



Effect of acceptance and commitment therapy in improving interpersonal skills in adolescents: A randomized waitlist control trial

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ABSTRACT

This parallel randomized controlled trial evaluated the effect of acceptance and commitment therapy (ACT) focused on repetitive negative thinking (RNT) versus a waitlist control (WLC) in improving interpersonal skills in adolescents with problems of social and school adaptation. Forty-two adolescents (11–17 years) agreed to participate. Participants were allocated through simple randomization to the intervention condition or the waitlist control condition. The intervention was a 3-session, group-based, RNT-focused ACT protocol. The primary outcome was the performance on a test of interpersonal skills (Interpersonal Conflict Resolution Assessment, ESCI). At posttreatment, repeated measures ANOVA showed that the intervention was efficacious in increasing overall interpersonal skills ($d = 2.62$), progress in values ($d = 1.23$), and reducing emotional symptoms ($d = 0.98$). No adverse events were found. A brief RNT-focused ACT intervention was highly efficacious in improving interpersonal skills and reducing emotional symptoms in adolescents.

1. Introduction

Human beings are social animals. Infants need to interact with other humans to survive and even to develop their linguistic and cognitive abilities (Hayes & Sanford, 2014). Within this process, interacting with others becomes so positively reinforcing that it is not surprising that developing rich interpersonal relationships is key to wellbeing and mental health (Cohen, 2004; Ryff & Singer, 2000). However, we are immersed in complex social contexts in which we need to develop and maintain different types of interpersonal relationships in multiple settings such as family, school, work, couple, and community. This complexity of social life makes necessary the development of interpersonal skills.

Interpersonal skills are usually defined as the cognitive skills and social knowledge regarding the analysis, understanding, and problem-solving at intrapersonal and interpersonal levels (D'Zurilla & Nezu, 1986). They are put into practice when a social conflict is perceived with the aim to collect information about the individuals and interact with them in order to find a valid solution for all. In other words, interpersonal skills allow the individual to understand others and solve their own or others' problems (Pelechano, 1996). These skills include the capacity to discriminate the emotional changes in others, their motivations, worries, and intentions (Gardner, 2000), which can lead to

empathic behavior and the solution of interpersonal conflicts (Morelato, Maddio, & Ison, 2005).

Interpersonal skills begin to be acquired during infancy through the models provided by the family when coping with interpersonal conflicts and are shaped when the child copes with interpersonal conflicts (Caballo & Carrobes, 1987). On some occasions, the child might obtain negative reinforcement when avoiding, running away, attacking, or accepting defeat, which can lead to the development of a dysfunctional behavioral repertoire in the long term. This repertoire might negatively affect enjoying, establishing, and maintaining interpersonal relationships (Van Zalk, Van Zalk, Kerr, & Stattin, 2011), and might constitute a risk factor for the development of psychopathology (Detweiler, Comer, & Albano, 2010).

Interpersonal skills are especially relevant in adolescence, which is characterized by physical and cognitive changes that are associated with the individual's psychosocial development. During this period, the social context usually acquires a high relevance, and adolescents develop new types of interpersonal relationships such as love relationships or intimate relationships with peers (Redondo et al., 2014). Additionally, adolescents experience demands associated with establishing and maintaining relationships, social decision making, and the need to manage personal and interpersonal conflicts. Thus, it is not surprising that interpersonal, adaptation and emotional difficulties tend to increase

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during adolescence (Greco & Eifert, 2004; Vialle, Heaven, & Ciarrochi, 2007).

Some therapeutic approaches have addressed the lack of interpersonal skills in adolescents, such as interpersonal psychotherapy (Mufson, Weissman, Moreau, & Garfinkel, 1999; Weissman, Markowitz, & Klerman, 2000; Young, Mufson, & Davies, 2006) and interpersonal problem-solving training (D'Zurilla & Goldfried, 1971; Spivack, Piatt, & Shure, 1976). These approaches have been effective in treating problems such as depression and difficulties in behavioral adaptation (Quinn, Kavale, Mathur, Rutherford, & Forness, 1999). However, some limitations have been identified, such as the high number of sessions included in the programs and the generalization of the training gains to other social behaviors (García-Martín & Calero, 2019).

Overall, the interpersonal problem-solving training programs suggest that problems of social adaptation are due to the adolescents' lack of interpersonal skills, such as difficulties in recognizing their own and others' emotions, in identifying the cause of these emotions, and in generating alternatives to solve the problem (García-Martín & Calero, 2019). An alternative option is that adolescents might have developed these skills, but are not able to put them into practice because of cognitive overload or emotional dysregulation (Nezu, Nezu, & Greenfield, 2018). Indeed, research shows that individuals with interpersonal problems usually display inflexible patterns of behavior (Gerhart, Baker, Hoerger, & Ronan, 2014; McKay, Lev, & Skeen, 2012). Accordingly, promoting behavioral flexibility might be an alternative to facilitate that adolescents put their current interpersonal skills into practice, which could lead to better interpersonal functioning and the increase of interpersonal skills over time.

Acceptance and commitment therapy (ACT; Hayes, Strosahl, & Wilson, 1999) is a contextual behavioral model of psychological intervention linked to a functional approach of language and cognition known as relational frame theory (RFT; Hayes, Barnes-Holmes, & Roche, 2001; Törneke, Luciano, Barnes-Holmes, & Bond, 2016). According to ACT, psychological inflexibility is an essential mechanism involved in psychopathology and behavioral ineffectiveness (Hayes & Strosahl, 2004). Psychological inflexibility entails the dominance of private experiences in guiding behavior over chosen values (Bond et al., 2011), and it is fostered by cognitive fusion, experiential avoidance, and the lack of values clarity.

