#P2065

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A Framework for Rating Scale Development: Example from the Depression Inventory Development Project

Anthony L Vaccarino[1*], Stephane Pollentier[2] and Kenneth R Evans[1]

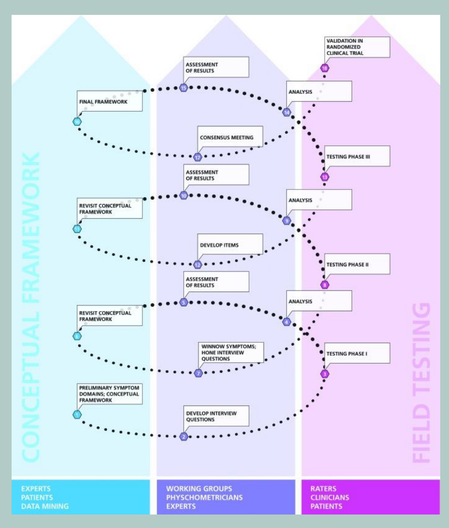
[1]Indoc Research, Toronto, Canada; [2]Indoc Research Europe gGmbH, Analytics, Mainz, Germany; * presenting author

The Depression Inventory Development program can serve as a model for development and validation of new rating scales

SCAN ME

INTRODUCTION

The goal of the Depression Inventory Development project is to develop a comprehensive and psychometrically sound rating scale for MDD that reflects current diagnostic criteria and conceptualizations of depression. Using a reciprocal, iterative process between field testing and psychometric analysis and drawing upon expertise of international researchers in depression, a protocol was developed for the creation of new items and field testing in depressed patients (1).

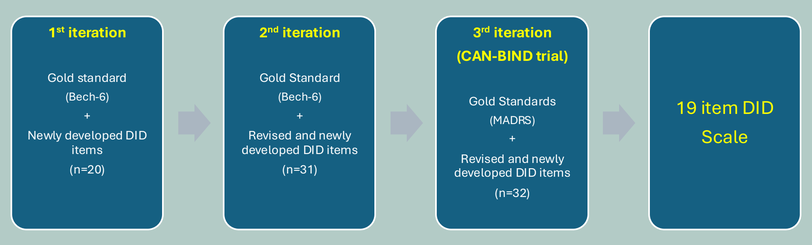


METHODS

Classical test theory, item response theory and Rasch measurement theory were applied to assess the psychometric properties of the DID items and determine which should be removed, modified or advanced.). We encourage evaluation using all three methods, as they provide complementary information that should be considered in evaluating item performance. Participants were also administered the MADRS that allowed DID items to be evaluated against existing "gold-standard" Data were managed on the Brain-CODE platform (3, www.braincode.ca) as part of the Canadian Biomarker Integration Network in Depression (CAN-BIND) (4)

RESULTS

The DID scale has completed three iterations, with 19 items identified for inclusion in final scale (2)



These items displayed good measurement properties, including unidimensionality and acceptable item-level goodness-of-fit statistics, suggesting that all items contributed to the same underlying construct. DID items also showed sensitivity to change following 8-week antidepressant treatment.

CONCLUSIONS

Conventions for administering the scale have been developed and we are planning validation studies of the current 19-item DID scale, including aspects of reliability (internal consistency, inter-rater, test-retest) and validity (concurrent, discriminant, convergent). The ultimate goal is to develop a validated measure to detect change in randomized, controlled trials of individuals with MDD. A patient reported version of the scale is also being developed based on the clinician version. The strategies adopted by the DID program, as an empirically-driven and collaborative process, provide a framework for rating scale development and validation in other therapeutic areas as well.

