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The state dependency of cognitive schemas in antisocial patients

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ABSTRACT

Patients with antisocial personality disorder (ASPD) typically report little psychopathology. Recent findings also showed this group to report high levels of healthy cognitions. Such a non-deviant cognitive profile might merely characterize ASPD under neutral assessment conditions. Indeed, hardly anything is known about how emotional states alter ASPD patients' cognitions. The current study therefore assessed the impact of autobiographical anger recollection on state cognitions. In a sample of $N=147$ participants, ASPD patients' ($n=21$) self-reported schema modes were assessed before and after an anger interview, and compared with those of borderline ($n=45$) and cluster-C patients ($n=46$) and non-patients controls ($n=35$). Results showed that ASP -patients' high baseline levels of healthy cognitions dropped drastically following the anger recollection. This finding suggests that reviving past anger-eliciting events breaks down the healthy veneer of ASPD patients and that their healthy cognitions are unstable. These findings underscore the importance of pathology assessment under emotional conditions in ASPD samples.

1. Introduction

It is well documented that emotions exert strong effects on thoughts (for an overview see Schwartz and Clore, 2007). Being optimistic about the future, for example, is much easier when happy than when in a bad mood. Anger is likely to exert powerful effects on cognitions too. While most people hold the rational belief that attacking someone is unnecessary or even dangerous, anger-triggering stimuli like insults might transform aggression into an appealing option. Both cognitive and health psychology stress the importance of separating 'cold' rational beliefs from affectively loaded 'hot' beliefs during tempting situations (David and Szentagotai, 2006; Wiers et al., 2010). In line with this, research showed that insulting participants high in trait aggression caused them to display increased attention for anger-eliciting stimuli, while no such bias was present before provocation (Eckhardt and Cohen, 1997).

Patients with antisocial personality disorder (ASPD) display a chronic inability to conform to social rules, resulting in a lifetime of norm-violating behavior (American Psychiatric Association, 2000). Research on the 'cold' cognitive profile of ASPD patients is scarce. Beckian beliefs of ASPD patients (Beck et al., 2004) remain untested. Three studies linked ASPD to Young's schemas of mistrust, insufficient self-control, emotional inhibition and vulnerability to harm (Ball and Cecero, 2001; Reeves and Taylor, 2007), and to angry and enraged cognitive profiles (Lobbestael et al., 2008b), but await replication (for an overview see Lobbestael and Arntz, 2012). Even less is known about ASPD-patients' hot cognitions. Some studies presented forensic samples with emotional stimuli (e.g. unpleasant pictures) but mostly assessed the impact on bodily reactions (for an overview see Steuerwald and Kosson, 2000).

Assessment of cognitions under hot (i.e., emotional) conditions might be particularly important in ASPD-samples though, because self-report of this sample typically reveals low psychopathology. There are two possible reasons for this. First, ASPD-patients might not possess deviant cold cognitions. Instead, ASPD might be better conceptualized as a 'reactive' pathology. Second, ASPD-patients' low reports of psychopathology could be due to deception or lack of self-insight (Posey and Hess, 1984; Haywood et al., 1993; Lewak and Hogan, 2001; Cima et al., 2007). In either case, assessment of cognitions during emotional states has the potential to adequately tap what cognitions underlie the frequent angry outbursts of these patients, and might circumvent false self-representation.

We hypothesize that low psychopathology levels typically reported by ASPD-patients possibly adequately reflect ASPD-patients' cold cognitions, but not their hot cognitions, that is what these patients think and believe under emotionally challenging circumstances. The current study therefore assessed the impact of an emotional change on cognitions. We specifically choose anger because out of all emotions, anger probably has the strongest link to aggression, the hallmark behavior of ASPD. The cognitive outcomes in this study are schema modes.

