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The course of dysphoric affective and cognitive states in borderline personality disorder: a 10-year follow-up study

Lawrence Ian Reed*, Garrett Fitzmaurice, and Mary C. Zanarini

Laboratory for the Study of Adult Development, McLean Hospital, and the Department of Psychiatry, Harvard Medical School

Abstract

The current study aimed to assess dysphoric states among 290 patients with borderline personality disorder (BPD) and 72 non-borderline axis II comparison subjects (OPD) over a 10-year course of prospective follow-up. Additionally, we assessed the severity of these states among borderline patients who had and had not recovered both symptomatically and psychosocially. The Dysphoric Affect Scale (DAS) – a 50-item self-report measure of affective and cognitive states thought to be common among borderline patients and specific to the disorder – was administered at five waves of prospective follow-up. Affective and cognitive DAS items were separately analyzed, yielding respective subscores. Borderline patients reported more severe dysphoric states compared to OPD subjects at baseline. However, the severity of affective and cognitive states declined significantly for both groups taken together over 10-years of follow-up. Within the BPD group, recovered subjects reported less severe dysphoric states compared to non-recovered subjects at baseline. Results also showed a significant decline in DAS scores over time, but at a greater rate for recovered subjects. In sum, while the severity of dysphoric states declines significantly over time, inner distress remains an area of vulnerability for borderline subjects. Additionally, the severity and pervasiveness of these states may affect recovery over time.

Keywords

borderline personality disorder; affect; cognition; longitudinal

1. Introduction

Borderline patients are often troubled by intense negative affects (Conte et al., 1980; Frances et al., 1984; Grinkler et al., 1968; Gunderson and Kolb, 1978; Gunderson et al., 1975; Perry and Klerman, 1980; Snyder et al., 1992; Zanarini et al., 1990) and cognitions (Gunderson and Kolb, 1978; Gunderson, et al., 1975; Perry and Klerman, 1980; Sheehy et al., 1980; Zanarini et al., 1990) reflective of severe inner pain. Affective difficulties are represented in the DSM-IV as chronic feelings of emptiness, inappropriate anger or difficulty controlling anger, as well as affective instability. Cognitive difficulties are represented by paranoid ideation/dissociation and identity disturbance (based on overvalued ideas of badness) (DSM-IV; American Psychiatric Association, 1994). Furthermore, other diagnostic criteria, such as

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Address reprint requests to Lawrence Ian Reed, McLean Hospital, 115 Mill Street, Belmont, Massachusetts 02478; phone: 617-855-4409; fax: 617-855-3580, lreed@mclean.harvard.edu.

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efforts to avoid abandonment, unstable interpersonal relationships, and recurrent suicidal behavior, may represent consequences of core affective and cognitive disturbances (Linehan, 1993).

In addition to clinical experience, research findings from the extant literature suggests that borderline patients suffer from a myriad of multifaceted affective and cognitive difficulties that may not be fully captured by these diagnostic criteria. Two studies have presented results regarding specific affective and cognitive states present in borderline patients in comparison to axis II comparison subjects. Butler (2002) found the following inner states to be more commonly reported among borderline patients than axis II comparison subjects: Unpleasant feelings will escalate and get out of control, I have to be on guard at all times, I cannot trust other people, and I am helpless when left on my own.

Our group has also been interested in specific affective and cognitive states for the past two decades. In order to increase our understanding of the subtle and nuanced affective and cognitive states experienced by borderline patients, we created the Dysphoric Affect Scale (Zanarini and DeLuca, 1998), a self-report measure specifically designed to distinguish borderline patients from those of other personality disorders. We found that 25 of these states, mostly affects, were common to but not specific for BPD. An additional 25 states, mostly cognitions, were found to be specific to BPD. Finally, it was found that reports of the following inner states were most strongly associated with BPD in multivariate analyses: I'm feeling betrayed, I think about hurting myself, and I'm completely out of control.

Together, these past studies have provided evidence regarding the affective and cognitive disturbances of borderline patients. Although these studies provide a detailed picture of the unique pain common in and specific to BPD, no studies exist that investigate the ways in which subjective affective and cognitive states unfold over the course of time. As a result, despite a growing evidence base concerning the affects and cognitions that borderline patients experience, little is known regarding their course over time.

