Stability or instability in avoidant personality disorder:Mode fluctuations within schema therapy sessions

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ABSTRACT

Background and objectives: Avoidant personality disorder (APD) is among the most prevalent personality disorders, but has received relatively little empirical attention. This study aims to characterize the frequency, intensity, and fluctuation patterns seen in the modes (self-states) of APD clients over the course of schema therapy (ST), a psychotherapy approach developed especially for personality disorders.
Method: The newly-developed client mode rating scale (CMRS) was used to code every 5-min segment (n = 645) of 60 ST sessions. Each segment was coded by two independent raters, achieving adequate reliability.
Results: The avoidant/detached mode was present in 74% of therapy segments and was the most intense and unstable mode; the vulnerable child mode was present in 58% of segments and was the second most intense and unstable mode; the dysfunctional parent mode was present in 40% of segments, and was the third most intense and unstable mode; the over-compensator, compliant-surrenderer, and healthy adult modes were present in around 33% of segments, but the healthy adult mode was significantly more stable than all others.
Limitations: Although 645 segments were coded, they were drawn from only 15 APD clients with no control group. Further studies are needed to established specificity to APD.
Conclusions: This study demonstrates the utility of the mode concept as a lexicon for capturing personality states and their instability. It highlights the use of in-session segment-by-segment ratings to assess client change within psychotherapy. Although DSM5 fails to address instability as a criterion for avoidant personality disorder, the APD clients in the current study were characterized by considerable mode instability.

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1. Introduction

Instability is one of the common facets of personality disorders (PDs) (APA, 2013). It encompasses fluctuations in affect, behavior, cognition, and interpersonal relations (Dimaggio, Nicolò, Semerari, & Carcione, 2013). The most common form of instability studied to date is emotional lability (EL), which is defined as instability of intense emotional experiences or moods which are easily aroused. EL is often attributed to difficulties in emotional regulation, and these are a common target of most evidence-based models for the treatment of PDs such as mentalization based treatment (Bateman & Fonagy, 2006), dialectical behavioral therapy (Linehan, 1987), transference focused psychotherapy (Levy et al., 2006) and schema therapy (Young, Klosko, & Weishaar, 2003). EL has been tied, prospectively, to poor social functioning (Bagge et al., 2004). In addition, EL has been discussed as a possible predictor of therapy outcome (Dimaggio et al., 2013; Gratz, 2007; Newton-Howes, Clark, & Chanen, 2015). Initial evidence supporting this possibility comes from studies targeting emotion dysregulation in the treatment of borderline personality disorder (BPD) symptoms, including self-injury behaviors: Gratz, Bardeen, Levy, Dixon-Gordon, and Tull (2015) demonstrated that emotional regulation (i.e., reduced emotional lability) was the mechanism of change leading to symptomatic improvement and reduced self-harm.

Importantly, the role of EL or other forms of instability in personality disorders has been studied extensively only with regards to BPD; research regarding its role in other PDs remains quite

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sparse (Dimaggio et al., 2013; Newton-Howes et al., 2015). One disorder within which the concept of instability merits further attention is avoidant personality disorder (APD; see Snir, Bar-Kalifa, Berenson, Downey, & Rafaeli, 2016). APD is among the most prevalent personality disorders, affecting about 10–20% of patients in psychiatric clinics and 1–2% of the general population (Sanislow, Bartolini, & Zoloth, 2012; Zimmerman, Rothschild, & Chelminski, 2005). Nonetheless, it has received relatively little empirical attention (Alden, Laposa, Taylor, & Ryder, 2002; Sanislow et al., 2012), possibly due to the ongoing debate about its overlap with other disorders, particularly social anxiety (see Chambless, Fydrich, & Rodebaugh, 2008). People with APD are socially withdrawn, have great trouble initiating and maintaining interpersonal relationships because of low self-esteem and an excessive need for assurance or acceptance. They often avoid making decisions, refrain from sharing intimate feelings, and avoid experiencing intense bodily sensations as well as positive or negative emotions (Arntz, 2012). APD impedes occupational, educational, and social functioning, and hinders people from realizing their potential. APD is associated with severe dysfunction and subjective distress, at a level comparable to that of BPD (Wilberg, Karterud, Pedersen, & Urnes, 2009).

Though individuals with APD often display negative affectivity (APA, 2013), only a handful of studies have examined instability in APD. It appears that APD is often assumed to be an exaggeration of normal personality (Alden et al., 2002), quite stable, and restricted behaviorally, to the strategy of avoidance. Studies that have considered instability in APD have typically compared it to that found in individuals with BPD or in healthy controls (HC). Herpertz et al. (2000) found few differences between individuals with APD, BPD, or HCs in either self-reported or psychophysiological reactivity to emotional pictures. Lobbestael and Arntz (2010) found that the physiological response pattern of Cluster C PD participants (which contained individuals with APD, dependent PD, or obsessive-compulsive PD) was comparable to that of a BPD group and these two groups were more reactive on a psychophysiological level to abuse-related stimuli (a film scene) compared to antisocial PD or HC participants, but did not differ from the HC group on self-report scales (Lobbestael & Arntz, 2015). Results from an fMRI study (Koenigsberg et al., 2014) indicated that whereas healthy participants habituated to negative emotional pictures, neither BPD nor APD participants did; additionally, the failure to increase neural activity in certain brain structures was associated with greater affective instability among both BPD and APD participants.

