Effectiveness of a protocol based on acceptance and commitment therapy.

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ABSTRACT
The present study evaluated the effectiveness of a maintenance protocol based on acceptance and commitment therapy (ACT) to reduce emotional symptoms and improve key psychological processes in young Ecuadorians with a history of severe depression. Changes in symptoms of anxiety, depression and stress, as well as in central variables of ACT, were analyzed over three time points. The results showed sustained improvements in acceptance and commitment therapy and a progressive reduction in symptoms. Through cluster analysis, three differentiated response profiles were identified, evidencing heterogeneity in the effectiveness of the protocol. These findings highlight the importance of personalizing interventions to optimize clinical outcomes. The clinical implications are discussed and future lines of research are suggested to deepen the mechanisms of change and therapeutic adaptation.

Keywords: ACT, psychological flexibility, depression, anxiety, stress, Ecuadorian youth

Introduction

Major depressive disorder (MDD) is recognized as one of the most disabling psychiatric conditions globally and has important implications for the emotional, social, and occupational functioning of individuals who suffer from it (Sancho et al., 2020). According to the World Health Organization (WHO), around 280 million people suffer from depression worldwide (Cuesta et al., 2022). In this context, and despite the existence of effective interventions and treatments in the acute phase, relapse rates still remain high, particularly in the young population. (Robberegt et al., 2023)
In the Latin American context, these challenges take on additional dimensions due to the various limitations in mental health systems and the lack of resources. Previous studies in Ecuador have shown this problem in communities where the scarcity of resources is very high and social stigmas make it difficult to continue therapy after remission (Kausar & Ishaq, 2024). In this sense, and taking into account that previous studies indicate that, even after effective treatments in the acute phase, the risk of relapse after a major depressive episode can range between 50% and 80% within two years (DeRubeis et al., 2020), it is not surprising that the constant search for maintenance innervations that transcend the symptomatic approach and address the psychological processes underlying recurrence is becoming more frequent. Acceptance and commitment therapy (ACT) has turned out to be an interesting alternative in this regard (De la Viuda Suárez & Posada, 2020; Ledesma-Ortega & Rosas, 2023). Based on the theory of the relational framework and the psychological flexibility model, (Enoch & Nicholson, 2020) ACT proposes that human suffering is perpetuated by experiential avoidance and cognitive fusion, and that well-being is strengthened through acceptance, clarification of values, and committed action (Doorley et al., 2020). ACT has been used and demonstrated in previous studies, certain advantages or equivalences compared to other traditional and cutting-edge treatments, such as cognitive behavioral therapy (CBT). (Thekkumkara et al., 2022)
In this framework, the present study aims to evaluate the effectiveness of an ACT-based maintenance protocol to reduce depressive symptoms and improve the psychological flexibility of young Ecuadorian patients with a history of severe depression.

Theoretical framework of reference
The available literature indicates that ACT offers notable advantages for working on relapse prevention, as it explicitly incorporates the objective of preventing future relapses as part of the behaviour change it seeks to promote (Barco

Alvarez Lino, AlejandraBravo, 2020; Ruiz et al., 2014). Unlike approaches focused solely on symptom eradication, ACT is geared towards increasing psychological flexibility, teaching people to accept difficult thoughts, emotions, and internal experiences without fighting them or trying to eliminate them (Ruiz et al., 2014).

This approach is particularly useful for relapse prevention, as it recognizes that unwelcome discomfort and private events are inevitable in life. Instead of focusing on their control or avoidance, it equips individuals with skills to manage these events functionally and continue to build a life consistent with their personal values, even in the presence of emotional difficulties (Ruiz et al., 2014; Universidad Pontificia Bolivariana, 2020). ACT teaches people to stay connected to the present moment by actively accepting their inner experience, allowing them to keep moving toward their life goals and purposes despite emotional distress.

For the development of the study, the creation of an intervention protocol was proposed that aims to design a maintenance plan based on ACT, aimed at young adults between 18 and 25 years of age with a history of severe depression previously treated with CBT, in order to promote psychological flexibility, prevent relapses and favor sustained emotional well-being. Table 1 summarizes the main aspects that make up the protocol.

Table 1. Summary of the intervention protocol.

