

**The Common Sense Model of Self-Regulation and Acceptance and Commitment
Therapy: Joined Forces to Guide Interventions for Chronic Illness**

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1. Introduction

Although adaptation to severe or chronic physical conditions can be difficult, modern self-management interventions have shown effectiveness in helping patients adapt and manage the symptoms and the physical and psychological demands of illness (Maes & Boersma, 2004; Sansom-Daly, Peate, Wakefield, Bryant, & Cohn, 2012; Schneiderman, Antoni, Panedo, & Ironson, 2010). Still, there is evidence that these interventions also have significant limitations. Their impact is often small (see, for example, Peytremann-Bridevaux, Ardit, Gex, Bridevaux, & Burnand, 2015; van der Heijden, Abrahams, & Sinclair, 2017), they may be effective only in the short-term (Goldbeck, Fidika, Herle, & Quittner, 2014), while their efficiency and usability in different clinical settings is also questionable (Leventhal, Weinman, Leventhal, & Phillips, 2008).

So far, self-management intervention efforts in chronic patients have typically been based on programmes or techniques that stem from the vast experience gained in the treatment of psychological difficulties (such as the behavioural or cognitive-behavioural therapy, CBT) and which is adapted to the context of a physical disease (e.g., Taylor, 2006). Most of the time, these interventions are not guided by (or take into serious consideration) the theories that specifically have been developed in order to describe the process of adaptation to illness (Maes & Boersma, 2004). Thus, a crucial step in the effort to develop effective and efficient interventions for chronic patients is to integrate intervention approaches with theoretical developments on self-management and adaptation to illness (Leventhal et al., 2008; Maes & Boersma, 2004).

The Common Sense Model of self-regulation (CSM) is probably the most widely used theory to explain and predict adaptation to illness and patients' behaviour

and self-management choices (Leventhal, Diefenbach, & Leventhal, 1992; Leventhal, Halm, Horowitz, Leventhal, & Ozakinci, 2005; McAndrew et al., 2008). Although not often, the CSM has already been used, in combination with CBT-oriented techniques, as a guide for the development of self-management interventions (e.g., Broadbent et al., 2009; Glattacker et al., 2012; Petrie et al., 2002; Siemonsma et al., 2013; Theunissen et al., 2003). A common feature of the majority of these intervention efforts, however, is their main focus on illness representations (especially, the cognitive ones) and action plans/goal setting (i.e., they target problem-solving self-regulation). Although, as we will present later, these are indeed important aspects of the CSM, several other also important aspects are not usually incorporated. Such aspects include the regulation of emotions (Cameron & Jago, 2008; Cameron, Booth, Schlatter, Ziginskis, & Harman, 2007), the self-regulation system coherence (McAndrew et al., 2008; Phillips et al., 2016), the (semi-)automatic processes (Breland, Fox, Horowitz, & Leventhal, 2012), the transformation of action plans into specific personalized activity and then into habits (Breland et al., 2012; Phillips, Laveenthal, & Laveenthal, 2013), as well as their embedment into patients' self-system (Leventhal et al., 2008). The failure to include these components into intervention programmes likely results from the fact that these intervention programmes are not readily amenable to dealing with these aspects.

In the field of psychological intervention approaches, a novel and very promising model is Acceptance and Commitment Therapy (ACT). ACT is a relatively new and dynamic framework rooted in clinical behaviour analysis and cognitive behaviour therapy and based on Relational Frame Theory (RFT; an extension of behaviour analysis). It aims to increase psychological flexibility and workability in individuals via the acceptance of all private events (thoughts, emotions, sensations

etc.), cultivating present moment awareness and a stable sense of self, and clarifying and acting upon personal values – even in the presence of illness (Hayes, Strosahl, & Wilson, 2011). ACT has effectively been used in the management of several psychological and physical health problems (Hayes, Barnes-Holmes, & Wilson, 2012; Ruiz, 2011), and although it stems out of the greater CBT tradition, it moves psychological intervention forward by addressing problems and difficulties often present in the more traditional CBT approaches (Hayes et al., 2012). For example, there is evidence that ACT facilitates lower dropout rates (Karekla et al., under review), is efficacious for treatment-resistant patients (Gloster et al., 2015), and better prepare clients to engage in behavioural change actions, improving thus the efficiency and usability of the intervention (Hayes et al., 2012).

ACT seems to share certain concepts and ideas with CSM. For instance, as we will present later in greater detail, both models emphasize the role of action plans and actual behaviour in achieving a more successful adaptation to a condition, the importance of constant feedback and (re-) evaluation processes, the significance of automatic/habitual processes (i.e. pre-existing behavioural patterns), as well as the role of “self” as the context in which self-regulation efforts are embedded. Thus, we believe that ACT probably has greater potential than other intervention approaches, such as the more traditional CBTs, to translate the critical aspects of CSM into intervention practice (for a comparison between ACT and CBT see Ruiz, 2012). In this way, the combination of CSM and ACT may render self-management interventions more pervasive and easily administered to a greater number of patients. The aim of the paper is to describe this combination. Namely, how CSM and ACT can be integrated in novel, effective and efficient self-management intervention programmes for chronic patients.