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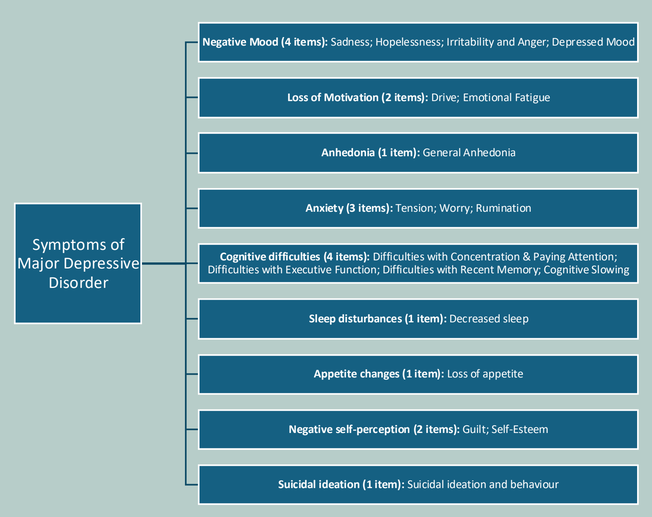
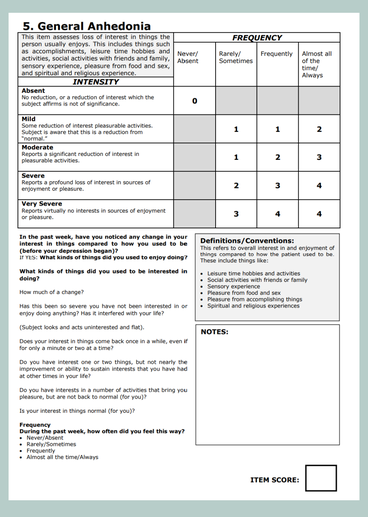
DID Conceptual Framework





5. General Anhedonia

This item assesses loss of interest in things the person usually enjoys. This includes things such as accomplishments, leisure time hobbies and activities, social activities with friends and family, sensory experience, pleasure from food and sex, and spiritual and religious experience.

INTENSITY	*FREQUENCY* Never/ Absent	Rarely/ Sometimes	Frequently	Almost all of the time/ Always
Absent No reduction, or a reduction of interest which the subject affirms is not of significance.	0			
Mild Some reduction of interest pleasurable activities. Subject is aware that this is a reduction from "normal."		1	1	2
Moderate Reports a significant reduction of interest in pleasurable activities.		1	2	3
Severe Reports a profound loss of interest in sources of enjoyment or pleasure.		2	3	4
Very Severe Reports virtually no interests in sources of enjoyment or pleasure.		3	4	4

In the past week, have you noticed any change in your interest in things compared to how you used to be (before your depression began)?
If Yes: **What kinds of things did you used to enjoy doing?**

What kinds of things did you used to be interested in doing?

How much of a change?

Has this been so severe you have not been interested in or enjoy doing anything? Has it interfered with your life?

(Subject looks and acts uninterested and flat).

Does your interest in things come back once in a while, even if for only a minute or two at a time?

Do you have interest one or two things, but not nearly the improvement or ability to sustain interests that you have had at other times in your life?

Do you have interests in a number of activities that bring you pleasure, but are not back to normal (for you)?

Is your interest in things normal (for you)?

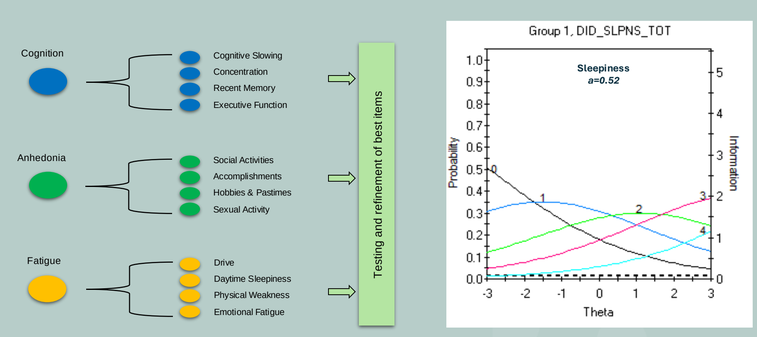
Frequency
During the past week, how often did you feel this way?
- Never/Absent
- Rarely/Sometimes
- Frequently
- Almost all the time/Always

Definitions/Conventions:
This refers to overall interest in and enjoyment of things compared to how the patient used to be. These include things like:
- Leisure time hobbies and activities
- Social activities with friends or family
- Sensory experience
- Pleasure from food and sex
- Pleasure from accomplishing things
- Spiritual and religious experiences

NOTES:

