

A Systematic Review of Values Interventions in Acceptance and Commitment Therapy

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ABSTRACT

Acceptance and Commitment Therapy (ACT) is characterized by a focus on contextual change and advances topics like acceptance, mindfulness, values, spirituality and relationship. It sets itself apart from other third wave approaches by bringing to the center of the therapeutic work values clarification and living. Previous systematic reviews provided support for the efficacy and effectiveness of Acceptance and Commitment Therapy (ACT) but it's unknown of reviews that comprehensively assess values interventions with a focus on examining the specific effects of working with values or meaning in life in a wide variety of settings, populations and methodological designs. The goal of this study is to investigate empirical interventions that utilizes values as conceptualized by ACT. Systematic searches in 5 databases were performed up to April 2020. For inclusion, the intervention study must have targeted values process as conceptualized by ACT. Systematic reviews, theoretical or conceptual papers were excluded. Analyzed data were publication year, language, country, number and description of participants, mean age, sample origin, outcome variables, study design and quality and overall results. Seventeen studies were identified. Results show a broad scope of research methods, in a variety of settings and populations. According to reported results, values interventions had the desired effect on the outcome variable.

Keywords: Acceptance and Commitment Therapy, values, meaning in life, Relational Frame Theory, review.

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Novelty and Significance

What is already known about the topic?

- Previous reviews provide support for the efficacy of ACT across a range of conditions.
- Laboratory-based studies indicate that when employing values component of ACT plus mindfulness the effect on outcome variables is large.

What this paper adds?

- The review found a relevant number of chronic pain studies (35%) and results show that values have a significant effect on targeted variables.
- Values-based interventions for chronic pain enhance life engagement and pain tolerance.
- Data collection of the analyzed studies was heavily based on self-report measures. Direct observation of behavior was present in only one study.

Acceptance and Commitment Therapy (ACT) is part of the third-wave of behavioral therapies, characterized by a focus on contextual change, an emphasis of function over form and an openness to areas traditionally reserved for the less empirical wings of clinical intervention (Hayes, 2004). It also advances topics like acceptance, mindfulness, cognitive defusion, dialectics, values, spirituality and relationship (Hayes, 2004). ACT sets itself apart from other third-wave approaches by bringing to the center of the therapeutic work values clarification and living (Hayes, Strosahl, & Wilson, 2012).

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Values play a central role in ACT. According to Hayes, Strosahl, and Wilson (2012), “all ACT techniques are eventually subordinated to helping the client live in accord with his or her chosen values” (p. 322). Differently from symptom reduction psychotherapy’s, valued living is the primary treatment outcome of ACT (Wilson, Sandoz, Kitchens, & Roberts, 2010). The goal is to generate the conditions for the client to behave according to personal values while being willing to notice the aversive private events that show up as a consequence of living.

ACT defines values as “freely chosen, verbally constructed consequences of ongoing, dynamic, evolving patterns of activity, which establish predominant reinforcers for that activity that are intrinsic in engagement in the valued behavioral pattern itself” (Wilson & DuFrene, 2009, p. 66). The behavior of valuing is an example of verbal behavior and is understood in ACT through the lens of Relational Frame Theory (RFT). This functional analytic theory of language and cognition seeks to understand and influence language phenomena through the study of derived stimulus relations and arbitrary applicable relational responding (Hayes, Barnes-Holmes, & Roche, 2001).

Values research can contribute to understand change processes in psychotherapy, not only limited to ACT. For example, Gloster, Klotsche, Ciarrochi, Eifert, Sonntag, Wittchen, and Hoyer (2017) shows that engagement in valued behaviors precedes reductions in suffering. This finding implies that part of the reason a client is suffering in the first place is due to a disconnect with his/her own personal values (Gloster *et alia*, 2017). Pain induced laboratory studies also point to the importance of values articulation as strengthening the willingness to act in the presence of pain/suffering (Páez, Luciano, Gutiérrez, Valdivia, Ortega, & Rodríguez, 2008; Páez, Luciano, Gutiérrez, Valdivia, Rodríguez, & Ortega, 2008).

Previous systematic reviews provided support for the efficacy and effectiveness of ACT across a range of conditions including psychosis (Wakefield, Roebuck, & Boyden, 2018), anxiety disorders (García & Valdivia, 2018; Soo, Tate, & Lane-Brown, 2011; Swain, Hancock, Hainsworth, & Bowman, 2013), body image (Griffiths, Williamson, Zucchelli, Paraskeva, & Moss, 2018), chronic pain (Feliu Soler, Montesinos, Gutiérrez, Scott, McCracken, & Luciano, 2018; Hann & McCracken, 2014; Hughes, Clark, Colclough, Dale, & McMillan, 2017), chronic diseases and long-term conditions (Graham, Gouick, Krahe, & Gillanders, 2016). There are also systematic review that evaluate different methods of delivery, including web-delivery (Brown, Glendenning, Hoon, & John, 2016) and self-help (French, Golijani-Moghaddam, & Schröder, 2017). Meta-analysis of ACT effectiveness and its empirical support look at the results of the complete intervention package (c.f. Feliu Soler *et alia*, 2018; Ruiz, 2010; Smout, Hayes, Atkins, Klausen, & Duguid, 2012).

Levin, Hildebrandt, Lillis, and Hayes (2012) evaluated the effect of various ACT model components individually, but limits itself to laboratory-based studies. The results indicate that when comparing values component with inactive control, the impact of the various studies on primary outcome was small (Cohen $d = .41$, $N = 5$) but when combined with mindfulness interventions it was large ($d = 1.37$, $N = 5$; mindfulness alone $d = .46$, $N = 8$). An example of values only laboratory intervention was writing about personally relevant values. For values plus mindful, interventions included metaphors like “Tug-of-war with a monster” and “Chinese finger trap” (cf. Stoddard & Afari, 2014). Imagery exercises linked endurance of pain for the purpose of previously identified personal value. In overall, values plus mindful interventions created a value-oriented context that encouraged the participants to continue with the task despite the exposure to pain or discomfort.

Another study worth mentioning is Stockton, Kellett, Berrios, Sirois, Wilkinson, & Miles (2019), a systematic review of the mediational impact of ACT components. Only one study that examined values as a mediational process was referred to.

To this date is unknown of reviews that comprehensively assess values interventions with a focus on examining the specific effects of working with values or meaning in life in a wide variety of settings, populations and methodological designs.

The goal of this work is to analyze empirical intervention studies that investigate the effects of ACT values component. To achieve this end, it was carried out a systematic review of interventions that used values component of ACT.