The proposed integration may also help professionals consider alternative ways of translating CSM concepts into practice, besides the use of the typical CBT methods, which has been the norm so far. Moreover, it could help the examination of the pathways through which critical aspects of the CSM (e.g., self as context) are linked to health outcomes. As a recent metaanalysis indicated, very few studies have examined the processes involved in illness-related self-regulation, as well as the impact of contextual factors. Also, the majority of these studies employ a correlational design (Hagger, Koch, Chatzisarantis, & Orbell, 2017). Thus, the integration of CSM with novel intervention approaches, like ACT, and the examination of its impact on self-management with the use of clinical experimental study designs, could move forward our understanding of the self-regulatory processes in illness.

2. The CSM and adaptation to illness

The CSM (Leventhal, Meyer, & Nerenz, 1980; Leventhal et al., 1992) is a well-established framework for understanding the patient-related and broader (e.g., social environment) factors that affect adaptation to illness and the associated health outcomes. According to the CSM, adaptation to illness is a dynamic self-regulation process (Diefenbach & Leventhal, 1996; Leventhal et al., 1980; Leventhal et al., 2005). First, patients develop dynamic and interactive cognitive and emotional representations of their experience in order to make sense of the disease. They, also, develop specific representations about each coping procedure or treatment option. Guided by their representations, patients develop short- and long-term action plans and employ certain coping procedures to manage symptoms and regulate negative emotions.

The reactions to physical symptoms are often guided by the activation of an illness-related memory schema or prototype which is based on personal previous

history, knowledge and beliefs about an illness. Each prototype typically includes illness and treatment-related representations (e.g., “I am just tired. Some rest and everything will be fine; no need to see a doctor”), potential action plans (e.g., “To get well, I need to rest for a couple of days”), and expected outcomes (e.g., “It will go away, if I rest”). The activation of a prototype determines to a great extent patient’s behaviour and symptom management.

The success of the efforts undertaken and the outcomes are appraised by the patient (e.g., “do I feel better now?”) and are compared with the expected or desired endpoints. The product of this evaluation process may cause revisions to the original illness and treatment representations, action plans and actual behaviour through a feedback loop.

A relevant aspect of the CSM is “coherence”. Coherence refers to the consistency among the ‘internal’ aspects of the illness-related self-regulation mechanism (e.g., illness representations, action plans) and the patient’s experience that their behaviour (e.g., adherence to treatment; health behaviour change) succeeds in controlling the illness or fulfilling their expectations (Leventhal et al., 2005; Phillips, Leventhal, & Leventhal, 2013). Coherence is achieved when the system feedback indicates that the expected goals are realized. That is, when the patient’s behaviour and the treatment they follow seem to work, confirming thus the accuracy of their representations about illness and treatment (Phillips et al., 2013). Patients may use an array of feedback channels in order to assess the coherence of their self-regulation efforts. These channels may refer to the patient (e.g., felt physical symptoms, emotional state etc.) or the social environment (e.g., feedback from close others, input from medical professionals; Tanenbaum et al., 2015).

Coherence is a critical self-regulation factor as it secures the continuation of the behaviour that the patient has adopted (at least until feedback signalling the need for correction is received). For example, when the system is not coherent, the patient re-evaluates and probably changes their representations and/or action plans (Phillips, Cohen, Burns, Abrams, & Renninger, 2016). On the contrary, a coherent system may lead to stable behavioural patterns able to provide the patient with a sense of control over the condition (Phillips et al., 2016; Tanenbaum et al., 2015).

The self-regulation process is shaped by two levels of memory processing that work in parallel (Leventhal et al., 1992): conceptual or propositional, which is the memory about illness or symptoms and consists of abstractions, causal inferences and outcome expectations based on personal thoughts and evaluations, as well as schematic or perceptual/experiential, which is the memory of illness or symptoms and consists of information/experience of prior illness and emotional episodes. Through the “symmetry” rule, perceptual events (e.g., the perception of a symptom) create a pressure for a conceptual event (e.g., labeling) and vice versa (e.g., a person seeks relevant symptoms when is diagnosed with a specific disease; Leventhal et al., 2005). According to the CSM, the entire illness-related self-regulation mechanism is nested in the self-system (e.g., personal attitudes and goals, role identities, self-assessed overall health), and both are nested in the broader social, cultural and ecological context (Leventhal et al., 2005).

The CSM has mostly been used as the theoretical framework for studying the relationships between illness representations, emotions, health behaviours, and illness outcomes (for reviews see, for example, Dempster, Howell, & McCorry, 2015; Foxwell, Morley, & Frizelle, 2013; Hagger et al., 2017; Hudson, Bundy, Coventry, & Dickens, 2014; McSharry, Moss-Morris, & Kendrick, 2011). Rather few studies have

focused on the use of this model as a basis for developing intervention programmes. For example, Petrie, and colleagues (2002) examined the effectiveness of a brief hospital intervention aiming to alter myocardial infarction patients' representations about their illness. Almost at the same period, Theunissen, de Ridder, Bensing and Rutten (2003) conducted an experiment to study whether illness representations and the action plans of patients with hypertension change when their physicians are trained to discuss these topics. Since then, CSM has served as the basis for intervention programs for several health problems, including chronic pain (e.g., Glattacker, Heyduck, & Meffert, 2012; Siemonsma et al., 2013), asthma (e.g., Petrie, Perry, Broadbent, & Weinman, 2012), heart diseases (e.g., Broadbent, Ellis, Thomas, Gamble, & Petrie, 2009; Lee, Cameron, Wünsche, & Stevens, 2011), cancer (Richardson, Tenant, Morton, & Broadbent, 2017), skin disorders (Fortune, Richards, Griffiths, & Main, 2004) etc. Additionally, special forms of cognitive intervention designed to modify illness representations have been developed (e.g., the "cognitive treatment of illness perceptions"; Siemonsma et al., 2013).