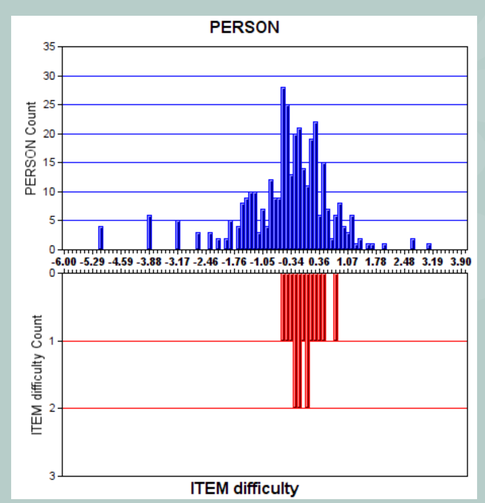
ITEM SCORE:

Item development (IRT)

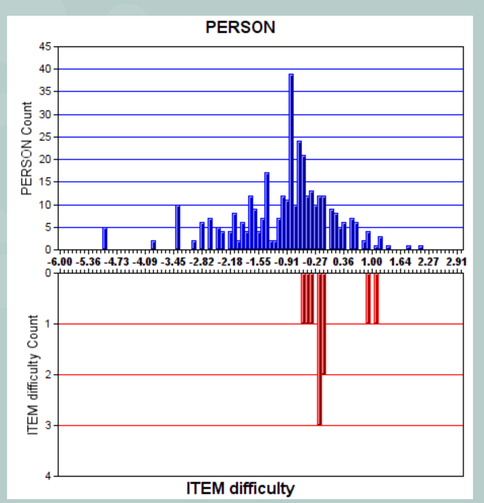


Item Targeting (Rasch)

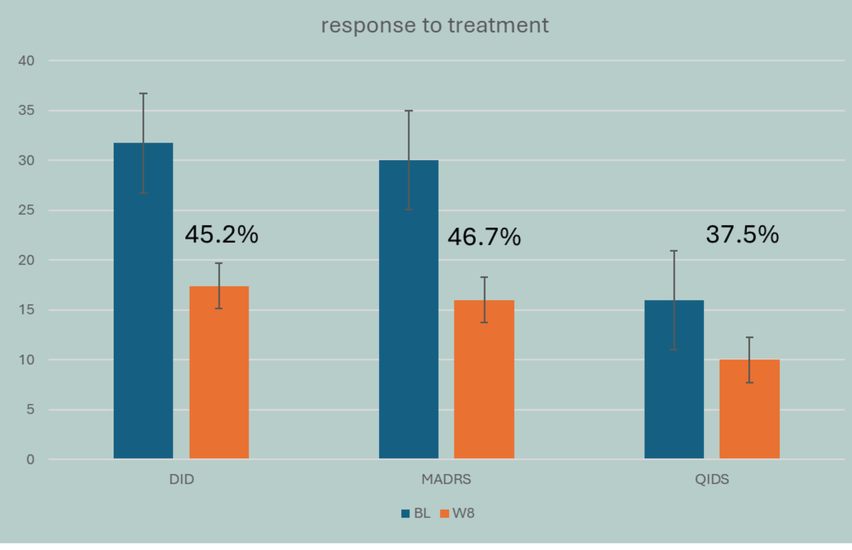
DID



MADRS



Sensitivity to change in open label trial of antidepressant treatment (CAN-BIND)



The authors declare no conflict on interest.

Contact us if you are interested in learning more about DID project

avaccarino@indocresearch.org

www.indocresearch.org

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Quality of Life Across Neurodegenerative and Major Depressive Disorders

Anthony Vaccarino,* Susan Gilbert Evans, Mojib Javadi,
Bianca Lasalandra, Emily Martens, Alana Sparks and Kenneth Evans
Indoc Research, Toronto, Canada; * presenting author

A shared data management platform facilitates pooling of data across disorders and connecting projects to provide new insights

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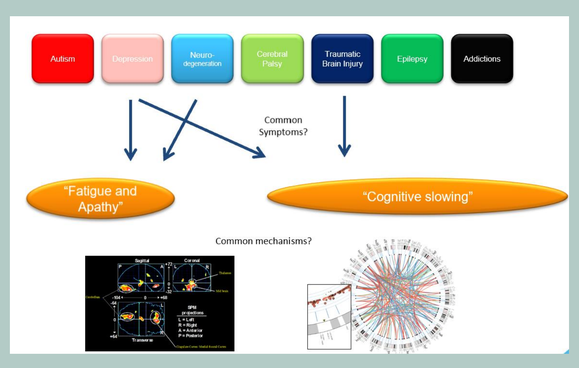
INTRODUCTION

Establishment of common data elements (CDEs) within large scale research studies is a critical step toward enabling consistency in data collection and optimizing the ability of investigators to analyze pooled participant-level data across brain disorders.