Schema modes are thematically organized clusters of momentary cognitions presumed to underlie severe personality disorders. Fourteen different schema modes have been defined, which, in distinct constellations, characterize personality disorders (Lobbestael et al.,

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2008b; Bamelis et al., 2011). Roughly, 12 of the modes reflect maladaptive, dysfunctional cognitive states, while 2 schema modes reflect adaptive or functional cognitions (Young et al., 2003; Lobbestael et al., 2007). We hypothesize that maladaptive schema modes in ASPD-patients will surface in response to anger-recollection, while the presence of adaptive schema modes will reduce. We analyzed data acquired in a study on direct and indirect responses of different personality disorders to an anger induction (Lobbestael et al., 2009a). In that study, we did not specifically look at self-report of various schema modes. The present article addresses whether ASPD is characterized by high levels of healthy mode reports at baseline, and a reduction of these reports, together with an increase in dysfunctional reports after an anger induction.

2. Methods

2.1. Participants

Data were analyzed from the same $N=147$ subjects as in Lobbestael et al. (2009a), belonging to four different groups: patients with ASPD ($n=21$), borderline (BPD, $n=45$) or Cluster C personality disorder (ClC-PD, $n=46$) and non-patient controls without psychopathology (NpCs, $n=35$). Patients were recruited from forensic or mental health care institutes within The Netherlands and Belgium, and NpCs from the general population. General exclusion criteria were psychotic or bipolar disorder, age <18 and >55 years, intoxication by alcohol or drugs during testing, IQ <80 and not being a native Dutch speaker. The non-BPD participants were not allowed to have two or more BPD criteria, and the non-ASPD participants were not allowed to have two or more ASPD criteria. Testing of between-group differences revealed that the groups did not differ significantly in age (ASPD: $M=30.29$, BPD: $M=33.82$, ClC-PD: $M=35.80$, NpC: $M=36.91$, Kruskall–Wallis: $\chi^2=6.52$, $P=0.09$). The groups differed significantly in gender, Kruskall–Wallis: $\chi^2=15.14$, $P=0.002$; the ASPD group contained fewer women (24%, compared to 73% of BPD, 63% of ClC-PD and 54% of NpC groups) and the BPD group fewer men (27%, compared to 76% of ASPD, 37% of ClC-PD and 46% of NpC groups) than the other groups. The ASPD group was significantly lower educated (12% received no education or only finished primary school, compared to 5% of BPD, 2% of ClC-PD and 0% of NpC groups; Kruskall–Wallis: $\chi^2=15.31$, $P<0.001$). Further analyses of this study were corrected for gender but not for education because a lower education level is inherent to the ASPD population (Robins et al., 1991) and this can produce statistic confound (Miller and Chapman, 2001). The ASPD group had a significantly lower number of DSM-IV Axis I disorders ($M=1.67$) compared to the BPD ($M=3.18$) and ClC-PD groups ($M=3.09$), Kruskall–Wallis: $\chi^2=15.31$, $P<0.001$, but the three patient groups did not differ with respect to number of DSM-IV Axis II disorders (ASPD: $M=1.57$, BPD: $M=2.02$, ClC-PD: $M=1.50$, Kruskall–Wallis: $\chi^2=4.99$, $P<0.09$).

2.2. Materials

2.2.1. Screening instruments

Dutch versions of the Structured Clinical Interview for DSM-IV Axis I and Axis II disorders (SCID I and SCID II, First et al., 1994; First et al., 1997; van Groenestijn, et al., 1999; Weertman et al., 2000) were used to assess DSM-IV axis I diagnoses and personality pathology. Previous studies have supported the reliability and validity of the SCID I and SCID II. More specifically, inter-rater reliability proved to be adequate for SCID I (Martin et al., 2000; Zanarini et al., 2000; Zanarini and Frankenburg, 2001; Lobbestael et al., 2011) and SCID II (Maffei et al., 1997; Weertman et al., 2003; Lobbestael et al., 2011). Furthermore, internal consistencies of the trait scales of the SCID II were satisfactory (Maffei et al., 1997). Interviewers were extensively trained and supervised by the first author. Of the current sample, 97 SCIDs were rated twice, yielding high inter-rater reliability values for SCID-I and SCID-II (k values of 0.98–1.00 and 0.76–0.93 respectively).

2.2.2. Social desirability

Social desirability refers to the tendency to portray an overly positive image of oneself on questionnaires. Social desirability responding is most likely to occur in response to socially sensitive questions (King and Bruner, 2000) like domestic violence (Babcock et al., 2004; Henning et al., 2005). In the current study, social desirability was measured with a subscale of the Supernormality Scale—Revised (SS-R, Cima et al., 2003). This subscale consisted of 4 items that had to be scored on a 4-point Likert scale ranging from 'never' to 'always'. The SS-R proved to be of good test–retest stability, and of adequate internal consistency (Cima et al., 2008).