In a recent experience-sampling study, Snir et al. (2016) asked participants to report their momentary affect several times each day. Following the recommendations of Ebner-Priemer, Eid, Kleindienst, Stabenow, and Trull (2009), they computed mean-squared-successive-difference (MSSD) scores as an index of temporal instability. Using this index, they found APD participants to show greater temporal instability in negative affect compared to the HCs, though less temporal instability compared to BPD participants.

As the studies reviewed above illustrate, a common focus on instability in personality disorders (and other disorders: e.g., Henry et al., 2001; Hollander, Pallanti, Allen, Sood, & Rossi, 2005) has been that of EL. Yet instability can manifest itself in other phenomenological aspects. Indeed, as recent advances in personality psychology (Dunlop, 2015; Fleeson, 2007; Mischel & Shoda, 2010) have illustrated, personality itself – including traits, goals, and even life-narratives, is often contextual. These contextualized "selves" or parts of an individual's personality are, by definition, state-like. The identity of these states, and the shifts between them, may be just as important as the fluctuations in emotions.

To be able to discuss fluctuations among self-states as a clinical phenomenon, we must adopt a clinical view of the self as multi-faceted. Several clinical theories adopt such a view (e.g., Bromberg, 1996; Greenberg, 2004; Stone & Stone, 2011). One theory that offers a promising approach for mapping the multi-faceted terrain of the self is schema therapy (ST; Edwards & Arntz, 2012; Young et al., 2003), and particularly the concept of *modes*.

The mode concept was developed by Young et al. (2003) in order to capture the instability reflected by rapid changes in behaviors, cognitions, and feelings of clients with PDs. A mode is said to reflect the individual's state at a given moment. Each mode has its unique combination of schemas and coping strategies. We can anticipate the way an individual will think, feel, and act when a specific mode becomes active in a given moment, and we can often predict the interpersonal responses that this mode will elicit in others. For instance, when an APD client who is eager for an emotional connection reverts into an avoidant mode (e.g., by declining a social invitation and instead opting for an evening of internet gambling) they may temporarily feel emotional relief and have some reprieve from the onslaught of self-critical automatic thoughts; interpersonally, the repeated activation of this mode is likely to turn others (e.g., the friend who extended the invitation) away in the long run.

According to ST (Young et al., 2003), all individuals inhabit several modes over time. They differ, however, both in the identity of these modes, and in the degree of integration or dissociation between them. In terms of their identity, modes fall into four categories. Some modes reflect a sort of regression into intense child-like emotional states (child modes; e.g., the lonely/inferior child); others have a self-protective function (maladaptive coping modes; e.g., the avoidant protector mode); still others reflect negative aspects of internalized object relations (dysfunctional parent modes; e.g., the critical parent mode); and one reflects the positive aspects of the internalized object relations (the healthy adult mode). These four categories have been further divided, with more and more specific modes identified as ST is applied to various patient populations (Bernstein, Arntz, & Vos, 2007; Gross, Stelzer, & Jacob, 2012; Lobbestael, van Vreeswijk, & Arntz, 2007, 2008).

Studies using the Schema Mode Inventory (SMI-1, SMI-2; Bamelis, Renner, Heidkamp, & Arntz, 2011; Lobbestael et al., 2008) have posited that individuals with avoidant PD are characterized by the following modes within each of the categories: vulnerable, lonely, abandoned and abused, angry, and undisciplined *child modes*; compliant surrender, detached protector, detached self-soother, avoidant protector, and suspicious over-controller *coping modes;* and punitive as well as demanding *parent modes*. They also posited that these individuals are particularly low in the happy *child mode*, attention and approval seeking *coping mode*, and the *healthy adult mode*.

Whatever the specific modes inhabited by an individual are, the transition between the modes can be thought of as falling on a continuum. At one end, modes could be like transient moods (e.g., one may feel a bit anxious early in the day, but gradually feel more content and energetic as the day progresses); such moods may fluctuate in a relatively healthy way, allowing the person to maintain a sense of consistent selfhood, an overarching "I". At the other end, extreme separation and dissociation among modes can lead to a very fragmented sense of self, with each mode presenting as a different personality – i.e., distinct and seemingly unrelated "I"s – which may characterize various forms of severe psychopathology (Rafaeli, Maurer, Lazarus, & Thoma, 2016). Theoretically, some disorders (e.g., BPD) are characterized by sudden and abrupt shifts between modes whereas others (e.g., obsessive compulsive personality disorder) are characterized by greater rigidity (Lobbestael et al., 2007). However, few studies have empirically investigated mode shifts or fluctuations.