METHOD

This review was based on Manchado Garabito, Tamames Gómez, López González, Mohedano Macías, D'Agostino, & Veiga de Cabo (2009) exploratory systematic review protocol, that aims to explore a certain field by reviewing multiple studies and interventions types. The protocol is composed of the following steps: 1) definition of inclusion and exclusion criteria, 2) identification of data sources and search strategies, 3) selection and classification of studies, 4) choice of variables to be assessed, 5) data analysis.

For inclusion in this study the articles needed to be published in a peer-reviewed journal in Portuguese or English. Unpublished dissertations or thesis were excluded. For inclusion, the study must have targeted values process as conceptualized by ACT, and if other processes were also targeted, i.e. the intervention delivered all ACT components, results must show the moderating/mediational effect of values alone in the overall treatment result. Systematic reviews, theoretical or conceptual papers were excluded.

A systematic search for articles on values interventions was conducted up to April 2020 on 5 electronic databases (IndexPSI, PePSIC, PsycINFO, Scielo and WebOfScience). For Portuguese databases, the search terms applied were *any* (“terapia de aceitação e compromisso”) AND *title* (“valores”, “sentido”, “propósito”). A search in English was conducted in all databases using search terms *any* (“acceptance and commitment therapy” OR “acceptance-based behavioral therapy”) AND *title* (“valu*”, “meaning”, “purpose”). No date restrictions were applied. Acceptance-based Behavioral Therapy developed by Roemer & Orsillo (2014) became part of the search after showing up in the initial screening. This approach also uses values as conceptualized by ACT.

The selection of studies occurred according to the defined inclusion and exclusion criteria. After removal of duplicates and screening abstracts of the remaining studies, full-text articles were retrieved for examination.

The extracted data of included studies were publication year, language, country, number and description of participants, mean age, percent female, sample origin (e.g. clinical vs. non-clinical sample), outcome variables (e.g. measure of psychological symptoms), study design (e.g. mediational analysis, laboratory-based), quality (e.g. randomized, controlled, follow-up) and overall results.

The data was organized in Mendeley, taking advantage of its tag-like, nested folder structure. Such feature enables the same reference to be added to multiple folders as required, making it easier to categorize and search. Microsoft Excel (version 2016) was used to build an overall summary of studies.

RESULTS

In Figure 1, the study selection process is visualized in a PRISMA flow diagram (Moher, Liberati, Tetzlaff, Altman, & Group, 2009). The initial search provided 158 possible relevant records and 109 remained after removing duplicates. Abstract screening revealed that 21 studies were theoretical or conceptual papers, 14 evaluated psychological measures related to values, three were systematic reviews, one was in German language and four design studies. Further assessment of the remaining 66 resulted in the exclusion of 15 papers that did not show the moderating effect of values alone in the overall treatment result and 28 assessed the relationship of values with other psychological measures but did not apply an intervention to change values process. In the end, a total of 23 articles remained for data analysis.

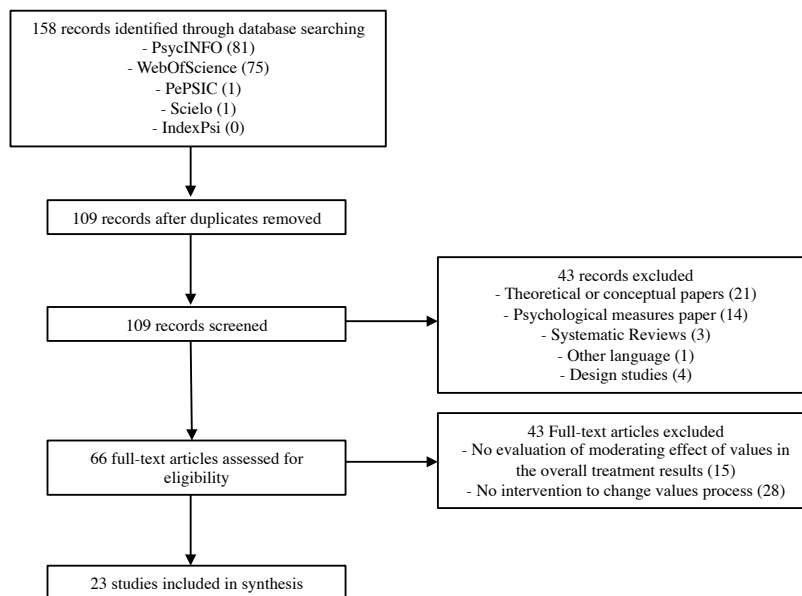


Figure 1. Flow of information from identification to inclusion of studies.

Table 1 summarizes the 23 studies of values interventions that met inclusion criteria. Publication year ranged from 2003 to 2019. Number of studies had a steady increase from 2016 onwards (Figure 2). All 23 articles were in English language and location of studies was diverse, being 10 in USA, five in UK, two in Germany, two in Spain, two Sweden, one in Canada and one in Israel. No studies were in Portuguese nor published in Brazil. Number of participants varied from one (a case study) to 314 and their age from 16 to 71. Sample origin was 10 clinical and 13 non-clinical.

To investigate the overall effects of the interventions, studies applied a variety of outcome measures. A subset of those were proxy measures of valued behavior. Valued Living Questionnaire -VLQ, was the most common values proxy measure, appearing in five studies. Others were the number of engagements in valued behavior (four studies), the Chronic Pain Values Inventory (three studies), unstructured interview

Table 1. Summary of values interventions and results.

