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Article

Diagnostic Properties of the Depression Clinical Evaluation Test

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ABSTRACT

Background/objective: To assess depression accurately, it is necessary to have tools that offer reliable and valid measurements. The Depression Clinical Evaluation Test (DCET) was developed with the aim of covering all the symptoms of this disorder and assessing them at different times (monthly, yearly, and always). The objectives of this study are (a) to compare mean DCET scores between a sample of the general population and a sample of patients with depression, and (b) to establish cut-off points for diagnosis. **Method:** The DCET was administered to 225 adults from the general population (M_{age} = 45, SD_{age} = 13.4, 52% female) and 200 patients diagnosed with depression (M_{age} = 51, SD_{age} = 14.8, 61% female). **Results:** Significant differences were observed for all the factors and subfactors of the DCET, except for Guilt and Family Impairment. Patients exhibit higher values in all cases except for substance abuse. ROC curves, conditioned by covariates such as age, education level, and marital status, were calculated for the DCET factors. In most cases, the Area Under the Curve (AUC) is greater than 0.70. **Conclusions:** The DCET provides valid measures to discriminate between clinical and general populations. These findings support the usefulness of the DCET as a comprehensive tool for screening depressive symptomatology across diverse demographic groups.

Propiedades Diagnósticas del Test de Evaluación Clínica de la Depresión

Palabras clave:
Depresión
Test de evaluación clínica de la depresión
Sensitividad
Especificidad

RESUMEN

Antecedentes/objetivo: Para evaluar la depresión con precisión, es necesario disponer de herramientas que ofrezcan medidas fiables y válidas. El Test de Evaluación Clínica de la Depresión (TECD) se desarrolló con el objetivo de abarcar todos los síntomas de este trastorno y evaluarlos en diferentes momentos (mes, año y siempre). Los objetivos de este estudio son: (a) comparar las puntuaciones medias del TECD entre una muestra de población general y una muestra de pacientes con depresión, y (b) establecer puntos de corte para el diagnóstico. **Método:** El TECD se administró a 225 adultos de la población general (*Medad* = 45, *DTedad* = 13,4, 52% mujeres) y a 200 pacientes diagnosticados con depresión (*Medad* = 51, *DTedad* = 14,8, 61% mujeres). **Resultados:** Se observaron diferencias significativas en todos los factores y subfactores del TECD, excepto en Culpa y Deterioro Familiar. Los pacientes presentan valores más altos en todos los casos, excepto en abuso de sustancias. Se calcularon curvas ROC, condicionadas por covariables como edad, nivel educativo y estado civil, para los factores del TECD. En la mayoría de los casos, el Área Bajo la Curva (AUC) es superior a 0,70. **Conclusiones:** El TECD proporciona medidas válidas para discriminar entre poblaciones clínicas y no clínicas. Estos hallazgos respaldan la utilidad del DCET como una herramienta integral para el cribado de la sintomatología depresiva en diversos grupos demográficos.

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Introduction

The assessment of depression is essential in the field of mental health, making it imperative for professionals to use appropriate tools to identify the disorder and provide effective treatment to those who suffer from it. Depression is an affective disorder with a high prevalence worldwide. According to the World Health Organisation, depression is a leading cause of disability (World Health Organisation [WHO], 2021), loss of quality of life, and one of the most relevant public health issues due to the high economic costs it entails, both on an individual and societal level (Institute for Health Metrics and Evaluation, 2020). It affects approximately 322 million people worldwide, accounting for 4.2% of the population (WHO, 2021). In the most severe cases, depressive symptomatology can increase the risk of suicidal behaviour (Sánchez-Teruel et al., 2020, 2021).

The assessment of depression can be approached from two different perspectives: dimensional and categorical. The dimensional approach involves measuring the intensity of depressive symptoms on a continuous scale, focusing on their severity. An example of an instrument based on this approach is the Hamilton Rating Scale for Depression (HAM-D; Hamilton, 1960). However, most instruments are based on the categorical assessment, which focuses on the classification of depressive symptoms into discrete categories, such as the presence or absence of specific symptoms. Instruments based on specific and concrete symptoms, such as those outlined in the Diagnostic and Statistical Manual of Mental Disorders (DSM-5-TR), which classifies depressive disorders into different categories based on the present symptoms (American Psychiatric Association, 2022), are an example of this approach. The Beck Depression Inventory (BDI; Beck et al., 1996) is one of the clearest examples of this type of evaluation. This perspective has certain practical limitations, such as high rates of comorbidity and substantial overlap between the features that define different disorders (Quilez-Orden et al., 2022).

In recent years, there has been a debate about the efficacy and validity of dimensional and categorical approaches for the assessment of depression. Some studies have found that the dimensional approach can be useful for identifying subtypes of depression and selecting more specific treatments (Kircanski et al., 2017; Rosellini & Brown, 2019). It can also provide practical information about treatment response and symptom evolution over time (Dalgleish et al., 2020). On the other hand, other research suggests that the categorical assessment may be better at identifying specific disorders and facilitating communication with other mental health professionals. It is also considered easy to use and familiar for evaluators (Sandín, 2013). The choice between these approaches depends on the evaluation objectives and the clinical context, although more recent classifications, such as the ICD, recommend the use of the dimensional approach as it helps to understand the illness as a continuum with normality and reduces the stigmatisation of those who suffer from it (WHO, 2019; Zabaleta, 2018).

