Self-compassion in Acceptance and Commitment Therapy for chronic pain

Short Communication

Sérgio A. Carvalho*, David Gillanders, Teresa Forte, Inês A. Trindade, José Pinto-Gouveia, Teresa Lapa, Ana Valentim, Elsa Santos, Juliana Paciência, Raquel Guiomar and Paula Castilho

Self-compassion in Acceptance and Commitment Therapy for chronic pain: a pilot study

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Abstract

Objectives: Evidence shows that Acceptance and Commitment Therapy (ACT) is an empirically supported psychological approach for chronic pain (CP) management. Although self-compassion is not explicitly a target of ACT, it seems to be one mechanism of change in ACT for CP. However, research is lacking on the benefits of including explicit self-compassionate exercises in ACT for CP. The current study pilot tested a Compassionate ACT 8-session group program (COMP.ACT; n=9), as well as an ACT-only 8-session group program (ACT; n=7), in a sample of women with CP.

Methods: The current study follows a quasi-experimental design, and conducts Reliable and Significant Change analyses comparing pre- to post-intervention scores of self-report measures.

Results: No differences were found between conditions at baseline, nor between completers and drop-outs. Although preliminary, results showed COMP.ACT led to greater clinical improvements in depression and anxiety, while ACT led to greater improvements in stress and uncompassionate self-responding. Reliable and Significant Change analysis showed that some participants improved significantly (in psychopathological symptoms, valued living and uncompassionate self-responding) in both conditions, while the majority did not change significantly.

Conclusions: More research is needed to conclude whether explicit self-compassion exercises are useful in ACT for CP. Limitations and implications are further discussed.

Keywords: Acceptance and Commitment Therapy; chronic pain; compassion; pilot study.

***Corresponding author: Sérgio A. Carvalho**, PhD, Center for Research in Neuropsychology and Cognitive Behavioral Intervention (CINEICC), Faculty of Psychology and Education Sciences, University of Coimbra, Rua do Colégio Novo, Apartado 6153, 3001-802 Coimbra, Portugal; and HEI-Lab: Digital Human-Environment Interaction Lab, School of Psychology and Life Sciences, Lusófona University, Lisbon, Portugal, Phone: (+351) 239 851450, Fax: (+351) 239 851462, E-mail: sergiocarvalho@fpce.uc.pt

David Gillanders, School of Health in Social Sciences, University of Edinburgh, Edinburgh, UK

Teresa Forte, Department of Social, Political and Territorial Sciences, University of Aveiro, Aveiro, Portugal

Inês A. Trindade, Center for Research in Neuropsychology and Cognitive Behavioral Intervention (CINEICC), Faculty of Psychology and Education Sciences, University of Coimbra, Coimbra, Portugal; and Department of Molecular and Clinical Medicine, Institute of Medicine, Sahlgrenska Academy, University of Gothenburg, Gothenburg, Sweden

José Pinto-Gouveia, Raquel Guiomar and Paula Castilho, Center for Research in Neuropsychology and Cognitive Behavioral Intervention (CINEICC), Faculty of Psychology and Education Sciences, University of Coimbra, Coimbra, Portugal

Teresa Lapa, Anaesthesiology Service, Coimbra Hospital and University Centre, Coimbra, Portugal; and Faculty of Health Sciences, University of Beira Interior, Covilhã, Portugal

Ana Valentim, Elsa Santos and Juliana Paciência, Anaesthesiology Service, Coimbra Hospital and University Centre, Coimbra, Portugal

Introduction

Acceptance and Commitment Therapy (ACT) [1] is a contextual-behavioral psychological approach that promotes 'workable' behavior towards personal valued goals [2]. There is strong evidence of the efficacy of ACT on improving quality of life, well-being, reducing pain limitation and psychopathological symptoms, and in promoting psychological flexibility in individuals with CP [3, 4], and its efficacy for CP has been acknowledged by The British Pain Society recommendation of ACT for CP management [5].

Self compassion, described as the sensitivity to personal suffering and the motivation to behave in a way that alleviates one's suffering [6, 7], has been a recent topic of interest in CP research (see [8]) due to its potential physiological mechanisms of action (e.g., associated with oxytocin-endorphin pain regulation systems) [9, 10], and

to its protective role against depression [11] and pain disability [12] in CP. Indeed, compassion-based psychological interventions were found useful in effectively promoting CP management (see [13]).