Study	Sample	N	Measures	Design	Intervention	Results
Heffner, Eifer, Parker, Hernandez, & Sperry (2003)	Adult/Middle-aged Alcohol dependence Clinical, USA	1	ADIS-IV PSWQ ACS AAQ VLO*	Meditational Analyses Control-group Pretest/posttest No FU	16 sessions; Non-GAD vs. GAD groups. Based on Roemer & Orsillo (2009). Methods included mindfulness practice, psychoeducation about anxiety, the function of worry and emotions, and limits of control, as well as experiential exercises and behavioral activities aimed at increasing valued activities. Toward the end of treatment, individualized plans with clients were formulated to increase the maintenance of skills learned in therapy	Individuals diagnosed with GAD reported living significantly less consistently with their values compared to individuals in the non-GAD group (VLO outcome: $F(1,56) = 12.32, p = .001$). The non-GAD control group was used to assist on determining the relevance of valued action in GAD and was only tested on pre-treatment. GAD group significantly improved self-reports of valued actions (VLO) ($F(1,28) = 14.77, p = .001$) with a large effect (d^2 partial = .35)
Vowles & McCracken (2008)	Adults with persistent pain and significant levels of pain-related distress and disability. Age: $M = 47.3, SD = 11.4$ Clinical, UK	187	CPAQ CEVI* BCMDI PASS Physical performance measures	Meditational Analyses and Additive design Non-controlled trial, Pre-Post, FU after 3 m.	15 or 20 sessions during 3 or 4 weeks depending on symptom severity. Adaptation of ACT from Hayes et alia (2012) and mindfulness methods from Kabat-Zinn (2013). Methods included mindfulness training, values clarification, exposure-based techniques, and cognitive defusion exercises. All in the service of promoting flexible and effective daily functioning and not to reduce or change pain or other physical or emotional symptoms.	Changes for all measures were large from pre- to posttreatment except for pain intensity. From pre- to FU effect sizes remained large for acceptance and medium for other measures. Changes in values-based action at FU were moderately associated with improvements in pain intensity, depression, pain-related anxiety and physical disability. Regression coefficients (β) at FU were significant for values-based action on four occasions: pain, depression, physical and psychosocial disability.
Pérez, Luciano, Gutiérrez, Valdivia, Ortega, & Rodríguez (2008)	Undergraduate students Age: 18-35, $M = 22.30$, $SD = 2.26$ Non-clinical, Spain	20	Pain threshold and tolerance induced by shock*	Laboratory-based RCT No FU	ACT values condition established a relation of coordination between pain-related thoughts and the actions in the valued direction. Cognitive control-based (CONT) condition established a relation of opposition between the same aspects.	Statistically significant increase in pain tolerance for both ACT values ($t(9) = -5.01, p < .005$) and CONT conditions ($t(9) = -4.22, p < .005$). Also a reduction of self-reported pain for ACT ($t(9) = 2.48, p < .05$) and CONT ($t(9) = 2.69, p < .05$). However, ACT values participants showed significantly lower believability of pain (degree to which the experienced pain functions as a barrier to continuing the pain task) than did CONT participants. Most important result was again a lower believability of pain in the ACT condition, i.e. most subjects continued performing the task upon reporting "very much pain" compared to the other conditions.
Pérez, Luciano, Rodríguez, Valdivia, Rodríguez, & Ortega (2008)	Undergraduate students Age: 18-31, $M = 22.67$, $SD = 2.77$ Non-clinical, Spain	30	Pain threshold and tolerance induced by shock*	Laboratory-based RCT No FU	Test I was the same as Pérez, Luciano, Gutiérrez, Valdivia, Ortega, & Rodríguez (2008). Test II evaluated ACT defusion protocol vs control-based suppression protocol.	Statistically significant difference on pain tolerance ($F(2,96) = 8.37, p < .001, \omega^2 = .88$), with the A+V group having the longest tolerance time of the 3 groups. Self-reported pain (pain rating) was higher in the A+V group ($F(2,96) = 7.21, p = .001, \omega^2 = .86$) as they persisted more time in the pain task.
Branstetter-Rost, Cushing, & Donlich (2009)	Undergraduate students Age: 16-44, $M = 19.17$, $SD = 3.20$ Non-clinical, USA	99	COPE, WBSI, AAQ, VLO, Pain threshold and tolerance induced by cold pressor test*	Laboratory-based RCT No FU	Acceptance only (A) vs Acceptance plus values (A+V) conditions. A+V included a 2-minutes imagery exercise involving endurance of physical pain for the purpose of previously identified personal value. For example, in the family-value condition, the participant was asked to imagine swimming in ice cold water to rescue a family member. These imagery exercises individualized for each of the ten potential valued-life areas identified through VQ.	Individuals diagnosed with GAD reported living significantly less consistently with their values compared to individuals in the non-GAD group (VLO outcome: $F(1,56) = 12.32, p = .001$). The non-GAD control group was used to assist on determining the relevance of valued action in GAD and was only tested on pre-treatment. GAD group significantly improved self-reports of valued actions (VLO) ($F(1,28) = 14.77, p = .001$) with a large effect (d^2 partial = .35).
Metelkson, Cushing, & Donlich (2011)	Treatment seeking clients whose principal diagnosis was Generalized Anxiety Disorder (GAD) Age: 19-58, $M = 35.20$, $SD = 11.06$ Clinical, USA	60	ADIS-IV PSWQ ACS AAQ VLO*	Meditational Analyses Control-group Pretest/posttest No FU	16 sessions; Non-GAD vs. GAD groups. Based on Roemer & Orsillo (2009). Methods included mindfulness practice, psychoeducation about anxiety, the function of worry and emotions, and limits of control, as well as experiential exercises and behavioral activities aimed at increasing valued activities. Toward the end of treatment, individualized plans with clients were formulated to increase the maintenance of skills learned in therapy.	Individuals diagnosed with GAD reported living significantly less consistently with their values compared to individuals in the non-GAD group (VLO outcome: $F(1,56) = 12.32, p = .001$). The non-GAD control group was used to assist on determining the relevance of valued action in GAD and was only tested on pre-treatment. GAD group significantly improved self-reports of valued actions (VLO) ($F(1,28) = 14.77, p = .001$) with a large effect (d^2 partial = .35).

Table 1. Summary of values Interventions and results (continuation).