Most studies on modes, their shifts, or their fluctuations have relied on clients' self reports (e.g., on the Schema Mode Inventory –

SMI-1; Arntz, Klokman, & Sieswerda, 2005; Bamelis et al., 2011; Lobbestael et al., 2008). Several studies have gone beyond simply obtaining self-report measures of modes. In an experimental test of the mode concept, Arntz et al. (2005) demonstrated that a stress-inducing situation (viewing an emotionally distressing film clip) led to greater increases in the detached protector mode among BPD patients compared to HC participants or to patients with other PDs. Lobbestael, Arntz, Cima, and Chakhssi (2009) used an anger-inducing interview and found an increase in self-reported anger-related modes among Cluster C and BPD participants but not among antisocial PD or HC ones. Lobbestael and Arntz (2010) reported that after watching abuse-related stimuli (a film scene depicting physical, emotional, and sexual abuse), there was a significant increase in maladaptive modes and a significant decrease in adaptive modes among BPD participants, compared to Cluster C, antisocial PD, or HC participants.

In an experience-sampling study, Shafran et al. (2017) examined mode fluctuations in the daily lives of participants from 3 different groups: individuals with APD, BPD, and HCs. Participants completed electronic diaries up to 5 times a day for three weeks. No significant differences were found in the identity or intensity of the modes typical for BPD and APD, except for the dominance of the angry child mode in the BPD group. Additionally, although the BPD group showed the greatest amount of mode fluctuation, the APD group also showed a moderate amount of mode fluctuation, and both clinical groups showed more fluctuation than the HC one. The minimal differences between the BPD and APD groups highlight the possible similarity in the two disorders' intrapsychic dynamic, even when their behavioral manifestations (e.g., the greater instability and greater anger in BPD) set them apart.

To date, only one study has used psychotherapy data to operationalize and examine modes. van den Broek, Keulen-de Vos, & Bernstein (2011) used videotaped sessions of psychotherapy conducted with forensic clients who were randomly assigned to ST or TAU. Independent raters reviewed entire sessions and used the Mode Observation Scale (MOS) to rate the degree to which each mode was present in the session. ST was found to evoke more child modes than TAU as well as a greater frequency of healthier emotional states, especially when art therapy techniques were used alongside verbal techniques.

The current study examines the frequency, intensity, and fluctuation patterns of modes over the course of ST sessions among APD clients who took part in an open-trial treatment study (which followed a protocol developed by Arntz, 2012). It is the first to use segment-by-segment in-session data to examine modes, and the first to explore mode fluctuations empirically. The specific modes examined in this study were chosen based on earlier writing on the ST model for APD (Arntz, 2012; Bamelis et al., 2011; Lobbestael et al., 2007, 2008), to include a vulnerable child mode, a dysfunctional parent mode, an avoidant/detached protector mode, a compliant-surrenderer mode, an over-compensating mode, and a (typically weak) healthy adult mode.

With these modes in mind, we expected that (1) the avoidant/detached mode will be the most frequent and intense, as APD clients are characterized by extreme avoidance and detachment; given previous work documenting the association between intensity, frequency, and variability in affect (e.g., Kardum, 1998), we also expected this mode to show the greatest amount of fluctuation; (2) the dysfunctional parent mode will be the second most frequent, intense, and unstable mode, as APD clients are often highly self-critical and punitive; (3) the compliant-surrender mode will be the third most frequent, intense, and unstable, as APD clients often behave in submissive ways to avoid negative consequences; (4) the vulnerable child mode will be the fourth most frequent, intense, and unstable, as APD clients' vulnerability is relatively elusive and masked by the more frequent modes noted above; (5) the healthy adult mode will be the relatively infrequent, will occur with low intensity, and will therefore show low instability around these low scores; and finally, (6) the over-compensating mode will be the least frequent, intense, or unstable, as APD clients rely on other coping behaviors (namely, avoidance and compliance) to a much larger degree.

2. Method

The data reported here comes from an open-trial study of ST for APD conducted with 15 clients. Sixty sessions (out of 439 audio-taped sessions) were randomly selected. Each session was broken up into 5 min segments (and thus a 50 min session will have 10 segments); in total, 645 such segments were analyzed. The choice of 5 min segments was consistent with conventions in the process-outcome research field (e.g., studies on within-session empathy: Elliot, Bohart, Watson, & Greenberg, 2011; Freire & Grafanaki, 2010). Such segments typically include multiple speech-turns and therefore they are sufficiently long to capture mode activations within the client.

Two raters coded every segment on the Client Mode Rating Scale (CMRS – detailed below). These ratings assessed the presence and intensity of the various modes. We analyzed mode fluctuations by using mean-squared-successive-differences (MSSD; von Neumann, von Kent, Bellinson, & Hart, 1941), an index which takes into account both variability and temporal instability. This method has been recommended for exploring fluctuations in affect (e.g., Houben, Van Den Noortgate, & Kuppens, 2015), psychopathology (e.g., Ebner-Priemer et al., 2009) and psychotherapy (e.g. Tryon, 1982).