2.2.3. Schema modes

Schema modes are the predominant emotional states and coping responses triggered by situations to which people are oversensitive. Schema modes are a concept of Schema Therapy (Young et al., 2003) that were introduced to explain the abrupt changes in thoughts, feelings and behaviors displayed by patients with severe personality disorders, like borderline personality disorder (Lobbestael et al., 2007; Young et al., 2003). Schema modes were measured with an abbreviated version of the Schema Mode Inventory (SMI, Young et al., 2007) consisting of 3 items for each of the 14 schema modes; Vulnerable Child, Angry Child, Enraged Child, Impulsive Child, Undisciplined Child, Happy Child, Compliant Surrender, Detached Protector, Detached Self- Soother, Self-Aggrandizer, Bully and Attack, Punitive Parent, Demanding Parent and Healthy Adult modes.[1] Each item had to be scored on a 100 mm VAS scale ranging from 'not at all true' to 'completely true'. An overall score was calculated from the scale sum score divided by three. A psychometric study of the complete version of the SMI (118 items) demonstrated a good fit for the 14-factor model (CFI = 0.98), and good internal consistencies of the subscales (Cronbach's α ranging from 0.76 to 0.96, mean = 0.86). Furthermore, inter-correlations between the subscales were moderate to high, construct validity was reasonable and the test–retest reliability was excellent (mean ICC = 0.84). Comparing the SMI subscale scores with that of content similar questionnaires indicated adequate discriminant validity and moderate convergent validity (Lobbestael et al., 2010). Internal reliability values of the abbreviated version of the SMI used in the current study varied between $\alpha=0.54$ and $\alpha=0.88$ with a mean of $\alpha=0.72$.

2.2.4. Anger recollection

Because vivid reconstruction of past experiences has been designated as an effective procedure for eliciting hot cognitions in therapy (Safran and Greenberg, 1982), the current study relied on an interview about a previous upsetting conflict (Dimsdale et al., 1988) to induce anger. Each participant indicated a person who they disliked or had conflicts with as an aggressor. Participants recalled and verbally described a conflict in the past with the aggressor, guided by the interviewer to a level of strong experienced emotions of anger. The instruction by the interviewer was: *'We are going to do a brief interview for 10 minutes about certain emotions you experienced in the past. I would like you to tell me about a situation in the past with [your aggressor] that made you very angry. Could you try to remember such a situation and tell me about it in detail? How did this make you feel? What did you want to do?'* Our group has previously shown that this stress interview generated the highest levels of self-reported anger and anger-related physiology, together with harassment (Lobbestael et al., 2008a).

2.3. Procedure

The patients from the clinics and forensic institutes were contacted to participate in this study by their therapists who were informed about the inclusion and exclusion criteria of the patients targeted for this study. The therapists provided general verbal information and an information letter about this study to these patients. If the patients indicated that they were willing to participate, they were contacted by the experimenter. NpCs were recruited by means of advertisements in local papers. The study received ethical approval from the Medical Ethical Committee of the Academic Hospital in Maastricht, The Netherlands. All subjects gave written informed consent. In a first screening session, SCID-I and SCID-II were administered. In some cases, diagnostic information from the SCIDs was already available from patients' clinical records. The second experimental session was divided into three different phases: (i) the neutral phase in which participants watched a nature documentary (used as baseline), (ii) the anger induction phase (interview) and (iii) the positive induction phase, in which participants viewed a 'Mr. Bean' movie fragment. This last phase was included to ensure induced negative emotions of the second phase decreased. Each phase had a 10-minute duration. After the neutral and anger induction phases, participants filled in the short SMI. Physiological measures and implicit associations were also collected during this experiment, but these results are reported elsewhere (Lobbestael et al., 2009a). Finally, participants were debriefed, thanked for their participation and received a small financial compensation.