Cognitive fusion consists of acting according to the content of private experiences that surface in a given moment, without realizing that those experiences are only transitory events. When private experiences have aversive functions, cognitive fusion leads to engaging in experiential avoidance strategies. In this regard, experiential avoidance entails deliberate efforts to avoid or escape from discomforting private experiences (Hayes, Wilson, Gifford, Follette, & Strosahl, 1996). The problem with a coping repertoire focused on experiential avoidance is that it usually provokes a paradoxical effect by which individuals begin to experience unwanted private experiences more frequently in the long term. Lastly, the lack of values clarity prevents the individuals from behaving under the control of personally relevant, long-term abstract consequences, which makes acting toward short-term contingencies more probable.

According to the previous discussion, psychological inflexibility might impede adolescents to put interpersonal skills into practice by guiding their behavior towards immediate contingencies of negative reinforcement. For instance, adolescents' behavior might fall under the control of negative thoughts (e.g., "She will not be interested in me," "He did that on purpose," or "They are going to laugh at me") or aversive feelings (e.g., anger, anxiety, sadness, or embarrassment) and adolescents might react to them by engaging in some experiential avoidance strategy (e.g., attacking the other person, acting in a submissive way, avoiding the situation, exploding, etc.). In these cases, fostering psychological flexibility would be an essential target for psychological trainings. Psychological flexibility can be defined as the skill to contact private experiences nonjudgmentally in order to orient behavior

towards valued ends (Hayes, Luoma, Bond, Masuda, & Lillis, 2006), and it is the main aim of ACT. Specifically, fostering psychological flexibility in this context would permit the adolescents to put their interpersonal skills into practice, orient their behavior toward their values, and to shape additional skills according to how effective the behavior was in advancing toward values.

Preliminary evidence shows that ACT might be an efficacious intervention in the context of interpersonal problems. Specifically, Quinlan, Deane, and Crowe (2018) tested the efficacy of a 12-week group intervention that integrated ACT and schema intervention (McKay et al., 2012) for the interpersonal problems faced by mental health carers. The results of this open trial indicated that participants showed significant improvements in interpersonal problems after introducing the intervention. However, this study did not analyze whether the intervention was associated with increases in interpersonal skills, as hypothesized in the last paragraph. Accordingly, this randomized controlled trial was designed to analyze whether a brief, group-based ACT intervention could lead to increases in interpersonal skills as measured by a performance test in adolescents showing problems of social and school adaptation. In so doing, we adapted a brief ACT intervention developed for child depression (Salazar, Ruiz, Ramírez, & Cardona-Betancourt, in press), which focused on disrupting repetitive negative thinking (RNT; Ehling & Watkins, 2008), and compared its efficacy against a waitlist control condition.

This type of ACT intervention has been called RNT-focused ACT and is an attempt to provide ACT with a more in-depth focus on RFT by incorporating recent theoretical and empirical analysis (Ruiz, 2019). A core idea in RNT-focused ACT interventions is that RNT, in the form of worry and rumination, is usually a predominant experiential avoidance strategy (Ruiz, Riaño-Hernández, Suárez-Falcón, & Luciano, 2016). Recent studies are showing that brief, RNT-focused ACT protocols are very effective in treating emotional disorders (Dereix-Calonge, Ruiz, Sierra, Peña-Vargas, & Ramírez, 2019; Ruiz et al., 2016; Ruiz, García-Beltrán, Monroy-Cifuentes, & Suárez-Falcón, 2019; Ruiz, Peña-Vargas et al., in press; Salazar et al., in press). Accordingly, developing a brief RNT-focused ACT intervention for adolescents with behavioral adaptation problems seemed to be a promising research direction.

The CONSORT statement (Moher et al., 2010) was followed to guide the reporting of this RCT.

2. Method

2.1. Participants

The current study was conducted in a middle-class, private school in Bogotá (Colombia). The school had approximately 550 students from kindergarten to the baccalaureate. Approximately half of the students in the school were coursing baccalaureate, which was the level in which the study was conducted.

The recruitment process was carried out following the next steps. Firstly, teachers were asked to refer students with problems of social and school adaptation to the school psychologist. The school psychologist assessed these students using a brief interview and a self-report measure of problems in behavior adaptation (Behavioral Adaptation Inventory; Cruz & Cordero, 1981). Afterward, the school psychologist provided the researchers with a list of 56 potential participants who, according to her and their teachers, experienced difficulties in social and school adaptation. These 56 adolescents were invited to participate in the study. Of them, 42 adolescents (30 girls; age range = 11–17 years, $M = 14.52$, $SD = 1.67$) agreed to participate by providing their parents' and own informed consent. Fig. 1 shows the flow of the participants in the study, whereas Table 1 presents the demographical and clinical characteristics of the final sample.