CDEs are supported in large scale research programs, including the Brain-CODE (1,2) and Pilot Platforms (www.indocsystems.com). In the present study, CDEs from the Ontario Brain Institute's Integrated Discovery Program were pooled across studies to better understand Quality of Life in neurological disease (Alzheimer's disease/amnesic mild cognitive impairment, amyotrophic lateral sclerosis, cerebrovascular disease, frontotemporal dementia, and Parkinson's disease) (3).

METHODS

The present study used de-identified, consented data collected by the Ontario Neurodegenerative Disease Research Initiative (ONDRI) (4) and Canadian Biomarker Integration Network in Depression (CAN-BIND) (5). Data included standardized demographic information, WHO-QoL-BREF (World Health Organization Quality-of-Life Scale), QIDS-SR (Quick Inventory of Depressive Symptomatology Self-Report) and GAD-7 (Generalized Anxiety Disorder 7) assessments in Alzheimer's disease or mild cognitive impairment (AD/MCI, n = 126), amyotrophic lateral sclerosis (ALS, n = 40), cerebrovascular disease (CVD, n = 161), frontotemporal dementia (FTD, n = 53) and Parkinson's disease (PD, n = 140), major depressive disorder (MDD), as well as age-matched healthy controls (n=157). These data were collected and stored on Brain-CODE (www.braincode.ca). ANOVA was used to compare WHO-QoL-BREF scores across cohorts, followed by linear regression models to examine the influence of comorbid depression.

RESULTS

All WHO-QoL-BREF domain scores for the MDD cohort were significantly worse than healthy controls and all ND cohorts (all $p < 0.05$). For the NDD cohorts, Physical QoL was significantly lower than controls for ALS (61.18+20.26), FTD (73.64+19.88), PD (66.50+16.31) (all $p<0.05$), but not AD/MCI (80.50+14.32, $p=0.97$) and CVD (75.97+15.57, $p=0.088$). Linear regression found an association between depression, anxiety and QoL. Both the QIDS and GAD-7 were significant predictors of QoL, with higher QIDS and GAD-7 scores contributing to decreased Physical (B=-0.45 and -0.17, respectively), Psychological (B=-0.45 and -0.27, respectively), Social (B=-0.25 and -0.17, respectively) and Environmental (B=-0.26 and -0.19, respectively) QoL (all $p<0.01$). Differences were noted across ND cohorts

CONCLUSIONS

The present study highlights the negative impact of depression on QoL [6]. Interestingly, physical QoL was rated better in the ALS and PD cohorts than MDD, despite the physical challenges experienced (i.e., the disability paradox) [7]. These findings also demonstrate the value shared data management platforms to support cross-disease research and CDEs