2.4. Statistical analyses

Differences in baseline schema mode scores between groups were compared by means of ANOVAs. Deviation contrasts tested which of the groups' baseline scores differed from the overall mean. Because some of the group x gender cells were too small, a full-factorial gender by group analyses could not be performed. Instead, gender was included as an extra factor and only the main effect of gender was evaluated. The same approach was used to test differences in change scores of schema modes from neutral to anger phase. These change scores were analyzed by means of ANOVAs with group and gender as factors. If there was no main effect of gender, this variable was left out of further analyses. Deviation contrasts were calculated to test which of the groups' change scores differed from the overall mean. In addition, Cohen's d effect sizes were calculated using the t-value of the deviation contrasts. An effect size of $d=0.30$ was interpreted as a small effect or increase from pre to post-anger induction phase, an effect size of $d=0.50$ as a medium effect, and an effect size of $d=0.80$ as a large effect (Cohen, 1992). Social desirability was included as a covariate in all analyses.

[1] See the supplementary material for descriptions of the modes.

Table 1
Mean schema mode baseline scores and standard deviations of all groups and deviation contrast values (*t*, *p*) of all groups' scores with the overall mean.

DV	ASPD ($n=21$)			BPD ($n=45$)			ClC-PD ($n=46$)			NpC ($n=35$)		
	M (S.D.)	Deviation contrast		*M* (S.D.)	Deviation contrast		*M* (S.D.)	Deviation contrast		*M* (S.D.)	Deviation contrast	
		t	*p*		*t*	*p*		*t*	*p*		*t*	*p*
VC	22.50 (21.67)	−3.67	<0.001**	55.61 (21.85)	6.36	<0.001**	53.43 (21.49)	5.76	<0.001**	14.99 (22.28)	−6.49	<0.001**
AC	28.10 (23.87)	−2.11	0.04*	50.10 (24.07)	3.96	<0.001**	55.26 (23.68)	5.67	<0.001**	14.78 (24.54)	−6.07	<0.001**
EC	19.00 (20.33)	−0.79	0.43	35.11 (20.50)	4.73	<0.001**	26.00 (20.16)	1.51	0.13	7.33 (20.90)	−4.65	<0.001**
IC	36.13 (18.07)	−1.04	0.30	54.54 (18.22)	6.06	<0.001**	36.61 (17.92)	−1.18	0.24	30.62 (18.58)	−3.19	0.002*
UC	34.50 (21.30)	−1.82	0.07	54.43 (21.49)	4.45	<0.001**	47.83 (21.13)	2.25	0.03*	28.73 (21.90)	−3.86	<0.001**
HC	59.69 (18.39)	−0.43	0.67	51.68 (18.55)	−3.71	<0.001**	52.28 (18.24)	−3.56	0.001*	80.71 (18.91)	6.94	<0.001**
CS	27.72 (21.02)	−4.42	<0.001**	54.32 (21.20)	3.49	0.001*	65.21 (20.85)	7.42	<0.001**	29.63 (21.61)	−4.51	<0.001**
DpT	14.45 (21.41)	−3.83	<0.001**	47.87 (21.59)	6.40	<0.001**	43.43 (21.23)	5.00	<0.001**	10.30 (22.02)	−5.68	<0.001**
DSS	32.17 (20.53)	−1.07	0.29	46.70 (20.71)	3.75	<0.001**	48.94 (20.37)	4.65	<0.001**	16.52 (21.11)	−6.20	<0.001**
SA	17.61 (16.10)	0.68	0.50	16.38 (16.23)	0.33	0.74	14.64 (15.97)	−0.47	0.64	13.98 (16.55)	−0.68	0.50
BA	18.86 (17.97)	−0.02	0.99	23.58 (18.12)	1.88	0.06	18.13 (17.82)	−0.32	0.75	15.10 (18.48)	−1.38	0.17
PP	21.27 (21.37)	−1.00	0.32	36.23 (21.56)	3.79	<0.001**	35.23 (21.20)	3.53	0.001*	7.59 (21.98)	−5.32	<0.001**
DP	32.35 (21.42)	−4.17	<0.001**	57.42 (21.60)	3.11	0.002*	67.09 (21.24)	6.54	<0.001**	36.11 (22.02)	−3.68	<0.001**
HA	75.64 (19.75)	3.51	0.001*	48.26 (19.92)	−5.54	<0.001**	48.29 (19.59)	−5.66	<0.001**	81.13 (20.37)	5.86	<0.001**

Note: VC = Vulnerable Child; AC = Angry Child; EC = Enraged Child; IC = Impulsive Child; UC = Undisciplined Child; HC = Happy Child; CS = Compliant Surrender; DpT = Detached Protector; DSS = Detached Self-soother; SA = Self-Aggrandizer; BA = Bully and Attack; PP = Punitive Parent; DP = Demanding Parent; HA = Healthy Adult.
* Significant at $P<0.05$.
** Significant at $P<0.001$.