2.1. Participants

Clients who met DSM-IV diagnostic criteria for APD were recruited from two sites: a university-based community mental health center and a student counseling center. Exclusion criteria were: 1. BPD diagnosis; 2. Cluster A personality disorder; 3. Psychotic disorder; 4. Substance-related addictive disorder; 5. Asperger's syndrome; 6. Severity of symptoms that required in-patient treatment. The exclusion criteria were set to ensure that the APD protocol will be clinically appropriate for the particular client.

Of the 23 clients who consented to participate, 15 (CMHC: N = 9; SCC: N = 6) were found to meet the criteria for APD (using the Structured Interview for the DSM-IV; Pfohl, Blum, & Zimmerman, 1997) with no exclusion criterion; these were included in the treatment trial. Of the 8 clients excluded from the study, 2 did not met APD criteria, 2 met BPD criteria, 1 met asperger's syndrome criteria, and 3 chose to withdraw for unknown reasons.

2.2. Procedure

The therapists in the treatment trial were clinical psychology interns, with at least two years of psychotherapy experience. Therapists were trained in ST by two senior certified trainers and supervisors (ER and OP). The therapists participated in a 2-day ST workshop which combined didactic as well as dyadic role-play exercises on mode work. Each therapist received 45 min of individual ST supervision once every 2–3 weeks alongside a 90 min group ST supervision meeting once a week.

The clients received weekly (50–60 min) individual therapy sessions. On average, clients received 41.3 sessions (ranging from 4 to 97). Eleven clients (73.3%) completed therapy, though at times somewhat earlier than would be ideal, due to the interns' training schedule (ranging from 23 to 97 sessions); four clients (26.7%)

dropped out (after 4, 20, 28, and 30 sessions).

2.3. Materials

2.3.1. Psychiatric diagnoses

The Structured Clinical Interview for DSM−IV Axis I Disorders (SCID-I; First, Gibbon, Spitzer, & Williams, 1996) and the Structured Interview for DSM−IV Personality (SIDP-IV; Pfohl et al., 1997) were used to establish diagnoses and ensure the meeting of inclusion criteria. Both are widely used interviews; the reported inter-rater reliability for SCID-I is kappa >0.6 (Williams et al., 1992). The reported inter-rater reliability for any PD on SIDP-IV is good (kappa = 0.77) and for Cluster C even better (kappa = 0.87) (Zimmerman et al., 2005).

2.3.2. Client's modes rating scale (CMRS)

The CMRS was developed by Mittelman Kirshenfeld (2012) to rate the presence and intensity of clients' modes and schemas within therapy sessions. This rating instrument was modeled on Callaghan, Follette, Ruckstuhl, and Linnerooth's (2008) coding system for functional analytic psychotherapy (FAPRS), a system which allows coding both therapist and client behaviors during the therapy session. In the current study, CMRS raters were asked to note the presence and intensity of client modes on a 4 point Likert scale (0-not present, 1-moderately present, 2-present, 3-clearly present). Any rating greater than zero indicated that the mode is present. The intensity of the mode was obtained by averaging the ratings. These ratings were provided for every 5 min segment of each session.

Ratings were obtained for 16 modes thought to be particularly prevalent or particularly absent in APD (Bamelis et al., 2011; Lobbestael et al., 2008). These included 7 Child Modes (Angry, Impulsive/Undisciplined, Happy, Abandoned/Abused, Dependent, Lonely/Inferior, and an additional category of Vulnerable Child Not Otherwise Specified [NOS]), 6 Maladaptive Coping Modes (Compliant-Surrenderer, Detached Protector, Avoidant Protector, Perfectionist/Over-controller, Self-Aggrandizer, and an additional category of Over-compensator NOS), 2 Dysfunctional Parent Modes (Punitive-Critical and Demanding Parent) and a Healthy Adult mode.

2.4. Rating procedure

Eight raters, all post-graduate students in clinical psychology, were trained by the same certified trainers and supervisors in ST (ER and OP). They participated in semester-long course on ST and then received 6 h of specific training on the CMRS. The raters worked in pairs. During the coding, each successive 5 min segment was played, and each rater provided their independent scores. In case of rater discrepancies, they listened to the segment once again and reached a consensus rating. The initial ratings (prior to reaching consensus) were used to compute inter-rater agreement (using Intra-Class Correlation, or ICC), which ranged from good to excellent across the different modes (Table 1).

2.5. Data analysis

The clients' mode ratings from the CMRS were reduced from 16 separate mode scores into 6 mode variables; this aggregation was done on conceptual grounds, based on functional similarity between modes. When multiple mode ratings were combined into a single score, the MAX function was used. The variables retained were (1) Dysfunctional Parent (PAR; composed of the *Punitive/Critical* and *Demanding Parent* scores). (2) Over-Compensator (OVC; composed of the *Perfectionist/Over-controller, Self-Aggrandizer*, and *Over-Compensator NOS* scores). (3) Avoidant/Detached Protector (AD; composed of the *Detached Protector* and *Avoidant Protector* scores). (4) Compliant-Surrenderer (CS). (5) Vulnerable Child (VC; composed of the *Abandoned/Abused, Dependent, Lonely/Inferior*, and *Vulnerable Child Not Otherwise Specific [NOS]* scores). (6) Healthy Adult (HA). We included only modes with frequencies greater than 20%, for which instability would be difficult to establish. This led to the exclusion of three modes (*Happy Child, Angry Child*, and *Impulsive/Undisciplined Child*, which appeared in less than 6%, 14%, and 4% of segments, respectively). Importantly, these modes were expected to be very infrequent among individuals suffering from APD, based on Bamelis et al.'s (2011) findings.