In the field of clinical psychology, it is essential to have instruments that assess the depressive disorders, not only exhaustively and effectively (Guillot-Valdés et al., 2020) but also with adequate psychometric properties that provide guarantees in their application. In this regard, the International Test Commission (2001) recommends the use of technically sound and situationally appropriate instruments. The development of valid and reliable assessment tools has been a growing focus in Spanish clinical research (Sánchez-Teruel & Robles-Bello, 2021)

The majority of depression measurement instruments focus on assessing the emotional dimension (Bernaras et al., 2019), neglecting physiological and motor aspects. It is also evident that tests evaluating multiple dimensions tend to distribute the contribution of each symptom group unevenly to the total score (Fried, 2017) and provide limited, differentiated, and detailed information about the dimensions (Sanz et al., 2013). Furthermore, none of them fully covers all the symptoms included in the latest versions of the DSM and ICD.

With the intention of overcoming these shortcomings and being able to approach most depressive symptoms in the adult population from a dimensional perspective, the Test for Clinical Evaluation of Depression (DCET; Guillot-Valdés et al., 2022a) has been developed. It includes 12 subfactors, grouped into five factors (affective, cognitive, behavioural, interpersonal, and somatic), which make it possible to detect changes in their frequency and duration, taking into account three time points (last month, last year, and lifelong). As shown in a previous study (Guillot-Valdés et al., 2022b), this instrument measures the intensity of a wide range of symptoms to determine the various ways in which the depressive disorder manifests. The DCET was proposed as a valid and reliable multifactorial instrument for identifying the variability of depressive symptoms in adults aged 18 and older.

As a complement to the adequate psychometric properties demonstrated by the DCET in the general population (Guillot-Valdés et al., 2022b), this study aims to (1) compare the mean scores of the subfactors and factors of the DCET between a sample of the general population and a clinical sample of adults diagnosed with depression and (2) establish cut-off points for diagnosis in each factor of the DCET and assess the questionnaire's ability to discriminate between depressed patients and non-depressed individuals.

It is expected that there will be significant differences between the general population and depressed patients, and that the questionnaire will be reasonably discriminatory between the two samples.

Method

Participants

A total of 425 individuals with ages ranging from 18 to 86 years participated, of whom 225 belonged to the general population and 200 were depressive patients. Sociodemographic data are presented in Table 1.

Participants from the general population were recruited using a combination of convenience and snowball sampling through social media (Facebook, Twitter and Instagram) and university mailing lists. Inclusion criteria for this group included being over 18 years old and not having received a diagnosis of a mental disorder in the past two years.

The inclusion criteria for the clinical sample were being diagnosed with any type of depressive disorder according to the DSM-5-TR or ICD-11 criteria, as determined by a structured clinical interview conducted by the psychiatrists and being over 18 years old. Exclusion criteria included having depression as a comorbid disorder. All diagnoses were established by psychiatrists.

Table 1
Sample Characteristics

	General sample (*n* = 225)	Clinical Sample (*n* = 200)	*T*	χ^2	φ
Sex (female), % (*n*)	52% (118)	61% (122)			0.09
Women age, *M* (*SD*)	42 (12.9)	52 (15.7)	**-5.48****		
Men age, *M* (*SD*)	48 (13.2)	49 (12.9)	**-0.49**		
Academic level %				**85.63****	
Higher education	22%	14.5%			
Secondary studies	58%	32.5%			
Professional training	15%	25.5%			
No studies	5%	27%			
Marital status %				**47.50****	
Single	54.7%	26%			
Married	37.8%	49.5%			
Divorced	6.2%	16%			
Widowed	1.3%	8.5%			

Note. *M*: mean; *SD*: standard deviation; *t* = Student *t*; χ^2 = Chi square; φ = Phi; ** $p < .01$

According to the ICD-11 classification, 77% had a single depressive disorder, 18% had a mixed anxiety-depressive disorder, and 5% had dysthymia. Patients had been under psychiatric treatment for an average of seven years (*SD* = 9.24), with a range of 0 to 40 years.

Instruments

Sociodemographic Questionnaire

An ad hoc questionnaire that collects information about sex, age, place of residence, marital status, academic level, and whether the person has been diagnosed with any mental disorder in the past two years.