These interventions, however, seem to focus mostly on illness representations and action plans, almost ignoring other important aspects of the CSM (e.g., the role of the self-system). Furthermore, these interventions have not focused on motivational and predetermined factors. It is rather assumed that individuals automatically want to change their thoughts or behaviors as a result of the health problem. Still, this has been shown to not be always the case, as we will discuss later. At this point, we will turn to present Acceptance and Commitment Therapy (ACT), an empirically tested conceptual and clinically driven model that can easily be applied for various health-related conditions.

3. Acceptance and Commitment Therapy (ACT)

Acceptance and Commitment Therapy (ACT) has its roots in principles of modern radical behaviourism (particularly Relational Frame Theory- a behavioural theory of language and cognition; see Blackledge, 2003 for more details) and philosophy (i.e., functional contextualism; Hayes, Barnes-Holmes, & Wilson, 2012). ACT targets skills that promote acceptance and mindfulness while simultaneously cultivating valued actions (Hayes et al., 2012). ACT proposes that human suffering, including psychopathology and various health related problems, are a direct result of inflexible and context incongruent patterns of behaviour (i.e., behaviour based on abstract rules devised by the person, rather than what would be functional in the specific situation). That is, a person rigidly uses specific learned and rule-governed ways of dealing with adversities, regardless of the context at hand and irrespective of whether these result in desired outcomes. As a result, the person may become “stuck” in old pre-existing habitual ways of responding, which may be ineffective for the situation at hand, such as a new or chronic health problem. For example, one’s rule to “work hard, be self-reliant, and the problem will go away” will not necessarily work well for them in the face of chronic illness. When these rigid rules do not deliver the expected outcome, the person may start to appraise not only the situation as problematic but also themselves as being ineffective (decreased self-efficacy). Coping methods applied may be unsuccessful (especially if they are rule-governed and inflexible to the contextual needs) and may result in increased (judged as negative) emotional reactions, such as stress, frustration, and sadness. The result is, more cyclical cognitive appraisals of the self as being ineffectual or that the situation is hopeless. The person may report being stuck and indeed ACT proposes that cognitive fusion (i.e., responding to thoughts or emotions as if the content of the thoughts themselves are reality and “the truth” and acting based on the literal content of these

thoughts) leads to even more rigidity (Hayes, Luoma, Bond, Masuda, & Lillis, 2006). The result is a multiplication of additional ineffective behavior (e.g., avoiding medical advice, inappropriate use of medication, searching for a quick easier fix) creating a continuous loop that the patients are unable to break on their own.

Problematic responding to adversity (including a chronic health condition) and barriers, is summarily referred to as experiential avoidance, i.e., inflexible and context-insensitive attempts at reducing or eliminating painful or feared internal events (thoughts, emotions, sensations, memories; Hayes, Luoma, Bond, Masuda, & Lillis, 2006). Experiential avoidance is associated with a host of pathological mental, behavioural, and physical outcomes including behavioural health (Hayes et al., 2006; Hayes, Strosahl, Wilson, 2011; Gloster, Meyer, & Lieb, 2017) For example, a person suffering from a chronic illness may go to great lengths to avoid experiencing any symptoms associated with the illness (e.g. pain, discomfort, etc.) or try to evade unwanted internal events associated with that illness (e.g., thoughts such as: “I can’t handle this!” or “Why me?”) and may result in various ineffective behaviours (e.g., taking excessive analgesic medications, avoiding exercise or social events, excessively searching for medical reassurance) in order to achieve this. Though this is to be expected and it makes evolutionary sense to avoid potential threats of harm, the problem arises when the person insists on avoiding any unwanted internal events *irrespective of the achieved outcome*. That is, for example, instead of achieving the desired goal, it instead increases the unwanted thoughts and emotions, which in turn elicits even more unhelpful behaviours (e.g. giving up, using substances, blaming, ruminating etc.) to achieve the original goal (avoid contact with the negative stimuli). Usually, experiential avoidance results in the formation of mental rules, rigid and inflexible patterns of behaviour, which in turn lead to not only problematic

management of the health problem, but ultimately to the degradation of well-being and life functioning (e.g., “I cannot go on vacation as I may tire my legs and then be in a lot of pain and spoil everyone else’s vacation as well”).

The goal of ACT is to promote Psychological Flexibility (PF). PF refers to a range of inter- and intra-personal skills that can be defined as the ability to “recognize and adapt to various situational demands; shift mindsets or behavioral repertoires when these strategies compromise personal or social functioning; maintain balance among important life domains; and be aware, open, and committed to behaviors that are congruent with deeply held values” (Kashdan & Rottenberg, 2010). PF is considered a fundamental aspect of health and is the antidote to the costs of experiential avoidance. PF is comprised of six interrelated skills and each of these are targeted in ACT (Hayes et al., 1999, 2011). The six skills (and experiential avoidant alternative) are: (1) acceptance (vs. avoidance, suppression, etc), (2) cognitive defusion (vs. cognitive fusion), (3) present moment focus (vs. loss of contact with the now or being in an “autopilot” mode of functioning, (4) having a stable and transidential sense of self (vs. attachment to a conceptualized self), (5) clarification of and living based on deeply meaningful chosen values (vs. confusion about what is important and/or living life in incongruence to what is really important for the person (i.e. values confusion, behaviour discrepant from one’s values), and (6) committed purposeful action (vs. inaction, impulsivity, non-functional or persistent avoidant behaving.