3. Results

3.1. Mode frequency and intensity

We assessed the frequency and the mean intensity of each measured mode across all segments. These are presented in Table 2. A series of one-sample t-tests indicated that each of the modes was present at a level significantly different from zero. A series of paired t-tests was used to examine differences in intensity levels between each pair of modes. The AD mode was the most frequent (and most intense), and differed significantly from all others: VC ($t[14] = 2.59$, $p < 0.05$), PAR ($t[14] = 4.91$, $p < 0.001$), CS ($t[14] = 7.09$, $p < 0.001$), OVC ($t[14] = 4.75$, $p < 0.001$), and HA ($t[14] = 6.55$, $p < 0.001$). The AD mode was present in 74% of the therapy segments; moreover, in 52% of the segments it was at least of medium intensity (≥ 2 on a 0−3 scale).

The VC was the second most frequent mode, and its intensity also differed significantly from other modes: PAR ($t[14] = 3.46$, $p < 0.01$), OVC ($t[14] = 3.00$, $p < 0.01$), CS ($t[14] = 4.61$, $p < 0.001$), and HA ($t[14] = 4.18$, $p < 0.001$). The VC mode was present in 58% of the therapy segments (with 29% of the segments of at least medium intensity).

The third most frequent mode, the PAR mode, differed in its intensity significantly from the HA mode ($t[14] = 3.02$, $p < 0.01$). The PAR mode was present in 40% of the therapy segments (with 19% of the segments of at least medium intensity).

The HA, CS, and OVC modes were the least present modes with no significant differences of intensity among them. The HA mode was present in 34% of the therapy segments (with 9% of the segments of at least medium intensity). The CS mode was present in 34% of the therapy segments (with 16% of the segments of at least medium intensity). The OVC mode was present in 33% of the therapy 'segments (with 13% of the segments of at least medium intensity).

3.2. Mode fluctuation

To test the extent of fluctuation from segment to segment within the session, we calculated the mean-squared-successive-difference (MSSD) for each mode (for comprehensive review see: Jahng, Wood, & Trull, 2008). MSSD is the average of the squared difference between successive observations at occasions i +1 and i. The MSSD for a time series of *n* measurement occasions is given by

$$MSSD = \frac{1}{N-1} \sum_{i=1}^{N-1} (x_{i+1} - x_i)^2$$

The averages and standard deviations of these MSSD scores across the 15 clients are presented in Table 2. A series of one-sample t-tests indicated that each of the modes fluctuated to a significant

Table 1
Intra-Class Correlation for client modes rating scale (CMRS).

CMRS − Client modes rating scale Agreement ICC (n=60)

MODE	ICC	MODE	ICC
Abandoned/abused child (AAC)	0.74	Detached protector (DP)	0.94
Dependent child (DC)	0.78	Avoidant protector (AP)	0.82
Lonely/inferior child (LIC)	0.83	Perfectionist/over-controller (PO)	0.80
Vulnerable child NOS (VCN)	0.71	Self−aggrandizer (SA)	0.74
Angry child (AC)	0.84	Over-compensator NOS (OCN)	0.68
Impulsive/undisciplined child (IUC)	0.74	Punitive/critical parent (PCP)	0.79
Happy child (HC)	0.75	Demanding Parent (DEP)	0.69
Compliant-surrenderer (CS)	0.77	Healthy adult (HA)	0.79

Table 2
Descriptive statistics of Client's modes.

Mode	Frequency (%)	Mode level ≥ 2 (%)	M	SD	One t-test	Mean MSSD	SD (MSSD)	Significance of MSSD [a]
1.PAR	40.16	18.76	0.60	0.31	7.52***	0.95	0.59	6.25***
2.OVC	33.02	13.18	0.57	0.45	4.91***	0.74	0.50	5.65***
3.AD	73.64	51.94	1.41	0.41	13.46***	1.14	0.34	13.12***
4.CS	33.64	15.50	0.44	0.29	5.84***	0.70	0.41	6.58***
5.VC	58.29	28.68	0.91	0.44	8.02***	0.99	0.43	8.90***
6.HA	34.11	8.53	0.38	0.26	5.79***	0.48	0.30	6.12***

Note. Client modes: PAR = dysfunctional parent; OVC = over compensator; AD = avoidant detached; CS = compliant surrenderer; VC = vulnerable child; HA = healthy adult; Frequency of mode = % of segments; Mode level ≥ 2 = % of the segments; M = mean of mode intensity (0-not present, 1-moderately present, 2-present, 3-clearly present); SD = standard deviation of M; †=<0.10; * = $p < 0.05$; ** = $p < 0.01$; *** = $p < 0.001$.
[a] Significance of MSSD is based on one sample *t*-test (df = 14).