Study	Sample	N	Measures	Design	Intervention	Results
Vowles, McCracken, & O'Brien (2011)	Same as Vowles & McCracken (2008) Age: $M=47.1$, $SD=10.7$	108	CFAQ CPVI* BCMDI PASS SIP	3-years FU of Vowles & McCracken (2008)	See Vowles & McCracken (2008)	Effect sizes at 3-year FU of Vowles & McCracken (2008), were large for acceptance and medium for values discrepancy, depression, pain-related anxiety, psychosocial disability and pain-related medical visits. Changes to pain intensity were non-significant. Changes in values-based actions were significantly correlated with all outcome measures except for medical visits. The regression coefficients (β) for change in values-based action was significant in three of five outcomes: depression, pain-related anxiety and psychosocial disability.
Chase, Hounamfar, Hayes, Ward, Vilardaga, & Follette (2013)	Undergraduate students Age: $M=19.22$ Non-clinical, USA	132	GPA scores	Additive RCT FU 6 m.	Goal-setting (GS) only vs. GS+values vs. Wait list. 30-45 min to online program. Values work consisted of identification of personal values using both positive (what values are) and negative (what values are not) examples. Emphasis on distinguishing values and goals. Reflect upon personal academic values and make choices about what is important to them as a student.	Significant and medium improvement in GPA score when comparing GS+values intervention group with waitlist. GS only did not differ significantly from waitlist.
Steger, Shim, Barenz, & Shin (2014)	Undergraduate students Age: $M=19.3$, $SD=1.9$ Non-clinical, USA	85	MLQ SWLS DASS-21 State Survey	Mediational analyses Single group, Pretest/Posttest.	1 week of photo shooting. Participants were instructed to take photographs of "things that make your life feel meaningful". Limit of 9-12 photographs. One week later, participants were asked to write a response to "What does this photo represent, and why is it meaningful?"	Small within-person improvements in levels of presence of meaning in life (MLQ-P), life satisfaction (SWLS) and positive affect (State Survey) were observed following intervention.
Castro, Rehfeldt, & Root (2016)	Direct care workers of clients with severe developmental disorders. Age: $M=36.39$ Non-clinical, USA	3	Observation of the frequency of engagement with clients*	Multiple baseline across three direct care staff	6 sessions for 2 weeks. Materials used were inspired by ACT exercises published in Harris (2013) and Stoddard & Afari (2014).	Workers emitted 11-16 more instances of engagement with clients following interventions relative to their baseline levels.
Fitzpatrick et alia (2016)	Faculty and staff of a large metropolitan university Age: $M=20.59$, $M=43.5$, $SD=12.5$ Non-clinical, Canada	16	Unstructured interview with open ended questions analyzed using Thematic Analysis (Braun & Clarke, 2006)*	Qualitative Single group, posttest-only	5 sessions. Simulate participants to focus on values-driven committed action based on one clearly articulated value. Electronic workbooks to utilize between sessions and a <i>Wikit</i> that contained articles and additional exercises were also available.	Results suggest that when facing a contextual challenge, working on values clarification and values congruence was more significant. Most participants recognized the presence of challenges in their lives at the time of the intervention, mainly in areas of work and relationship. Those who changed did a lot of exploration and most of the challenges they faced where moderate (not traumatic). Support of others and being inspired by their values was an important context for behavior changes related to those values. Inspiration was notably absent among those who did not act on their values.
Katz, Carane, & Yovel (2016)	Undergraduate students Age: $M=18.34$, $M=23.25$, $SD=2.46$ Non-clinical, Israel	123	PANAS, Assessment of the subjective importance and relevance of elicited basic negative cognition	Laboratory-based RCT No FU.	In phase 1, "hot" negative core beliefs were elicited. Phase 2 was the random assignment of participants to groups for each of the four motivation manipulation conditions: Value promotion (VP), symptom prevention (SP), distraction (DC), no intervention (NI). Phase 3: a set of therapeutic tasks were given to the four conditions.	Framing motivation for treatment in terms of promoting one's values (VP) led to moderate effect on engagement in a subsequent therapeutic task when compared to the three other conditions.

Table 1. Summary of values Interventions and results (continuation).

Study	Sample	N	Measures	Design	Intervention	Results
Kennari, Olsson, Holmstrom, & Wicksell (2016)	Adolescents in pain treatment services Age: 14-18 Clinical, Sweden	3	Visual analyses of the graphed data within and between subjects to evaluate changes in pain intensity and values-based behaviors*.	Multiple baseline. FI after 2 m.	12 to 22 sessions for 6 to 11 weeks. All sessions promoted acceptance of pain and related distress as well as engagement in values-consistent behavior. During initial assessment (baseline) behavioral goals were identified. First treatment period, values were articulated and activated. Second treatment period, ACT strategies for everyday life were employed. Previous formulated behavioral goals were discussed and refined.	Pain levels remained at similar levels through treatment for all 3 adolescents, but values-oriented behaviors increased from start of treatment to the follow-up period.
Wersche, Lieb, Meyer, Hoyer, Wittchen, & Gloster (2017)	Treatment resistant panic disorder with or without agoraphobia Age: M = 36.9 Clinical, Germany	41	VLQ-2* PAS WHODAS 2.0	Mediational analyses: RCT FU 6 m.	8 sessions during 4 weeks. Eifert & Forsyth (2005) ACT for anxiety protocol. All six processes of psychological flexibility were addressed. Values were discussed in the initial session and concentrated again in the second half of the treatment. 8 session for 4 weeks. Eifert & Forsyth (2005) ACT for anxiety protocol. Treatment target all core processes of ACT model. Valued behaviors were introduced in the first session with exercises and discussions about what the patients want their life to stand for and what they are currently doing in that regard. This theme was reviewed in each session.	Increases in valued behavior were related to improved functioning from pre- to post-treatment. Increase in valued action goes hand in hand with a decrease in panic symptomatology. Association (parallel latent growth curve-beh) between valued action and suffering was -0.64 (0.16), $p = 0.0$. In other words, change in valued action was negatively correlated with changes in suffering.
Gloster, Klatsche, Claeroh, Eifert, Sonntag, Wittchen, & Hoyer (2017)	Adults with primary diagnosis of panic disorders and/or agoraphobia Age: M = 37.1, SD = 9.1 Clinical, Germany	41	Online questions of the last 24 hours with the aim of identifying valued behavior, struggling and suffering.	Mediational analyses: RMD data from Gloster <i>et alia</i> (2015). RCT FU 6 m.		
Boulton, Williams, & Jones (2018)	Intellectually Disabled (ID) people Age: M = 52.3, SD = 22 Non-clinical, UK	6	Number of photos taken between sessions; Nature of photos taken; Proportion of sessions attended.	Pilot study. Single group, post-test-only design.	6 sessions. "Catching what matters" manualized values-based intervention on a one-to-one basis.	The findings suggest that: (a) participants with ID were able to engage with manualized intervention for enhancing the concept of values; (b) participant-produced photography related to valued aspects of life enhanced the understanding of "values" concept; (c) the presence of photography increased therapeutic engagement and exploration, providing focus and sense of ownership in the therapeutic work.
Bramwell & Richardson (2018)	Trans-diagnostic and depression patients. Age: 21-67, M = 42 Clinical, UK	33	PHQ-9 CORE-OM VLQ-2* CFQ	Mediational analyses: RMD data from Richardson <i>et alia</i> (2018)	12 to 16 sessions; ACT Made Simple (Harris, 2009). Treatment targeted the six key processes of ACT and was delivered by an ACT-trained therapist (mental health nurse, clinical psychologist or social worker).	Increases in values-based action (VLQ) were significantly related to reductions in distress (CORE-VLQ: -0.504 , $p = .003$) and depression (PHQ-9A-VLQ: -0.555 , $p = .001$).
Wallin, Parling, Weinehand, & Dahl (2018)	Adults with overweight or obesity Age: M = 42, SD = 13.79 Clinical, Sweden	13	Value attainment related to health* weight related experiential avoidance WTP-DI AAQ-W BRO WASSO HADS	Multiple baseline, FI 3 m.	Text-based self-help material was sent to the participants via email and a weekly telephone support during a 3-week treatment period.	The intervention improved value attainment related to health among seven participants and reduced experiential avoidance among five. Effect sizes for those who improved were medium to large. Remaining participants did not improve with regard to primary outcomes.

