



## A 1-year follow-up study of capacity to love and work: What components of borderline personality disorder most impair interpersonal and vocational functioning?

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### ABSTRACT

**Background** – For individuals with borderline personality disorder (BPD), both the reduction in symptoms and the improvement of vocational and interpersonal function (psychosocial function) are important for recovery. Research suggests that some components of BPD make it harder to achieve functional recovery; however, findings are varied and inconclusive. The present study assesses recovery over time in BPD, investigates which symptoms make it harder to function and explores the relationships between these symptoms.

**Method** – One hundred ninety-nine consecutively recruited individuals in psychological treatment for personality disorder were studied over 12 months. Measures of BPD symptom severity at intake were used to predict improvements in social and vocational function at follow-up. Exploratory modelling was conducted to understand the relationships between symptoms and function.

**Results** – Following 12 months of treatment, symptoms and functioning improved. Those who experienced more severe emptiness, impulsivity and self-harm had worse outcomes. A relationship between chronic emptiness at intake and impaired vocational outcome (days out of work) at follow-up was found, mediated by severity of impulsivity and frequency of self-harm.

**Conclusion** – Chronic emptiness is associated with dysfunctional behaviours such as impulsivity and self-harm, and poor psychosocial improvement. Interventions targeting chronic emptiness in those most vulnerable may improve functional outcomes. © 2018 John Wiley & Sons, Ltd.

### Introduction

Achieving and maintaining good interpersonal relationships and vocational pursuits is considered core to mental health; as Tolstoy (1856) stated ‘One can live magnificently in this world if one knows how to work and how to love’.<sup>1</sup> This was

later reinforced by Freud who stated good mental health involves the capacity to love and work.<sup>2</sup> Indeed, recovery in borderline personality disorder (BPD) is considered to involve several factors—remission of symptoms, maintenance of at least one close social relationship and ability to work or complete studies.<sup>3,4</sup> The two latter components

are referred to jointly as psychosocial function and have been considered equivalent to Global Assessment of Functioning (GAF) scores above 60 in longitudinal studies.<sup>5</sup>

Impairment of psychosocial function is a key barrier to recovery. Individuals with personality disorders are between three and seven times more likely than healthy controls to experience significant impairment in quality of social relationships and work, including reduced days able to work or complete normal activities.<sup>6</sup> Low incomes and reliance upon government disability services are over-represented in the population, in addition to high rates and long periods of unemployment and difficulty in academic achievement.<sup>7,8</sup> Among employed individuals with BPD, it is estimated that an average 47.6 days of work are lost per year due to both absenteeism and presenteeism.<sup>9</sup> Additionally, research has demonstrated that symptoms of BPD predict dysfunctional romantic relationships over time<sup>10</sup> and individuals with BPD report higher levels of emptiness, sadness and anger in social interactions in comparison with individuals with other or no personality disorders.<sup>11</sup>

Improvement in personality disorder symptoms is associated with better functional outcomes for individuals with BPD,<sup>12</sup> and number of personality disorder symptoms at intake can predict functional outcome 2 years later, operationalized by GAF scores.<sup>13</sup> Studies suggest that symptoms may remit relatively quickly after commencement of psychological treatment, but psychosocial dysfunction persists for people with BPD.<sup>12</sup> In a cohort of 290 former inpatients with BPD, 74.1% had poor psychosocial function at admission.<sup>4</sup> Over 10 years, 93% of the sample achieved remission of symptoms (no longer meeting DSM-III-R or the more stringent Revised Diagnostic Interview for Borderlines criteria for 2 years follow-up), but only 50% achieved recovery (both symptom remission and adequate psychosocial function).<sup>3</sup> This further supports the understanding that good psychosocial function is more difficult to achieve and sustain than symptomatic remission. There is a need to study psychosocial

functioning more broadly, and expanding this area of research is also strongly supported by people with lived experience.<sup>14,15</sup> Indeed, economic evaluations point to the benefits of treatment not only in terms of financial benefits for the patient and savings to the health system but also society gains from greater productivity and paying taxes.<sup>16</sup> In order to further develop treatments targeting function, a comprehensive understanding of what factors may contribute to persistent psychosocial impairment is required. Although studies have reported a relationship between psychopathology and functional outcomes, the impact of symptomology on function requires further investigation.