Although self-compassion is not an explicit target of ACT for CP, the bridge between ACT and compassion-based approaches has been theoretically built [14, 15], and indeed research suggests that ACT does promote self-compassion [16], that self-compassion overlap with psychological processes promoted through ACT [17], and is one mechanism of therapeutic change underlying ACT for CP [18]. Also, although interventions that incorporate elements of ACT and compassion seem to be effective in promoting mental health in different clinical conditions other than CP [19, 20], the added value of including explicit compassionate exercises in an ACT protocol has yet to be established.

The current study aims to pilot test an 8-session group ACT intervention that incorporates explicit self-compassion exercises (COMP.ACT), and compare it to an ACT-only intervention (ACT), in a sample of women with CP.

Methods

The COMP.ACT program

The development of the COMP.ACT program (Table 1) was based on the Psychological Flexibility Model (PFM) applied to CP [21, 22], with elements of compassion-based approaches [7, 23].

The COMP.ACT program has eight weekly sessions of 2 h and is delivered according to a standardized and previously written workbook (with sessions' goals, therapist guidance, instructions to meditations, metaphors and overall exercises, guiding bullet-points for post-exercises inquiry, summary and indication of between sessions assignments and practices). Participants were provided with the following materials: complementary texts, handouts with activities worksheets, and recorded audio exercises (1. Mindful breathing, 2. Body-scan, 3. Soothing Rhythm Breathing, 4. Loving-kindness, and 5. Soften, Soothe and Allow).

Participants

The current study is part of a larger one that focused on the relationship between self-compassion, pain, psychopathology, and psychological flexibility processes in CP. Specifically, the sample in the present clinical study (n=16) partly overlaps with the sample (n=49) of a published cross-sectional study [24] (which is composed of the baseline scores of the 16 participants who are part of the current study, as well as participants who were not able or interested to participate in the current clinical study, but who agreed to participate in the cross-sectional study).

Recruitment occurred in the pain consultation of the anesthesiology service of Coimbra University Hospital (CHUC). Inclusion: a) non-malignant CP; b) female (the healthcare service has disproportionately more women with CP; this criterion was established *a priori* for attaining a homogeneous sample in terms of gender); c) adults (age 18–65); d) available to attend sessions. Exclusion: a) psychosis; b) severe depression; c) substance abuse; d) non-suicidal self-injury; e) suicidal ideation; f) attending another psychological intervention.

Participants had a mean age of 50.69 (SD=8.50). The majority were married (n=12; 75%), and some were single (n=2; 12.5%), divorced (n=1; 6.3%) and widowed (n=1; 6.3%). In terms of education, participants had 4th grade (n=3; 18.8%), 6th grade (n=3; 18.8%), 9th grade (n=4; 25%), high school (n=3; 18.8%), bachelors (n=2; 12.5%), and masters (n=1; 6.3%). In regards to duration of CP, participants reported having pain for less than 1 year (n=4; 25%), between 1 and 5 years (n=8; 50%), between 5 and 10 years (n=3; 18.8%), and for more than 10 years (n=1; 6.3%). CP diagnoses included fibromyalgia (n=12; 75%), osteoarthritis (n=1; 6.3%), rheumatoid arthritis (n=1; 6.3%), low back (n=2; 12.5%), neck pain (n=2; 12.5%), and other (n=6; 37.5%). Ten participants reported 1 CP diagnosis (62.5%), four reported having 2 CP diagnoses (25%), and two reported having 3 CP diagnoses (12.5%). Seven participants had other chronic illnesses (43.8%).

No significant differences were found between conditions in terms of age ($t_{(14)}$=1.216; p=0.244), marital status ($\chi^2_{(3,\ n=16)}$=2.12, p=0.549), education ($\chi^2_{(5,\ n=16)}$=2.79, p=0.732), number of CP diagnoses ($t_{(14)}$=−1.038; p=0.317), duration of CP ($\chi^2_{(3,\ n=16)}$=5.67, p=0.129), and presence of other chronic illnesses ($\chi^2_{(1,\ n=16)}$=0.91, p=0.341).