Depression Clinical Evaluation Test (DCET; Guillot-Valdés et al., 2022b)

It comprises 92 items grouped into 12 subfactors: Thoughts of death, Decreased attention, Depressive mood, Anhedonia, Clinical distress, Sleep disturbance, Underestimation and guilt, Appetite disturbance, Family impairment, Couple impairment, Decreased libido, and Substance abuse. These subfactors are further grouped into five factors: Behavioural, Affective, Somatic, Cognitive, and Interpersonal. It assesses the intensity with which each symptom has been experienced using a Likert-type response format ranging from 0 (*almost none*) to 4 (*completely*), and whether the symptom has been present in the last month, last year, or always. The internal consistency reliability for all factors and time points ranged from .75 to .90 (Guillot-Valdés et al., 2022b). In the present study, the alphas ranged from .75 to .98, both in the general and clinical samples.

Procedure

The assessment instruments were administered in two ways: virtually and on paper/pencil. During the development of the original version of the DCET, no differences or differential item functioning issues were observed between the two formats (Guillot-Valdés et al.,2022b). The virtual application was conducted using Google Forms, distributing the questionnaire through social media platforms (e.g., Facebook, Twitter, and Instagram) and broadcasting lists from the University of Granada. The paper and pencil format was administered by an evaluator in public places (e.g., faculties and transportation stations). Participants were verbally informed about the study's objectives and ethical guarantees. After giving informed consent and accepting a confidentiality clause, the participants completed the questionnaire while the researcher was present to address any questions that might arise. These surveys were collected individually, and no incentives were offered for participation. The average time taken to complete all the questionnaires was 20 minutes.

In the virtual form, the first page provided detailed information about the study, data protection guarantees, and informed consent in accordance with current regulations. Participants had to accept the content of this form before proceeding to the next page. Automated response patterns were manually analysed to remove outliers, and no unusual response patterns were detected. In both processes (paper and pencil, and virtual), the questionnaires were answered anonymously to maintain the confidentiality of the responses.

Between June and December 2022, a researcher administered the paper and pencil instruments to patients previously diagnosed with depression by a psychiatry professional at the Mental Health Unit of the Health Centres *Los Carteros* and *El Alamillo*, both affiliated with the *Hospital Virgen Macarena*" from Seville (Spain). Before conducting the study, authorisation was obtained from the responsible psychiatrist of each patient, who offered participation to those who met the inclusion criteria. Participants were provided with complete information about the study's objective, and the confidentiality of their responses was guaranteed. No incentives were offered for participation. The researcher was present during the questionnaire's completion to address any questions and ensure its proper completion. The average time to complete the

questionnaires was approximately 20 minutes, and responses were collected anonymously to ensure confidentiality.

The study was approved by the Bioethics Committee of the Andalusian Government (Ref.: 0300-N-22) and the Ethics Committee of the University of Granada (Ref. 2576/CEIH/2022). The study complied with the ethical standards of the Declaration of Helsinki (World Medical Association, 2013) and its subsequent amendments. All participants provided voluntary consent to participate in the study.

Data Analysis

Descriptive tests were performed on the sociodemographic variables. The independent samples *t*-test was applied to compare age and each subfactor, factor, and time point of the questionnaire between the clinical and normal samples. To determine the magnitude of these differences, effect sizes were calculated using Cohen's *d* (Cohen, 1988), as well as the coefficient *r*. Differences are considered small when the *d* value is around 0.2, moderate around 0.5, and large from 0.8 onwards. The Chi-square statistic was also applied to the academic level and marital status variables and the Phi test for the sex variable, both to analyse differences in these variables between the two groups. As significant differences were found in age (women), academic level, and marital status, a binary logistic regression analysis was performed, including each factor of the DCET and the covariates age, academic level, and marital status. Given the exploratory nature of the study, no correction for multiple comparisons (e.g., Bonferroni, FDR) was applied; therefore, findings should be interpreted with caution. *P* values were corrected considering .01. Subsequently, a Receiver Operating Characteristic (ROC) analysis was conducted for each factor and time point of the DCET to check the instrument's sensitivity and specificity and establish diagnostic cut-off points. The cut-off points are those that provide the best balance between sensitivity and specificity, and therefore yield the highest overall correct classification (Youden, 1950). In addition, conditional ROC curves were plotted, specifically ROC curves adjusted for the covariates that were significant in the regression for each factor of the DCET. These graphs display the area under the curve for each factor, taking into account the introduced covariates. Following Swets' criteria (1988), if the value of the area under the curve is between 0.5 and 0.7, the accuracy is low; if it is between 0.7 and 0.9, it is fair to high; and if it is above 0.9, the test accuracy is high.

The analyses were performed using the statistical software R 3.5.1 (RStudio Team, 2020), and the packages pROC (Robin et al., 2011) were used for the ROC analysis and ROCnReg (Rodríguez-Álvarez & Inácio, 2021) for the conditional ROC curves.