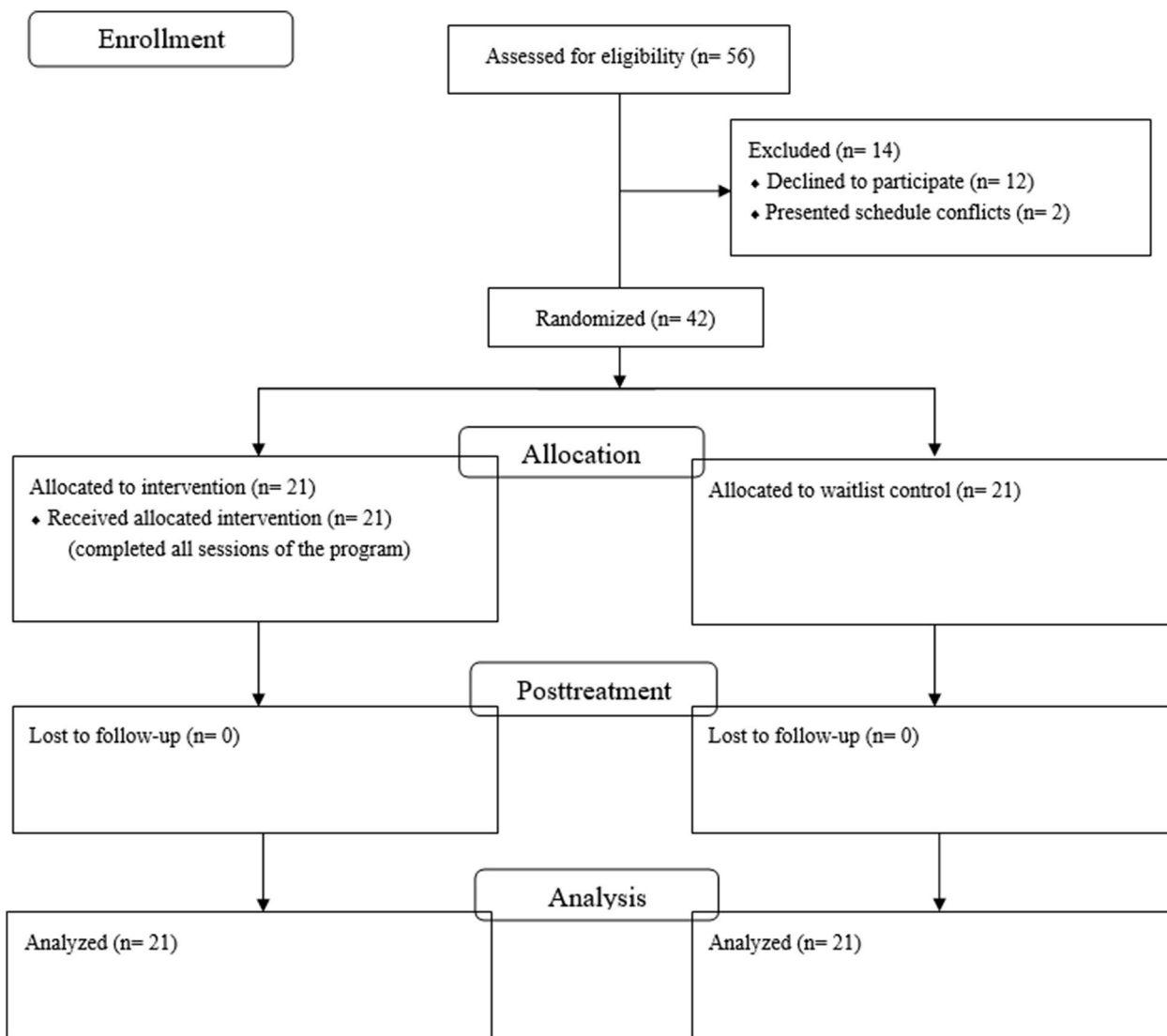


Fig. 1. Participants' flow throughout the study.

2.2. Research design

The study design was a parallel, two-arm RCT with simple randomization with a 1:1 ratio. The web-based tool Research Randomizer (Urbaniak & Plous, 2013) assisted the randomization procedure. Participants were randomly allocated to the RNT-focused ACT intervention ($N = 21$) or the WLC ($N = 21$). The third author generated the random allocation sequence, whereas the first and second authors enrolled the participants and assigned them to the experimental conditions.

The RNT-focused ACT intervention was an adaptation of a protocol used for child depression by Salazar et al. (in press). Dependent variables were divided into primary outcomes, secondary outcomes, and process outcomes. The primary outcomes were the scores on a performance test of interpersonal skills, whereas the secondary outcomes were scores on self-reports of emotional symptoms and valued living. Lastly, process outcomes were measures of RNT and psychological inflexibility.

2.3. Primary outcome

Interpersonal Conflict Resolution Assessment (ESCI; García-Martín & Calero, 2019). The ESCI is a performance test of interpersonal problem-solving skills. It consists of 16 exercises, each containing three questions. All exercises begin by presenting a picture representing an

interpersonal conflict (e.g., a person who is upset at the theatre because someone is talking on the phone out loud). Afterward, participants respond to three questions that measure the skills of identifying emotions (“How is the main character feeling?”), searching the causes of the conflict (“Why is he/she feeling that way?”), and the generation of possible solutions (“What can he/she do to solve it?”). Questions about emotion identification and the generation of possible solutions are rated on a 3-point scale (from 0 to 2), with total scores on the subscales ranging from 0 to 32 points, respectively. Questions about causes are rated on a 4-point scale (from 0 to 3), with a total score on the subscale ranging from 0 to 48. An overall score for the whole test can be obtained by summing the scores of each subscale (range = 0 to 112). In all cases, higher scores represent a higher level of interpersonal skills. The ESCI has a hierarchical factor structure with three first-order factors (Emotions, Causes, and Solutions) and a second-order factor that is an overall indicator of interpersonal problem-solving skills. The ESCI has shown good internal consistency in the validation studies in Colombia, with alphas of .89, .87, .81, and .80 for the ESCI-Total, Emotions, Causes, and Solutions. It has also shown theoretically coherent correlations with self-report measures of interpersonal skills.