3. Results

3.1. Social desirability

Social desirability differed significantly between groups, $F(3,143) = 7.00$, $P<0.001$. Deviation contrasts revealed ASPD and BPD groups to display higher levels of social desirability, $t=2.17$, $P=0.03$ and $t=2.36$, $P=0.02$, respectively, and NpCs to display lower social desirability, $t=-4.04$, $P<0.001$.

3.2. Baseline values

All analyses of the baseline scores were controlled for social desirability. There was a main effect of gender on the baseline schema mode level of the Self-Aggrandizer mode, $F(1,138)=8.84$, $P=0.003$, that was higher in men, and of the Punitive Parent, $F(1,138)=5.20$, $P=0.03$, and the Detached Self-soother modes that were higher in women, $F(1,138)=5.15$, $P=0.03$. Gender did not effect the other schema mode baseline scores, $F(1,138)$ $P's>3.83$, $P's>0.06$. The ASPD group scored lower than average on baseline levels of 5 maladaptive modes (Vulnerable Child, Angry Child, Compliant Surrender, Detached Protector and Demanding Parent), and higher than average on the Healthy Adult mode (Table 1). None of the groups deviated from the overall mean in baseline Self-Aggrandizer and Bully- and Attack scores. Next to that, the BPD-group scored higher on all 12 other maladaptive modes compared to the overall mean, and significantly lower on the adaptive modes (i.e. Happy Child and Healthy Adult). The baseline schema mode scores of the ClC-PD-group were quite similar to that of the BPD-group, except that they did not differ from the overall mean in baseline Enraged Child and Impulsive Child scores. NpCs displayed a complete opposite pattern; significantly lower baseline schema mode scores on all maladaptive modes compared to the overall mean, again except for Self-Aggrandizer and Bully- and Attack modes, and significantly higher scores on the adaptive modes than the overall mean.

3.3. Change scores

All analyses of the mode change scores were controlled for social desirability. There was a main effect of gender on the change score of the Demanding Parent mode, $F(1,138)=4.59$, $P=0.03$, that increased more in women and the Happy Child mode, $F(1,138)=4.18$, $P=0.04$, that decreased more in women after the anger induction. Gender did not effect the other schema mode change scores, $F(1,138)$ $P's>1.40$, $P's>0.24$. The ASPD-group displayed a stronger decrease in the Impulsive Child and Healthy Adult schema modes after the anger induction compared to the overall mean. The BPD-group showed a stronger increase in Angry Child and Detached Self-Soother mode than the overall mean. All observed change score had small effect sizes (Table 2).[2]

4. Discussion

This study assessed the impact of anger-recollection on cognitions. Our main finding is that high baseline levels of healthy cognitions in ASPD-patients dropped drastically after autobiographical recall of an anger-inducing event. This suggests that reviving past anger episodes has the potential to break down the healthy veneer of ASPD-patients. Previous studies also showed that not only ASPD-patients themselves (Lobbestael et al., 2005; Lobbestael et al., 2008b), but their therapists as well assigned more healthy cognitions to this group than to other personality disorder patients (Lobbestael et al., 2009b). The current findings suggest that strong healthy cognitions could indeed be part of the mental make-up of ASPD-patients, but emotional triggers cause these adaptive state cognitions to weaken. In other words, ASPD-patients' healthy schemas are mainly cold cognitions, that are unstable, and easily diminish when angry feelings are triggered.

