
Article:
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Supplementaty Materials

The following document contains supplemetary materials for the manuscript '*Early response as a prognostic indicator in person-centered experiential therapy for depression*'.

1. Full logistic regression model performance output including classification table to provide additional transparency regarding the calculation of the sensitivity, specificity, and positive and negative predictive values (page 2).
2. Sensitivity analysis results for a single-level logistic regression model including (a) only cases who received less than eight PCET sessions and (b) only cases who received eight or more PCET sessions to compare the odds ratios at below and above average PCET interventions (page 3 & 4 – Table S1 & S2).
3. Additional multi-level logistic regression model including a test of a random slope for reliable improvement at session 4 (page 5 – Table S3).
4. Demographic and clinical characteristics associated with the four different early response pattern subgroups (early responders, eventual responders, early response false positive & true negative), including a logistic regression predicting the likelihood of being an eventual responder relative to an early responder (page 6, 7 & 8 – Table S4 & S5)

1. **Logisitc regression model classification table and calculated sensitivity, specificity, positive and negative predictive values.**

Vasser Stats Calculator

25/08/2021, 14:37

VassarStats Printable Report:
From an Observed Sample: Estimates of Population Prevalence, Sensitivity, Specificity, Predictive Values, and likelihood Ratios
Wed Aug 25 2021 14:37:09 GMT+0100 (BST))

Values entered:

	Condition		
	Absent	Present	Totals
Test Positive	305	980	1285
Test Negative	240	796	1036
Totals	545	1776	2321

	Estimated Value	95% Confidence Interval	
		Lower Limit	Upper Limit
Prevalence	0.765187	0.747293	0.782195
Sensitivity	0.551802	0.528304	0.575074
Specificity	0.440367	0.398348	0.483239
For any particular test result, the probability that it will be:			
Positive	0.553641	0.533129	0.573974
Negative	0.446359	0.426026	0.466871
For any particular positive test result, the probability that it is:			
True Positive	0.762646	0.738221	0.785479
False Positive	0.237354	0.214521	0.261779
For any particular negative test result, the probability that it is:			
True Negative	0.23166	0.206527	0.258813
False Negative	0.76834	0.741187	0.793473
likelihood Ratios: [C] = conventional [W] = weighted by prevalence			
Positive [C]	0.986006	0.905243	1.073975
Negative [C]	1.017783	0.962187	1.076593
Positive [W]	3.213115	2.899669	3.560443
Negative [W]	3.316667	3.18754	3.451024

2. Sensitivity analyses

Sensitivity analysis results for a single-level logistic regression model including (a) only cases who received less than eight PCET sessions and (b) only cases who received eight or more PCET sessions to compare the odds ratios at below and above average PCET interventions.

Table S1 displays the results of a sensitivity analysis of a single-level logistic regression model using only cases who received less than eight sessions of PCET. Early response was a significant predictor of RCSI and patients with early response were almost 7 times (OR = 6.92) more likely to attain RCSI at the end of treatment compared to those with no early response.

Table S1
Sensitivity Analysis of Logistic Regression using Only Cases with <8 sessions

Variable	Pseudo R^2 = .27					
	B	SE B	Wald X^2	*p*	OR	95% CI OR
Constant	1.689	0.197	73.28	<.001	5.41	
Baseline PHQ-9	-0.128	0.011	126.83	<.001	0.88	0.860 to 0.899
RI at session 4	1.934	0.107	328.16	<.001	6.92	5.610 to 8.525

Table S2 reports the results of a sensitivity analysis of a single-level logistic regression model testing the association between early response (reliable improvement [RI] at session four) and post-treatment reliable and clinically significant change (RCSI), after controlling for baseline depression severity using only cases who receive eight or more sessions of PCET. Early response was a significant predictor of RCSI, demonstrating that participants with early

response were approximately 5 times (Odds ratio = 4.99) more likely to attain RCSI at the end of treatment than those without early response.

Table S2

Sensitivity Analysis of Logistic Regression using Only Cases with ≥ 8 Sessions

Variable	Pseudo R^2 = .17					
	B	SE B	Wald X^2	*p*	OR	95% CI OR
Constant	1.165	0.251	21.58	<.001	3.21	
Baseline PHQ-9	-0.090	0.014	42.01	<.001	.914	0.89 to 0.94
RI at session 4	1.608	0.143	125.87	<.001	4.99	3.77 to 6.61

3. Multi-level logistic regression model including a test of a random slope for reliable improvement at session 4.

Table S3 reports the results of a random-slopes multi-level logistic regression model investigating the association between early response (indicated by RI at session four) and post-treatment RCSI, after controlling for baseline depression severity and therapist effects.

Table S3
Multilevel model with random slope for reliable improvement (RI) at session 4

Fixed	*B*	SE B	*p*
Constant	-0.826	0.094	<.001
Baseline PHQ-9	-0.108	0.009	<.001
RI at session 4	1.886	0.101	<.001
Random			
Constant	0.481	0.121	
RI at session 4	0.113	0.099	

4. Comparisons of demographic and clinical characteristics associated with different early response patterns

Demographic and clinical characteristics associated with the four different early response pattern subgroups (early responders, eventual responders, early response false positive & true negative) are reported in Table S3.