Table 1. Summary of values interventions and results (continuation).

Study	Sample	N	Measures	Design	Intervention	Results
Engle & Follette (2018)	Amazon Mechanical Turk (MTurk) workers Age: 18-70, <i>M</i> = 36, <i>SD</i> = 11.3 Non-clinical, USA	314	Charitable donation* AAQ-II ATQ PANAS	Analogue study. RCT No FU	Participants were randomly assigned to one of three conditions: 1) basic values identification (Values), 2) Values plus rating one's values-behavior consistency (VBC), 3) control condition.	VBC and Values conditions were more effective at increasing the likelihood of engagement in valued action (charitable donation) than the control condition. Participants donation in each condition was respectively 46%, 47% and 26%.
Borges (2019)	Service Member. Age: Early thirties. Clinical, USA	1	VLO* Engagements in valued behavior* PROMIS AAQ-II EMIS-M CSQ-8	Case study FU 1m.	12 weekly, 90-min individual telehealth sessions conducted over iPad. Sessions: 1-2: values clarification; 3-5: mindfulness/creative hopelessness; 6-9: values-consistent emotion regulation and distress tolerance; 10-12: practice noticing stories about himself and holding these stories lightly. Practice bold moves tied to values. Based on Evans <i>et al</i> (2020) protocol.	Engagement with valued-importance and valued-behavior increased dramatically following treatment (VLO importance: 53 at Pre to 76 on FU. VLO behavior: 25 at Pre to 66 on FU). Greater willingness to accept his moral pain (AAQ-II from 45 to 29). Treatment was highly acceptable (CSQ-8; 31 out of 32-points).
Firestone, Cardaciotto, Levin, Goldbacher, Vernig, & Gambrel (2019)	Undergraduate students Age: <i>M</i> = 20.22, <i>SD</i> = 4.35 Non-clinical, USA	137	PVQ* PWB SUS ZKPQ-Form III Inf	Pilot study. Single group, Pre-Post. FU after 4 w.	Web-based, 60-90 min single session, self-delivered values focused program. Program included didactic and experiential exercises to help students identify and clarify their values and set values-based goals.	Small effect size increase for value consistent living across PVQ domains (Cohen's <i>d</i> = 0.23) and in leisure /recreation / community / citizenship value success increase (Cohen's <i>d</i> = 0.27). No significant changes in psychological well-being.
Smith, Villatte, Ong, Butcher, Twohig, Levin, & Hayes (2019)	Undergraduate students Age: <i>M</i> = 20.4, <i>SD</i> = 2.60 Non-clinical, USA	32	Immersion time in cold pressor*. Subjective pain and distress ratings.	Laboratory- based RCT.	Each condition was 30 min long delivered via computer as a pre-recorded Microsoft PowerPoint slideshow. Values condition included worksheets and visualization exercise intended to clarify their personal values and relate those values to the cold pressor task.	Immersion time for participants in the Values condition increased by an average of 51.06s (<i>SD</i> = 48.77) from Pre to Post, while in Control decreased by 10.79s (<i>SD</i> = 84.67).
Vowles, Sowden, Hickman, & Ashworth (2019)	Adults with chronic pain Age: <i>M</i> = 48.0, <i>SD</i> = 11.2 Clinical, UK	242	Values Tracker* pain intensity SIP-CP BCMDI PASS CPVI*.	Mediational Analysis FU 3 m.	Interdisciplinary treatment of pain rehabilitation aimed to increase engagement in meaningful and valued activity with the ongoing experience of pain and pain-related distress. Disciplines included clinical psychology, anesthesiology, physical therapy and nursing and each offered interventions consistent with the overarching goal. 44h of intervention in two consecutive days per week for four weeks.	Medium effect size decrease (Cohen's <i>d</i> = 0.67), Pre to 3-month FU, on values discrepancy (CPVI) which indicates more valued action. Medium effect size decrease (<i>d</i> = 0.67) on pain-related anxiety and fear.

Notes: * = Proxy measures of valued behavior marked with an asterisk; AAQ= Acceptance and Action Questionnaire for Weight-Related Difficulties; ACS= Affective Control Scale; ADIS-IV= Anxiety Disorders Interview Schedule for DSM-IV; ATQ= Automatic Thoughts Questionnaire; BBQ= Brief Quality of Life Inventory; BCMMDI= British Columbia Major Depression Inventory; CFQ= Cognitive Fusion Questionnaire; CORE-OM= Clinical Outcomes in Routine Evaluation; CPAQ= Chronic Pain Acceptance Questionnaire; CPVI= Chronic Pain Values Inventory; CSQ-8= Client Satisfaction Questionnaire-8; DASS-21= Depression Anxiety and Stress Scale; EMIS-M= Expressions of Moral Injury Scale-Military Version; FU= Follow Up (m= months, w= weeks); HADS= Hospital Anxiety and Depression Scale; MIQ= Meaning in life Questionnaire; OO-45= Outcome Questionnaire; PANAS= Positive Affect-Negative Affect Scale; PAS= Panic and Agoraphobia Scale; PASS= Pain Anxiety Symptoms Scale-20; PHQ-9= Patient Health Questionnaire; PROMIS= PROMIS Short Form v2.0; PSWQ= Penn State Worry Questionnaire; PVQ= Personal Values Questionnaire; PWB= Ryff's Psychological Well-Being Scale; RCT= Randomized Controlled Trial; RMD= Repeated Measures Design; SIP= Sickness Impact Profile; SIS= System Usability Scale; SWLS= Satisfaction with Life Scale; VQ= Values Questionnaire; VLO= Valued Living Questionnaire; WBSI= White Bear Suppression Inventory; WHODAS 2.0= World Health Organization Disability Assessment Schedule; WSSQ= Weight Self-Stigma Questionnaire; WTP-DE= Willingness to Pay-Distress Intolerance; ZKPQ-Form III Inf= Zuckerman-Kuhlman Personality Questionnaire- Form III Infrequency subscale.