Results

Table 2 shows the results of the binary logistic regression for the five factors of the DCET and the variables age, academic level, and marital status. Academic level ($p < .001$) is the covariate that is significant for all factors and time points, while marital status is

Table 2
Logistic Regression for the DCET Factors and Selection of Covariates for all Time Points (N =425)

	Month				Year							
	B	**S. T.**	***p***	**OR**	**B**	**S. T.**	***p***	**OR**	**B**	**S. T.**	***p***	**OR**
Affective	0.055	0.006	**.000**	1.056	0.065	0.006	**.000**	1.067	0.044	0.006	**.000**	1.045
Age	0.015	0.010	.129	1.016	0.017	0.011	.107	1.018	0.012	0.009	.199	1.012
Academic level	1.75	0.434	**.000**	5.751	1.719	0.462	**.000**	5.576	1.694	0.404	**.001**	5.442
Marital status	-0.25	0.279	.380	0.783	-0.395	0.296	.182	0.674	-0.472	0.255	.064	0.624
Cognitive	0.031	0.004	**.000**	1.032	0.035	0.004	**.000**	1.035	0.025	0.004	**.000**	1.025
Age	0.023	0.009	.011	1.023	0.029	0.010	**.003**	1.029	0.021	0.009	.019	1.021
Academic level	1.732	0.392	**.000**	5.653	1.662	0.399	**.000**	5.268	1.720	0.385	**.000**	5.585
Marital status	-0.158	0.248	.524	0.854	-0.238	0.256	.352	0.788	-0.342	0.241	.155	0.710
Interpersonal	0.117	0.014	**.000**	1.124	0.109	0.013	**.000**	1.115	0.089	0.014	**.000**	1.093
Age	-0.004	0.011	.698	0.996	0.001	0.011	.919	1.001	-0.008	0.010	.462	0.993
Academic level	2.079	0.432	**.000**	7.999	2.001	0.430	**.000**	7.395	2.101	0.409	**.000**	8.178
Marital status	-0.910	0.291	**.002**	0.403	-0.979	0.290	**.001**	0.376	-1.077	0.276	**.000**	0.341
Somatic	0.096	0.011	**.000**	1.101	0.115	0.012	**.000**	1.122	0.076	0.012	**.000**	1.079
Age	0.008	0.009	.403	1.008	0.009	0.010	.368	1.009	0.009	0.009	.303	1.009
Academic level	1.540	0.416	**.000**	4.663	1.443	0.434	**.001**	4.232	1.758	0.404	**.000**	5.802
Marital status	-0.157	0.258	.542	0.854	-0.262	0.269	.330	0.021	-0.268	0.242	.268	0.765
Behavioural	-0.186	0.041	**.000**	0.830	-0.151	0.039	**.000**	0.860	-0.133	0.039	**.001**	0.876
Age	0.015	0.008	.067	1.016	0.016	0.008	.054	1.016	0.018	0.008	.030	1.018
Academic level	1.769	0.383	**.000**	5.868	1.766	0.379	**.000**	5.849	1.774	0.378	**.000**	5.897
Marital status	-0.502	0.233	.875	0.964	-0.040	0.231	.861	0.960	-0.772	0.231	.938	0.982

only significant in the interpersonal factor at all time points ($p < .01$). Tables 3, 4, and 5 present the results of the mean comparison between the general population and the diagnosed depression patient groups for each subfactor and factor of the DCET, as well as the effect sizes, at each time point. As can be seen, there are statistically significant differences ($p < .01$) in all subfactors of the DCET, except

Table 3
Comparison of the Subfactors and Factors of the DCET Between the General Population Sample and the Clinical Sample at the Month Time Point (N = 425)

	General (*n* = 225)	Clinical (*n* = 200)					
DCET Subfactors	***M (SD)***	***M (SD)***	***df***	***t***	**95% CI**	**Cohen's *d***	***r***
Death thoughts	2.68 (3.56)	7.97 (6.03)	422	**-11.14****	[-6.22, -4.35]	-1.03	-.46
Attention problems	31.64 (17.80)	42.22 (16.90)	417	**-6.20****	[-13.92, -7.22]	-0.60	-.29
Depressive mood	16.56 (15.24)	38.06 (13.42)	421	**-15.30****	[-24.26,-18.74]	-1.50	-.60
Anhedonia	6.76 (6.28)	15.71 (7.35)	421	**-13.50****	[-10.25, -7.65]	-1.30	-.55
Clinical distress	3.08 (3.67)	11.33 (1.6)	422	**-29.3****	[-8.8,-7.7]	-2.91	-.82
Sleep problems	9.87 (6.25)	16.73 (6.92)	421	**-10.71****	[8.11, -5.6]	-1.04	-.46
Feelings of guilt	2.80 (3.23)	3.64 (3.85)	422	**-2.44***	[-1.51,-0.16]	-0.23	-.11
Appetite disturbance	5.56 (4.3)	9.90 (6.04)	421	**-8.58****	[-5.33,-3.34]	-0.82	-.38
Couple impairment	3.17 (3.69)	6.75 (5.38)	381	**-7.72****	[-4.50,-2.66]	-0.77	-.36
Decreased libido	6.15 (3.06)	8.85 (3.73)	422	**-8.18****	[-3.34,-2.05]	-0.79	-.37
Family impairment	6.72 (5.58)	6.47 (5.78)	422	0.45	[-0.83, 1.33]	0.04	.02
Substance abuse	3.88 (2.87)	2.32 (2.61)	422	**-5.80****	[1.02, 2.07]	0.57	.27
DCET factors							
Affective	26.14 (23.05)	57.42 (20.29)	420	**-14.7****	[-35.46, -27.10]	-1.44	-.58
Cognitive	38.35 (25.28)	60.80 (28.56)	416	**-8.55****	[-27.6, -17.27]	-0.83	-.39
Interpersonal	12.91 (9.97)	24.33 (9.22)	381	**-11.4****	[-13.38, -9.45]	-1.19	-.51
Behavioural	3.88 (2.87)	2.32 (2.61)	422	**-5.80****	[.79, 1.88]	0.57	.27
Somatic	21.60 (10.93)	35.40 (11.67)	420	**-12.53****	[-15,96, -11.63]	-1.22	-.52