Table 1
Demographic and clinical characteristics of the sample ($N = 42$).

Characteristic	Total	ACT ($N = 21$)	WLC ($N = 21$)	t or χ^2	p
Gender					
Female	71.4% (30/42)	66.7% (14/21)	76.2% (16/21)	0.47	.50
Age in years, M (SD)	14.52 (1.67)	14.48 (1.89)	14.57 (1.47)	-0.18	.86
ESCI, M (SD)					
ESCI – Emotions	19.90 (4.81)	20.38 (5.30)	19.43 (4.35)	0.64	.53
ESCI – Causes	21.60 (5.42)	22.05 (5.63)	21.14 (5.30)	0.54	.60
ESCI – Solutions	19.90 (2.98)	20.38 (2.96)	19.43 (2.99)	1.04	.31
ESCI – Global	61.40 (10.19)	62.81 (10.66)	60.00 (9.76)	0.89	.38
DASS-Total, M (SD)	30.90 (12.32)	33.19 (12.09)	28.62 (12.42)	1.21	.23
VQ-Progress, M (SD)	17.86 (6.92)	18.14 (6.26)	17.57 (7.67)	0.27	.79
VQ-Obstruction, M (SD)	15.05 (6.77)	15.62 (6.87)	14.48 (6.79)	0.54	.59
PTQ-C, M (SD)	34.86 (14.48)	38.48 (12.89)	31.24 (15.37)	1.65	.11
AFQ-Y-8, M (SD)	15.71 (7.02)	17.10 (5.97)	14.33 (7.84)	1.28	.21

Note. AFQ-Y-8 = Avoidance and Fusion Questionnaire – Youth – 8; DASS = Depression, Anxiety, Stress Scale – 21; PTQ-C = Perseverative Thinking Questionnaire – Children; VQ = Valuing Questionnaire.

2.4. Secondary outcomes

Depression Anxiety and Stress Scales – 21 (DASS-21; Lovibond & Lovibond, 1995; Spanish version by Daza, Novy, Stanley, & Averill, 2002). The DASS-21 is a 21-item, 4-point Likert-type scale (3 = *applied to me very much or most of the time*; 0 = *did not apply to me at all*) that assesses the negative affect experienced within the last week. Higher scores represent a higher level of emotional symptoms. The DASS-21 has demonstrated excellent internal consistency and criterion validity (Lee, Lee, & Moon, 2019). It showed excellent psychometric properties (alpha of .93 in the total scale) in Colombian samples and a hierarchical factor structure with three first-order factors (Depression, Anxiety, and Stress) and a second-order factor that is an overall indicator of emotional symptoms (Ruiz, García-Martín, Suárez-Falcón, & Odrizola-González, 2017). The DASS-21 has also shown measurement invariance across different Spanish-speaking countries and good psychometric properties in Colombian adolescents (Ruiz, Salazar et al., in press).

Valuing Questionnaire (VQ; Smout, Davies, Burns, & Christie, 2014; Spanish version by Ruiz, Suárez-Falcón, & Gil-Luciano, unpublished manuscript). The VQ is a 10-item, 7-point Likert (6 = *completely true*; 0 = *not at all true*) self-report instrument that assesses valued living averaged across life areas during the past week. It comprises two subscales: Progress (i.e., enactment of values, including clear awareness of what is personally meaningful and perseverance) and Obstruction (i.e., disruption of valued living due to avoidance of unwanted experience and distraction from values). Higher scores on VQ-Progress represent a higher level of Progress, whereas higher scores on VQ-Obstruction represent a higher level of Obstruction. The Spanish version has shown good internal consistency, a two-factor structure, and measurement invariance across gender and clinical and nonclinical participants. The VQ subscales also discriminated against clinical and nonclinical participants and showed theoretically coherent correlations with emotional symptoms, life satisfaction, experiential avoidance, and cognitive fusion.

2.5. Process outcomes

Perseverative Thinking Questionnaire – Children (PTQ-C; Bijttebier, Raes, Vasey, Bastin, & Ehring, 2015; Spanish version by Ruiz, Salazar, et al., in press). The PTQ-C consists of 15 items with a 5-point Likert-type scale (4 = *almost always*; 0 = *never*) that measure RNT in children and adolescents. Higher scores represent a higher level of RNT. The original PTQ-C has shown excellent psychometric properties, a one-factor structure, and convergent and criterion validity. In Ruiz, Salazar, et al. (in press), the PTQ-C showed excellent psychometric properties (alpha of .93), a one-factor structure, and measurement invariance across gender and groupage (i.e., children and adolescents). It also showed theoretically coherent correlations with measures of pathological worry, emotional symptoms, and psychological inflexibility.

Avoidance and Fusion Questionnaire – Youth – 8 (AFQ-Y-8; Greco, Lambert, & Baer, 2008; Spanish version by Salazar et al., 2019). The AFQ-Y-8 consists of 8 items with a 5-point Likert-type scale (4 = *very true*; 0 = *not at all true*). The AFQ-Y-8 is the short version of the AFQ-Y, which has 17 items, and was designed to measure psychological inflexibility. Higher scores represent a higher level of psychological inflexibility. The use of the AFQ-Y-8 is usually recommended over the more extended version because it has a more evident one-factor structure. In Salazar et al. (2019), the AFQ-Y-8 showed good internal consistency in Colombian adolescents (alpha of .82), a one-factor structure, and measurement invariance across gender and groupage. The AFQ-Y-8 also showed theoretically coherent correlations with measures of emotional symptoms, RNT, pathological worry, and generalized pliance.