Research examining psychosocial impairment has produced mixed results, with studies variously identifying dysphoric mood,<sup>17</sup> affect dysregulation,<sup>18</sup> impulsivity,<sup>19,20</sup> suicidal behaviour,<sup>21</sup> identity disturbance<sup>22,23</sup> and chronic emptiness.<sup>24,25</sup> Recent efforts have focused on symptoms of identity disturbance and emptiness. Ellison and colleagues<sup>25</sup> explored the influence of single clinical symptoms on impairment, with chronic feelings of emptiness evidencing the poorest psychosocial outcomes, highest number of days out of work and lowest social function.<sup>25</sup> Similarly, identity and sense of self predicted GAF scores over time.<sup>23</sup> Theoretically, it has been suggested that identity disturbance and emptiness underlie core components of BPD<sup>26</sup> and may be expressed by behavioural symptoms. Empirical research is still needed to understand this relationship.

The current study examined symptoms of BPD and their influence over 12 months on psychosocial function in a cohort receiving treatment for BPD. On the basis of previous research, we predicted that the sample would reduce in symptom severity and improve in psychosocial function over the follow-up period. Based on previous theory, exploratory analyses were conducted to examine whether the relationship between emptiness and identity disturbance and function would be mediated by behavioural symptoms of BPD.

## Method

### Participants

Two hundred twenty-four consecutive patients presenting to mental health services for treatment of personality disorder were recruited. Diagnosis was indicated using a specific trained structured interview protocol of mental health outcomes and assessment.<sup>27</sup> Participants provided informed, written consent following Institutional Review Board and health service approval. Participants were interviewed after approximately 12 months (mean (M) = 11 months and 15 days, standard deviation (SD) = 4 months and 3 days) by trained research psychologists, independently of treating practitioners. Of those initially recruited, 20 were lost to follow-up, three were excluded due to univariate outlying data and a further two were excluded due to invalid responses. The analysed sample comprised 199 participants (mean age 35.25 years, SD = 13.8, range 15–72; 72.9% female). Treatment was stepped, from initial engagement and diagnosis, to brief care planning, followed by evidence-based psychological treatment in the community that followed recommendations from clinical guidelines<sup>28,29</sup>; 99.4% of participants were engaged in psychological treatment throughout follow-up, which was predominantly delivered by psychologists or psychiatrists.

### Measures

*Global Assessment of Functioning and Social and Occupational Functioning Assessment Scale.* The GAF is a widely used tool to indicate psychological, social and occupational functioning on a scale from 1 to 100.<sup>30</sup> The Social and Occupational Functioning Assessment Scale (SOFAS) is a similar single measure tool quantifying social and occupational functioning independent of the experience of mental health symptoms.<sup>31</sup>

*World Health Organization Disability Assessment Schedule.* Items H2 and H3 of the World Health Organization Disability Assessment Schedule

(WHO-DAS 2.0) were used in the present study to measure vocational impairment, as the WHO-DAS2 is sensitive to change when measuring function.<sup>6</sup> Item H2 asks: *in the past 14 days, how many days were you totally unable to carry out your usual activities or work because of any health condition?*, item H3 asks: *not counting the days that you were totally unable, for how many days did you cut back or reduce your usual activities or work?* These items are frequently used in studies investigating impaired vocational function.<sup>32</sup>

*BPD symptom severity.* The severity of DSM-5 BPD symptoms<sup>33</sup> were rated (1 = *none of the time*, 6 = *all of the time*) to provide a dimensional understanding of symptom experience.<sup>34</sup> Internal consistency of the measure was good (Cronbach's  $\alpha = 0.83$ ); however, as this rating of severity was a developed measure, other psychometric properties are as yet unknown. Participants as a group were highly symptomatic; average number of DSM BPD symptoms met was 8.16/9 (SD = 2.08). Using the McLean screening instrument<sup>35</sup> with the conservative cut-off score of 7/10, 81.5% of the sample met caseness for BPD.

### Data analysis

Data screening and cleaning was conducted prior to analysis. Missing values analysis indicated that data were missing completely at random (Little's missing completely at random  $\chi^2 = 513.04$ ,  $p = 0.238$ ). Expectation–maximization was used to impute missing cases for continuous variables (4.1%).

A series of analyses were used to test our hypotheses. Within samples analysis was conducted using Bonferroni corrections to analyse differences in symptom endorsement and severity between intake and follow-up. To test the hypothesis that psychosocial function would improve over the follow-up period, multiple linear regressions were conducted to understand the predictive capacity of BPD symptoms on GAF and SOFAS scores. Within samples methods were used to understand

the changes to vocational function from intake to follow-up.