Note. df = degrees of freedom, *t* = Student *t*, ** $p < .01$, * $p < .05$.

Table 4
Comparison of the Subfactors and Factors of the DCET Between the General Population Sample and the Clinical Sample at the Year Time Point (N =425)

	General (*n* = 225)	Clinical (*n* = 200)					
DCET Subfactors	***M (SD)***	***M (SD)***	***df***	***t***	**95% CI**	**Cohen's *d***	***r***
Death thoughts	2.82 (3.67)	9.71 (6.93)	422	**-12.90****	[-7.93, -5.84]	-1.24	.53
Attention problems	30.78 (17.91)	42.54 (17.46)	416	**-6.94****	[-15.47,-8.64]	-0.83	-.39
Depressive mood	16.55(14.78)	40.50 (12.1)	422	**-18.16****	[-26.62, -21.42]	-1.77	-.66
Anhedonia	6.48 (6.09)	16.20 (7.12)	421	**-15.12****	[-10.98, -8.45]	-1.46	-.59
Clinical distress	3.24 (3.80)	11.04 (2.28)	42	**-25.29****	[-8.4, -7.19]	-2.49	-.80
Sleep problems	9.53 (5.89)	17.11 (6.76)	421	**-12.32****	[-8.8,-6.37]	-1.19	-.51
Feelings of guilt	2.91 (3.38)	3.85 (4.18)	422	**-2.58***	[-1.67, -0.22]	-0.25	-.12
Appetite disturbance	5.30 (4.13)	10.11 (6.13)	422	**-9.57****	[-5.8, -3.82]	-0.92	-.41
Couple impairment	3.43 (3.89)	7.24 (5.17)	381	**-8.24****	[-4.72, -2.9]	-0.83	-.38
Decreased libido	5.88 (2.91)	8.91 (3.65)	422	**-9.50****	[-3.65, -2.4]	-0.91	-.42
Family impairment	6.65 (5.71)	7.03 (6.1)	422	-0.66	[-1.5, 0.75]	-0.06	-.03
Substance abuse	3.86 (2.89)	2.53 (2.79)	422	**4.78****	[0.78, 1.86]	0.49	.22
DCET factors							
Affective	25.95 (22.48)	60.60 (19.18)	421	**-16.93****	[-38.67, 60.6]	-1.65	-.64
Cognitive	37.97 (25.88)	66.30 (32.04)	416	**-9.99****	[-33.9,-22.75]	-0.97	-.44
Interpersonal	13.27 (10.83)	24.99 (9.28)	381	**-11.09****	[-13.8, -9.64]	-1.16	-.50
Behavioural	3.86 (2.89)	2.53 (2.79)	422	**4.78****	[.79, 1.88]	0.49	.22
Somatic	20.72 (10.24)	36.15 (11.61)	421	**-14.53****	[-17.51, -13.34]	-1.40	-.58

Note. df = degrees of freedom, *t* = Student *t*, ** $p < .01$.

Table 5
Comparison of the Subfactors and Factors of the DCET Between the General Population Sample and the Clinical Sample at the always time point (N =425)