2.6. RNT-focused ACT protocol

The ACT protocol used in this study is available in Spanish and English at <https://osf.io/mxpzj/>. The protocol consisted of three, group-based, 75-min sessions. It was based on the relational frame theory's (RFT; Hayes et al., 2001) definition of psychological flexibility (Luciano, Valdivia-Salas, & Ruiz, 2012; Ruiz & Perete, 2015; Törneke et al., 2016) and previous similar protocols used in Ruiz et al. (2016, 2018, 2019) and Salazar et al. (in press). The protocol aimed to develop psychological flexibility and, in so doing, emphasized shaping the ability to discriminate ongoing triggers for RNT, take distance from them (i.e., defusion), and behave according to what is most important at that moment for the individual (i.e., values).

The aims of Session 1 were: (a) to establish the differentiation between psychological inflexibility (PI) and psychological flexibility (PF) reactions through multiple examples, (b) to practice the differentiation between PI and PF, (c) to examine options for PI and PF in the adolescents' daily life, and (d) to establish the adolescents' commitment to realize whether they were reacting inflexibly or flexibly toward their ongoing private experiences until the next session. The objectives of Session 2 were: (a) to review the experience since the last session and advances in discrimination of PI and PF, (b) promoting a transcendental and coherent perspective of the self, (c) exploring values and goals that allow advancing towards them, (d) to identify the counterproductive effects of RNT and practice defusing from its triggers, and (e) to establish the commitment to continue practicing the differentiation between PI and PF, and to try not engaging in counterproductive RNT. Lastly, the aims of Session 3 were: (a) to review examples of inflexible and flexible reactions since the last session, (b) to develop defusion skills through multiple exemplar training, and (c) to practice the differentiation between engaging in RNT or choosing to behave towards values in the presence of triggers.

2.7. Procedure

This study took place between August and November 2018. The study was presented to the principal of a Colombian school, who

approved its implementation. Subsequently, the study was presented to potential participants (i.e., adolescents previously identified as showing problems of social and school adaptation) and their parents in the first week of the semester. Participants who provided informed consent signed by them and their parents responded to the pretreatment assessment approximately two weeks after the recruitment. This assessment was conducted on a group basis and consisted of responding to the ESCI, DASS-21, VQ, PTQ-C, and AFQ-Y.

After conducting the pretreatment assessment, participants were randomly allocated to the experimental conditions. The intervention with the ACT condition began the following week and was implemented after the school day in a classroom provided by the school. The sessions were conducted weekly in two groups of approximately 10 participants. They were led by the first author, who was in the last year of her master's degree in clinical psychology. She received an introduction to ACT during her studies and was trained in the application of the protocol by the second and third authors.

The posttreatment assessment was conducted one week after the application of the intervention, approximately one month after the pretreatment evaluation. In this session, participants responded to the same measures as in pretreatment. Participants in WLC began the intervention afterward. No posttreatment assessment was conducted with participants in the WLC because of time constraints.

2.8. Data analysis

The raw data of this study can be accessed at <https://osf.io/mxpzj/>. Before conducting the data analyses, all variables were explored for the accuracy of data entry and missing values. No missing data were found at the item and total scores level.

Data analyses were conducted with the free software JASP 0.9.2.0 (<https://jasp-stats.org/>). First, independent sample t-tests and chi-square tests were conducted to explore the equivalence of both conditions at pretreatment. Secondly, repeated measures analyses of variance (RM ANOVA) were computed to analyze the effects of the factors Time (Pretreatment and Posttreatment) and Condition (RNT-focused ACT vs. WLC) on all dependent variables. We adopted Bonferroni's correction (alpha/number of tests) for multiple testing to prevent Type I error inflation. This resulted in setting alpha at .0056. To facilitate the communication of the effect sizes of the intervention, the *F* values of the RM ANOVAs were transformed into Cohen's *d* through the online calculator http://www.psychometrica.de/effect_size.html#interpretation (6. Computation of *d* from the *F*-value of Analyses of Variance) (Lenhard & Lenhard, 2016). The results of Cohen's *d* can be interpreted as small ($d = 0.20$ to 0.49), medium ($d = 0.50$ to 0.79), and large (above $d = 0.80$) (Cohen, 1988).

As the sample included participants with very high scores on the DASS-Total, we reran the analyses with only the participants with clinical scores on the DASS-Total (participants with at least a score of 25, which was the cutoff used in the clinical trial by Ruiz, Peña-Vargas et al., in press). These analyses were exploratory and, due to the decreased statistical power, we did not apply Bonferroni's correction. Also, we computed the reliable change index (RCI) and clinically significant change (CSC) according to the guidelines provided by Jacobson and Truax (1991) and the data provided by Ruiz et al. (2017). The RCI indicates whether a participant has shown a change score on a psychometric instrument that exceeds the reasonably expected change due to measurement error alone. A change of 9 points was needed to claim for an RCI. CSC occurs when the participant shows an RCI and his/her score in the instrument that is closer to the nonclinical average than to the clinical average. According to Ruiz et al. (2018), the cutoff to claim for CSC was established in 22/23 points (i.e., 22 points were closer to the nonclinical average and 23 points to the clinical average).