The aim of the current study was to examine the specific dysphoric affective and cognitive states reported by borderline patients over the course of 10 years of prospective follow-up. To this end, we used the DAS to compare borderline patients with those with non-borderline axis II diagnoses. In order to further examine the ways in which these states related to the course of the disorder, we also compared patients within the BPD group who had and had not recovered both symptomatically and psychosocially (Zanarini et al., 2010a).

2. Methods

All subjects were initially inpatients at McLean Hospital in Belmont, MA recruited for a study of the longitudinal course of BPD (Zanarini et al., 2003)—the McLean Study of Adult Development or MSAD. Each patient was first screened to determine that he or she: i) was between the ages of 18–35; ii) had a known or estimated IQ of 71 or higher, iii) had no history or current symptoms of schizophrenia, schizoaffective disorder, bipolar I disorder, or an organic condition that could cause psychiatric symptoms; and iv) was fluent in English.

2.1. Measures

2.1.1. Axis I and axis II disorders—Diagnostic information regarding axis I and axis II disorders was obtained via the Structured Clinical Interview for DSM-III-R Axis I Disorders (Spitzer et al., 1990), the Revised Diagnostic Interview for Borderlines (DIB-R; Zanarini et al., 1989) and the Diagnostic Interview for DSM-III-R Personality Disorders (Zanarini et al., 1987). Good to excellent inter-rater and test-retest reliability were found for all three of these measures (Zanarini and Frankenburg, 2001; Zanarini et al., 2002).

2.1.2. Dysphoric affective states and cognitions—The severity of dysphoric affective states and cognitions of borderline patients and axis II comparison subjects was assessed using the DAS (Zanarini and Deluca, 1993) (see Table 1). The DAS is a self-report measure containing 50 items selected specifically by our group to comprehensively assess dysphoric affective and cognitive states reflective of the inner pain thought to be characteristic of and discriminating for BPD. With the DAS, subjects are asked to report the percentage of time that he or she has experienced each affective state or cognition during the past month. In order to most accurately reflect the ways in which clinicians and patients conceptualize them, groups of states measured with the DAS were rated as either affective (28 states) or cognitive (22 states) by a group of five psychiatrists and psychologists with an average of over 20 years of postdoctoral experience. Any differences were resolved by discussion, resulting in consensus ratings for those inner states. The psychometric properties of the DAS are excellent, with very high internal consistency (Cronbach's $\alpha = 0.97$). In addition, the 1-week test-retest reliability of the DAS was found to be 0.97 when examined in a sample of 15 nonpsychotic outpatients.

2.1.3. Definition of recovery—Recovery of BPD was defined as concurrent remission of symptoms as well as having good social and vocational functioning during the previous 2 years. Over the course of the study, 50% of participants achieved recovery (Zanarini et al., 2010a). An inability to work consistently on a full time basis was the primary reason for failure to achieve recovery (Zanarini et al., 2010b).

2.2. Subjects

Two hundred and ninety patients met both DIB-R and DSM-III-R criteria for BPD and 72 met DSM-III-R criteria for at least one non-borderline axis II disorder (and neither criteria set for BPD) during their index admission, which was, on average, 6 days in length. Of the 72 comparison subjects, 4% met DSM-III-R criteria for an odd cluster personality disorder, 33% met DSM-III-R criteria for an anxious cluster personality disorder, 18% met DSM-III-R criteria for a non-borderline dramatic cluster personality disorder, and 53% for personality disorder not otherwise specified (which was operationally defined in the DIPD-R as meeting all but one of the required number of criteria for at least two of the 13 axis II disorders described in DSM-III-R). Baseline demographic data have been reported elsewhere (Zanarini et al., 2003). Briefly, 77.1% ($n = 279$) of the subjects were female and 87% ($n = 315$) were white. The average age of the subjects was 27 years ($SD = 6.3$), the mean socioeconomic status was 3.3 ($SD = 1.5$) (where 1 = highest and 5 = lowest), and their mean GAF score was 39.8 ($SD = 7.8$) (indicating major impairment in several areas, such as work or school, family relations, judgment, thinking, or mood). In addition, the subjects had, on average, been psychiatrically ill for 8.8 years ($SD = 6.8$).