Procedure

This study is registered as a trial (NCT04210466) at ClinicalTrials.gov. Participants were informed about the study by their physician or nurse that participation was voluntary, and that personal information would be accessed exclusively by the research team. Those who provided informed consent were assessed for exclusion criteria (see Figure 1). Exclusion criteria were assessed by a clinical psychologist through a semi-structured 30-min clinical interview.

Conditions differed in sessions 3 and 4, in which the COMP.ACT condition included two compassion-based sessions (see Table 1), and in the ACT-only condition these sessions consisted of questions and answers regarding previous sessions, willingness, and mindful meditation practice. The intervention was conducted in a co-therapy setting by two clinical psychologists with training in ACT and compassion approaches, and previous experience in delivering acceptance, mindfulness and compassion-based interventions.

No significant differences were found between participants who were lost to post-intervention assessment and participants who completed the program in terms of age ($t_{(25)}$=−0.98; p=0.338), marital status ($\chi^2_{(3,\ n=27)}$=2.70, p=0.440), education ($\chi^2_{(5,\ n=27)}$=4.05, p=0.541), number of CP diagnoses ($t_{(10.00)}$=1.19; p=0.262), duration of CP ($\chi^2_{(3,\ n=24)}$=1.68, p=0.641), and presence of other chronic illnesses ($\chi^2_{(1,\ n=24)}$=0.18, p=0.673).

It should be noted that the current study design present the following deviations from the registered clinical trial (NCT04210466): 1) the sample size is n=16, instead of the aimed n=20. The reason for this discrepancy relates to the dropout rate of participants throughout the study (see Figure 1). Also, this study was part of the PhD studies of the first author, who, due to time constraints and lack of human resources, was not able to continue recruitment; 2) as a result from these time constraints, the research team was unfortunately not able to conduct the 6-month follow-up assessment as was previously intended; 3) additionally, we added one more exclusion criterion that was

Table 1: Overview of the COMP.ACT program for chronic pain.

Session title	Theme(s)	Content	Between sessions practice
1. Introduction to COMP.ACT: control is the problem	Setting the structure and functioning of the sessions; Creative hopelessness; Introduction to mindfulness.	Welcome meditation; Creative hopelessness part I: the mind as a problem solving machine; Creative hopelessness part II: control as the problem; Creative hopelessness part III: what controlling pain has cost me; Mindful breathing meditation.	Daily mindful breathing meditation.
2. The body is (a) present: promoting body awareness through mindfulness.	The multidimensional nature of pain; Language and the paradoxical effect of thought suppression; Mindfulness, body awareness and the different components of pain experience.	Check-in mindful meditation; The pain as a multidimensional phenomenon (sensations, thoughts, emotions, behaviors); The yellow giraffe exercise; Mindfulness exercise: body-scan.	Daily body-scan exercise. Activity worksheet 3 ("the mind registration").
3. Compassion I: from self-criticism to self-care	The relationship between mind and body; Introduction to (self)compassion as an alternative to (self)criticism.	Soothing Rhythm Breathing; Mind and body: an artificial division; Compassion in the body; Loving-kindness meditation.	Daily practice of body-scan and/or loving-kindness. Activity worksheet 4 ("what I would say to someone who suffers like I do"). Activity worksheet 5 ("10 fingers of gratitude").
4. Compassion II: the body is an anchor of self-compassion	Promoting self-compassion; The body as a safe place.	Soothing Rhythm Breathing; Compassionate touch; Soften, soothe and allow exercise.	Daily practice of body-scan and/or soften, soothe and allow.
5. Acceptance: there is more to accept than pain itself	Promoting openness to experience; Promoting willingness.	Shorten body-scan meditation; Describe vs. evaluate; Acceptance of emotions meditation.	Daily practice of body-scan and/or loving-kindness. Activity worksheet 7 ("what have I given up?").
6. (Re)discovering values: searching for a valued life	Values clarification; Introduction to committed action.	Present moment awareness meditation (ending: what brings me here?); Introduction to values; Values meditation; Activity worksheet 9: values exercise ("what matters to me").	Daily practice of body-scan and/or loving-kindness. Purposely choosing one valued-based action daily.
7. ACT now: from values to committed action	Values-guided committed action; The link between present moment awareness, willingness and committed action.	Values exercise: 80th birthday; Introduction to committed action; Passengers on the bus exercise; Setting SMART goals; Activity worksheet 10 ("4 steps to committed action").	Daily practice of body-scan and/or loving-kindness. Commit to the formulated actions in activity worksheet 10. Register obstacles to committed action and strategies to overcome the obstacles.
8. Going on after COMP.ACT: program summary	Reflection on learned skills; Embracing life kit.	The well in the field meditation; Activity worksheet 11 ("obstacles in the river: before vs. now"); Gratitude meditation; Embracing life kit: program summary; Compassionate body-scan (abbreviated).	Daily implementation of the embracing life kit.