Chi-squared tests were conducted to analyze possible statistically significant differences in the frequency of RCI and CSC between conditions. Cohen's *ds* were obtained from the chi-square value according to

the formula presented by Rosenthal and DiMatteo (2001, p. 72). This analysis was also computed in http://www.psychometrica.de/effect_size.html#interpretation (15. Computation of the effect sizes *d*, *r* and n^2 from X^2 and *z* test statistics).

3. Results

3.1. Sample characteristics and equivalence of conditions at pretreatment

Table 1 shows the detailed information of the participants. The mean score on emotional symptoms (DASS-Total: $M = 30.90$, $SD = 12.32$) was in the clinical range, whereas the mean scores on valued living were slightly lower for the VQ-Progress and higher for the VQ-Obstruction compared with nonclinical samples. Lastly, the scores on RNT (i.e., PTQ-C scores) and psychological inflexibility (i.e., AFQ-Y-8 scores) were high compared with nonclinical samples (Ruiz, Salazar, et al., in press; Salazar et al., 2019).

Table 1 also shows the results of the chi-squared tests and t-tests conducted to explore the equivalence of the ACT and WLC conditions at pretreatment. There were no statistically significant differences between conditions.

3.2. Primary outcomes

Fig. 2 shows the pre-post differences in interpersonal skills, whereas Table 2 presents the descriptive data and the results of the RM ANOVA. Although participants in the WLC showed an increase in the ESCI scores, participants who received the RNT-focused ACT protocol showed a steeper increase. The RM ANOVA showed statistically significant interaction effects between the factors Time and Condition for the overall scores of the ESCI and each of its subscales (ESCI-Total: $F(1, 40) = 68.71$, $p < .001$; ESCI-Emotions: $F(1, 40) = 28.51$, $p < .001$; ESCI-Causes: $F(1, 40) = 26.50$, $p < .001$; ESCI-Solutions: $F(1, 40) = 39.74$, $p < .001$). These results indicate that the ACT condition showed statistically significant higher increases in interpersonal skills than the WLC. The effect sizes of the intervention effects were very large (ESCI-Total: $d = 2.62$; ESCI-Emotions: $d = 1.69$; ESCI-Causes: $d = 1.63$; ESCI-Solutions: $d = 1.99$).

3.3. Secondary outcomes

Table 2 also shows the results on emotional symptoms and valued living. The results of the RM ANOVA indicated that there were statistically significant interaction effects between Time and Condition for the DASS-Total ($F(1, 40) = 9.71$, $p = .003$) and VQ-Progress ($F(1, 40) = 15.04$, $p < .001$). However, there was not an interaction effect between Time and Condition for VQ-Obstruction ($F(1, 40) = 2.11$, $p = .15$). The effect sizes for the DASS-Total and VQ-Progress were large ($d = 0.98$ and 1.23 , respectively) and near medium-size for the VQ-Obstruction ($d = 0.46$).

3.4. Process outcomes

Participants in the ACT condition showed marked decreases in RNT and psychological inflexibility, whereas the WLC condition showed slight increases in both measures (see Table 2). The RM ANOVAs showed statistically significant interaction effects between the factors Time and Condition for both the PTQ-C, $F(1, 40) = 39.67$, $p < .001$, and the AFQ-Y-8, $F(1, 40) = 12.22$, $p = .001$. The effect sizes were very large (PTQ-C: $d = 1.99$; AFQ-Y-8: $d = 1.11$).

3.5. Results in participants with clinical scores on emotional symptoms

Table 3 shows the results of the reanalysis conducted with participants with clinical scores on the DASS-Total. The same pattern of results was obtained. Regarding the effect on emotional symptoms, the effect

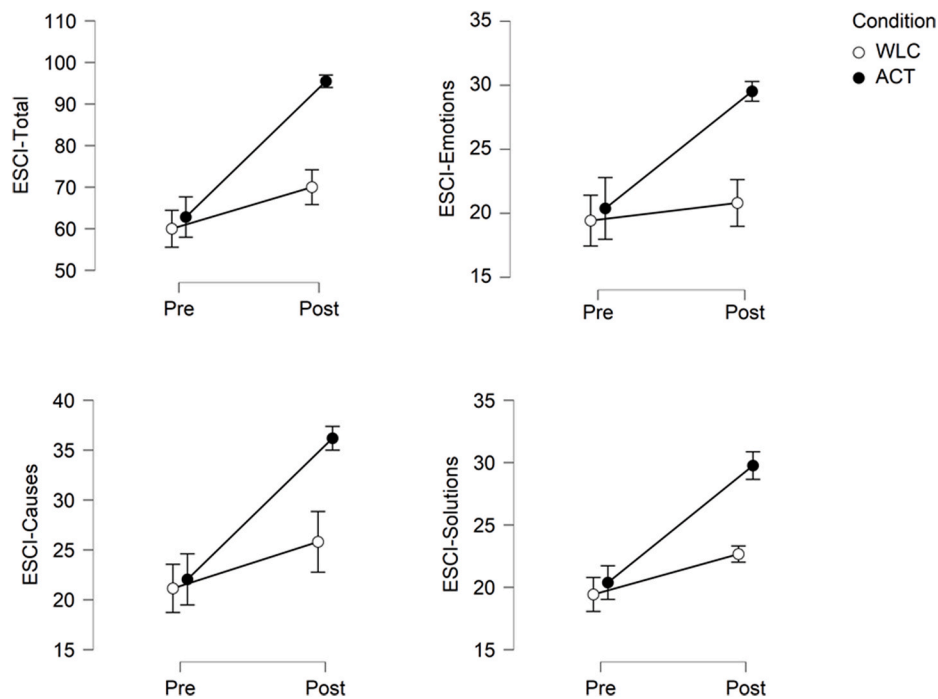


Fig. 2. Pre-post change in interpersonal conflict resolution (ESCI) scores. Error bars represent 95% confidence intervals. The scale of the figures has been adjusted (ESCI-Total = 0–112; ESCI-Emotions = 0–32; ESCI-Causes = 0–48; ESCI-Solutions = 0–32).