Procedurally, experiential methods, including metaphors and exercises, are used in ACT. They aim to increase direct experiential contact (e.g. what will actually happen if I go on vacation) over dominance of literal verbal rules (“if I have pain, I can’t go on vacation”). Therefore the therapeutic stance in ACT is one of mistrust

towards the literal content of thoughts and the attempts at avoiding internal events. Instead, the focus is on bringing the person into direct contact with the experience, in the present, and at the same time allowing valued chosen actions, consistent with increasing functioning in daily life, to occur. For example, in a case report (Karekla & Constantinou, 2010), of a cancer patient treated using ACT, it was demonstrated how via utilizing the patients' spiritual and family values to drive acceptance of the illness facts (e.g., hair loss as part of a chosen treatment that could save her life and not as her mind was telling her (and thus holding such thoughts lightly) that it was a punishment for not being a "good" Christian), in the present, the client was better able to cope with her illness and live a meaningful life.

Promotion of the PF components in chronic illness illustrates the potential for chronic illness management. For example, Gillanders et al. (2015), showed that among a heterogeneous group of cancer patients cognitive fusion was the strongest predictor of anxiety symptoms and avoidant coping was the strongest predictor of depressive symptoms and lower quality of life. Research has also found evidence for the salience of PF in other health-related problems (see Graham, Gouick, Krahé, & Gillanders, 2016 for a systematic review), including: diabetes (Gregg et al., 2007), epilepsy (Lundgren et al., 2006), irritable bowel syndrome (Ferreira, 2011), thalassemia (Karekla, et al., 2015), and chronic pain (McCracken & Vowles, 2008). The full ACT therapeutic model has been examined in various randomized clinical trials. In general, ACT has been found to aid in improvements in various health related problems with medium to large resulting effect sizes (see also Ruiz, 2012 for a review and meta-analysis), including: physical activity (Butryn, Forman, Hoffman, Shaw & Juarascio, 2011), obesity (Forman et al., 2013), smoking cessation (Gifford et al., 2004; Hernandez-Lopez et al., 2009; Karekla et al., 2010), distress associated with

end-stage cancer (Branstetter, Wilson, Hilderbrandt, & Mutch, 2004), tinnitus distress (Hesser, Westin, Hayes, & Andersson; 2009), multiple sclerosis (Sánchez, & Luciano, 2005), prevention of HIV (Gutiérrez, Luciano, Bermúdez, & Buela-Casal, 2007), and irritable bowel syndrome (Ferreira, 2011).

Chronic pain has generated the most ACT research to date and is recognized as an Empirically Supported Treatment by the American Psychological Association for chronic pain. In the case of chronic pain, it is seen that suffering and life functioning limitations result from ineffective attempts at controlling pain and its symptoms. McCracken & Vellerman (2010) found that psychological flexibility accounted for more variance in measures of health than pain intensity. In one of the first ACT trials for chronic pain, Dahl and colleagues (2004), found ACT to result in fewer medical treatment utilizations and less sick days compared to treatment as usual. Similarly, Wicksell and colleagues (2008) showed that ACT led to significant improvements in functioning, life satisfaction, fear of movements, and depression among individuals with longstanding pain compared to wait-list control. Interestingly, these effects were maintained at the 7-month follow-up. There are now more than 10 randomized clinical trials showing similar results and provide support for the efficacy of ACT for chronic pain (Scott & McCracken, 2015).

4. Combining the CSM and ACT

Based on the CSM conceptualization, a patient's illness representations are the basis of the self-regulation process involved in coping-with-illness procedures and behavior (Leventhal et al., 1980). ACT, on the other hand, although it puts emphasis on the role of behaviour rather than on perceptions, also recognizes the importance that patients often ascribe to the latter. Thus, a first step necessary to integrate CSM and ACT within chronic illness would be the assessment of patient's cognitive and

emotional representations about their health problem. Towards this end, emphasis should be placed on behavior and the ways typically used to regulate it when facing a health problem (see also Table 1).

Following the mapping of patient's representations and illness-related behaviour, the next step is to discuss the results with the patients and help them understand the connection between "inner" factors (i.e., cognitive and emotional representations), "external" behaviour (i.e., coping with illness and symptoms), and adaptation to illness. For example, discuss how the rigid belief that "nothing can help with my symptom" (a sign of cognitive fusion in ACT) may result in frustration and avoidance of any further effort to deal with that symptom (experiential and behavioral avoidance) or may engage in non-functional coping strategies such as rumination (preoccupation with the past or thoughts of a foreshortened future; Karekla & Panayiotou, 2011), which in turn may distance the patient from valued activities in their life and diminish well-being (Hayes et al, 2011).

According to ACT, two types of reactions towards cognitions and emotions are maladaptive: the attempt to avoid or "get rid" of painful thoughts and feelings, which often results in increasing cognitive/emotional and behavioural avoidance, as well as responding to them as the only valid explanation of reality which may hold the patient to inaction (e.g., when a patient fears a change). However, in contrast to the more traditional cognitive-behavioural interventions, ACT does not aim in challenging and replacing these thoughts or representations (Hayes et al., 2013). This is a delineation point from the existing intervention programs based on CSM (e.g., Glattacker et al., 2012; Fortune et al., 2004; Siemonsma et al., 2013), which in accordance to the traditional CBT, aim to alter cognitions/appraisals in order to achieve behavior change. We believe, however, that given that the ultimate goal of CSM is behavior

change and better adaptation to illness, this model can better be combined with ACT, which tries to guide patients not towards changing internal events like cognitions, but towards finding meaning as to why change would be important for them and then committing to action plans, even in the presence of unwanted thoughts and emotions.