Regarding continuing participation, 90.1% ($n = 309$) of surviving patients were re-interviewed at all five follow-up waves conducted at 2-year intervals. More specifically, 91.5% of surviving borderline patients (249/272) and 84.5% of surviving axis II comparison subjects (60/71) were evaluated at all five follow-up periods.

2.3. Statistical Analyses

Data obtained from the DAS were assembled in panel format (i.e., multiple records per subject, with one record for each follow-up period for which data on the DAS were available). Random effects regression modeling methods assessing the role of diagnostic group (BPD vs. OPD), time, and their possible interaction, were used in analyses of the total DAS scale and the affective and cognitive subscales. The inclusion of random subject effects in these analyses accounts for the correlation among the repeated measures of the DAS over time. As total DAS scores and affective and cognitive subscale scores were

skewed, continuous measures were logarithmically transformed prior to modeling analyses in order to achieve distributions that were more symmetric. Because these analyses are based on logarithmically transformed scores, the results have interpretations in terms of relative, rather than absolute, differences. A similar analytic approach was used for comparing borderline patients who recovered to those who did not recover.

The development of the DAS was completed, and the measure was introduced into our assessment battery about halfway through recruitment of the baseline MSAD sample. As a result, DAS data for 174 of 362 subjects (140 with borderline personality disorder and 34 with non-BPD axis II diagnoses) were collected at baseline. A multiple imputation procedure was used to conduct analyses including observed and imputed baseline data. The imputation procedure incorporated both diagnostic group and follow-up DAS data as predictors of the missing baseline DAS data. Specifically, the missing baseline values were replaced by a set of 10 plausible values randomly drawn from the imputation model. Results from the 10 imputed datasets were then appropriately combined to provide a single estimate of the parameters of interest, together with standard errors and test statistics that reflect the uncertainty inherent in the imputation of the unobserved data. It should also be noted that these imputations were only conducted at baseline. To assess the sensitivity of the results to this imputation procedure, all analyses were re-run without imputed baseline data.

3. Results

Table 2 presents total DAS scores as well as affective and cognitive DAS subscores over time for subjects in the BPD and OPD groups. The mean total DAS score among subjects in the BPD group was 41.56 (SE = 1.68) at baseline and 17.39 (SE = 1.09) at 10-year follow-up. In comparison, the mean total DAS score among subjects in the OPD group was 16.81 (SE = 2.42) at baseline and 7.95 (SE = 1.43) at 10-year follow-up.

The results of the random effects regression analyses are presented in Table 3. For analyses comparing subjects in the BPD group with subjects in the OPD group, no significant diagnostic group by time interactions were found, implying a similar pattern of change over time in the two groups. Because of the lack of interaction, relative differences for group can be interpreted as the order of magnitude by which one group differs from the other over the 10 years of follow-up, while relative differences for time can be interpreted as the order of magnitude by which both groups taken together have changed over time. As shown in Table 3, the relative difference of 2.64 for diagnosis indicates that the mean total DAS score among subjects in the BPD group was 2.64 times higher than the corresponding mean score in the OPD group. The relative difference of 0.37 for time indicates that the relative change from baseline to 10-year follow-up resulted in a 63% [or $(1-0.37) \times 100\%$] decline for subjects in both groups taken together.

As with total DAS scores, no significant diagnostic group by time interactions were found for DAS subscores, implying a similar pattern of change over time in the two groups for both affective and cognitive subscores. Regarding DAS subscores, the relative differences of 2.48 and 3.10 for diagnosis indicate that subjects in the BPD group reported experiencing affective and cognitive states approximately 2 ½ and 3 times more severe than subjects in the OPD group. Relative differences of 0.39 and 0.32 for time indicate that the relative change from baseline to 10-year follow-up resulted in an approximately 61% and 68% decline in affective and cognitive scores among subjects in both groups taken together.

Table 4 represents total DAS scores as well as affective and cognitive DAS subscores over time among borderline patients who recovered as well as those who did not recover. The mean total DAS score among subjects in the recovered group was 35.44 (SE = 2.03) at baseline and 8.56 (SE = 0.68) at 10-year follow-up. In comparison, the mean total DAS

score among subjects in the non-recovered group was 47.68 (SE = 2.15) at baseline and 26.74 (SE = 1.78) at 10-year follow-up.