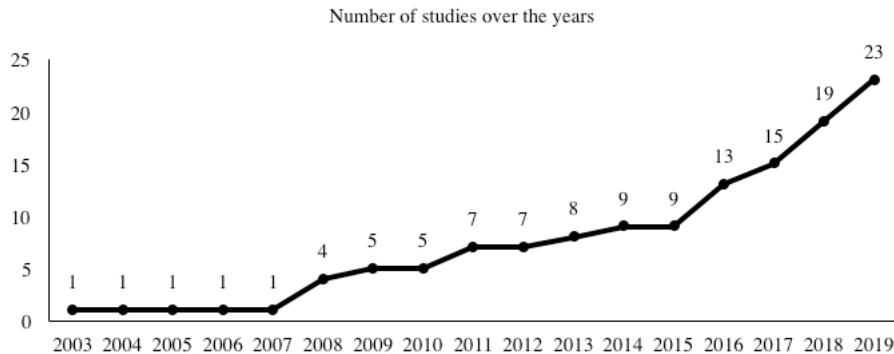


Figure 2. Number of values intervention studies over the years.

using Thematic Analysis (Braun & Clarke, 2006) (one), pain threshold and tolerance either induced by shocks (two) or cold pressor test (two).

Regarding sessions in outcome studies (excluding laboratory-based studies), the numbers ranged from six to 21. When grouping studies per health condition, the two chronic pain related interventions had between 15 to 22 sessions and the four that targeted anxiety and depression ranged from eight to 16.

Values interventions varied according to targeted outcome but, in overall, the clinical sample studies delivered all key ACT processes: mindfulness training, values clarification, defusion/acceptance exercises and exposure techniques (committed action). When dealing with non-clinical population a values-only approach was more common. Published material used to build treatments protocols included works from Eifert & Forsyth (2005), Harris (2009), Harris (2013), Stoddard & Afari (2014), Roemer & Orsillo (2009), Hayes *et alia* (2012) and Evans, Walser, Drescher, & Farnsworth (2020).

As presented in Table 1, there were a variety of study designs employed. Mediational analyses accounted for eight studies. Additive or dismantling designs accounted for three studies. A relevant highlight is the presence of five laboratory-based studies. Case study design was present in two studies. Multiple baseline design was used in three studies. Qualitative research was present in one study. Finally, two articles were of pilot studies. Eleven studies did follow-ups, ranging from one month to three years after treatment. A randomized controlled trial was employed in nine studies.

Results of the 23 studies indicate values intervention had the desired effect on the outcome variable. Table 1 provides a summary of results that are related to changes in values processes. No study reported adverse effects after intervention. The evaluated outcomes were comprehensive: alcohol dependence, anxiety disorders, depression, therapy engagement, values-congruent behavior, academic performance via GPA (Grade Point Average) scores, pain tolerance and chronic pain, positive affect and life satisfaction and finally work engagement. Chronic pain and pain tolerance were the most frequent evaluated outcomes with seven studies followed by anxiety disorders with three studies and the remaining all had one study each.

DISCUSSION

To investigate the overall effects of the interventions, studies applied a variety of proxy measures of valued behavior. According to GovEx (2018), "A proxy is an indirect

measure of the desired outcome which is itself strongly correlated to that outcome. It is commonly used when direct measures of the outcome are unobservable and/or unavailable". As exemplified by Barnes-Holmes, Hussey, McEntegart, Barnes-Holmes e Foody (2016), when measuring suicidal ideation using a self-report questionnaire we are not measuring the behavior of ideating, but the respondent's report on ideating. Proxies have utility because some level of reliability and validity can be determined psychometrically (Barnes-Holmes *et alia*, 2016).

Within ACT research, there are eight valuing proxy measures with a psychometric validation study available (Reilly, Ritzert, Scoglio, Mote, Fukuda, Ahern, & Kelly, 2019). Of those, only Valued Living Questionnaire -VLQ (Wilson *et alia*, 2010) and Chronic Pain Values Inventory -CPVI (McCracken & Yang, 2006) were used respectively by five and three of the assessed studies. Reilly *et alia* (2019) analysis of CPVI conclude that although the validation study report good internal consistency, there wasn't any data regarding scale readability or item-selection. Also there was no report of factor structure information to validate their two-scale factor structure. The authors point to a mixed evidence regarding the methodological quality of this measure. VLQ measure missed information about target populations, readability assessment, and a lack of pre-determined and specified hypotheses for content validity testing. In overall, VLQ validity showed only moderate methodological strength (Reilly *et alia*, 2019). Of interest to this discussion, there were four measures considered methodologically strong, i.e. good content validity, internal reliability and construct validity: Engaged Living Scale-9 -ELS-9, Engaged Living Scale-16 -ELS-16, Valued Living Scale -VLS and Valuing Questionnaire -VQ.

Barney, Lillis, Haynos, Forman, and Juarascio (2019) collected in-depth, descriptive data from 11 ACT experts to examine how the valuing process in ACT is currently defined and measured. The experts agree that current measures, like VLQ and CPVI, oversimplify the valuing process as understood by ACT theoretical conceptualization. Measures do not evaluate one's level of awareness when actively engaging in values consistent behaviors. Such awareness is important to value engagement because the connection between one's values and behaviors in the moment, elicits the rewarding and reinforcing qualities inherited within the action. Experts also point out the limitation of clients reporting behaviors retrospectively long after occurrence. For example, Vowles and McCracken (2008) evaluated values-based action using CPVI which evaluates six values domains by asking to rate how successful client has been living that value during the past two weeks. VLQ, used in five studies, also evaluates valued action by asking how client thinks he/she has been doing during the past week in 10 values areas. In addition, measures do not evaluate the individualized nature of the valuing process. They fail to adequately assess cultural and developmental relevant factors as well as individually defined meaning. What feels meaningful and reinforcing to a child may not be to geriatric client and each may not perceive the other's values as meaningful. There are also differences between individuals who reside within collectivist cultures and those who live in highly individualistic cultures. One expert stated that "for some people the concept of what I care about can never be separated from a group as much as they would like to say yeah well *I* really like this". Despite the critiques, experts agree that current measures have high clinical value and provide guidance as long as the answers given by respondents are expanded and clarified. For example, VLQ questionnaire was used in many of the evaluated therapeutic protocols (e.g. Eifert & Forsyth, 2005; Roemer & Orsillo, 2009) to help identify and initiate a discussion that leads to values construction and clarification.

Barney *et alia* (2019) expert's opinions on measures do not necessarily conflict with Reilly *et alia* (2019) analyses. The former evaluated how extensively current measures capture the values phenomena when compared to theoretical conceptualization in ACT and clinicians experience in therapy. The latter focused on evaluating psychometric quality.

The lack of direct observation of overt behavior can be seen as a weakness of the analyzed studies. The ones that did not rely solely on proxy measures (like CPVI and VLQ), utilized clients report of behavior. For example, in Heffner *et alia* (2003), a single case study, client provided feedback on sobriety levels across sessions and valued direction behavior progress was recorded with a daily journal filled in by the client. Kemani *et alia* (2016) single subject design study with three adolescents also relied heavily on self-report of valued actions. Borges (2019) had the client monitoring its "bold moves" tied to values. The only exception was Castro *et alia* (2016) where staff engagements with clients was observed and recorded by trained graduate students.