	General (*n* = 225)	Clinical (*n* = 200)					
Subfactors del DCET	***M (SD)***	***M (SD)***	***df***	***t***	**95% CI**	***Cohen's d***	***r***
Death thoughts	1.68 (2.71)	6.37 (6.98)	422	**-9.30****	[-5.67,-3.69]	-0.88	-.40
Attention problems	23.04 (14.55)	28.73 (18.27)	417	**-3.54****	[-8.84, -2.53]	-0.34	-.16
Depressive mood	8.67 (10.76)	24.54 (18.96)	422	**-10.75****	[-18.77,-12.97]	-1.02	-.45
Anhedonia	3.13 (3.65)	8.64 (8.02)	421	**-9.27****	[-6.67,-4.34]	-0.88	-.40
Clinical distress	2.01 (2.9)	7.23 (4.84)	422	**-13.64****	[-5.97,-4.46]	-1.30	-.55
Sleep problems	7.48 (5.11)	12.03 (7.53)	422	**-7.35****	[-5.76, -3.32]	-0.70	-.33
Feelings of guilt	2.11 (2.74)	2.65 (3.74)	422	-1.71	[-1.16, 0.07]	-0.16	-.08
Appetite disturbance	4.22 (2.73)	6.84 (5.4)	422	**-6.40****	[-3.42, -1.81]	-0.61	-.29
Couple impairment	1.82 (2.67)	4.46 (4.59)	380	**-7.04****	[-3.37,-1.9]	-0.70	-.33
Decreased libido	4.48 (2.46)	6.39 (4.06)	422	**-5.91****	[-2.54,-1.27]	-0.57	.27
Family impairment	5.56 (4.89)	5.03 (5.31)	422	1.05	[-0.44, 1.49]	0.10	.05
Substance abuse	3.87 (2.75)	2.72 (2.86)	422	**4.22****	[0.61, 1.68]	0.40	.20
DCET factors							
Affective	13.91 (15.66)	35.70 (27.71)	421	**-10.10****	[-26.03, -17.5]	-0.97	.44
Cognitive	27.68 (19.47)	44.22 (32.81)	417	**-6.37****	[-21.63, -11.4]	-0.61	-.29
Interpersonal	9.4 (7.97)	16.5 (11.06)	380	**-7.29****	[-9.01, -5.18]	-0.74	-.35
Behavioural	3.87 (2.75)	2.72 (2.86)	422	**4.22****	[0.62, 1.68]	0.40	.20
Somatic	16.20 (7.84)	25.27(13.25)	422	**-8.69****	[-11.12, -7.02]	-0.83	-.38

Note. df = degrees of freedom, *t* = Student *t*, ** $p < .01$.

for Guilt and Family Impairment. Patients report higher values in all cases except for substance abuse, where patients obtain a lower mean score. Regarding the five factors of the questionnaire, there are significant differences between the two groups in all of them.

To determine the discrimination ability of each factor of the DCET, cut-off points, sensitivity, and specificity were calculated through ROC curves for all time points, considering the general population sample with the depression patient group, as shown in Table 6. Figure 1 presents the graphs of the conditional ROC curves, showing the area under the curve for each factor and time point of the DCET. Except for the behavioural factor (which includes only the Substance abuse subfactor) and the cognitive factor (Thoughts of death and Decreased attention) at the *always* time point, the area under the curve is greater than .70 for all other factors.

Discussion

The importance of depressive disorder in the present time, along with its serious associated consequences, makes it necessary to have assessment tools that provide valid and reliable measures for early detection. With this goal in mind, the DCET, a multifactorial instrument that evaluates a wide range of symptoms, has been developed and has shown adequate psychometric properties in general population samples (Guillot-Valdés et al., 2022b). The objective of this study was to compare the results obtained with the DCET between a general population sample and a sample of depressive patients, as well as to establish cut-off points for the accurate detection of the disorder.

The logistic regression model indicated that the sociodemographic variables of the participants do not affect all factors and time points

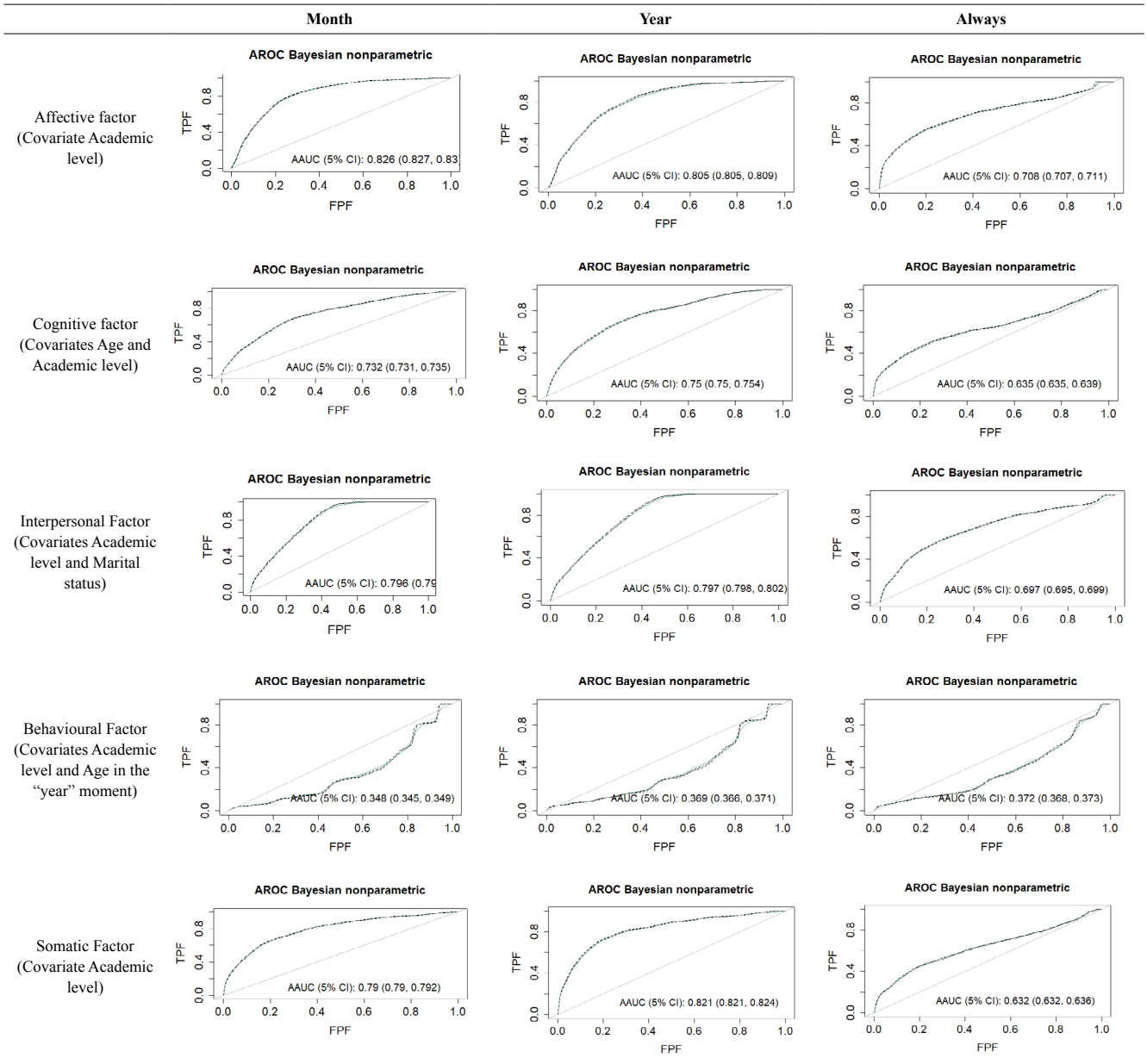
Table 6
Cut-off Points and Areas Under the Curve in ROC Curves for the DCET Factors, Considering the Month, Year, and Always Time Points (N = 425)