Sessions followed the same structure: 1) check-in meditation; 2) post-meditation inquiry; 3) brief sharing of experiences (obstacles, reflections, accomplishments) since last session; 4) core theme of the session; 5) session summary; 6) homework assignments.

not previously thought out: participants already attending psychological programs/care were not eligible, as this would confound results on the impact of COMP.ACT; 4) also, the study previously aimed to assess exclusively pain, psychopathological symptomatology, and quality of life. However, it has been pointed out that assessing the impact of contextual-behavioral interventions (e.g., ACT) should

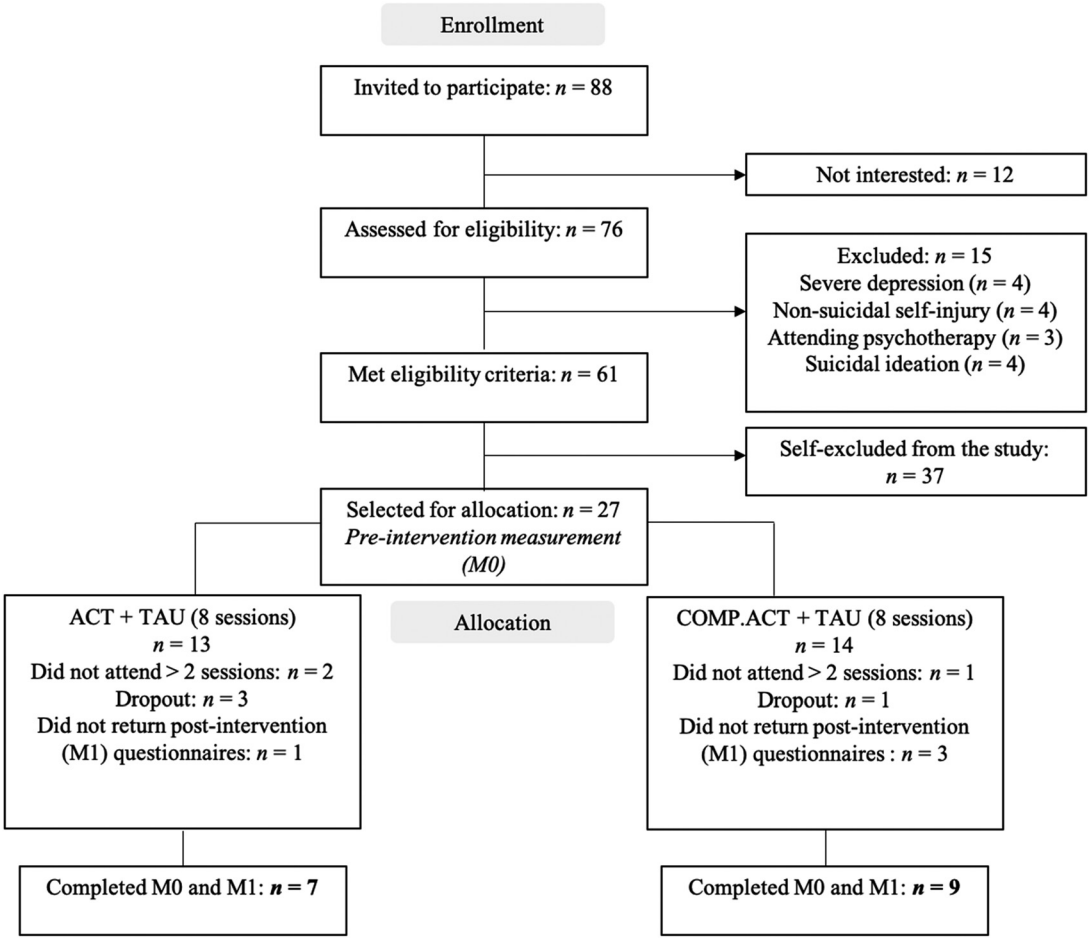

Figure 1: Diagram of participants

consider not exclusively symptom reduction, but more importantly changes in functioning and in the psychological processes targeted by these interventions [25]. In order to add measures of relevant processes (e.g., mindfulness, self-compassion, valued-living), and reduce the burden of an already extensive assessment battery, we ended up excluding the quality of life measure from the protocol.