The investigated values interventions are an illustration of the challenges in isolating the functional processes of the psychological flexibility model. For example, acceptance and defusion are usually addressed in ACT interventions as a mean to values engagement, therefore it is not straight forward how to work with values "standalone".

Although the measures employed by the studies aimed at evaluating the effects of each component in the outcome variable, some interventions targeted multiple processes at once (e.g. Bramwell & Richardson, 2018). Dismantling or additive designs can help answer whether the systematic inclusion/exclusion of treatment components impacts efficacy (Levin & Villatte, 2016), but it's still a methodological challenge given that even a discrete and precise intervention may touch multiple processes. The focus of mediation analyses and additive/dismantling methods is more on testing the relationship of interventions to middle-level theoretical models, rather than basic principles (Levin & Villatte, 2016).

Laboratory-based (analogue) studies were more rigorous in isolating values intervention and Relational Frame Theory (RFT) provided a theory to interpret the results with satisfactory prediction and influence. For an in-depth presentation of RFT role in clinical practice and its application for values work see Villatte, Villatte, and Hayes (2016) and Törneke, Luciano, Barnes-Holmes, and Bond (2016). According to Levin and Villatte (2016) laboratory-based studies can help as they provide highly controlled contexts and opportunities for precise measurement. They also allow for testing of theory with a level of control that is often not possible in standard outcome research (Levin *et alia*, 2012).

The domain of values encompasses numerous basic functional processes. Some examples in the realm of verbal behavior are the transformation of stimulus functions (Dougher, Hamilton, Fink, & Harrington, 2007) present in hierarchical and deictic framing (Hayes *et alia*, 2001; Murthy, Villatte, & McHugh, 2019) and establishing operations (Michael, 1982). It's still a work in progress to determine more precisely how the manipulation of the verbal behavior related to values leads to the desired behavior change.

Values interventions varied considerably given the range of the targeted population and clinical or non-clinical conditions. The lack of session-by-session details of most interventions made it difficult to compare approaches and techniques employed. The exceptions were Fitzpatrick *et alia* (2016) and Boulton *et alia* (2018). The manualized protocols used also varied in precision on how to implement. Some like Roemer & Orsillo (2009), Harris (2009), Harris (2013) provided more of a general direction and

topics to cover while Eifert & Forsyth (2005) provided details for every session. Two laboratory-based studies (Páez, Luciano, Gutiérrez, Valdivia, Ortega, & Rodríguez, 2008; Páez, Luciano, Gutiérrez, Valdivia, Rodríguez, & Ortega, 2008) were the most comprehensive when describing the intervention, with detailed description of every step, including sample dialogs. Given the goals of laboratory-based studies, precision in describing independent variable manipulation is essential to replication. Branstetter-Rost *et alia* (2009) laboratory study was not so thoroughly as Páez, Luciano, Gutiérrez, Valdivia, Ortega, and Rodríguez (2008) and Páez, Luciano, Gutiérrez, Valdivia, Rodríguez, & Ortega (2008). It missed description of procedure details, leaving many open questions for someone that would like to replicate it.

All four studies targeting clinical population with anxiety disorder used manualized protocols. Eifert & Forsyth (2005) used in two studies describes session-by-session procedures and aims to cover all processes of the Psychological Flexibility model. Roemer & Orsillo (2009) utilized in one incorporates values process, mindfulness and acceptance but in a different treatment package. Chapters mostly discuss what should be targeted when working with each relevant domain, without aiming to fit domains into sessions.

The only study targeting clinical population with depression was based on Harris (2009), an all-purpose ACT manual for therapists. The values process is dealt with in the initial session and in the second half of the treatment. Topics covered include “Values vs Goals” and “Values Vs. Desires, Wants, Needs, Feelings, Virtues, Morals, And Ethics”.

The use of metaphors was ubiquitous in values interventions. For Törneke (2017), metaphors are one of the most important tools psychotherapists can rely on as it allows expression of complex ideas. Although being part of many forms of psychotherapies, there is little understanding on how it works. By contrast, the extensive use of metaphors in ACT is backed by RFT theory (Hayes *et alia*, 2001; Stoddard & Afari, 2014; Törneke, 2010, 2017). For Stoddard and Afari (2014) “the story-like quality of metaphors has the advantage of providing instructive lessons that are rich in emotional and perceptual detail, mimicking direct contact with the environment and making the experience more memorable”. Examples of values metaphors used in Harris (2009) was “Two Kids in The Car”, “Imagine Your Eightieth Birthday” and “Values as a compass”. Harris (2013) also used “Imagine Your Eightieth Birthday”. Eifert and Forsyth (2005), talks about values as a life compass. Roemer and Orsillo (2009) relates value living as a “path up the mountain” as it provides an “example of choosing not to engage in experiential avoidance and instead continuing with a task despite the distress associated with it because of a broader goal of increasing understanding in service of change” (Roemer & Orsillo, 2009).

From an ACT perspective, goals are a concrete, object-like consequences of action that can be obtained or finished while values refer to qualities intrinsic to action that can be instantiated but not obtained or finished (Chase *et alia*, 2013). To evaluate if values conceptualization contributes to the goal setting literature, Chase *et alia* (2013) empirically evaluated the importance of values articulation in addition to setting goals. In this research, students that received goal setting plus values training had significant improvements in their GPA scores when compared to waitlist or goal setting only intervention groups. Chase and colleague’s discussion points to three possible mechanisms of action. First, by receiving values training before goal setting, the reinforcing effects of setting a goal were altered, placing their achievement into a larger verbal network with motivating properties (c.f. O’Hora & Maglieri, 2006). For instance, doing well on a test is more about learning and taking on new challenges than simply getting a good grade. Second, values articulation training can decrease the

likelihood of setting incongruent goals. Finally, if personal values are thought of as verbal establishing operation, it could be built on the notion that goals exert control only if the individuals had been previously reinforced by goals completion (e.g., Fellner & Sulzer-Azaroff, 1985). Despite the hypothesized mechanisms, the authors conclude that additional research is needed to determine why values exploration is helpful in enhancing academic performance.

Another relevant question raised by Chase and colleagues concerns whether training participants in what values are from an ACT theoretical perspective contributes anything to the intervention success. Perhaps having participants write about important values without refining it beyond a commonsense understanding, is enough (c.f. Morisano, Hirsh, Peterson, Pihl, & Shore, 2010).