Towards this end, cognitive defusion may be used as an intervention technique. Cognitive defusion refers to the ability to observe inner events, such as cognitions and emotions, from a distance so as to gradually understand that they are not facts or rules that dictate behaviour, but rather the –often inaccurate– ways one represents the world (Gillanders et al., 2015). For example, putting a simple phrase like “I am having the thought that...” before a cognitive illness representation (e.g., “I am having the thought that nothing I do can help me with my symptoms”) may help the patient understand that it is only a belief and not a fact (Harris, 2009). Extensive other cognitive defusion exercises exist with varying lengths and intensities (see Hayes 2012). Cognitive defusion thus presents a new way by which to deal with dysfunctional illness representations (hold thoughts and evaluations lightly instead of fighting with them) and may prove to be more effective in dealing with particularly problematic and sticky cognitions that are often associated with inactivity or maladaptive action uptake.

Another relevant ACT component that could be formally incorporated into the CSM based interventions (and may indeed have been implied to date) is acceptance. Acceptance refers to allowing unpleasant thoughts, feelings, sensations, and evaluations to come and go without “struggling” with them and their supposed importance (Hayes et al., 2013). It includes acceptance of the current situation and of the internal world of the person (i.e., thoughts, emotions). For instance, instead of focusing on the worrisome thoughts and aiming at changing them before action can be

taken, ACT proposes that the patient observe these feelings and thoughts by adopting a scientist or detective mindset. For example, “What can I *do* when I hold this thought to be literally true?” vs. “What can I *do* when I treat this thought as a thought and move on without struggling with it?” This will help the patient to explore and observe feelings and thoughts investigatively in order to understand their function and recognize them for what they are, that is, just thoughts and feelings and not for what they say they are (i.e. something threatening based on illness representations). From this standpoint, the person can then choose to act centred upon what is important to them, such as spending quality time with a loved one even if feeling pain, rather than become stuck with their minds’ content (e.g., if you go out with your friend, your headache will get worse). There is evidence that such an approach helps patients better regulate their emotions and respond to their thoughts in a more effective/functional way (e.g., Gillanders et al., 2015). Once this step is achieved, the emphasis in the next steps is on setting goals, planning relevant courses of action, and committing in the effort to follow them, all in the context of living a valued life.

According to the CSM, the assessment of patient’s illness representations allows the designation of health-related goals and specific action plans in order to achieve these goals (Leventhal et al., 2005). Each action plan, in order to be effective, should be tailored to the patient’s characteristics, be relevant (i.e., make sense to the patient) and in consistence with the patient’s representations and goals (i.e., coherence), and should incorporate conscious processes and habitual reactions (i.e., newly acquired behavioural patterns promoting long-term illness self-management; McAndrew et al., 2008). ACT skills can be utilized and be combined with this CSM knowledge so as to serve as a suitable way to realize this complicated task.

ACT emphasizes action towards the achievement of goals, which, however, should ideally also correspond to personal values (i.e., *consistent with the patient's broader life*; Wilson, Sandoz, Kitchens, & Roberts, 2010). By doing so, the probability is increased that the patient follows through – even when difficult – because it is something they deeply care about. If the goals are not consistent with values, however, the patient is less likely to follow through with the things they simply “have to do” because their health care provider told them so. To tip the balance in the favour of values, ACT suggests that the key to successful behaviour change and greater well-being is to (a) “re-discover” or “clarify” personal values (i.e., what is important in one’s life and what gives meaning to changing a behavior), which are often “blurred” because of everyday living with illness and symptoms and in ACT terms, “fused” with the content of thoughts, (b) set goals (including health-related goals) based on personal values such as “I will walk for 10 minutes *in the service of my health*, because as I value being healthy” vs. “I *have to* walk 10 minutes”, and then (c) commit to acting based on these valued (and *relevant*) goals (Hayes et al., 2006).

In this regard, once patients link health-related goals to personal values, they can then plan specific actions to reach these goals (Karekla & Constantinou, 2010). For example, let’s consider a chronic pain patient who should increase her mobility and who also values family relationships as an important part of life. This patient could explore what type of family member they want to be and then how becoming more mobile would aid in living such a valued life. Then, commit to a specific action plan with the aim to gradually increase her mobility as a way not only to achieve a health goal, but also become more able to visit family members and, thus, strengthen family bonds. In this way, setting a goal and a corresponding action plan becomes

relevant to the patient and more motivating and engaging to follow through. Also, it empowers the client to uptake this plan (increases self-efficacy) as it is the clients themselves who choose the actions based on what is important to them and it is not something somebody else (e.g., a health professional) has told them they should do.

In fact, as ACT emphasizes the pursuit of action chosen by the patient on the ground of their own long-term values and life-goals, it pinpoints the latter as milestones that should guide behaviour (including health-related behaviour), even when conditions become adverse. Importantly, increasing valued behaviours precedes reductions in suffering (Gloster et al., 2017). Further, valued actions are always possible and available if one is flexible. For example, a patient/client would be asked what meaningful action can be taken today in service of their love of their children, even though they may not survive this illness. In this example, the choice is about the possibilities of today rather than the fused stories about what the future may or may not bring. To the extent that an important health-related action plan is integrated into patients' broader valued goals, the continuity of the illness self-regulation mechanism and probably its effectiveness are enhanced.