Week	Session Theme	Main ACT Process	Specific objective	Featured Techniques
1	Introduction and psychoeducation	Model Hexaflex	Understand the structure and commit to the process	Participatory explanation, group dynamics, contract
2	Acceptance of emotional distress	Acceptance	Reduce experiential avoidance	Experiential exercises, metaphors, guided discussion
3	Cognitive defusion	Cognitive defusion	Changing Relationship with Thoughts	"Leaf in the stream", verbal repetition, reflection
4	Mindfulness and Mindfulness	Contact with the present	Improve emotional regulation	Guided mindfulness, body scanning, group analysis
5	The self as context	Me as context	Build flexible perspective of yourself	"The Constant Observer", metaphor, group dynamic
6	Clarification of values	Clarification of values	Identify purpose and life direction	"Wheel of Life", visualization, group discussion
7	Committed action	Committed action	Turning values into meaningful behavior	Action plan, barrier analysis, metaphors
8	Integration and relapse prevention	ACT Process Integration	Consolidating learning and planning prevention	Group review, personal map, symbolic dynamics

Source: (Álvarez Lino, 2025)

It is important to clarify that the effectiveness of a psychological intervention protocol is not limited only to the reduction of clinical symptoms during the acute phase of the disorder, but extends to its ability to generate sustained changes in the long term. In the case of severe major depressive disorder (MDD), therapeutic sustainability is reflected in what are called positive maintenance indicators. These indicators allow us to identify not only symptomatic remission, but also the functional integration of psychological skills that favor a meaningful life and with less emotional suffering over time. From the framework of ACT, positive maintenance indicators focus on the consolidation of six key psychological processes that make up psychological flexibility: acceptance of discomfort, cognitive defusion, contact with the present moment, clarification of values, sense of self as context, and committed action (Hayes et al., 2012; Ruiz, 2013). The persistence and generalization of these processes after the intervention allow psychological well-being to be sustained even in the face of the return of depressive thoughts or painful emotional experiences.

Materials and methods

In accordance with the above, a longitudinal study was carried out to evaluate the effectiveness of the proposed maintenance protocol by evaluating the positive maintenance indicators referred to ACT. The design of the study was structured in such a way that three moments of evaluation are included in time, after the third month after the maintenance plan has been completed, after the sixth month after the maintenance plan has been completed, and after the ninth month.

The sample was initially made up of 270 young people between the ages of 18 and 25, selected through non-probabilistic convenience sampling. Inclusion criteria were having previously completed previous CBT treatment for severe depression, being currently in the maintenance phase, residing in Ecuador for the duration of the study, and

providing informed consent to participate in the study. Participants with a current diagnosis of psychotic disorder, active substance use, or serious medical conditions that could interfere with the protocol were excluded.
Participants were grouped into cohorts and received the protocol in a group format by a group of previously trained specialists and health professionals. Of the young people initially selected for the study, 39 did not complete the complete scheme of the protocol so they were discarded from the results. The evaluation of the effectiveness of the protocol was carried out (whenever the evaluation tool allowed it), online, to minimize logistical expenses and advance in the speed of data collection. In cases where this was not possible, the working group was supported for interviews and analysis of the information. A group of previously validated tools were used and are in accordance with the information needs required for the study. Table 2 represents the variables analyzed and the tools used to measure them.

Table 2. Study variables and measurement tools used.

Module to be evaluated	Assessment Tool	Description
Acceptance	Acceptance and Action Questionnaire-II (AAQ-II) (Wolgast, 2014)	It measures people's levels of avoidance and psychological inflexibility to cope with events associated with psychological distress
Cognitive defusion	Cognitive Fusion Questionnaire, Spanish version (CFQ)12 (Romero-Moreno, Márquez-González, Losada, (Téllez et al., 2020)	It measures the degree to which people cling to or get caught up in their thoughts
Mindfulness	MORE (Scale, 2012)	It measures the level of open or receptive awareness of attention and attention to what is occurring in the present
Clarification of values	Questionnaire-of-Personal-Values-II (PVQ-II) (Sasaki et al., 2020)	Determine patients' values and their level of commitment to them
Committed action	Committed Action Questionnaire (CAQ-8) (McCracken et al., 2015)	Measures the level of commitment to goals and values
Me as context	Self-as-Context Scale (SACS) (Zettle et al., 2018)	Measures the ability to adopt the observer's perspective
Anxiety, Depression and Stress Scale	DASS-21 (Mella et al., 2014)	Measures levels of depression, anxiety, and stress