Linear modelling techniques were used to examine our hypothesis that identity disturbance and chronic emptiness at intake would best predict psychosocial function at 12-month follow-up. A multiple linear regression analysis was then conducted to understand the predictive capacity of BPD symptoms at intake on vocational outcome at follow-up. Further exploratory mediation modelling using PROCESS macro was conducted based on significant variables of the regression to understand the relationship between identity disturbance, emptiness and behavioural symptoms, which contribute vocational impairment.<sup>36</sup> Indirect effects were calculated using a bias-corrected and accelerated bootstrapped confidence interval (CI) method, based on 10 000 samples. Completely standardized indirect effect sizes were calculated.<sup>37</sup>

## Results

As expected, there was a significant decrease in number of endorsed BPD symptoms at intake ( $M = 8.16$ ,  $SD = 2.08$ ) compared with follow-up ( $M = 5.62$ ,  $SD = 2.64$ ),  $t(182) = 12.74$ ,  $p = 0.000$ ,  $95\% CI = [2.15, 2.94]$ , Cohen's  $d = 1.07$ . There was a significant reduction in

severity for all BPD symptoms between intake and follow-up (Table 1). The proportion of participants meeting caseness for a BPD diagnosis reduced from 81.5% at intake to 44.9% at follow-up; 44.2% of participants had a GAF above 61, and 46.2% had a SOFAS above 61 at follow-up, indicating good psychosocial function.<sup>38</sup>

### General and social functioning

Overall, severity of BPD symptoms at intake were positively predictive of GAF scores at follow-up,  $R^2 = 0.124$ ,  $F(198) = 2.97$ ,  $p = 0.003$ , with frequency of self-harm ( $\beta = -0.148$ ,  $p = 0.044$ ), chronic emptiness ( $\beta = -0.248$ ,  $p = 0.009$ ) and mood dysregulation ( $\beta = 0.319$ ,  $p = 0.002$ ) individually predictive of GAF scores. Severity of BPD symptoms at intake also predicted SOFAS scores at follow-up,  $R^2 = 0.089$ ,  $F(198) = 2.02$ ,  $p = 0.039$ , where chronic emptiness ( $\beta = -0.191$ ,  $p = 0.048$ ) and mood dysregulation ( $\beta = 0.327$ ,  $p = 0.002$ ) were individual predictors.

### Vocational functioning

There was a significant decrease in total days out of work from intake ( $M = 6.13$ ,  $SD = 5.05$ ) to follow-up ( $M = 3.07$ ,  $SD = 4.00$ ),  $t(198) = 6.81$ ,  $p = 0.000$ ,  $CI = [2.17, 3.95]$ , Cohen's  $d = 0.67$ . There was also a significant decrease in days of

Table 1: Differences in symptom severity on BPD items between intake and follow-up data using paired sample *t*-tests

BPD symptoms	Response range	Responses M (SD)			d.f.	<i>t</i>	<i>p</i>	95% CI	Effect size (Cohen's <i>d</i> )
		Intake	Follow-up						
Real or imagined abandonment	(1–6)	3.20 (1.91)	2.20 (1.64)	198	6.60	0.000	[0.71, 1.31]	0.56	
Unstable relationships	(1–6)	3.62 (1.69)	2.01 (1.48)	198	12.12	0.000	[1.35, 1.87]	1.01	
Identity disturbance	(1–6)	3.20 (1.83)	2.54 (1.75)	198	4.74	0.000	[0.39, 0.93]	0.37	
Impulsivity	(1–6)	3.67 (1.59)	2.57 (1.59)	198	8.00	0.000	[0.83, 1.37]	0.69	
Self-harm or suicide	(1–6)	1.77 (1.26)	1.27 (0.86)	198	5.63	0.000	[0.32, .067]	0.46	
Mood dysregulation	(1–6)	3.84 (1.52)	2.79 (1.57)	198	7.99	0.000	[0.79, 1.32]	0.68	
Chronic emptiness	(1–6)	3.98 (1.51)	2.90 (1.66)	198	8.16	0.000	[0.82, 1.34]	0.68	
Anger	(1–6)	3.39 (1.53)	2.32 (1.32)	198	9.49	0.000	[0.85, 1.30]	0.75	
Paranoid ideation	(1–6)	3.54 (1.29)	2.62 (1.37)	198	8.40	0.000	[0.71, 1.14]	0.69	

CI, confidence interval; d.f., degrees of freedom; M, mean; SD, standard deviation.