Furthermore, ACT may provide the means to bring habitual and automated behaviours (i.e. pre-existing maladaptive behavioural patterns) into the intervention/health-behaviour change process. As already noted, according to the CSM, the self-regulation process is driven and its contents (e.g., illness behaviour) are partially defined by habitual or semi-automatic mechanisms (Breland et al., 2012; Orbell & Verplanken, 2015). Likewise, ACT suggests that rigid and inflexible mental rules and maladaptive behaviours are often linked to each other in ways that individuals may not even acknowledge, as in an "autopilot" mode. The function of those is recognized to be usually negative reinforcement where actions temporarily

lead to a decrease in the unwanted thoughts/emotions (Kashdan, Barrios, Forsyth & Steger, 2006). In this regard, it is important for the patient to be enabled to recognize these maladaptive (non-deliberative) skills and their negative impact, and be able to disengage from them. Though other researchers have provided suggestions for integrating treatment behaviors into automatic daily routines (e.g., Phillips et al., 2013), ACT proposes two therapeutic techniques that might be particularly helpful towards this direction: mindfulness or present moment awareness and cognitive defusion, which was discussed earlier.

Within the context of ACT, mindfulness refers to the process of engaging and achieving awareness and acceptance of the present moment rather than follow the ‘autopilot chain’ of thoughts and behaviour (Harris, 2006). Through the use of experiential exercises and metaphor, such as “a body scan” or awareness exercises (for relevant examples, see https://contextualscience.org/free_audio) and cognitive defusion exercises (e.g., musical thoughts, Harris 2009), patients begin to gain insight of these (automatic) internal events at the moment they occur (present-moment awareness), for what they are (e.g., cognitive representations or beliefs), make room for them (without attempts at changing them) and, instead, choose at that moment to put effort and energy into changing their behavior to be more valued consistent (Dimidjian, & Segal, 2015).

With regard to the process of change, ACT underlines that any effort to change behaviour and achieve valued goals is an ongoing and dynamic process, as the CSM also suggests (Leventhal et al., 1992), which potentially includes several setbacks. Therefore, patients are encouraged to monitor changes as they happen (mindfulness may prove helpful in this regard) and use the gradual attainment of their goals as the appropriate reinforcement for continuing their efforts. Through a feedback loop, this

may eventually result in changes into the ways patients represent their condition and self (e.g., a perception that an illness bears nothing more than sorrow may change as a result of changes in behaviour and the achievement of a valued goal). Thus, the content of illness representations may not be directly targeted in ACT as in more traditional CBT approaches, but instead the emphasis is placed on changing the relation between these representations and resulting actions. This may be one salient reason why ACT is particularly useful with “treatment-resistant” patients who have not responded to other treatments (Gloster et al., 2015).

The emphasis that ACT puts on clear and relevant goals, as well as on change as a contextually based dynamic process, facilitates the long-term engagement in the pursuit of these goals (McCracken & Vowles, 2014). In other words, ACT seems able to realize what the CSM postulates as necessary conditions for the effective implementation of an action plan. That is, specificity, continuous feedback, and incorporation of both conscious and habitual processes (Jones, Smith, & Llewellyn, 2015). In other words, ACT provides the tools to control/intervene upon the areas that CSM posits as necessary conditions.

Finally, ACT describes all symptoms (i.e., identity representations according to the CSM) and the particular difficulties that a patient may be faced with (e.g., sleep problems, high distress; representations about consequences according to the CSM) as parts of the same dynamic “experience” (i.e., the illness or life experience). Thus, it is possible in this conceptualization to incorporate all behaviours, thoughts, and life situations without suggesting that a patient needs to erase them (e.g., the symptoms of an illness). Instead, ACT urges patients to view the entire experience as a whole. To accept and make room for what cannot change (e.g., a limitation that will be there for a long time) but, at the same time, commit to action in order to modify what can be

changed and is relevant to the patient (e.g., modify a health behavior in the context of achieving a personally valued goal). This, in turn, is expected to result in modifications to the ways patients experience (i.e., represent and react to) their condition, including particular symptoms and difficulties. Sometimes the changes are only ones of emphasis or perspective (e.g., walking as an expression of being a caring family member vs. walking because my care taker told me to). Through this process, the patient's sense of purpose and coherence is reinforced and the commitment to the implementation of the action plans is amplified.

Though we have attempted to propose a combination of the CSM model with ACT based on common postulates between the two approaches, we need to acknowledge that we did not attempt to reconcile any differences at the basic theoretical level. The two approaches may indeed lack theoretical consistency between them. ACT foundations lie in functional contextualism where the "truth" criterion is a pragmatic one of successful working within a context (see Hayes, 2004), whereas the CSM may approach "truth" more mechanistically (i.e., with emphasis on processes rather than function) and reductionistically (Leventhal et al., 1997). We however believe that combining approaches grounded in research even if they originate from different theoretical frameworks may lead to new ideas and present with benefits at the application level.

