnotes

¹The means and standard deviations for the four groups can be found in Appendix 2. They are based on the averaged scores from the two past events or the two future events.

²As explained in the methods section, the different categories for structural pattern were not mutually exclusive. The normative classical pattern was regarded as the default pattern, and the other categories were only considered if the classic pattern could be excluded. This is illustrated in the tables by an indentation of each of the remaining patterns relative to the classical pattern.

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Table 1
Age, Depression, Identity Diffusion and Education-level for the Four Groups

Variable	BPD			ED			OCD			Control		
	<i>LB</i>	<i>M</i>	<i>UB</i>	<i>LB</i>	<i>M</i>	<i>UB</i>	<i>LB</i>	<i>M</i>	<i>UB</i>	<i>LB</i>	<i>M</i>	<i>UB</i>
<i>Age and depression</i>												
Age	24.7	28.5	32.2	24.7	27.3	29.9	26.3	33.6	40.8	22.7	28.2	33.7
BDI-score	23.7	30.4	37.0	17.7	22.4	27.2	11.1	17.0	22.8	4.2	6.2	8.1
<i>Identity Diffusion</i>												
SIID- score	20.6	24.6	28.6	9.3	11.9	14.4	5.1	7.8	10.6	1.2	3.2	5.2
<i>Education-level*</i>												
0 years	9 (45%)			4 (20%)			5 (28%)			0 (0%)		
1-2 years	6 (30%)			3 (15%)			3 (17%)			8 (40%)		
3-4 years	4 (20%)			8 (40%)			4 (22%)			6 (30%)		
> 5 years	1 (5%)			5 (25%)			6 (33%)			6 (30%)		

Note: LU = Lower Bound 95% confidence interval for mean; UB = Upper Bound 95% confidence interval for mean. *Education-level denotes number of years of ongoing or completed education after high school. BPD = Borderline Personality Disorder; ED = Eating Disorders; OCD = Obsessive Compulsive Disorder; Control = Non-clinical control group; BDI = Beck's Depression Inventory, SIID = Structured Interview for Identity Diffusion. Ns in all groups = 20, except for OCD identity (N=19) and OCD educational level (N=18)

Table 2

Results from the Overall ANCOVAs Comparing the Four Groups on Structural Pattern for Past and Future Events and Depression as the Covariate

	Main effects				Interactions	
	Event (Past/future)		Group (BPD/ED/OCD/Control)		Event (Past/future)	
	<i>F</i>	η_p^2	<i>F</i>	η_p^2	<i>F</i>	η_p^2
Classic	3.74	.05	6.13**	.20	2.05	.08
Ending-at-high-point	.00	.00	.67	.03	2.63	.10
Leap-frogging	.64	.01	.65	.03	1.90	.07
Chronological	.01	.00	4.61**	.16	1.05	.04
Impoverished	2.56	.03	3.45*	.12	.41	.02
Disoriented	.08	.00	2.15	.08	.73	.03
Miscellaneous	1.97	.02	.82	.03	.93	.04

Note: * $p < .05$; ** $p < .01$; Group sizes: $18 < N < 20$. BPD = Borderline Personality Disorder; ED = Eating Disorders; OCD = Obsessive Compulsive Disorder; Control = Non-clinical control group

Table 3

Results from the Overall ANCOVAs Comparing the Four Groups on Specificity, Event Details and AMQ Characteristics for Past and Future Events and Depression as the Covariate

	Main effects				Interactions	
	Event (Past/future)		Group (BPD/ED/OCD/Control)		Event X Group	
	<i>F</i>	η_p^2	<i>F</i>	η_p^2	<i>F</i>	η_p^2
<i>Episodic richness</i>						
Specificity	9.50**	.11	4.55*	.15	1.09	.04
Internal SUM	12.29**	.14	1.37	.05	.85	.03
External SUM	1.76	.02	1.44	.05	.03	.00
Internal/External ratio	7.99**	.10	2.83*	.11	.04	.00
<i>Other characteristics</i>						
Age of event	8.54**	.10	.42	.02	1.12	.04
Importance	.67	.01	1.24	.05	.87	.03
Rehearsal	2.40	.03	.80	.03	.08	.00
Valence	16.53***	.18	1.66	.06	1.19	.05
Number of prompts	6.57*	.08	1.78	.07	.40	.02
Word count	8.82**	.11	.48	.02	1.05	.04

Note: * $p < .05$; ** $p < .01$; Group sizes: $18 < N < 20$. BPD = Borderline Personality Disorder; ED = Eating Disorders; OCD = Obsessive Compulsive Disorder; Control = Non-clinical control group

Figure 1. Relative Frequencies of the Classic (top panel), Chronological (middle panel) and Impoverished Pattern (bottom panel) across the Four Groups. Error Bars Denote 95% Confidence Intervals.