Measures

In addition to socio-demographic and medical information, the protocol included self-report measures already validated for the Portuguese population. See Cronbach α for each scale in Table 2.

Numerical Pain Rating Scale (NPRS) [26] is a measure of pain intensity. Participants are asked to rate the average pain intensity in the last 24 h on an 11-point scale (0 = "No pain"; 10 = "Worst imaginable pain"). A pain intensity single score was created from ratings of: 1) current pain; 2) highest pain in last 24 h; 3) lowest pain in last 24 h. Higher scores indicate greater pain intensity.

Pain Disability Index (PDI) [27], is an 11-point scale (0 = "No disability"; 10 = "Worst disability") that measures pain disability in seven daily life domains. Higher scores indicate higher pain disability.

Depression, Anxiety and Stress Scale-21 (DASS-21) [28] is a measure of depression, anxiety and stress symptoms with 21 items rated on a 4-point Likert scale (0 = "Did not apply to me at all"; 3 = "Applied to me very much or most of the time").

Five Facet Mindfulness Questionnaire (FFMQ) [29] is a self-reported measure of mindfulness composed of 39-items. These are divided in five facets of mindfulness: Observing, Describing, Acting with awareness, Nonjudgmental, and Non-reactive, which can be computed in a total Mindfulness score. Each item is scored on a 5-point Likert scale (1 = "Never or very rarely true"; 5 = "Very often or always true"). Higher scores indicate higher levels of mindfulness.

Valuing Questionnaire (VQ) [30] is a 10-items measure of valued living. The questionnaire has a two-factor structure: 1) VQ-Obstruction (obstacles to valued living), and 2) VQ-Progress (progress in valued living). Higher scores in VQ-Obstruction indicate higher levels of experiencing obstructions to valued living, and higher scores in VQ-Progress indicate higher levels of experiencing progress in living according to values.

Self-Compassion Scale (SCS) [6] is a 26-items scale that measures self-compassion in two domains: compassionate self-responding (self-kindness, common humanity and mindfulness) and uncompassionate self-responding (self-judgment, isolation and over-identification). Items are scored in a 5-point Likert scale (1 = "Almost never"; 5 = "Almost always"). There is an ongoing debate around the factor structure of the SCS [31, 32]. In this study, we will follow the two-factor approach [31].

Table 2: Means (M), standard deviations (SD), and Cronbach alphas (α) for each measure in ACT and COMP.ACT conditions.

	ACT (n=7)		COMP.ACT (n=9)		ACT (n=7)		COMP.ACT (n=9)	
	Pre-intervention M (SD)	Post-intervention M (SD)	Pre-intervention M (SD)	Post-intervention M (SD)	Pre-intervention (α)	Post-intervention (α)	Pre-intervention (α)	Post-intervention (α)
Pain intensity	5.79 (1.78)	6.05 (1.37)	6.13 (1.57)	6.59 (1.57)	0.90	0.73	0.87	0.84
Pain disability	40.57 (11.10)	37.71 (7.78)	40.56 (10.67)	46.00 (8.12)	0.85	0.62	0.78	0.63
Obstruction to valued living	16.43 (10.42)	14.29 (4.35)	19.89 (6.93)	17.33 (6.25)	0.93	0.31	0.74	0.83
Progress in valued living	23.29 (6.05)	21.57 (4.69)	19.67 (6.76)	20.22 (7.89)	0.72	0.91	0.80	0.95
Mindfulness	117.29 (18.58)	117.14 (14.80)	108.22 (12.47)	111.56 (12.28)	0.83	0.87	0.71	0.79
Compassionate self-responding	37.86 (7.06)	39.14 (5.98)	38.67 (9.26)	37.44 (5.17)	0.74	0.82	0.87	0.72
Uncompassionate self-responding	43.57 (14.15)	40.86 (6.28)	41.44 (14.53)	40.44 (11.33)	0.95	0.80	0.96	0.97
Depression	9.00 (5.89)	7.00 (4.08)	8.25 (5.63)	8.33 (6.18)	0.92	0.62	0.91	0.94
Anxiety	8.86 (5.67)	5.71 (3.25)	8.88 (6.45)	8.44 (5.81)	0.84	0.53	0.92	0.89
Stress	11.14 (6.12)	8.14 (4.45)	10.25 (6.27)	10.56 (5.57)	0.90	0.88	0.94	0.93