Interestingly, ASPD-patients also demonstrated a decrease in impulsive cognitions after the recollection of anger-triggering events. One possible explanation is that this decreased impulsivity is inherent to the autobiographical recall method that forced participants to become more reflective and cognitively focused, a process rather opposed to impulsivity. In fact, non-patient controls also reported decreased impulsivity after the anger induction, which normalizes this pattern in ASPD-patients. Therefore, decreased impulsivity could reflect the rise of adaptive emotional control coping processes. Although we considered lowered impulsivity scores reflecting emerging controlled, predatory-like aggression in ASPD-patients, such an interpretation is unlikely since non-patients displayed a similar pattern, and predatory

[2] Following a reviewer's advice, we contrasted the ASPD-scores with the NpC scores only. This revealed the same response patterns as when comparing ASPD-scores to the overall mean (i.e. ASPD-group only differed from the NpC group in that they displayed a significantly higher drop in Healthy Adult mode after angered, while no significant differences were apparent between ASPD and NpC participants in the other modes). The only exception was that, while the ASPD-group showed a stronger decrease in Impulsive Child mode compared to the overall mean, this ASPD-score was not significantly different from the NpC group (LSD corrected post-hoc contrast $P=0.13$).

Table 2
Mean schema mode change scores and standard deviations of all groups and deviation contrast values (*t*, *p*, ES) of all groups` scores with the overall mean.

DV	ASPD ($n=21$)				BPD ($n=45$)				CIC-PD ($n=46$)				NpC ($n=35$)			
	Deviation contrast				Deviation contrast				Deviation contrast				Deviation contrast			
	M (S.D.)	*t*	*p*	ES[1]	*M* (S.D.)	*t*	*p*	ES[1]	*M* (S.D.)	*t*	*p*	ES[1]	*M* (S.D.)	*t*	*p*	ES[1]
VC	1.57 (10.00)	−0.003	0.98	−0.007	−0.45 (10.09)	−1.50	0.14	−0.27	4.13 (9.92)	1.87	0.06	0.33	1.23 (10.28)	−0.25	0.80	−0.05
AC	6.38 (16.42)	−0.02	0.98	−0.005	11.19 (16.56)	2.10	0.04*	0.38	5.67 (16.29)	−0.35	0.73	−0.06	2.54 (16.88)	−1.55	0.12	−0.30
EC	6.78 (17.77)	0.25	0.80*	0.06	8.41 (17.92)	0.99	0.32	0.18	7.77 (17.62)	0.74	0.46	0.13	1.00 (18.26)	−1.83	0.07	−0.36
IC	−7.16 (12.16)	−2.82	0.006*	−0.67	1.98 (12.27)	1.82	0.07	0.33	1.92 (12.06)	1.83	0.07	0.33	−1.04 (12.50)	0.02	0.99	0.004
UC	−2.46 (13.00)	−1.16	0.25	−0.28	0.15 (13.11)	−0.004	0.97	−0.0007	2.06 (12.90)	1.06	0.29	0.19	1.11 (13.37)	0.45	0.66	0.09
HC	−2.75 (12.32)	−0.07	0.94	−0.02	−3.09 (12.43)	−0.29	0.77	−0.05	−1.32 (12.22)	0.76	0.45	0.14	−3.20 (12.67)	−0.32	0.75	−0.06
CS	−1.29 (9.81)	−0.34	0.73	−0.08	−0.21 (9.89)	0.36	0.72	0.06	−0.15 (9.72)	0.41	0.68	0.07	−1.12 (10.08)	−0.28	0.78	−0.05
DpT	3.99 (14.38)	0.76	0.45	0.18	2.83 (14.51)	0.39	0.70	0.07	0.54 (14.27)	−0.78	0.44	−0.14	0.85 (14.79)	−0.55	0.59	−0.11
Dss	0.71 (12.50)	−0.35	0.73	−0.08	6.60 (12.60)	2.97	0.003*	0.54	−0.62 (12.39)	−1.26	0.21	−0.23	−0.74 (12.85)	−1.16	0.25	−0.23
SA	1.09 (10.81)	0.14	0.89	0.03	0.80 (10.90)	−0.002	0.98	−0.0004	−0.62 (10.73)	−0.99	0.32	−0.18	2.04 (11.12)	0.73	0.47	0.14
BA	3.82 (11.49)	0.51	0.61	0.12	2.96 (11.59)	0.12	0.91	0.02	4.85 (11.40)	1.34	0.18	0.24	−0.51 (11.81)	−1.86	0.07	−0.36
PP	1.25 (12.06)	0.20	0.84	0.05	2.16 (12.17)	0.08	0.42	0.01	0.73 (11.96)	−0.05	0.96	−0.01	−0.89 (12.40)	−0.92	0.36	−0.18
DP	1.76 (10.84)	0.81	0.42	0.19	−1.11 (10.93)	−0.87	0.38	−0.16	0.29 (10.75)	0.06	0.95	0.01	−0.16 (11.14)	−0.21	0.83	−0.04
HA	−8.53 (12.81)	−2.77	0.006*	−0.66	0.003 (12.92)	1.26	0.21	0.23	−1.41 (12.71)	0.81	0.64	0.15	1.06 (13.17)	1.67	0.10	0.33