	Temporal moment of the response scale														
DCET Factors	**Month**					**Year**					**Always**				
	CP	**AUC**	**Sens.**	**Spec.**	**TPR**	**CP**	**AUC**	**Sens.**	**Spec.**	**TPR**	**CP**	**AUC**	**Sens.**	**Spec.**	**TPR**
Affective	40.5	.826	.66	.75	72.46	42.5	.805	.69	.75	73.32	42.5	.708	.34	.93	76.17
Cognitive	67.5	.732	.36	.87	72.45	67.5	.75	.43	.85	36.51	40.5	.635	.42	.78	34.23
Interpersonal	15.5	.796	.68	.67	67.33	16.5	.797	.66	.66	65.9	19.5	.70	.34	.89	73.32
Behavioural	2.5	.348	.62	.70	67.8	2.5	.37	.60	.71	67.9	1.5	.372	.51	.78	70.32
Somatic	29.5	.79	.58	.81	74.46	28.5	.82	.65	.81	76.46	24.5	.632	.43	.89	75.9

Note. CP= Youden Cut-off point; AUC = Adjusted Area Under the Curve (AUC) taking into account the covariates; Sens. = Sensitivity; Spec = Specificity; TPR = True positive rate.

Figure 1

Conditional ROC Curves for the Factors of the DCET at All Time Points



Note. FPF = False positive fraction; TPF = True positive fraction.

of the instrument in the same way. In some cases, they only influence the cognitive and behavioural factors (age) or the interpersonal factor (marital status). However, academic level is the variable that appears to have the most significant influence on all factors and time points of the DCET. Previous studies (Butters et al., 2022; Martin et al., 2020; Szymkowicz et al., 2023) have noted that cognitive symptoms (feeling of memory loss, lack of attention, appearance of automatic thoughts producing negative ideas about the future or oneself) are often common in depressed middle-aged individuals, such as the clinical sample in this study. On the other hand, the impact of marital status is also a variable that has been studied in relation to the development of depressive symptoms, as noted by Kudoh et al. (2023) and Park et al. (2023), where widowhood is considered a risk factor for depression in some cases. Similarly, Frey et al. (2023) found that greater interpersonal needs were associated with higher depression scores. In the same vein, studies by Hald et al. (2022) and Tosi and van den Broek (2020) indicated that divorced individuals had higher depressive symptomatology compared to those who were not divorced. In terms of academic level, a low level of education can also serve as an indicator of risk (Ayasrah et al., 2018; Kettunen & Hintikka, 2017), given its potential impact on employment, which is likely to be more precarious or unstable. Age-related differences

were only observed in the cognitive facet, which is consistent with evidence indicating that cognitive vulnerability tends to increase across adulthood (Yin et al., 2024). Sex differences should also be considered when interpreting these results, as the proportion of women with depression was higher in the clinical group. This consideration is relevant because women typically report higher levels of emotional distress and internalising symptoms compared to men (La Torre et al., 2021; Shi et al., 2021) and help-seeking behaviours may have influenced the observed scores.