Data analysis

Preliminary analyses (descriptive analyses, t-test differences, and chi-square differences) were conducted in SPSS version 23 (IBM Corp., Armonk, N.Y., USA). Reliable and significant change examined the clinical meaningfulness of change (pre-intervention vs. post-intervention) according to Jacobson's clinical significance analysis [33]. Reliable change index (RCI) tests whether individual change falls outside the range that could be due to measurement error. Reliable change occurs if it exceeds 1.96 times the standard error (see [34] for an in-depth description). Change is considered clinically significant (CSC) when a person's score moves from the "dysfunctional population" to the "functional population" [35]. A cut-off is calculated considering the mean and standard deviation of the sample at pre-treatment, as well as from the comparison "functional" population. A person is considered "recovered" when the magnitude of change is above the level of the RCI and the post-treatment score is beyond the CSC cut-off (see [36]).

Results

See results of RCI and CSC in Table 3.

Results show that two participants were "recovered" in terms of depressive (25.00%) and anxiety symptoms (25.00%) in COMP.ACT (these were the same two participants), while in ACT-only three participants "recovered" in terms of stress symptoms (42.86%). One participant was "recovered" in terms of pain intensity in COMP.ACT (12.50%), while regarding pain disability three participants have "deteriorated" (33.33%). One participant in ACT-only "recovered" and two "deteriorated" in terms of obstruction to valued living (14.29%), while one in COMP.ACT did so in terms of progress in valued living (11.11%). No change was found in both conditions in terms of mindfulness and compassionate self-responding. Three participants in ACT-only improved, two of which "recovered" in terms of uncompassionate self-responding, while one "recovered" in COMP.ACT (11.11%). However, it should be noted that one participant "deteriorated" in ACT-only (14.29%), and two did so in COMP.ACT (22.22%).

Discussion

Results showed that while the majority of participants in both conditions did not present reliable and clinically significant changes, some did significantly improve in key outcomes (e.g., psychopathological symptoms, valued living and uncompassionate self-responding). One puzzling result that is worth noting is the increase in pain disability in COMP.ACT. Given that there were no baseline differences between conditions, compassion-based sessions and exercises may be hypothesized to have unintentionally and

Table 3: Reliable change index, clinically significant change index and frequencies of outcome in the ACT (n=7) and COMP.ACT (n=9) conditions.

Measure	RCI	CSC	Condition	Deteriorated n, %	No change n, %	Improved but not recovered n, %	Recovered n, %
Depression	4.86	7.43	ACT	0 (0)	6 (85.71)	0 (0)	1 (14.29)
			COMP.ACT	1 (12.50)	5 (62.50)	0 (0)	2 (25.00)
Anxiety	5.65	6.51	ACT	0 (0)	6 (85.71)	1 (14.29)	0
			COMP.ACT	1 (12.50)	4 (50.00)	1 (12.50)	2 (25.00)
Stress	4.70	9.55	ACT	1 (14.29)	3 (42.86)	0 (0)	3 (42.86)
			COMP.ACT	1 (12.50)	6 (75.00)	0 (0)	1 (12.50)
Pain intensity	1.56	5.62	ACT	1 (14.29)	6 (85.71)	0 (0)	0 (0)
			COMP.ACT	2 (25.00)	5 (62.50)	0 (0)	1 (12.50)
Pain disability	12.67	33.60	ACT	0 (0)	6 (85.71)	1 (14.29)	0 (0)
			COMP.ACT	3 (33.33)	6 (66.67)	0 (0)	0 (0)
Obstruction to valued living	8.82	14.08	ACT	2 (28.57)	4 (57.14)	0 (0)	1 (14.29)
			COMP.ACT	0 (0)	9 (100.00)	0 (0)	0 (0)
Progress in valued living	8.67	20.33	ACT	0 (0)	7 (100.00)	0 (0)	0 (0)
			COMP.ACT	0 (0)	8 (88.89)	0 (0)	1 (11.11)
Mindfulness	19.30	106.41	ACT	0 (0)	7 (100.00)	0 (0)	0 (0)
			COMP.ACT	0 (0)	9 (100.00)	0 (0)	0 (0)
Compassionate self-responding	9.54	37.49	ACT	0 (0)	7 (100.00)	0 (0)	0 (0)
			COMP.ACT	0 (0)	9 (100.00)	0 (0)	0 (0)
Uncompassionate self-responding	8.63	44.45	ACT	1 (14.29)	3 (42.86)	1 (14.29)	2 (28.57)
			COMP.ACT	2 (22.22)	6 (66.67)	0 (0)	1 (11.11)