Table 2: Zero-order correlations for demographic variables and BPD symptoms at intake and days out of work at follow-up

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1. Real or imagined abandonment	—													
2. Unstable relationships	0.39**	—												
3. Identity disturbance	0.27**	0.21**	—											
4. Impulsivity	0.32**	0.44**	0.36**	—										
5. Self-harm or suicide	0.09	0.14	0.26**	0.20**	—									
6. Mood dysregulation	0.43**	0.43**	0.38**	0.53**	0.19**	—								
7. Chronic emptiness	0.32**	0.26**	0.62**	0.39**	0.34**	0.44**	—							
8. Anger	0.43**	0.51**	0.33**	0.49**	0.20**	0.66**	0.36**	—						
9. Paranoid ideation	0.33**	0.32**	0.48**	0.41**	0.24**	0.45**	0.42**	0.44**	—					
10. Age (intake)	-0.26**	-0.22**	-0.20**	-0.23**	-0.17*	-0.44**	-0.22**	-0.27**	0.21**	—				
11. Gender	0.12	0.10	0.12	0.07	0.15*	0.02	0.17*	0.18*	0.10	-0.10	—			
12. Relationship status (intake)	-0.19*	-0.18*	0.00	-0.16*	-0.08	-0.13	-0.18*	-0.11	-0.18*	0.28**	-0.04	—		
13. Days out of work (follow-up)	0.08	0.11	0.07	0.21**	0.23*	0.01	0.17*	0.16*	0.17*	0.04	0.06	-0.10	—	
14. Days of reduced work (follow-up)	-0.01	-0.02	0.06	0.06	0.10	0.03	0.09	0.01	-0.02	0.04	0.10	-0.08	0.26**	—

n = 199. Gender (0 = male, 1 = female) and relationship status (0 = not in a relationship, 1 = in relationship).

\*p < 0.05.

\*\*p < 0.01.

reduced usual activities or work between intake ( $M = 6.33$ ,  $SD = 4.83$ ) and follow-up ( $M = 3.11$ ,  $SD = 3.73$ ),  $t(198) = 8.04$ ,  $p = 0.000$ ,  $CI [2.42, 4.00]$ , Cohen's  $d = 0.75$ . Despite the overall improvement of the sample in vocational function, there remained a large range (0–14 days) and high variance at follow-up for both reduced days of work ( $SD = 3.73$ ) and total days out of work ( $SD = 4.00$ ). We sought to further understand which BPD symptoms at intake were associated with function at follow-up. As outlined in Table 2, total days out of work at follow-up was positively correlated with self-harm and suicidality, impulsivity, anger, paranoid ideation and chronic emptiness.

The relationship between BPD symptoms and days out of work was examined further. A multiple linear regression was conducted with BPD symptoms as independent variables and number of days out of work at follow-up as the dependent variable. Age, gender and relationship status were included in the model to account for any covarying effects (Table 3).

The overall model predicting role impairment days was significant,  $R^2 = 0.179$ ,  $F(12, 155) = 2.591$ ,  $p = 0.004$ .

### Serial mediation analysis

Two exploratory models were tested to investigate the relationship between identity disturbance and days out of work, and emptiness and days out of work. The identity disturbance model was not significantly predictive.<sup>1</sup> The best fitting serial multiple mediator model includes chronic emptiness mediated by impulsivity and self-harm,  $R^2 = 0.079$ ,  $F(3, 195) = 5.66$ ,  $p = 0.001$  (Figure 1). The model shows a significant indirect effect of chronic emptiness on days out of work, as mediated by impulsivity and self-harm,  $ab = 0.12$ ,  $CI [0.05, 0.19]$ . The direct effect of chronic emptiness on days out of work became non-significant when

accounting for impulsivity and self-harm,  $c' = 0.12$ ,  $p = 0.547$ . The total effect of the model was significant,  $c = 0.44$ ,  $p = 0.019$ . Overall, these findings are consistent with previous theoretical models that suggest in individuals with BPD, emptiness underpins behaviours that may then impact on vocational functioning.

### Discussion

This study aimed to examine what components of BPD most impair interpersonal and vocational functioning over time. We analysed data of 199 individuals who presented to community health for treatment for BPD over 12 months.