5. Conclusion

We believe that the development of intervention programs that integrate the knowledge and research experience gained from a well-structured theory regarding adaptation to chronic illness, namely, the Common Sense Model of Self-regulation (CSM; Leventhal et al., 1980; Leventhal et al., 2005), and an efficient and evolving psychological therapy model, i.e., Acceptance and Commitment Therapy (ACT;

Hayes et al., 1999; Hayes et al., 2012), may prove especially effective for promoting patients' adaptation to a chronic condition and enhancing their well-being and health. Although the CSM has been combined in the past with cognitive and cognitive-behavioral intervention methods (e.g., Glattacker et al., 2012; Kasteleyn et al., 2014; Petrie et al., 2002), those intervention programs have focused only on specific aspects of the CSM (mostly, illness representations and action plans) and left out other, equally important for a fruitful adaptation to illness, recommendations of the model (e.g., regarding the role of automated processes). Therefore, the development of an effort that will combine the CSM theoretical and empirical knowledge with the ACT theoretical and treatment model may prove to be especially useful in achieving the best possible therapeutic outcomes for chronic illness sufferers. In addition, the proposed combination may help professionals, who use CSM as a guide to build self-management interventions, move forward and consider the adoption of strategies and techniques that lie beyond the scope of the traditional CBT approaches and, in this way, probably achieve better outcomes.

Indeed, the intervention methods and techniques employed by ACT seem to be able to promote several of the features that the CSM considers important for the illness-related self-regulation process. As presented earlier, ACT could be used so as to promote (a) the overall consistency of the adaptation process, (b) a good match between illness-related goals, expected outcomes and action plans as well as between illness-related and broader personal life goals, (c) the effective regulation of emotions, and (d) the integration of the patient's newly acquired skills. In addition, (e) ACT emphasizes the development and implementation of action plans and behaviors that are realistic, tangible and corresponding to personal values (thus, self reinforcing). All these may be achieved through the use of multiple feedback channels. Therefore,

ACT seems suitable to stimulate a “psychologically flexible”/ adaptive, relevant and well nested in the self-context self-regulation process that according to the CSM, is crucial for an effective long-term adaptation to illness and for better health (Leventhal et al., 2005).

The combination of ACT and the CSM in an effort to build more effective interventions may prove productive for both models. The CSM is a well-known and strongly validated theoretical model regarding adaptation to chronic illness (Leventhal, Leventhal, & Breland, 2011; Leventhal et al., 2005). Yet, through ACT, it may gain a proper vehicle for a more active, complete, and pervasive application of its principles in the intervention field. Also, the use of ACT has already been successful in dealing with physical health issues and problems (e.g., Butryn et al., 2011; Gifford et al., 2004; Gutiérrez et al., 2007; Ruiz, 2012). Still, its combination with the CSM may result in the improvement of its efficiency and refinement of its treatment targets at least as far as the adaptation to chronic illness is concerned.

Although both models are grounded on the broader social cognitive robust theoretical tradition and share a common strong interest in patient’s valued goal oriented behavior as well-fitted in the overall self-context, the effectiveness of their combination undoubtedly depends on the characteristics of the health problem and the intervention specific aims and attributes. Likewise, the form of the combination depends on the patient’s specific needs and the intervention particular characteristics. For instance, the use of a therapeutic intervention framework may not be necessary for a very short intervention aiming in just providing information or facilitating patient’s understanding of their condition, or for patients that are easily motivated to adhere to medical advice and engage in health behaviour change, if necessary. On the other hand, a more fully deployed intervention addressed to patients with significant

adaptation difficulties (as, for example, in several cases of severe chronic pain) may take advantage of a broad array of ACT techniques in order to optimize the efficiency of patients' illness-related as well as overall self-regulation mechanism. Moreover, the use of ACT strategies and techniques would be especially helpful for those patients who, due to several reasons, are faced with significant cognitive or emotional barriers that hinder their adaptation to illness (e.g., may not fully accept the health care professionals' explanation of their condition, such as in functional physical symptoms, or may be stuck to chronic inactivity and avoidance, such as in severe rheumatoid diseases).

In any case, the effectiveness of the combination of the CSM and ACT, as outlined here, remains to be examined in future intervention studies. One such controlled clinical trial in chronic pain patients is under way (see [clinical trials.gov](https://clinicaltrials.gov/ct2/show/study/NCT02734992) registry reference: NCT02734992). We expect the results of this study and probably of others to follow with great expectation, as we believe that the CSM/ACT combination may lead to new exciting ways of facilitating adaptation to illness and assisting patients' recovery. This conceptual work in consort with the empirical tests have the potential to set off a productive debate about the best possible ways of integrating adaptation to illness, on the one hand, and psychological intervention, on the other hand.

References

- Blackledge, J.T. (2003). [An Introduction to Relational Frame Theory: Basics and Applications](#). *The Behavior Analyst Today*, 3(4), 421-434.
- Broadbent, E., Ellis, C. J., Thomas, J., Gamble, G., & Petrie, K. J. (2009). Further development of an illness perception intervention for myocardial infarction patients: a randomized controlled trial. *Journal of psychosomatic research*, 67(1), 17-23.
- Branstetter, A. D., Wilson, K. G., Hildebrandt, M., & Mutch, D. (2004). Improving psychological adjustment among cancer patients: ACT and CBT. *Association for Advancement of Behavior Therapy, New Orleans*, 35-732.
- Breland, J.Y., Fox, A.M., Horowitz, C.R., and Leventhal, H. (2012). Applying a common-sense approach to fighting obesity. *Journal of Obesity*, Article ID: 710427
- Broadbent, E., Ellis, C.J., Thomas, J., Gamble, G., & Petrie, K.J. (2009). Further development of an illness perception intervention for myocardial infarction patients: A randomized clinical trial. *Journal of Psychosomatic Research*, 67, 17-23.
- Butryn, M. L., Forman, E., Hoffman, K., Shaw, J., & Juarascio, A. (2011). A pilot study of Acceptance and Commitment Therapy for promotion of physical activity. *Journal of Physical Activity and Health*, 8, 516-522.
- Cameron, L.D., & Jago, L. (2008). Emotion regulation interventions: A common-sense model approach. *British Journal of Health Psychology*, 13, 215-221.
- Cameron, L.D., Booth, R.J., Schlatter, M.S., Ziginskis, D., & Harman, J. (2007). Changes in emotion regulation and psychological adjustment following use of a