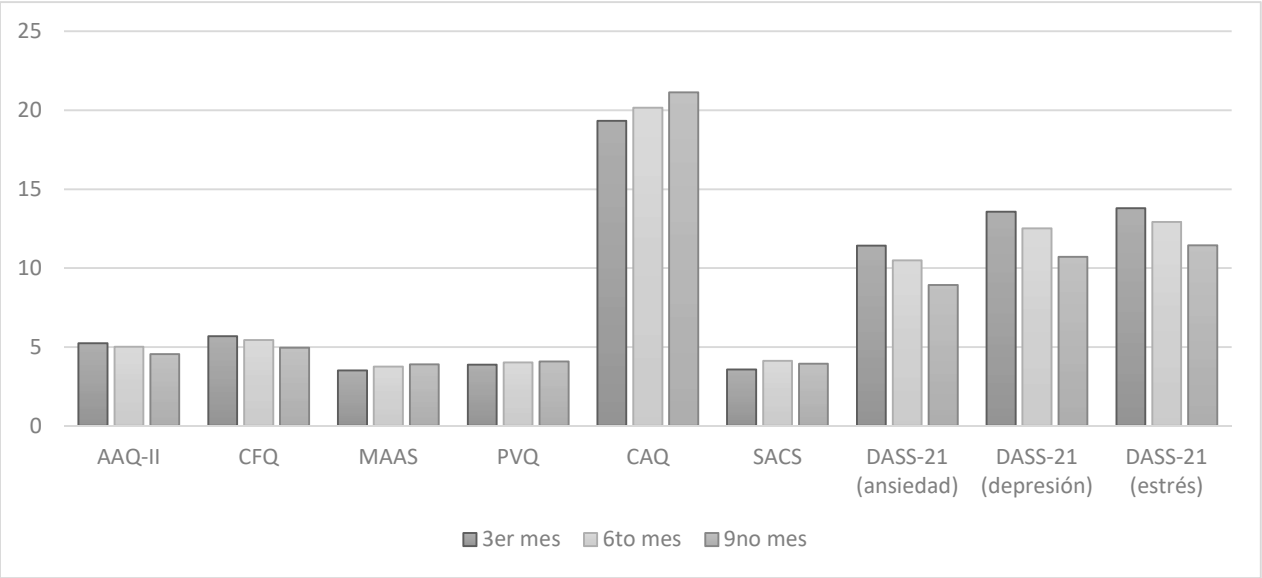
Source: Own elaboration

During the data cleansing phase, anomalies in the measurements, incomplete, blank or undefined responses were filtered. Likewise, the study carried out in the last measurement had complete data from 174 patients, which was adopted as the real sample for the development of the study.
The statistical software InfoStat was used for the analysis and processing of the data. Information consolidation and tabulation tools were used, as well as advanced statistical tools to determine the existence of significant correlations and relationships between the study variables. Confidentiality and anonymity of participants were guaranteed in all phases of the study.

Results

The selected sample had a mean age of 24.1 years with SD=2.6. The preliminary analyses made it possible to determine that the average values of the tools applied had a more or less significant improvement over time. Figure 1 shows a graphical representation of the main variables analyzed.

Figure 1: Relationship of the means of the variables analyzed and their behavior over time



Source: Authors.
Note: In original language (Spanish)

As can be seen in the table, each of the ACT processes showed progressive improvement over the course of the measurements. Simultaneously, the symptoms associated with depression, stress and anxiety gradually but steadily decreased over time. These results indicate a positive and sustained effect over time, which could suggest very preliminarily that the protocol applied had the expected effect.
On the other hand, correlation analyses were performed to measure the level of relationships between the ACT variables and their relationship with the symptoms analyzed.
At the same time, the correlation analysis was carried out to determine possible relationships between the variables. In the first instance, the analysis was carried out between the ACT variables. Spearman's correlation coefficient was used, since normality was not found in the distribution of all variables. The correlation analyses were performed separately in each of the time measurements made in the study. Table 3 shows the main results observed.