In line with our first hypothesis, the overall sample improved significantly both on symptom and psychosocial function measures. The average number of BPD symptoms endorsed reduced from 8.16 to 5.62, and there was a 36.6% reduction in number of participants meeting caseness for BPD from intake to follow-up. The severity of these symptoms decreased significantly across the sample. The effect sizes for the outcomes at 12 months on BPD symptom improvement ( $d = 1.07$ ) were highly similar to published studies. For example, McMains et al.<sup>39</sup> reported the mean 12-month effect size of symptom change on the Zanarini Rating Scale total score of 1.13. This suggests that the change in our sample is similar to previously studied samples of individuals with BPD.<sup>3,40,41</sup> There was also a significant decrease in total days out of work and reduced days of work at follow-up, and almost half the sample had scores above 60 on GAF (44.2%) and SOFAS (46.2%), indicating good psychosocial function.

We investigated which symptoms at intake predicted function at follow-up and hypothesized severity of identity disturbance and chronic emptiness would predict psychosocial function over time. Overall, severity of BPD symptoms at intake predicted both GAF and SOFAS scores at follow-up, indicating an effect of psychopathology at intake on later vocational and social function. These effects were primarily driven by chronic

<sup>1</sup>The non-significant identity disturbance model is available from authors on request.

Table 3: Multiple linear regression predicting follow-up days out of work by intake BPD items and demographic variables

Variable	B	$\beta$	t	p	CI
Age	0.02	0.07	0.82	0.411	[-0.03, -0.07]
Gender	-0.33	-0.04	-0.48	0.635	[-1.72, 1.05]
Relationship status	-0.16	-0.02	-0.21	0.835	[-1.66, 1.34]
Real or imagined abandonment	-0.01	-0.00	-0.03	0.975	[-0.38, 0.37]
Unstable relationships	0.11	0.05	0.49	0.623	[-0.33, 0.55]
Identity disturbance	-0.57	-0.26	-2.42	0.017*	[-1.04, -0.11]
Impulsivity	0.48	0.19	2.00	0.047*	[0.07, 0.96]
Self-harm or suicide	0.54	0.17	2.09	0.039*	[0.28, 1.04]
Mood dysregulation	-0.73	-0.27	-2.32	0.022*	[-1.35, -0.11]
Chronic emptiness	0.62	0.24	2.17	0.031*	[0.05, 1.19]
Anger	0.40	0.15	1.40	0.165	[-0.17, 0.98]
Paranoid ideation	0.49	0.16	1.69	0.093	[-0.08, 1.07]

CI, 95% confidence interval.

\*Significant at  $\alpha = 0.05$ .

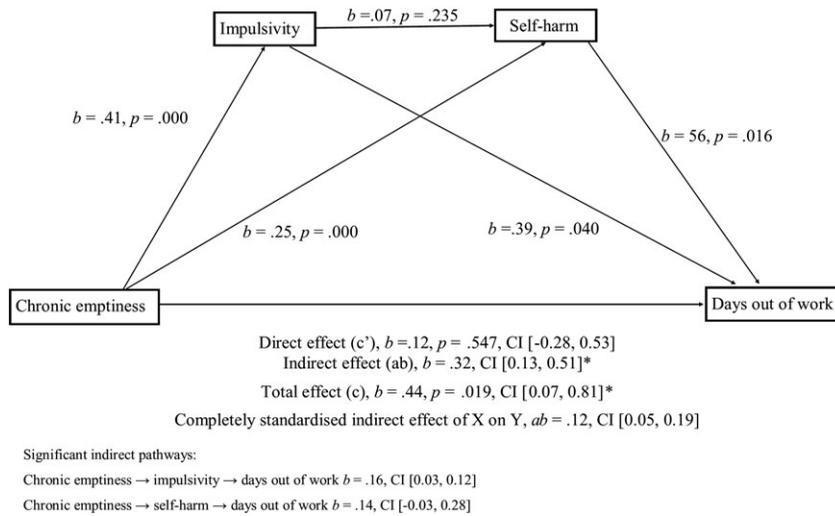


Figure 1: Model of intake severity of feelings of chronic emptiness as a predictor of follow-up role impairment days, mediated by intake severity of impulsivity and self-harm. \* $p < 0.05$ . CI, confidence interval

emptiness, mood dysregulation and self-harm, suggesting that these symptoms impact most on general functioning.

We explored the effect of symptoms at intake on days out of work at follow-up. Severity of chronic emptiness, identity disturbance, mood dysregulation, impulsivity and self-harm at intake were all predictive of impaired vocational function

at follow-up. This supported our hypothesis that both identity disturbance and chronic emptiness are predictive of psychosocial impairment over time but indicated that there were additional contributing symptoms.