Appendix

1 Structured Interview for Identity Diffusion

(SIID)

-
- 1. Occupational identity:** Have your education and career plans changed repeatedly over time?
 - 2. Behavioral fluctuations:** Do you find yourself behaving differently with different people, across different situations, making you question that you really are you?
 - 3. Emotional fluctuations:** Do you experience many fluctuations between positive and negative beliefs about who you are as a person as well as your worth as a human being?
 - 4. Fluctuations in self-perception:** Does your self-perception often change, making you question who you really are and what you believe in?
 - 5. Other's view:** Do you find it difficult to know for sure what other people think of you, even people that know you very well?
 - 6. Borrowed self-perception:** Do you sometimes feel as if your tastes, beliefs and values not really are you own but borrowed from others'?
 - 7. Boundaries:** Have you ever experienced fear of losing yourself and your sense of personal boundaries, if you get close to another human being?
 - 8. Emptiness:** Have you experienced situations, where you have been on your own and felt uneasy or empty inside – that you in an unpleasant way were lacking something inside yourself without knowing exactly what?
 - 9. Facade:** Do you sometimes have the experience that you are wearing a facade or playing a part, when you are together with other people and that this facade or part expresses something completely different from how you feel inside?
 - 10. Sexuality:** Are you sometimes confused as to whether you are more attracted to males, females or both genders?
 - 11. Female identity:** Do you sometimes experience doubt as to what it means to be a woman – how a woman is expected to look and behave?
-

Appendix 2

Means and Standard Deviations for Past and Future Events for the Four Groups

	BPD				ED				OCD				Control			
	Past		Future		Past		Future		Past		Future		Past		Future	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
<i>Structural pattern</i>																
Classic	.28	.41	.05	.15	.13	.22	.10	.26	.25	.38	.05	.22	.60	.44	.30	.41
Ending-at-high	.25	.38	.20	.25	.33	.37	.08	.18	.10	.21	.18	.34	.08	.18	.18	.29
Leap-frogging	.18	.34	.13	.22	.20	.34	.30	.38	.30	.44	.08	.18	.23	.34	.13	.32
Chronological	.03	.11	.13	.22	.08	.18	.08	.18	.13	.22	.25	.34	.00	.00	.03	.11
Impoverished	.23	.38	.38	.43	.23	.30	.33	.41	.08	.18	.13	.22	.05	.15	.23	.38
Disoriented	.00	.00	.03	.11	.05	.22	.10	.31	.15	.29	.13	.29	.05	.15	.00	.00
Miscellaneous	.05	.15	.10	.31	.00	.00	.03	.11	.00	.00	.15	.33	.00	.00	.15	.33
<i>Episodic Richness</i>																
Specificity	.78	.34	.38	.32	.78	.30	.45	.46	.90	.26	.65	.37	.80	.34	.68	.37
Internal SUM	19.90	18.49	6.73	5.22	15.20	11.70	8.23	9.58	20.40	11.49	7.88	6.63	23.40	20.43	8.38	7.66
External SUM	21.28	25.80	15.00	22.16	17.18	13.90	12.08	7.20	16.65	18.83	10.73	10.48	20.68	14.46	14.25	8.75
Int/Ex ratio	.46	.24	.38	.28	.44	.25	.33	.31	.60	.17	.46	.20	.48	.21	.34	.29
Years from present	10.30	7.27	6.06	4.69	11.66	6.33	6.19	5.46	14.63	16.31	5.70	6.92	10.00	8.95	6.88	6.28
Importance	6.26	.88	6.21	.90	6.30	.68	6.55	.63	6.33	.71	6.58	.59	5.77	1.31	6.35	.78
Rehearsal	3.84	1.04	5.37	1.08	4.38	1.40	4.88	1.09	4.13	1.09	4.60	1.34	4.70	1.17	4.88	1.07
Valence	.29	2.11	2.38	.84	-.25	1.83	2.28	.75	.73	1.90	2.23	1.13	.44	1.90	2.45	.46
Prompts	.40	.38	.55	.46	.23	.30	.33	.40	.35	.40	.45	.36	.43	.41	.58	.47
Word count	457.90	450.06	238.20	199.97	335.78	213.91	241.45	106.44	412.63	298.83	281.68	211.04	459.43	283.80	248.50	130.15

Note: Ratings for specificity and structural pattern all refer to mean proportions. BPD = Borderline Personality Disorder; ED = Eating Disorders; OCD = Obsessive Compulsive Disorder; Control = Non-clinical control group