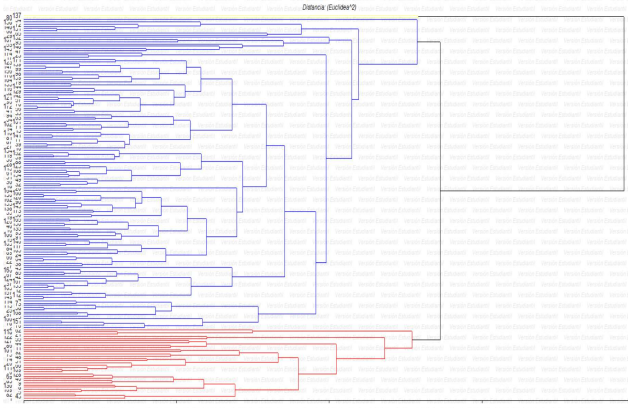
Table 3. Correlation coefficients for ACT variables

Variable Pair	T3 (r_s, p)	S6 (r_s, p)	S9 (r_s, p)
AAQ-II vs. CFQ	0.80 (<0.0001)	0.71 (<0.0001)	0.60 (0<0.0001)
AAQ-II vs CAQ	-0.52 (<0.0001)	-0.42 (<0.0001)	-0.39 (0<0.0001)
CFQ vs. CAQ	-0.36 (<0.0001)	-0.35 (<0.0001)	-0.36 (0<0.0001)
MAAS vs. PVQ	0.77(<0.0001)	0.49(<0.0001)	0.36(<0.0001)
MAAS vs. SACS	0.29(0,0001)	0.39(<0.0001)	0.44(<0.0001)
PVQ vs. SACS	0.31(0,0001)	0.52(<0.0001)	0.77(<0.0001)

Source: Own elaboration

The correlations found were mostly moderate to low and little statistical significance was found between the variables. However, when performing the longitudinal analysis of the pairs of variables shown in Table 3, the relationship between several pairs of variables belonging to ACT can be appreciated. First, moderately strong relationships were observed between psychological inflexibility and cognitive fusion. Interestingly, as time progressed, the levels of correlation tended to decrease, indicating that the relationship might not be significant in the much more distant future. In both cases, moderately high coefficients were obtained that decreased over time.

On the contrary, the relationships observed between the variables associated with the self as context, linked to mindfulness and commitment to values showed results with initially lower correlations, but which increased significantly



over time. These results indicate a coherence and strengthening of the values identified and actions committed.
The relationship observed between the variables referring to cognitive fusion and committed action remained relatively constant during all moments of the study. These results indicate that reduced cognitive fusion is consistently associated with greater behavioral engagement.
Subsequently, analyses of variance were performed on the study data in order to evaluate the evolution of anxiety, depression and stress symptoms, as well as the results of the ACT model over time. The results observed are summarized in Table 4.

Table 4. Summary of ANOVA results and post-hoc comparisons (Bonferroni)

Variable	R^2	F (Time)	p (Time)	Medium T3	Average T6	Medium T9
DASS-21 Anxiety	0.89	182.51	<0.0001	11.43	10.49	8.93
DASS-21 Depression	0.84	170.83	<0.0001	13.58	12.51	10.72
DASS-21 Stress	0.86	101.73	<0.0001	13.79	12.93	11.44
AAQ-II	0.93	422.70	<0.0001	5.24	5.02	4.54
CFQ	0.94	425.83	<0.0001	5.69	5.45	4.95
MORE	0.85	205.97	<0.0001	3.51	3.76	3.91
PVQ	0.90	82.82	<0.0001	3.88	4.02	4.09
CAQ	0.97	106.73	<0.0001	19.34	20.17	21.13
SACS	0.70	134.63	<0.0001	3.57	4.13	3.94

Source: Own elaboration

The Bonferroni test was used as a post-hoc comparison method to control for type I error when making multiple comparisons between temporal levels. The results obtained revealed a progressive and statistically significant decrease in the levels of anxiety, depression and stress perceived by patients in all the time frames analyzed. The means of the symptom variables decreased consistently over time, with anxiety being the variable with the highest % decrease in the mean. On the other hand, the ACT variables showed more controlled but progressive changes, which shows that as time progressed, the protocol allowed patients to deepen the levels of flexibility and strengthening of adaptive and commitment skills.
In this scenario, a cluster analysis was carried out in order to identify differentiated profiles of response to the applied protocol, considering the levels of response in emotional symptoms and in the central psychological processes of ACT applied in the protocol. The hierarchical method of average bonding with Euclidean distance squared was applied, obtaining a cophenetic correlation of 0.947, which indicates a high fidelity of the dendogram with respect to the original distances between subjects. Three main clusters were defined, based on the jump observed in the graph and the interpretation of the results. Figure 2 shows the graph obtained.
Figure 2: Obtained dendogram. (Distance: Euclidea^2)
Source: Own elaboration
Note: In original language (Spanish)

The analysis made it possible to determine three subgroups of participants with differentiated patterns in their evolution of the variables analyzed over time. Table 5 summarizes the average percentages for each variable in each identified cluster.