degree. A series of paired t-tests was used to examine differences in fluctuation levels between each pair of modes. The AD mode showed the greatest amount of fluctuation, and differed significantly from OVC (t[14] = 2.32, $p < 0.05$), CS (t[14] = 3.18, $p < 0.01$) and HA (t[14] = 6.33, $p < 0.001$). The HA mode showed the least amount of fluctuation, and differed significantly from OVC (t[14] = 2.21, $p < 0.05$), PAR (t[14] = 3.03, $p < 0.01$), VC (t[14] = 4.25, $p < 0.001$), as well as CS, at a trend level (t[14] = 1.94, $p < 0.10$). Finally, the VC fluctuated more than the CS, at a trend level (t[14] = 1.91, $p < 0.10$).

4. Discussion

The current study aimed to characterize the instability of APD clients by measuring the frequency, intensity, and fluctuation patterns of the typical modes (self-states) thought to characterize this population. This study offers several innovations, which should be of interest to those interested in ST and/or APD in particular, but may also be of interest to the broader psychotherapy research community. First, as noted above, it documents the considerable instability characteristic of APD clients. Second, it generally supports our predictions regarding the presence, intensity, and stability (or lack thereof) of the specific modes expected to characterize individuals with APD. More broadly, it demonstrates the utility of the ST mode concept (Young et al., 2003) as a lexicon for capturing personality states and their instability. Finally, it illustrates the use of in-session segment-by-segment ratings to assess client change within psychotherapy. In the sections below, we expand on each of these innovations.

4.1. Stability and instability in APD

One prominent finding of the current study is the considerable instability found to characterize modes typical for APD. Three modes in particular - the avoidant/detached mode, vulnerable child mode, and the dysfunctional parent mode − had markedly more elevated fluctuation levels than the other modes. As such, this study joins several recent studies (e.g., Koenigsberg et al., 2014; Shafran et al., 2017; Snir et al., 2016) highlighting the notion that APD clients are characterized by considerable instability − possibly more instability than is suggested by the (absence) of any formal criterion (e.g., in DSM-V; APA, 2013).

Of course, the current study and the three earlier ones approach this concept of instability using divergent research methods and focusing on different aspects of the phenomenology of APD patients. The current study focuses on mode instability within psychotherapy in a single sample. The earlier studies focused on emotional habituation assessed using fMRI (Koenigsberg et al., 2014); fluctuations in negative affect using electronic diaries in daily life (Snir et al., 2016); and mode instability in daily life (Shafran et al., 2017); notably, unlike the current study, the earlier studies compared APD clients to HCs (who were significantly more stable) but also to BPD clients (who were significantly less stable). In the absence of such a comparison group in the current study, we cannot be sure whether the (significant) level of instability found within sessions will again prove to be higher than that of HC participants or of other (non PD) clinical groups.

Given the shared focus on schema modes, it is particularly important to consider our results in light of Shafran et al.'s (2017) results, as the one extant study documenting mode fluctuation patterns among individuals with APD. Shafran and her colleagues found great similarity between APD and BPD participants in the intensity of all of their modes, with both groups showing higher levels of all negative modes (and lower levels of the healthy adult mode) than the HC participants. The two PD groups did differ, however, in the degree of mode fluctuation for most modes, with APD participants showing less fluctuation than BPD participants in six out of eight negative modes; additionally, APD participants did

not differ from the HC participants in the fluctuation level of the healthy adult mode, with both groups showing considerably less variability than the BPD group. Like us, Shafran et al. conclude that for individuals with APD, the healthy adult mode is the steadiest; indeed, this steadiness may serve, to some extent, as a stabilizing factor which helps distinguish individuals with APD from those with BPD, despite the similarities between the two groups.

Shafran and her colleagues' data were based on self-reports (rather than observer ratings) obtained over the course of three weeks in the daily life of their respondents (rather than in 5 min segments of psychotherapy sessions). Importantly, the participants in the present study were all treatment-seeking, whereas those in Shafran et al.'s study were mostly not treatment-seeking. Though both studies show considerable fluctuation among individuals with APD, the methodological and sample differences may help explain why the results differ somewhat. For instance, Shafran et al. report high levels of the healthy adult mode, and considerably low levels of avoidance. These differing results may reflect fundamental differences between the samples in their distress levels. Alternatively, they may have to do more with the unique context created by therapy sessions, which may pull for a different admixture of modes than the contexts encountered in daily life (for review, see Dunlop, 2015; Fleeson, 2007). If that is the case, it serves as a reminder that our clients may not always behave or feel outside the therapy room in the same ways that they feel within it — in other words, that the therapy setting is not necessarily a one-to-one microcosm of daily life.