The results of the random effects regression analysis are presented in Table 5. In contrast to analyses comparing subjects in the BPD and OPD groups, a significant interaction was found in each analysis comparing recovered BPD patients with non-recovered BPD patients. The presence of these significant interaction changes the interpretation of the group and time effects. For these comparisons, relative differences for group can be interpreted as the order of magnitude by which one group differs from the other at baseline. Relative differences for time can now be interpreted as the order of magnitude by which subjects in the non-recovered group changed over time; the group $\times$ time interaction can be interpreted as the comparison of the change over time in the recovered group with the corresponding change over time in the non-recovered group.

As shown in Table 5, the relative difference of 0.54 for recovered indicates that the mean total DAS score among subjects in the recovered group was 46% lower at baseline than the corresponding mean in the non-recovered group. The relative difference of 0.53 for time indicates that the relative change from baseline to 10-year follow-up resulted in a 47% [or $(1 - 0.53) \times 100\%$] decline for subjects in the non-recovered group. In contrast, the significant interaction of 0.51 between group and time for total DAS score indicates that the relative decline from baseline to 10-year follow-up is approximately 73% [or $(1 - 0.53 \times 0.51) \times 100\%$] for those in the recovered group.

Regarding DAS subscores, the relative differences of 0.58 and 0.44 for recovered indicate that subjects in the recovered group reported experiencing affective and cognitive states approximately 42% and 56% less severe respectively than subjects in the non-recovered group at baseline. Relative differences of 0.55 and 0.46 for time indicate that the relative change from baseline to 10-year follow-up resulted in a 45% and 54% decline for subjects in the non-recovered group. In contrast, the significant interaction between group and time for affective and cognitive DAS subscores indicate that the relative decline from baseline to 10-year follow-up is approximately 71% and 78%, respectively for those in the recovered group.

Finally, as discussed in the Methods section, there was a substantial amount of missing data at baseline for the DAS. We compared those with and without baseline data in terms of their follow-up assessments of the DAS and found no differences. In addition, to assess the sensitivity of the reported results to the multiple imputation procedure, all analyses were re-run excluding the imputed baseline data. These additional analyses yielded very similar estimates of effects and produced the same subject-matter conclusions. That is, the reported results do not appear to be sensitive to the imputation of missing baseline data.

4. Discussion

The aim of the current study was to assess the severity of dysphoric affective and cognitive states among individuals suffering from borderline personality disorder over a 10-year course of prospective follow-up. We used a self-report scale (the DAS) specifically designed to assess affects and cognitions thought to be common among and specific to BPD at five two-year follow-up periods post baseline. Results suggest that borderline patients differ from OPD patients regarding both the severity and course of dysphoric states over time.

The first main finding is that borderline patients reported experiencing subjective dysphoric states at significantly greater severities when compared to OPD patients across follow-up periods. This was true not only for mean total scores, but also affective and cognitive subscores. Across follow-up periods, dysphoric affective and cognitive states were

experienced by borderline patients 2.5 and 3 times more severe, when compared to OPD patients. This is consistent with initial baseline findings presented by Zanarini et al. (1998) and sheds light on the subjective dysphoric states that are common in and specific to borderline patients. These results also dovetail nicely with recent findings of increased negative affectivity of borderline patients in response to specific interpersonal triggers (Sadikaj et al., 2011).

The second main finding is that the severity of subjective dysphoric states assessed by the DAS declined significantly over time for BPD and OPD patients taken together (63% relative decrease). Furthermore, the severity of dysphoric affective and cognitive states declined similarly, showing decreases of 61% and 68%, respectively. This mirrors findings by Gunderson et al. (2011), McGlashan (1985), and Paris (1987) regarding overall improvements in functioning among borderline patients over time.

Third, greater severities of dysphoric states were found in borderline patients who did not recover when compared to those who did. In fact, borderline patients who recovered reported less severe experiences of dysphoric affects and cognitions by 2-year follow-up than borderline patients who did not recover reported at 10-year follow-up. One interpretation of these differences is that dysphoric cognitive beliefs and feeling states may inhibit overall functioning. Taken together with findings by Zanarini et al. (2010a) and Gunderson et al. (2011), overall functioning may be particularly impaired in the vocational realm where positive motivational and social states may greatly enhance successful functioning.