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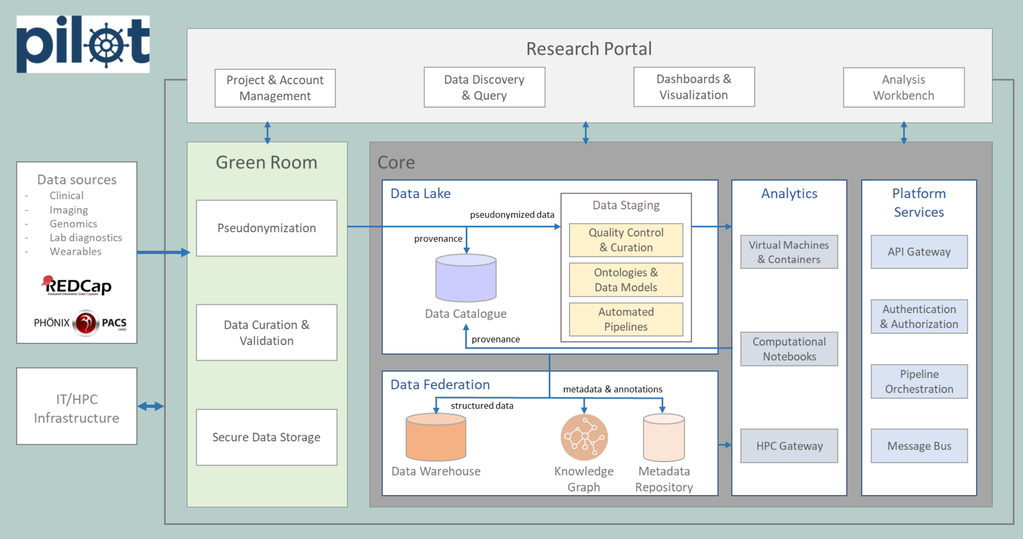
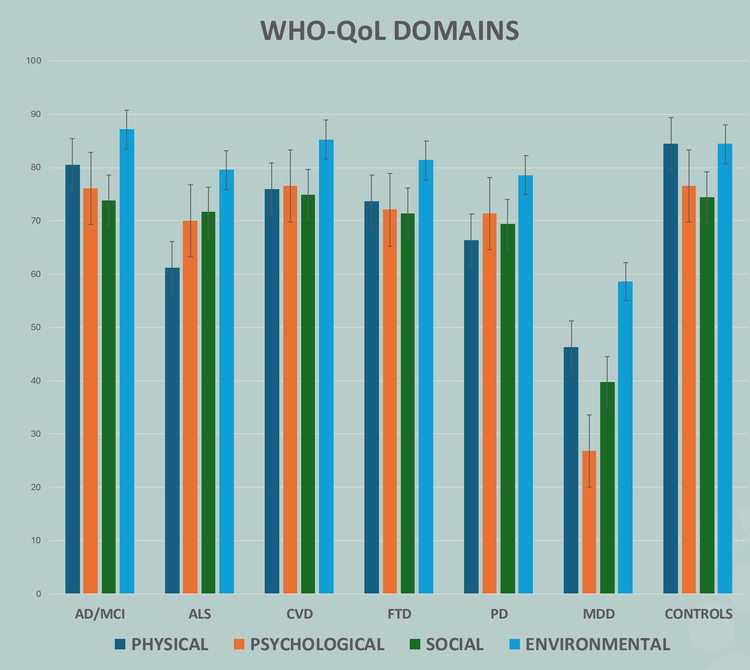
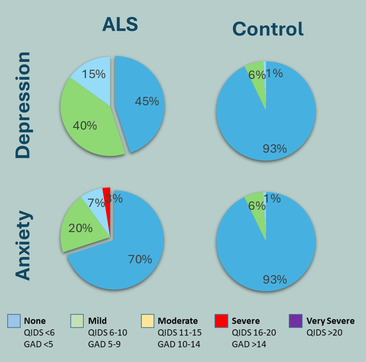
Pilot: Platform for Data Integration and sharing

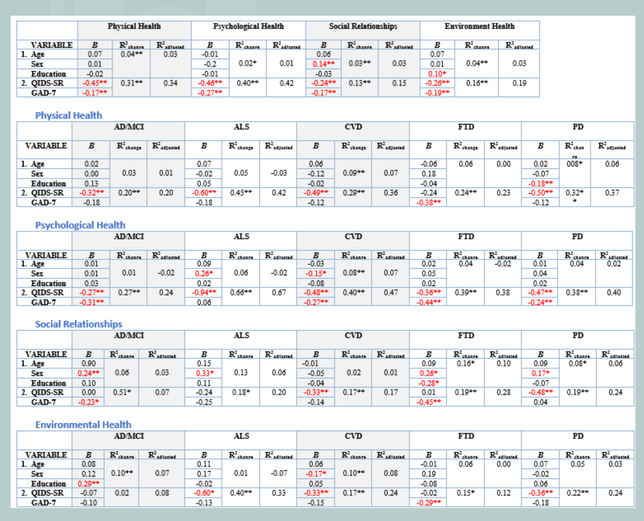


QoL in neurodegenerative disease and MDD: Disability paradox vs negative cognitive bias?



Depression is a mediator of QoL in neurodegeneperative disease





	Physical Health			Psychological Health			Social Relationships			Environment Health		
VARIABLE	B	R^2_{change}	$R^2_{adjusted}$	B	R^2_{change}	$R^2_{adjusted}$	B	R^2_{change}	$R^2_{adjusted}$	B	R^2_{change}	$R^2_{adjusted}$
1. Age	0.07	0.04**	0.03	-0.01			0.06			0.07		
Sex	0.01			-0.2	0.02*	0.01	0.14**	0.03**	0.03	0.01	0.04**	0.03
Education	-0.02			-0.01			-0.03			0.10*		
2. QIDS-SR	-0.45**	0.31**	0.34	-0.46**	0.40**	0.42	-0.24**	0.13**	0.15	-0.26**	0.16**	0.19
GAD-7	-0.17**			-0.27**			-0.17**			-0.19**		