4.2. A mode-based description of APD clients in therapy

To date, our knowledge regarding the modes which characterize APD comes from two studies using self-report measures to answer this question. In the first of these, Lobbestael et al. (2008) reported the associations between various PDs and the 14 modes which were included in the SMI-1. Individuals with APD characterized themselves as having the following modes: vulnerable, angry, and undisciplined child modes; detached protector, detached self-soother, and compliant-surrender coping modes; the punitive and demanding parent modes; and a relatively weak happy child and healthy adult modes. Using a revised self-report measure of modes (the SMI-2, which contains 18 modes), Bamelis et al. (2011) found APD individuals to be characterized by a somewhat different set of modes. These included the lonely and abandoned child modes, both of which are subtypes of the vulnerable child mode; a relatively weak healthy adult mode; and a punitive parent mode (though not the demanding parent mode). They also included high standing on the avoidant protector, detached protector, compliant-surrender, and suspicious-overcontroller, and a relatively low standing on the attention/approval seeking coping modes. The avoidant, suspicious-overcontroller, and attention/approval seeking modes were not part of the earlier SMI; in contrast, the detached self-soother, which was tied to APD by Lobbestael et al. was no longer associated with APD in the Bamelis et al. study.

Our results add to the mode-based model of APD (Arntz, 2012; Bamelis et al., 2011; Lobbestael et al., 2008), by informing us about the frequency, intensity, and rate of fluctuation of the modes seen among APD clients in therapy. Specifically, as would be expected from Bamelis et al.'s findings, the avoidant/detached coping modes were by far the most prevalent in our data, followed by the vulnerable child modes. However, our results highlight the relatively frequent occurrence of the dysfunctional parent modes, as well as the healthy adult, compliant-surrender, and overcompensating modes.

Our finding of relatively frequent occurrence of overcompensation modes echoes some of Bamelis et al.'s (2011) findings, who, unlike Lobbestael et al. (2008) found individuals with APD to have a high standing on one type of overcompensation — namely, the suspicious overcontroller mode. In contrast, our finding of a relatively frequent occurrence of the healthy adult mode stands in direct contrast to both self-report studies. Below, we elaborate regarding each of these modes and its implications for the understanding of APD.

4.2.1. Mode-by-mode discussion

Finding the avoidant/detached mode to be the most frequent and most intense in our sample is certainly not surprising. Our clients were in the avoidant/detached mode over half the segments, and this mode was of at least medium intensity. This mode also showed the greatest amount of fluctuation. A high frequency of avoidance/detachment at the beginning phase of therapy is of course diagnostic of this population, and thus inevitable. Moreover, access to this mode may help tailor the therapy plan to the client's actual maladaptive coping. Over time, of course, we would expect the frequency and intensity of this mode to abate when therapy is successful, as other coping strategies are learned and internalized. On the other hand, high frequency and intensity of avoidance and detachment pose a formidable challenge for therapists, as these coping mechanisms often impede progress in therapy. At the same time, the considerable level of fluctuations found in this mode may be seen as a positive sign: it suggests that even among strongly avoidant or detached clients, repeated moments of lower avoidance and detachment occur, and these offer opportunities for intervention and for greater access to other modes, particularly the vulnerable child mode.

The vulnerable child mode was the second most frequent and intense mode, appearing in over half the segments. We see this finding as very encouraging. Specifically, the vulnerable child mode offers direct access to the clients' core emotional needs and hence opens up the opportunity for therapeutic corrective experience to occur (Arntz & Jacob, 2013; Arntz & Van Genderen, 2009; Rafaeli, Bernstein, & Young, 2010; Young et al., 2003). Indeed, increasing access to this vulnerability is a key objective within ST. Nevertheless, the fact that this mode fluctuates strongly might impede the therapeutic process, as the vulnerable child often becomes inaccessible quite rapidly, thus turning less amenable to corrective therapeutic experience.

The dysfunctional parent mode was the third most frequent and intense mode, appearing significantly more frequently than the healthy adult mode. On the one hand, the relatively high frequency of this mode could be seen as an indication of the severity of psychopathology in the sample; after all, this mode reflects clients' self-punitiveness, criticism, or harshness. On the other hand, given the fact that a main target of therapy is to reduce this mode's influence and to supplant it with the healthy adult mode, its high frequency may be seen as a blessing early on in therapy, as it provides opportunities to engage with this mode when it is active; of course, successful therapy should lead to a reduction in this mode with time. Still, despite the relatively high frequency, the fact that the dysfunctional parent mode was not present at all in more than half of the segments, and that it fluctuated significantly more than the healthy adult mode, are reasons for some cautious optimism. Specifically, whereas the dysfunctional parent mode fluctuated quite widely, the healthy adult appeared to be steadier.

The healthy adult mode was present in approximately a third of the segments, but was lower in its intensity. Nevertheless, as noted above, it fluctuated significantly less than all other modes. This relative stability may serve as a valuable resource for APD clients; after all, the healthy adult mode carries out fundamental emotional functions including self-compassion, adaptation to reality, and self regulation.

Two additional coping modes (the over-compensator and the compliant-surrenderer) were also present in a substantial portion of segments, though significantly less than the avoidant/detached mode or the vulnerable child mode. The fact that these coping modes were less prominent than avoidance or detachment speaks to the characteristic behaviors of this clinical population, and is therefore entirely not surprising. Clinically, this finding validates the importance of keeping our focus on strategies for overcoming detachment and avoidance, but also remaining alert to moments of dependence and over-compliance on the one hand, or of entitlement, perfectionist over-control, or self-aggrandizement on the other hand.