Despite the lack of a conclusive answer of if adding values to goals intervention improves outcome, an important contribution of ACT values definition to the goals setting literature is to improve the scientific language (Chase et alia, 2013). After all, it is relevant to distinguish different verbal behaviors. Imagining a desired future is different from constructing a value or meaning in life which in turn is different from setting goals. Chase and colleagues provide an example of this problem. When asking students to answer, “What do you want from your education?” answers like “I want a job” differ greatly from “I want to be more able to contribute to others.”. While contributing to others may include having a job, you may have a job just for the money and not be sensitive to the long-lasting reinforcing effects of contributing to others. Therefore, having a clear theoretical distinction of the difference between values and goals help guide clients through the goals setting process.

The number of chronic pain studies was significant (30%, 7/23). This finding is consistent with data from the Association for Contextual Behavioral Science (ACBS) state of evidence webpage of ACT research, where chronic pain Randomized Controlled Trials studies ranks first (Hayes, 2020).

Of the seven studies, four showed no decrease in reported pain but other three did. Corroborating this finding, Kemani et alia (2016) mediation analyses suggest that decreases in disability are not primarily a function of self-reported pain reduction. However, all studies reported a significant increase in behaviors congruent with chosen life directions, showing either a decrease in functional disability or increased tolerance levels (in case of the laboratory studies). In other words, behavior can be placed under control of articulated values, instead of pain.

The values-focused protocols of Páez, Luciano, Gutiérrez, Valdivia, Ortega, and Rodríguez, (2008) and Páez, Luciano, Gutiérrez, Valdivia, Rodríguez, and Ortega (2008) laboratory-based studies are particularly informative about the core differences on how ACT vs. control-based interventions cope with private events in relation to valued behavior. In ACT values protocols, painful internal experiences are framed as being part of and not a barrier to moving forward and acting in valued directions. To better illustrate this distinction, below is the final piece transcript of the ACT values training delivered by the experimenter in Páez, Luciano, Gutiérrez, Valdivia, Rodríguez, and Ortega (2008) (*italics added*):

(...) “when you get into the experimental room think about the worker example, and specially, think that by keeping performing the task [pain task] you are contributing to the understanding of those cases in which people have to go through discomfort and pain in their daily life *in order to get the things they really value.*” (p. 89)

In RFT terminology, ACT values work aims to establish a relation of *hierarchy*, where, in this particular case, related pain thoughts and feelings as part of value living

(Villatte *et alia*, 2016). Relations of “part-whole” or “attribute of” are examples of frames of hierarchy (Hayes *et alia*, 2001).

In control-based conditions, moving towards valued action can only occur in the absence of pain, which leads to attempts to suppress it (cf. Ahles, Blanchard, & Leventhal, 1983; Harvey & McGuire, 2000; McCaul & Haugtvedt, 1982). Below is the final piece transcript of the control-based values training delivered by the experimenter in Páez, Luciano, Gutiérrez, Valdivia, Rodríguez, and Ortega (2008) (*italics added*):

(...) “when you get into the experimental room think about the worker example, and specially, think that by keeping performing the task [pain task] you are contributing to the understanding of those cases in which the people who suffers from pain *have to quit* important activities because of the discomfort and pain.” (p. 90)

This framing establishes a relation of *opposition* between valued action and pain. An opposition relation points in the other direction along a continuum. For example, along the dimension of temperature, cool is the opposite of warm, and cold is the opposite of hot (Hayes *et alia*, 2001).

Páez, Luciano, Gutiérrez, Valdivia, Ortega, and Rodríguez (2008) and Páez, Luciano, Gutiérrez, Valdivia, Rodríguez, and Ortega (2008) studies show the superiority of the ACT approach, mainly in the reduction of pain-believability and tolerance. The complete training session, up to the point of the above dialogs, guided the participant to frame pain and valued action in the specified way (pain as opposed to valued action vs. pain as part of valued action). It is not being implied that this one paragraph was the sole responsible for the difference in results. Nevertheless, even small differences in how you relate events can eventually lead to different outcomes.

Working with values/meaning in life in psychotherapy, schools or organizations was present in one way or another in many forms of psychological interventions. Despite the widespread use, it was rarely empirically investigated, nor conceptually defined in a way that provided precision and control to the scientist. To a certain extent, this study contributes to the field by providing an overview of the current state-of-the art and discuss some of the conceptual and theoretical challenges.

This review highlights areas that could benefit from addition research. First, there is a lack of outcome studies with direct observation of overt behavior (only one). Considering that the goal of values-based action is to engage the person into several activities, relying almost exclusively on proxy measures (CPVI or VLQ for example) adds a level of subjectivity that may be undesired. A person may not recall many days (or even weeks) of behaving and report only recent events. Also, reporting a response as valued-based does not mean it was under the control of personal values. An example is a father that takes his son to school because is under aversive control of his partner and not necessary exercising the value of parenting. An external observer or an interviewer may capture some of these nuances. Borges (2019) case study did supplement the proxy measures and self-reports of behavior with interviews that provided a richer understanding on how the treatment and valued-actions were perceived by the client. In summary, improvements to values measures that capture the more fluid and personal nature of the phenomena would help provide a better understanding of its effect.

It is worth noting that only one study evaluated the impact of values in participants with depression as the primary mental condition. Depression is a leading cause of disability worldwide (WHO, 2012) and certainly needs additional research. Behavior activation approaches have shown good results for treating this condition (Dimidjian

et alia, 2006), therefore it's likely that values-based process, with its great focus on values-based action, is an important mediator of change.

Another important area of research is on identifying basic functional processes related to symbolic behavior as values articulation relies heavily on it. Laboratory-based studies of verbal behavior backed by RFT seems to be a promising way forward as demonstrated by two of the evaluated studies. Their aim is to link verbally constructed desirable consequences and test how they link to new behavior. As noted in discussion, analogue studies should aim for precision, changing very few relational frames across conditions. An interesting focus of exploration are studies that relate different types of relational frames with differential impact on motivation (e.g. Murthy *et alia*, 2019). Studies that manipulate conditions closer to natural language and change larger textual structures (multiple different relational frames) are also valuable as results can more readily inform practitioners Páez, Luciano, Gutiérrez, Valdivia, Rodríguez, and Ortega, 2008).

A limitation of this systematic review is the use of a search strategy that, in one hand, would not require a review of all ACT literature, but, in the other, possibly miss relevant studies. Limiting articles that include in the *title* the words “values” (and its variations like “valuing” and “valued”), “purpose” or “meaning”, excluded studies that would have matched the inclusion criteria if perhaps the search strategy was broader (e.g. Paliliunas, Belisle, & Dixon, 2018).

The results presented in this work suggests that an increased attention to values process may be warranted. A comprehensive understanding of verbal behavior is in its infancy. Values articulation is an example of the power, and challenge, of the symbolic language only humans present.

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