Table 2

Descriptive data at pretreatment and posttreatment, results of the repeated measures ANOVA, and effect sizes.

	RNT-focused ACT (N = 21)		Wait-list Condition (N = 21)		Between-group differences	
	Pre	Post	Pre	Post	F	d
	M (SD)	M (SD)	M (SD)	M (SD)		
Primary outcomes						
ESCI – Total	62.81 (10.66)	95.48 (3.28)	60.00 (9.76)	70.03 (9.20)	68.71***	2.62
ESCI – Emotions	20.38 (5.30)	29.52 (1.69)	19.43 (4.35)	20.81 (4.01)	28.51***	1.69
ESCI – Causes	22.05 (5.63)	36.19 (2.62)	21.14 (5.30)	25.81 (6.68)	26.50***	1.63
ESCI – Solutions	20.38 (2.96)	29.76 (2.43)	19.43 (2.99)	22.67 (1.43)	39.74***	1.99
Secondary outcomes						
DASS-Total	33.19 (12.09)	23.29 (12.69)	28.62 (12.42)	27.48 (13.88)	9.71***	0.98
VQ – Progress	18.14 (6.23)	24.52 (3.01)	17.57 (7.67)	16.00 (5.62)	15.04***	1.23
VQ – Obstruction	15.62 (6.87)	11.81 (6.27)	14.48 (6.79)	14.09 (6.95)	2.11	0.46
Process outcomes						
PTQ-C	38.48 (12.89)	19.19 (6.19)	31.24 (15.37)	33.71 (10.72)	39.67***	1.99
AFQ-Y-8	17.10 (5.97)	11.19 (6.69)	14.33 (7.84)	14.43 (6.49)	12.22***	1.11

Note. AFQ-Y-8 = Avoidance and Fusion Questionnaire – Youth – 8; DASS = Depression, Anxiety, and Stress Scales-21; ESCI = Interpersonal Conflict Resolution Assessment; PTQ-C = Perseverative Thinking Questionnaire – Children; VQ = Valuing Questionnaire.

* $p < .05$, ** $p < .01$, *** $p \leq .001$.

size obtained was very large ($d = 1.24$). Table 4 shows the percentage of reliable change and clinically significant change in each condition. There were statistically significant differences between conditions in both reliable change ($X^2(1, 29) = 6.56, p = .01, d = 1.08$) and clinically significant change ($X^2(1, 29) = 7.49, p = .006, d = 1.18$).

4. Discussion

Interpersonal skills have shown to be a crucial factor for adolescents' adaptation, mental health, and valued living (García-Martín & Calero, 2019). Training protocols on interpersonal skills for adolescents have focused on developing the skills of (a) identifying own and others' emotions, (b) identifying the causes of own and others' emotions, and (c) generating alternative solutions for the problematic, interpersonal situations. Although these training protocols have been efficacious (Nezu et al., 2018), they usually do not directly address psychological

inflexibility, which might be an important factor for adolescents not displaying their interpersonal skills in the abovementioned problematic situations. This difficulty in putting the interpersonal skills into practice might impede their further development, which can hinder advancing towards values and goals and lead to increases in emotional symptoms.

The current study was designed to test the hypothesis that training psychological flexibility would lead to increases in interpersonal skills as measured by a performance test, even without explicitly targeting them. In so doing, an RCT was conducted to analyze the effect of a 3-session, group-based, RNT-focused ACT protocol versus a waitlist control in increasing interpersonal skills in adolescents showing problems of social and school adaptation ($N = 42$). We did not select an active control condition (e.g., an interpersonal problem-solving training) because the results could be inconclusive regarding the increase of interpersonal skills (i.e., if both interventions would lead to equal increases, we would not know if that was due to a practice effect with the test or to actual

Table 3

Descriptive data at pretreatment and posttreatment, results of the repeated measures ANOVA, and effect sizes for participants with clinical scores in emotional symptoms (DASS-Total ≥ 25).

	RNT-focused ACT (N = 16)		Wait-list Condition (N = 13)		Between-group differences	
	Pre	Post	Pre	Post	F	d
	M (SD)	M (SD)	M (SD)	M (SD)		
Primary outcomes						
ESCI – Total	63.25 (11.65)	95.31 (3.52)	62.38 (6.33)	71.62 (6.94)	41.80***	2.49
ESCI – Emotions	21.06 (5.21)	29.25 (1.77)	20.62 (3.40)	22.15 (3.67)	13.64***	1.42
ESCI – Causes	21.94 (5.99)	36.06 (2.77)	21.38 (5.01)	26.31 (6.29)	14.35***	1.46
ESCI – Solutions	20.25 (3.15)	30.00 (2.73)	20.38 (2.22)	22.77 (1.09)	37.24***	2.35
Secondary outcomes						
DASS-Total	38.25 (8.77)	25.38 (13.72)	35.38 (9.97)	33.77 (13.13)	10.33**	1.24
VQ – Progress	18.50 (7.06)	25.13 (3.10)	14.85 (8.33)	15.62 (6.16)	7.99*	0.89
VQ – Obstruction	16.50 (7.02)	12.31 (6.66)	16.69 (6.79)	16.92 (6.96)	1.76	0.51
Process outcomes						
PTQ-C	42.81 (10.96)	19.19 (6.60)	34.85 (12.56)	36.69 (10.07)	45.90***	2.61
AFQ-Y-8	18.44 (5.82)	11.81 (7.47)	17.92 (6.02)	17.31 (4.75)	6.41*	0.98