4.3. The utility of the schema therapy mode concept as a lexicon for capturing personality states and their instability

The mode concept, first introduced by Young et al. (2003), offers a solution to a problem that has received growing attention from both basic research on personality and applied clinical theories. Specifically, the realization that the self is multi-faceted (e.g., Bromberg, 1996; Greenberg, 2004; Stone & Stone, 2011), which dovetails with recent advances in personality psychology (Dunlop, 2015; Fleeson, 2007; Mischel & Shoda, 2010) creates a need for a language of self- (or personality-) states. This study joins several earlier ones (e.g Arntz et al., 2005; Lobbestael & Arntz, 2010; Lobbestael et al., 2008; Shafran et al., 2017) in widening the evidence base for the ST mode concept as such a language.

Much of the research on instability, especially within psychopathology, has focused on affective fluctuations (e.g., Houben et al., 2015; Trull, Lane, Koval, & Ebner-Priemer, 2015). Yet affect is just one part of the phenomenology of fluctuating self-states (Dunlop, 2015; Fleeson, 2007). The mode concept offers taxonomy of states, each involving emotional, but also cognitive, behavioral, and motivational aspects. For instance, the APD clients in the current study appeared to shift among a relatively defined set of modes. Most commonly, in moments identified as reflecting avoidant/detached mode, they seemed to experience emotional restraint or numbness, voiced statements such as "I don't care" or "nothing matters", and exhibited behavioral disengagement. In other moments, reflecting the vulnerable child mode, they seemed to experience emotional distress, voiced statements such as "I wish I had a partner" or "I need someone to care for me", and exhibited behavioral approach (e.g., actively seeking comfort or help). In yet other moments, reflecting the dysfunctional parent mode, they seemed to be experiencing self-loathing or recrimination, voiced statements such as "I'm not good, I always ruin everything", and exhibited self-punitive or self-critical behaviors.

Specific individuals differ in the frequency, intensity, and fluctuation pattern of these modes, as well as in the identity of additional modes they may inhabit. Nonetheless, our ability to anticipate a particular set of self-states for individuals from a certain clinical group is aided by having the ST language of modes, as well as the recognition that specific mode maps are characteristic of different groups (Lobbestael et al., 2008). The mode concept further helps in providing a way of thinking about instability and change – namely, by recognizing the manner in which dynamic mode shifts occur.

4.4. The use of in-session segment-by-segment ratings to assess client change

The mode language offers a way of speaking about moment-to-moment changes, and the segment-by-segment analytic approach used in the current study complements this language with a methodology that allows tracking these changes. Indeed, by utilizing independent raters' evaluations of segment-to-segment mode changes, the current study demonstrates an innovative approach to the assessment of change within psychotherapy sessions. It complements existing methods (e.g., ratings made of entire sessions (van den Broek et al., 2011); mode profiles obtained using self-reports (Lobbestael et al., 2008)) and opens up the possibility of modeling within-session change processes in theoretically meaningful constructs.

For instance, obtaining independent coders' ratings for every 5 min segment has allowed us to examine idiographic patterns of interplay among the modes displayed within segments, between segments, and along the course of therapy as a whole, by different individual clients (Peled, Bar-Kalifa, & Rafaeli, 2017), using novel analytic approaches such as time-series panel analyses. It also allows us to study the associations between therapist interventions (within those same segments) and clients' mode changes over the course of the session (Peled, Mittelman Kirshenfeld, Bar-Kalifa, & Rafaeli, 2017). In the current study, obtaining these ratings allowed us to paint a richer picture regarding each mode's temporal change characteristics. As we posited earlier, these characteristics offer an innovative approach to understanding the complexity of personality, and in particular, the fluctuating nature of personality states.

4.5. Limitations and summary

The current study suffers from several limitations. Although it is based on 645 therapy segments, these were drawn from only 15 clients and 60 sessions. Further replication studies on larger samples are needed. No inter-rater reliability is available for the diagnostic interviews, as these were each conducted by one interviewer and were not recorded. In addition, the homogenous sample of APD clients did not allow us to compare the obtained patterns to those which may emerge in non-clinical samples, or in ones with other clinical conditions. Future studies should explore this with such samples. Finally, though the language of modes can be a general one, the current study examined it only among clients receiving ST; similar analyses of sessions from other forms of psychotherapy are certainly worthwhile. In short, additional studies on within-session changes in clients' modes or self-states and on broader changes which may occur as therapy progresses are strongly needed.

In summary, our study used segment-by-segment codings of sessions from a sample of clients with APD who received ST. It documents the considerable instability characteristic of APD clients, offered rich data regarding the mode-based description of APD, demonstrates the utility of the ST mode concept as a lexicon for capturing personality states and their instability, and illustrates the use of in-session segment-by-segment ratings to assess client change within psychotherapy.

Declaration of interest

There is no interest to be declared.

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