Note: ES = Effect size, Cohen's *d* effect size based on the *t*-value of the deviation contrasts; VC = Vulnerable Child; AC = Angry Child; EC = Enraged Child; IC = Impulsive Child; UC = Undisciplined Child; HC = Happy Child; CS = Compliant Surrender; DpT = Detached Protector; DSS = Detached Self-soother; SA = Self-Aggrandizer; BA = Bully and Attack; PP = Punitive Parent; DP = Demanding Parent; HA = Healthy Adult.
* Significant at $P<0.05$.
** Significant at $P<0.001$.

aggression is not typically accompanied with anger (Weinshenker and Siegel, 2002).

Country to our expectation, the autobiographical anger-recall did not cause significant increases in ASPD-patients' dysfunctional schema mode report. Their increases in anger-related modes like Angry and Enraged Child and Bully- and Attack modes just failed to reach significance, however, which could indicate that increased anger might have been somewhat at stake. A limitation of the present study was that we did not include a self-report assessment of the predatory mode that was proposed by Bernstein et al. (2007) to be specific to ASPD, especially to the psychopathic subtype. Alternatively, ASPD-patients might not tend to report on increased cognitions in general due to a denying response style, or lack of self-insight (Posey and Hess, 1984; Haywood et al., 1993; Lewak and Hogan, 2001; Cima et al., 2007). Alternative assessment methods like implicit association tasks might be a better way to reliably assess cognitions in ASPD-samples. It has indeed been suggested that implicit measures might be particularly important in assessment of socially unacceptable constructs (Roefs et al., 2011) like anger and aggression. In line with this, playing a violent video game was shown to increase implicit aggressive self-concept, but not to alter trait aggressiveness (Bluemke et al., 2009).

Although the study of cognitive profiles of ASPD, BPD and ClC-PD patients under neutral conditions are not new (for a review see Lobbestael and Arntz, in press), and mostly in line with the baseline cognitive profiles found in this study, this study is one of the first attempts to assess hot cognitions in these psychopathologies. Strong features of this study are the inclusion of both non-patients and other personality disorder control groups, and the fact that the findings were controlled for social desirability. Future studies should assess the impact of alternative anger-inducing methods on ASPD-patients' cognitions (Harmon-Jones et al., 2003; Lobbestael et al., 2008a). Another important avenue for further research would be to study the impact of cold versus hot cognition on behavior. Health psychology research already showed that cold cognitions are suboptimal predictors of behavior under challenging conditions (Wiers et al., 2010). The dual process theory predicts that controlled and automatic cognitions jointly predict behavior (Strack and Deutch, 2004). It would be interesting to study how cold versus hot cognitions steer actual ASPD-patients' behavior, and especially aggression.

Taken together, the current study showed strong healthy cognitions in ASPD-patients under neutral emotional conditions that drastically lowered after autobiographical anger recall. As a clinical implication, we plead for increased focus on state dependency of cognitions in ASPD-patients. This could increase the effectiveness of cognitive-behavioral psychotherapy (David and Szentagotai, 2006). While assessing cognitions in ASPD-patients under neutral circumstances might be accurate as an indication of their healthy capacities, one should keep the instability of these cognitions in mind, and the likelihood of maladaptive cognitions dominating under emotional or stressful conditions.

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Appendix A. Supplementary data

Supplementary data to this article can be found online at doi:10.1016/j.psychres.2012.02.002.

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