Exploratory analyses were conducted to understand the predictive capacity of two models; identity disturbance and days out of work, and chronic

emptiness and days out of work, both mediated by behavioural symptoms. To our knowledge, this is the first study to investigate how BPD symptoms relate to each other in their contribution to days out of work. The findings indicate a significant relationship between severity of chronic emptiness at intake and days out of work at follow-up, which was partially mediated by both severity of impulsivity and frequency of self-harm (Figure 1). Surprisingly, mediation models explored with identity disturbance as a predictor were non-significant. It seems that behaviours like impulsivity and self-harm may not be directly driven by identity disturbance but more likely are a result of emptiness. This is perhaps reflective of the 'cognitive' nature of identity disturbance characterized by thoughts about the self, compared with the 'affective' experience of chronic emptiness.<sup>42</sup> It may be the case that the feeling of chronic emptiness is so pervasive that it spurs compensatory actions, whereas identity disturbance may not transfer directly to behavioural symptoms. This may relate to previous theoretical indications that identity disturbance manifests as the feeling of emptiness, but a more in-depth focus is needed to confirm this.<sup>26</sup>

The relationship found between emptiness and impulsivity suggests that individuals with BPD may attempt to reduce inner experiences of emptiness by engaging in impulsive behaviours such as substance use or risky behaviour. This has previously been documented theoretically,<sup>43</sup> and our study provides some empirical indication of this relationship. Our finding of the association between emptiness and self-harming behaviours supports previous qualitative and quantitative studies, reporting chronic emptiness as the most common affective state for individuals with BPD before self-harm or suicidal behaviours.<sup>44,45</sup> Klonsky<sup>46</sup> found that feelings of emptiness were more strongly related to self-harm and suicidal behaviour than other BPD symptoms. Our findings add to this literature, suggesting that feelings of chronic emptiness may underlie and contribute to both impulsivity and self-harming behaviour.

Our last finding in the model was that self-harming behaviours impact upon days out of work. Self-harm has previously been associated with poor social, study and work outcomes.<sup>47</sup> Individuals with BPD who expressed intentions of self-harm and suicidal ideation at intake were likely to remain functionally impaired after 1 year in an outpatient programme.<sup>48</sup> Similarly, hospital patients with BPD with suicidal behaviours consistently experienced poorer levels of function in comparison with non self-harming individuals with BPD.<sup>21</sup> Attempts to understand the mechanisms underlying self-harm suggest that these behaviours are often an impulsive consequence of emotional regulation difficulties.<sup>49,50</sup> Our findings further suggest that feelings of chronic emptiness may contribute to self-harming behaviours.

Taken as a whole, we suggest that impulsivity and self-harm may act as external dysfunctional manifestations of the internal distress of chronic emptiness. These external behaviours then seem to interfere with treatment outcomes in the domain of days out of work—meaning it was harder for these participants to work, study or maintain usual duties compared with others in the sample.

Although addressing gaps within the body of BPD literature, the present study has several limitations. First, there was limited data on social relationships and function at both intake and follow-up time points, and type of employment or study was not collected. These variables would enrich the understanding of psychosocial function and could be a focus of future studies. Second, the ratings of symptom severity, like all Likert scales, may be influenced by contextual factors, such as hoping to obtain enhanced care from the interviewer or alternatively show gratitude for care provided. The assessment methods used were unable to distinguish between self-harm with or without an attempt to die, and further studies should aim to elucidate these factors to understand whether they contribute individually or as one factor to psychosocial function. The mediation model tested here was limited by a small number of variables; future research would benefit from a wider range of

predictors. Despite the good reliability of WHO-DAS 2.0 and its use in outcome studies, we did not have additional measures of functional outcome to compare, which would be helpful in future research. Future research would also benefit from more continuous measures of vocational functioning assessed over longer periods of time. Further, GAF scores were made by a single trained rater, meaning inter-rater reliabilities were not available. Finally, the findings relate to individuals in treatment over time for BPD; future studies may investigate comparison samples in or out of treatment.

Despite the limitations, this study expands our understanding of factors that may make it particularly hard to overcome BPD. Future studies should aim to replicate this study with more comprehensive measures. Using measures that account for the past year of vocational functioning would provide a more in-depth understanding in this area. Similarly, further studies are required to understand the experience of emptiness as a significant factor in psychosocial function. These findings may contribute to the improvement of interventions aimed towards increasing the capacity to love and work.

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