One participant in the COMP.ACT condition did not report DASS-21 at pre-intervention; One participant in the COMP.ACT condition did not report NPRS at pre-intervention. RCI, reliable change index; CSC, clinically significant change index.

counterintuitively promoted some level of avoidant processes, thus increasing disability. It should be noted that the compassion-based sessions and exercises were focused on promoting self-care and a soothing way of self-to-self relating. Although the program was adamant in distinguishing compassion from potentially misguiding constructs (e.g., self-indulgence, self-pity, self-commiseration) [7], it may have been the case that some level of avoidant-based self-indulgence might have emerged. Although not assessed in this study, one can hypothesize that these participants might have presented patterns of boom/bust cycles, and after the program they might have given self-permission to rest and self-care, which might look like more disability and doing less. One might also hypothesize that these participants became more aware of their personal suffering due to the compassionate sessions, but the length of the program was not long enough to promote a motivation to wise compassionate action [37]. Another interesting result is that two participants in COMP.ACT seem to have presented more uncompassionate self-responding at post-intervention. One possible way of interpreting this result is that at the end of the intervention, participants in the COMP.ACT condition were more aware of their difficulties in embodying self-compassion (see *backdraft*; [38]), as well as were more aware of their uncompassionate self-responding and/or self-criticism than those at ACT-only (which did not include compassion-based content). However, it is premature to establish confidently a pattern of individual clinical benefits of COMP.ACT comparatively to ACT-only, given that the current small sample does not allow a more in-depth examination of which factors are associated to individual response to the program.

The limitations of this study should be considered. Firstly, the sample was composed of women, which does not allow for further generalization of results to other genders. The sample was small, thus not allowing for more conclusive results. Also, this is an explorative, hypotheses-generating study, therefore a sample size was not calculated *a priori*, thus yielding power concerns, and inconclusive results. Additionally, although all participants could read and write, some had a primary-level education, which may have impacted on the interpretation of items. Indeed, the problematic internal consistency (α<0.70) of some subscales may have been a result from the low education level in our sample. This calls for a wider discussion on the representativeness and generalizability of results in psychometrics and efficacy studies. For example, when considering ACT interventions for CP, studies are usually conducted with highly educated participants (see meta-analyzed studies in [4]). Finally, participants were allocated according to schedule preference. Future studies should follow a randomized control trial design.

Conclusions

More research is needed to conclude whether explicit self-compassion exercises in an ACT program for CP (COMP.ACT) is a useful strategy to complement medical treatment as usual for women with CP. The current study is built on previous research that established the efficacy of ACT for CP [4], as well as on the efficacy of incorporating compassion in mindfulness- and acceptance-based interventions [19, 20], and is the first pilot study exploring the role of self-compassion in ACT by comparing it to a standard ACT-only intervention.

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Competing interests: The authors declare that they have no conflict of interest.
Informed consent: Informed consent was obtained from all individual adult participants included in the study.
Ethical approval: All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional research committee and with the 1964 Helsinki Declaration and its later amendments or comparable ethical standards. The current study was approved by the Research Ethical Committee of the Faculty of Psychology and Education Sciences of the University of Coimbra (number 12012017).
Data availability: The datasets generated during and/or analyzed during the current study are available from the corresponding author on reasonable request.

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