Physical Health

	AD/MCI			ALS			CVD			FTD			PD		
VARIABLE	B	R^2_{change}	$R^2_{adjusted}$	B	R^2_{change}	$R^2_{adjusted}$	B	R^2_{change}	$R^2_{adjusted}$	B	R^2_{change}	$R^2_{adjusted}$	B	R^2_{change}	$R^2_{adjusted}$
1. Age	0.02			0.07			0.06			-0.06	0.06	0.00	0.02	0.08*	0.06
Sex	0.00	0.03	0.01	-0.02	0.05	-0.03	-0.12	0.09**	0.07	0.18			-0.07		
Education	0.13			0.05			-0.02			-0.04			-0.18**		
2. QIDS-SR	-0.32**	0.20**	0.20	-0.60**	0.45**	0.42	-0.40**	0.29**	0.36	-0.24	0.24**	0.23	-0.50**	0.32**	0.37
GAD-7	-0.18			-0.18			-0.12			-0.35**			-0.12		

Psychological Health

	AD/MCI			ALS			CVD			FTD			PD		
VARIABLE	B	R^2_{change}	$R^2_{adjusted}$	B	R^2_{change}	$R^2_{adjusted}$	B	R^2_{change}	$R^2_{adjusted}$	B	R^2_{change}	$R^2_{adjusted}$	B	R^2_{change}	$R^2_{adjusted}$
1. Age	0.01			0.09			-0.03			0.02	0.04	-0.02	0.01	0.04	0.02
Sex	0.01	0.01	-0.02	0.26*	0.06	-0.02	-0.15*	0.08**	0.07	0.05			0.04		
Education	0.03			0.02			-0.08			0.02			0.02		
2. QIDS-SR	-0.27**	0.27**	0.24	-0.84**	0.66**	0.67	-0.48**	0.40**	0.47	-0.16**	0.39**	0.38	-0.47**	0.38**	0.40
GAD-7	-0.31**			0.06			-0.27**			-0.44**			-0.24**		

Social Relationships

	AD/MCI			ALS			CVD			FTD			PD		
VARIABLE	B	R^2_{change}	$R^2_{adjusted}$	B	R^2_{change}	$R^2_{adjusted}$	B	R^2_{change}	$R^2_{adjusted}$	B	R^2_{change}	$R^2_{adjusted}$	B	R^2_{change}	$R^2_{adjusted}$
1. Age	0.90			0.15			-0.01			0.09	0.16*	0.10	0.09	0.08*	0.06
Sex	0.24**	0.06	0.03	0.33*	0.13	0.06	-0.05	0.02	0.01	0.26*			0.17*		
Education	0.10			0.11			-0.04			-0.28*			-0.07		
2. QIDS-SR	0.00	0.51*	0.07	-0.24	0.18*	0.20	-0.33**	0.17**	0.17	0.01	0.19**	0.28	-0.43**	0.19**	0.24
GAD-7	-0.23*			-0.25			-0.14			-0.45**			0.04		

Environmental Health

	AD/MCI			ALS			CVD			FTD			PD		
VARIABLE	B	R^2_{change}	$R^2_{adjusted}$	B	R^2_{change}	$R^2_{adjusted}$	B	R^2_{change}	$R^2_{adjusted}$	B	R^2_{change}	$R^2_{adjusted}$	B	R^2_{change}	$R^2_{adjusted}$
1. Age	0.08			0.11			0.06			-0.01	0.06	0.00	0.07	0.05	0.03
Sex	0.12	0.10**	0.07	0.17	0.01	-0.07	-0.17*	0.10**	0.08	0.19			-0.02		
Education	0.29**			-0.02			0.05			-0.08			0.06		
2. QIDS-SR	-0.07	0.02	0.08	-0.60*	0.40**	0.33	-0.33**	0.17**	0.24	-0.02	0.15*	0.12	-0.36**	0.22**	0.24
GAD-7	-0.10			-0.13			-0.15			-0.29**			-0.18		

Contact us if you would like to learn more about data platforms

avaccarino@indocresearch.org
www.indocresearch.org/www.indocsystems.com

The authors declare no conflict on interest.