Finally, it was found that the severity of dysphoric states decreased for borderline patients who do and do not recover, though at varying rates. More specifically, it was found that borderline patients who recovered had a greater relative decline compared to those borderline patients who did not recover. This suggests that when borderline patients experience painful and dysphoric states that are pervasive and stable, achieving recovery may become more difficult.

Clinical experience suggests that borderline patients often have trouble functioning in the vocational realm because of a lack of the type of emotional energy needed to secure or maintain full-time employment. Clinical experience also suggests that the negative cognitive states so typical of borderline patients may rob them of the self-confidence and ability to focus and attend needed to succeed or at least, attempt to succeed in the vocational realm. As such, clinicians may benefit from focusing on fostering patient's sense of competence regarding work related activities.

A number of limitations to this study must be taken into account in interpreting its findings. First, the study was conducted on inpatients with BPD and other axis II disorders. As such, the results may not generalize to less severely ill patients with BPD. Future research focusing on borderline patients in outpatient clinical and primary care settings may reveal differences with these levels of borderline psychopathology. In addition, the DAS was administered to only 48% of the entire sample at baseline as overall recruitment began before its introduction into our assessment battery. Finally, about 90% of those in both patient groups were in individual therapy and taking psychotropic medication at baseline and about 70% were participating in each of these outpatient modalities during each follow-up period (Hörz et al., 2010). It remains possible that the dysphoric states investigated in the current study may differ over time among untreated individuals.

Taken together, these findings underline the importance of patients' reports of subjective internal states. Clinically, an understanding of affective and cognitive states common in and specific to BPD can provide clinicians with valuable insights regarding the severity of the

inner pain of borderline patients—the severity of which clinicians might not be aware. Furthermore, knowledge of these states may allow clinicians to better empathize with affects and thoughts that are particularly difficult for these patients.

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Table 1**Dysphoric Affect Scale (DAS) Items**

<u>Affects</u>	<u>Cognitions</u>
1 Unhappy	1 I'm misunderstood
2 Depressed	2 I'm a complete failure
3 Sad	3 I'm a bad person
4 Anxious	4 The pain will never end
5 Scared	5 No one cares about me
6 Lonely	6 I'm evil I think about hurting someone
7 Empty	7 else
8 Hurt	8 I think about killing someone else
9 All alone	9 I think about hurting myself
10 Completely frustrated	10 I think about killing myself
11 Very angry inside	11 I'm a small child
12 Guilty	12 People and things aren't real
13 Full of shame	13 People can see right through me
14 In terrible pain	14 I have no identity
15 Worthless	15 I'm someone else
16 Helpless	16 Other people are living inside me
17 Hopeless	17 People hate me
18 Completely numb	18 People are abusing me
19 Desperate	19 I'm being tortured
20 Overwhelmed	20 I'm completely out of control
21 Grief-stricken	21 I'm damaged beyond repair
22 Terrified	
23 Completely panicked	
24 Abandoned	
25 Betrayed	
26 In agony Furious or enraged	
27 inside	
28 Humiliated	
29 Unreal	

Note: subjects are asked to report the percentage of time that he or she has experienced each affective state or cognition during the past month.

Table 2

Mean Scores (and Standard Deviations) of Borderline Patients and Axis II Comparison Subjects Over 10 Years Prospective Follow-Up

	Borderline Patients Mean (Standard Deviation)						Axis II Comparison Subjects Mean (Standard Deviation)					
	Baseline* (N = 290)	2-year follow-up (N = 275)	4-year follow-up (N = 269)	6-year follow-up (N = 264)	8-year follow-up (N = 255)	10-year follow-up (N = 249)	Baseline* (N = 72)	2-year follow-up (N = 67)	4-year follow-up (N = 64)	6-year follow-up (N = 63)	8-year follow-up (N = 61)	10-year follow-up (N = 60)
DAS Total	41.56 (18.48)	28.08 (21.92)	25.29 (21.76)	21.94 (18.92)	19.09 (18.42)	17.39 (17.17)	16.81 (13.41)	13.20 (13.87)	9.24 (12.17)	8.43 (11.02)	6.37 (11.97)	7.95 (11.41)
Affects	47.94 (19.74)	33.28 (24.16)	30.10 (24.12)	26.40 (21.21)	23.05 (20.45)	21.35 (19.26)	21.14 (15.82)	16.91 (15.88)	11.89 (13.88)	11.38 (13.99)	8.44 (13.40)	10.72 (14.46)
Cognitions	32.75 (18.56)	20.91 (20.00)	18.66 (19.62)	15.79 (17.05)	13.63 (16.73)	11.93 (15.33)	11.21 (11.41)	8.08 (12.67)	5.57 (10.78)	4.35 (7.34)	3.50 (10.47)	4.13 (7.81)

Note: *P* values for diagnosis were all <0.001. *P* values for time were all <0.001.