Note. AFQ-Y-8 = Avoidance and Fusion Questionnaire – Youth – 8; DASS = Depression, Anxiety, and Stress Scales-21; ESCI = Interpersonal Conflict Resolution Assessment; PTQ-C = Perseverative Thinking Questionnaire – Children; VQ = Valuing Questionnaire.

* $p < .05$, ** $p < .01$, *** $p \leq .001$.

Table 4

Percentages of reliable change and clinically significant change in DASS-Total scores.

	RNT-focused ACT	Waitlist Condition
Reliable Change	62.50% (10/16)	15.39% (2/13)
Clinically Significant Change	43.75% (7/16)	7.69% (1/13)

changes in interpersonal skills). The recruited sample showed high levels of emotional symptoms, RNT, and psychological inflexibility, and low levels of valued living.

Participants in the WLC showed an increase in interpersonal conflict resolution skills (i.e., ESCI), which might be due to a practice effect with the test. However, participants in the RNT-focused ACT condition showed steeper increases on ESCI scores, with very large between-condition effect sizes. Regarding secondary outcomes, the RNT-focused ACT protocol also showed significant effects in reducing emotional symptoms and promoting progress in valued living, with large effect sizes. However, no statistically significant changes were found for the Obstruction subscale of the VQ. Large and statistically significant effect sizes were found for measures of RNT and psychological inflexibility. The effect of the RNT-focused ACT intervention was similar to participants with high scores on emotional symptoms (i.e., DASS-Total ≥ 25), although the effect sizes for emotional symptoms increased.

Some limitations of the current study are worth mentioning. Firstly, the sample of this study consisted of adolescents from a middle-class, private school. This implies that we might have higher confidence in the generalizability of the results to similar schools than to other types of schools (e.g., a low-class, public school). Secondly, the long-term effects of the RNT-focused ACT protocol are unknown because it was not possible to collect follow-up data due to the end of the school year. Further studies should analyze the long-term effects of the RNT-focused ACT intervention on interpersonal skills and the secondary outcomes. For instance, previous studies that used the ESCI as the outcome measure have shown that the effect of the training in interpersonal skills increases at the follow-up (Guarnizo-Guzmán & García-Martín, unpublished manuscript). Also, previous studies on the efficacy of brief, RNT-focused ACT protocols in emotional disorders have shown increasing effects at follow-up (e.g., Ruiz et al., 2016, 2018; Salazar et al., in press). In this regard, it would be interesting to analyze the interrelationships between interpersonal skills, emotional symptoms, and values with the process measures of psychological flexibility and RNT. Thirdly, the total score of the ESCI is more strongly a function of the ESCI-Solutions

because each item is scored on a 0–4 scale, whereas ESCI-Emotions and ESCI-Cause are both scored on a 0–3 scale. Note, however, that the intervention showed large effect sizes on each subtest of the ESCI. Fourthly, only one psychologist applied the intervention. Further studies should replicate this study with different psychologists implementing the protocol to increase the generalizability of the results. Fifthly, although interpersonal skills were assessed through a performance test, no ecological data were collected regarding the participants' interpersonal skills. It might have occurred that participants in the ACT condition would have shown an increase in their performance on the ESCI, but they would not be displaying interpersonal skills in daily life. Accordingly, further studies might include ecological measures of interpersonal skills. Lastly, the RNT-focused ACT intervention was compared to a WLC condition. The WLC conditions control for hope and expectancies for change but do not control for the potentially beneficial effect of unspecific factors such as attention and support (Knock, Janis, & Wedig, 2008). Further studies might analyze the effect of the RNT-focused ACT protocol in increasing interpersonal skills versus a nondirective supportive intervention or an intervention specifically designed to increase interpersonal skills.

Despite the aforementioned limitations, the current study provides preliminary evidence that training psychological flexibility might facilitate putting interpersonal skills into practice, which might contribute to shaping further skills. Subsequent studies should analyze this hypothesis in greater detail by conducting mediation analyses. Importantly, the increase of interpersonal skills occurred even without explicitly training interpersonal skills during the ACT protocol. Further studies might analyze if including training on psychological flexibility within interpersonal problem-solving training programs improves their efficacy. Lastly, a strength of the current study is that the nomothetic and idiographic analyses reached similar conclusions regarding the decrease in emotional symptoms.

In conclusion, this study adds empirical evidence of the efficacy of a brief, RNT-focused ACT protocol in increasing interpersonal skills. Further studies might analyze the effect of this protocol that makes few emphases in interpersonal skills with other interventions designed to increase them and analyze their long-term effects and processes of change.

Ethical approval

All procedures performed in this study were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or

comparable ethical standards.

Informed consent

Informed consent was obtained from all individual participants included in the study.

Declaration of competing interest

The authors declare that they have no conflict of interest.

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