Table S4

Demographic and clinical characteristics associated with early response patterns

	Early responder (n=980)	**Early response false positive (n=305)**	**Eventual responder (n=796)**	**True negative response (n=1240)**	**Difference between groups** p^a
Demographics					
Gender					**.002**
Male	270/976 (27.7%)	94/303 (31.0%)	205/791 (25.9%)	409/1234 (33.1%)	
Female	706/976 (72.3%)	209/303 (69.0%)	586/791 (74.1%)	825/1234 (66.9%)	
Age (SD)	44.05 (14.59)	43.04 (14.66)	43.63 (14.38)	43.69 (13.19)	.731
Ethnicity					.735
White British	823/980 (84.0%)	250/305 (82.0%)	661/796 (83.0%)	1021/1240 (82.3%)	
Other	157/980 (16.0%)	55/305 (18.0%)	135/796 (17.0%)	219/1240 (17.7%)	
Employment status					**<.001**
Employed or other	705/872 (80.8%)	174/250 (69.6%)	553/695 (79.6%)	747/1065 (70.1%)	
Unemployed or long-term sick/disabled	167/872 (19.2%)	76/250 (30.4%)	142/695 (20.4%)	318/1065 (29.9%)	
Psychotropic Medication					**<.001**
Taking	511/853 (59.9%)	183/257 (71.2%)	445/673 (66.1%)	777/1100 (70.6%)	
Not taking	342/583 (40.1%)	74/257 (28.8%)	228/673 (33.9%)	323/1100 (29.4%)	
Clinical characteristics					
Baseline PHQ-9 score (SD)	17.58 (4.22)	20.74 (3.87)	16.27 (3.99)	18.09 (5.00)	**<.001**

Baseline GAD-7 score (SD)	14.64 (4.32)	16.62 (3.89)	14.20 (4.26)	15.51 (4.41)	**<.001**
Baseline WSAS score (SD)	19.46 (9.41)	24.78 (9.23)	19.88 (8.37)	23.69 (9.63)	**<.001**

Note: Percentages exclude cases with missing data; Abbreviations: GAD-7, General Anxiety Disorder-7 measure; PHQ-9, Patient Health Questionnaire-9 measure of depression; WSAS, Work and Social Adjustment Scale; SD, standard deviation. [a]Significance test based on Chi-squared (or Fishers exact test if cell counts less than 5) for categorical variables and ANOVA for continuous variables.

There were significant differences between response patterns for gender, employment status, medication status and baseline severity of depression, anxiety and impaired functioning symptoms. Contrasts between subgroups indicated a significantly greater proportion of true negative patients were male compared to early and eventual responders (there were no other significant differences between subgroups). Early response false positive and true negative response patterns were associated with a greater proportion of patients who were unemployed or on long-term sick compared to early and eventual response patterns (no other subgroups were significantly different). Early response was associated with a significantly greater proportion of patients not taking medication compared to early response false positive and true negative response patterns (no other subgroups were significantly different).

Patients who experienced a false positive early response pattern had significantly higher levels of baseline depression and anxiety than other response patterns (all $p<.001$). They also had higher levels of impaired functioning than the two subgroups who experienced post-treatment recovery (early and eventual responders; both $p<.001$). While early and eventual responders did not differ in baseline severity of anxiety ($p=.144$) and impaired functioning ($p=.824$), eventual responders had significantly lower depression symptoms than early responders ($p<.001$). True negative response patterns demonstrated significantly higher levels of baseline depression, anxiety and impaired functioning compared to eventual and early responders (all $p<.001$), but significantly lower depression and anxiety severity compared to

false positive patients (all $p<.001$). There was difference between true negative and false positive patterns in levels of impaired functioning at baseline ($p=.365$).

Table S5 reports the results of logistic regression analysis predicting the likelihood of being an eventual responder (relative to an early responder). Eventual responders were significantly more likely to be taking medication, have lower baseline depression severity and higher baseline impaired functioning (Overall model X=61.71, $p=<.001$, Nagelkerke R Square = 0.065).

Table S5

Logistic regression analysis examining the association between patient demographics and response pattern for eventual responders relative to early responders

Predictor variable	***b***	**SE**	**Wald**	***p***	***β***
Eventual responder (signal) vs early responder (reference)					
Baseline PHQ-9 score	-0.13	0.02	43.97	<.001***	.880
Baseline GAD-7 score	0.02	0.02	1.42	.234	1.020
Baseline WSAS score	0.04	0.01	20.87	<.001***	1.037
Age (years)	-0.01	0.00	1.70	.192	.995
Gender (% male)	-0.22	0.13	0.79	.375	0.888
Ethnicity (% White British)	0.02	0.16	0.01	.921	1.016
Employment (% unemployed/long-term sick)	0.08	0.15	0.27	.606	1.079
Medication (% taking pharmacotherapy)	0.37	0.13	8.67	.003**	1.444

Notes: A positive relationship signifies that the variable is more likely to occur in eventual responder patients. Reference categories for categorical variables: gender 'female', ethnicity 'other', employment 'employed', medication 'not taking pharmacotherapy', self-report LTC 'no LTC'. Abbreviations: SE= standard error; PHQ-9= patient health questionnaire-9; GAD-7= generalised anxiety disorder-7; WSAS= work and social adjustment scale. *$p<.05$, ** $p<.01$, ***$p<.001$.