* Baseline mean and SD values based on observed (N=140) and imputed (N=150) values for borderline patients and observed (N=34) and imputed (N=38) values for axis II comparison subjects.

Random Effects Regression Modeling of Subjects With Borderline Personality Disorder and Axis II Comparison Subjects

Table 3

	Coeff	SE	z	P	Relative Difference	95% CI
DAS Mean						
Diagnosis	0.97	0.10	9.44	<.001	2.64	2.16–3.24
Time	–0.99	0.06	–15.29	<.001	0.37	0.33–0.42
DAS Affects						
Diagnosis	0.91	0.10	8.96	<.001	2.48	2.04–3.04
Time	–0.94	0.06	–14.74	<.001	0.39	0.35–0.44
DAS Cognitions						
Diagnosis	1.13	0.11	10.08	<.001	3.10	2.49–3.87
Time	–1.15	0.08	–15.07	<.001	0.32	0.27–0.37

Table 4

Mean Scores (and Standard Deviations) of Recovered and Non-recovered Borderline Patients over 10 Years of Prospective Follow-up

	Not Recovered Mean (Standard Deviation)						Recovered Mean (Standard Deviation)					
	Baseline* (N = 145)	2-year follow-up (N = 130)	4-year follow-up (N = 124)	6-year follow-up (N = 119)	8-year follow-up (N = 114)	10-year follow-up (N = 110)	Baseline* (N = 145)	2-year follow-up (N = 145)	4-year follow-up (N = 145)	6-year follow-up (N = 145)	8-year follow-up (N = 141)	10-year follow-up (N = 139)
DAS Total	47.68 (18.63)	36.72 (22.02)	35.87 (21.43)	31.11 (19.30)	29.57 (19.92)	26.74 (19.44)	35.44 (16.17)	16.97 (18.00)	12.78 (16.61)	11.57 (13.97)	8.39 (10.65)	8.56 (9.58)
Affects	54.04 (19.91)	42.30 (23.71)	41.58 (23.32)	36.44 (20.96)	34.50 (21.71)	31.65 (21.22)	41.84 (17.56)	21.38 (21.00)	16.25 (19.21)	14.96 (16.89)	11.14 (12.73)	11.55 (11.99)
Cognitions	38.85 (19.05)	29.02 (21.08)	27.99 (20.39)	23.75 (18.85)	22.77 (19.15)	19.97 (18.45)	26.64 (15.87)	10.86 (14.84)	7.98 (13.88)	6.88 (10.76)	4.60 (8.49)	4.43 (6.99)

Note: *P*-values for diagnosis were all <0.001. *P*-values for time were all <0.001. *P*-values for interaction terms were all <0.001.

* Baseline mean and SD based on observed (N=76) and imputed (N=69) values for not recovered borderline patients and observed (N=98) and imputed (N=47) values for recovered borderline patients.

Table 5
Random Effects Regression Modeling of Borderline Patients Who Did and Did Not Recover

	Coeff	SE	z	P	Relative Difference	95% CI
DAS Mean						
Recovered	-0.62	0.08	-7.77	<.001	0.54	0.46-0.63
Time	-0.64	0.07	-8.78	<.001	0.53	0.46-0.61
Interaction	-0.67	0.11	-5.96	<.001	0.51	0.41-0.64
DAS Affects						
Recovered	-0.55	0.08	-7.13	<.001	0.58	0.50-0.67
Time	-0.59	0.07	-8.57	<.001	0.55	0.49-0.63
Interaction	-0.64	0.11	-5.81	<.001	0.53	0.42-0.65
DAS Cognitions						
Recovered	-0.81	0.10	-8.23	<.001	0.44	0.37-0.54
Time	-0.77	0.09	-8.09	<.001	0.46	0.38-0.56
Interaction	-0.75	0.13	-5.60	<.001	0.47	0.37-0.62