When comparing the mean scores between the study groups, significant differences were observed for all factors, subfactors, and time points evaluated by the DCET, except for family impairment. The clinical group obtained higher scores, except for the subfactor substance abuse, which is the opposite. This finding is not consistent with other studies highlighting the high comorbidity between depressive patients and substance abuse disorders (Hammerton et al., 2023; Tolliver & Anton, 2022; Torrens et al., 2022). However, it's important to note that the patients participating in this study were receiving psychopharmacological treatment. This could imply that they were more aware of the incompatibility between the consumption of harmful substances and their medication, as many antidepressant treatments require abstinence from substances due to possible adverse reactions caused by the interaction between them (Carey, 2019; Choi et al., 2022). In addition, patients with depression tend to isolate themselves due to their low interest and lack of motivation to engage in social interactions, participate in celebrations, or attend festive events where alcohol consumption is common (Chevance et al., 2020). Regarding the subfactor family impairment, there were no significant differences between the groups. This could be because, for patients, the family is a relevant or even indispensable support network to alleviate their symptoms and improve their quality of life (Manczak et al., 2018; Mohd et al., 2019). As for the guilt subfactor, it's worth noting that there are no significant differences between the groups at the "always" time point. This could be because feelings of guilt may be specific to certain cases, such as separation or bereavement (Oren & Hadomi, 2020; Wagner et al., 2021), and they may not always be a prominent symptom in all cases of depression.

Given the interest and convenience of having data on diagnostic efficacy for its use in clinical contexts, the sensitivity-specificity of the DCET was evaluated using ROC curves, calculating cut-off points, sensitivity, and specificity for each of its five factors at different time points rather than using a total score that combines and does not weigh symptoms against each other. Considering the influence of age, marital status, and academic level on the results obtained for some factors, conditional ROC curves were conducted, taking them into account as covariates. It was observed that the area under the curve is higher than .70 for most factors (except for the behavioural factor), indicating that each factor of the DCET is relatively effective in detecting the evaluated symptoms (Unal, 2017). In addition, the results also revealed that the specificity values are higher than the sensitivity values at all time points (with true positive rates exceeding percentages greater than 70 in factors such as Affective and Somatic), making it effective in ruling out the disease in unaffected individuals. This aligns with other depression assessment instruments, such as the Teate Depression Inventory (Balsamo & Saggino, 2014), where higher specificity than sensitivity has also been found, especially as the cut-off point increases. Although the specificity values were consistently higher than the sensitivity values, it is important to note that the DCET is a dimensional instrument intended for screening and research purposes, aimed at identifying risk patterns and symptomatic tendencies in the general population. For this reason, the lower sensitivity values should be interpreted within the context of its intended use.

However, the behavioural factor obtains a relatively low area under the curve, indicating that the subfactor it comprises (e.g., substance abuse) may not achieve good discriminatory precision or that the covariates academic level and age are affecting this precision. It may be worth considering a revision of the items that make up this subfactor. In addition, substance abuse may be present in other psychological disorders not exclusive to depressive disorders (Bahji et al., 2019; Jones et al., 2018; Kaiser et al., 2021).

Limitations

This study is not without limitations. Firstly, due to the limited sample size and the use of a non-probabilistic sampling method and the context in which the study was conducted it is not possible to generalise the findings to the general Spanish population and other cultures or linguistic groups. Secondly, although the study indicates that age and sex effects were statistically controlled through regression analyses, the group comparisons based on Student's t test do not statistically adjust for these variables. This limits the interpretability of the group differences and should be considered in future studies. Additionally, not all facets of the DCET appear to fully discriminate between depressive patients and the general population, so these cut-off points should be interpreted with caution when establishing a diagnosis of depression. In addition, the cross-sectional design does not allow for causal inferences or the examination of temporal stability of the DCET. In order to determine its test–retest reliability and sensitivity to change over time, future longitudinal studies are needed particularly for therapeutic interventions or symptom remission

Conclusions

Despite the limitations mentioned, this study has achieved favourable results in relation to the objectives set and may constitute a valid contribution to the development of a depression assessment instrument. Given the prevalence of this disorder in current times, it is essential to have effective tools that meet appropriate psychometric criteria for their application in clinical settings. In this regard, the DCET presents itself as a valid and useful multidimensional instrument to discriminate between clinical and general adult populations. This study provides relevant information on its diagnostic function by establishing cut-off points for each of its five factors at each time point.

In terms of the clinical implications of the DCET, it offers a detailed evaluation of depressive symptomatology, allowing the detection of the disorder and associated secondary symptoms. This will lead to a therapeutic focus on the most affected areas, preventing their development or worsening. Furthermore, this study highlights that the diagnostic capability of the questionnaire is

appropriate and similar at all three time points evaluated, facilitating the differential diagnosis between episodes of acute depression and persistent depression (also known as dysthymia). This developed instrument can be used in both applied contexts and for research purposes, providing further psychometric data in other contexts and populations.

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