Table 5. Percentage evolutions of the variables analyzed in the study from the first to the last measurement, by identified group

Cluster	n	Δ AAQ-II	Δ CFQ	Δ MAAS	Δ PVQ	Δ CAQ	Δ SACS	Δ DASS anxiety	Δ DASS depression	Δ DASS stress
1	32	-8.96%	-12.56%	9.81%	13.69%	40.63%	-7.56%	-14.88%	-10.71%	-12.20%
2	140	-10.21%	-12.52%	7.49%	1.95%	34.71%	10.98%	-11.39%	-14.25%	-11.22%
3	2	-10.94%	2.40%	18.38%	17.07%	30.00%	-10.08%	0.00%	-16.67%	7.14%
Grand total	174	-9.99%	-12.36%	8.04%	4.28%	35.75%	7.33%	-11.90%	-13.63%	-11.19%

Source: Own elaboration

First, a group of participants was observed that showed a significant reduction in symptoms of anxiety, depression, and stress, along with notable improvements in ACT processes. This was especially relevant in the case of committed action and commitment to personal values. This group of participants corresponds to a profile with high overall improvement.
On the other hand, the largest group corresponded to participants who also had significant improvements in the variables that evaluated the symptoms of anxiety, depression and stress, with a greater impact in terms of stress reduction. At the same time, significant improvements were observed in the variables corresponding to the ACT processes, although less pronounced than in those observed in group 1.
Finally, the smallest cluster corresponded to subjects who showed atypical patterns with respect to those observed in the other groups. Although an increase in cognitive fusion was observed in these subjects, although other ACT processes showed similar or even higher results than the average of the other groups. However, the low frequency of this group indicates that this cluster represents particular cases of differential response, resistance to change, or measurement biases.
The general results indicate that the protocol applied allowed practically most of those involved in the study to show favorable results in the long term both in the processes related to ACT and in the improvement of the indicators of depression, stress and anxiety. Similarly, it is important to consider the possibility of adjusting some phases of the protocol for greater customization for those who show less response or unusual patterns.

Discussion

The results obtained showed a sustained improvement in the central processes of ACT, as well as a progressive reduction in the symptoms of anxiety, depression and stress over time. The observed results support the efficacy of the ACT method and the protocol applied, in line with previous studies that have reported similar benefits through ACT-based interventions. The gradual decrease in psychological inflexibility and cognitive fusion, together with the strengthening of skills such as mindfulness, clarification of values and committed action, suggest that the protocol facilitates a profound change in the psychological mechanisms underlying emotional symptomatology.
The existence of changes in both symptoms of anxiety, depression and ACT processes was confirmed, which reaffirmed the relevance and practical effect of the interventions throughout the three time points evaluated. The identification of three participant profiles provided a more nuanced view of heterogeneity in treatment response. Overall, the results validated the effectiveness of the protocol and highlighted the importance of considering individual heterogeneity to optimize the intervention.

Conclusions

The present evaluated the effectiveness of an ACT-based maintenance protocol to reduce depressive symptoms and improve the psychological flexibility of young Ecuadorian patients with a history of severe depression. Through the use of statistical techniques, it was possible to analyze, verify and present relevant results. Moderate to strong correlations were observed between some of the ACT processes, although no relationships were observed between symptom

variables and ACT variables. The analysis of variance confirmed that the changes observed both in the variables referring to ACT and in the assessors of symptoms of depression, anxiety and stress were significant at the different times evaluated. A cluster analysis was carried out that allowed the identification of three response profiles, characterized by specific patterns in the evolution of the variables symptoms and psychological processes. These results indicated the existence of subgroups with high, medium and low improvement, reflecting heterogeneity in response to treatment. These results indicate that

It is recommended to consider these profiles to guide more personalized interventions, adjusting the protocol to maximize its effectiveness in those participants who present a lower response or atypical patterns. In addition, it is suggested to deepen the study of the relationships between ACT processes and symptoms, as well as to incorporate contextual and longitudinal variables that allow a better understanding of the mechanisms of change and optimize therapeutic strategies.

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