- group psychosocial support program for women recently diagnosed with breast cancer. *Psycho-Oncology*, *16*, 171-180.
- Dahl, J., Wilson, K. G., & Nilsson, A. (2004). Acceptance and commitment therapy and the treatment of persons at risk for long-term disability resulting from stress and pain symptoms: A preliminary randomized trial. *Behavior therapy*, *35*(4), 785-801.
- Dempster, M., Howell, D., & McCorry, N.K. (2015). Illness perceptions and coping in physical health conditions: a meta-analysis. *Journal of Psychosomatic Research*, *79*, 506-513.
- Diefenbach, M.A., & Leventhal, H. (1996). The common-sense model of illness representation: theoretical and practical considerations. *Journal of Social Distress and the Homeless*, *5*, 11-38.
- Dimidjian, S., & Segal, Z. V. (2015). Prospects for a clinical science of mindfulness-based intervention. *American Psychologist*, *70*(7), 593.
- Ferreira, N. M. D. R. B. (2011). Investigating the role of psychological flexibility and the use of an acceptance and commitment therapy based intervention in irritable bowel syndrome.
- Forman, E. M., Butryn, M. L., Juarascio, A. S., Bradley, L. E., Lowe, M. R., Herbert, J. D., & Shaw, J. A. (2013). The Mind Your Health Project: A randomized controlled trial of an innovative behavioral treatment for obesity. *Obesity*, *21*, 1119 – 1126.
- Fortune, D.G., Richards, H.L., Griffiths, C.E.M., & Main, C.J. (2004). Targeting cognitive-behavior therapy to patients' implicit model of psoriasis: Results from a patient preference controlled trial. *British Journal of Clinical Psychology*, *43*, 65-82.

- Foxwell, R., Morley, C., & Frizelle, D. (2013). Illness perceptions, mood and quality of life: A systematic review of coronary heart disease patients. *Journal of Psychosomatic Research, 75*, 211-222.
- Gifford, E. V., Kohlenberg, B. S., Hayes, S. C., Antonuccio, D. O., Piasecki, M. M., Rasmussen-Hall, M. L., & Palm, K. M. (2004). Acceptance-based treatment for smoking cessation. *Behavior therapy, 35*(4), 689-705.
- Gillanders, D. T., Sinclair, A. K., MacLean, M., & Jardine, K. (2015). Illness cognitions, cognitive fusion, avoidance and self-compassion as predictors of distress and quality of life in a heterogeneous sample of adults, after cancer. *Journal of Contextual Behavioral Science, 4*(4), 300-311.
- Glattacker, M., Heyduck, K., & Meffert, C. (2012). Illness beliefs, treatment beliefs and information needs as starting points for patient information – Evaluation of an intervention for patients with chronic back pain. *Patient Education and Counselling, 86*, 378-389.
- Gloster, A. T., Meyer, A. H., & Lieb, R. (2017). Psychological flexibility as a malleable public health target: Evidence from a representative sample. *Journal of Contextual Behavioral Science, 6*(2), 166-171.
- Gloster, A. T., Sonntag, R., Hoyer, J., Meyer, A. H., Heinze, S., Ströhle, A., ... & Wittchen, H. U. (2015). Treating treatment-resistant patients with panic disorder and agoraphobia using psychotherapy: a randomized controlled switching trial. *Psychotherapy and psychosomatics, 84*(2), 100-109.
- Goldbeck, L., Fidika, A., Herle, M., & Quittner, A.L. (2014). Psychological interventions for individuals with cystic fibrosis and their families. *Cochrane Database of Systematic Reviews, 6*. Art No.: CD003148.

- Graham, C. D., Gouick, J., Krahe, C., & Gillanders, D. (2016). A systematic review of the use of Acceptance and Commitment Therapy (ACT) in chronic disease and long-term conditions. *Clinical psychology review*, 46, 46-58.
- Gregg, J. A., Callaghan, G. M., Hayes, S. C., & Glenn-Lawson, J. L. (2007). Improving diabetes self-management through acceptance, mindfulness, and values: a randomized controlled trial. *Journal of consulting and clinical psychology*, 75(2), 336.
- Gutiérrez, O., Luciano, M. C., Bermúdez, M. P., & Buela-Casal, G. (2007). Prevention of HIV among adolescents. Comparing the effect of information-based protocols vs. information plus values-based protocols on risky patterns of behavior. In *5th World Congress of Cognitive and Behaviour Therapies, Barcelona*.
- Hagger, M.S., Koch, S., Chatzisarantis, N.L.D., & Orbell, S. (2017). The common-sense model of self-regulation: Meta-analysis and test of a process model. *Psychological Bulletin*, <http://dx.doi.org/10.1037/bul0000118>.
- Harris, R. (2006). Embracing your demons: an overview of acceptance and commitment therapy. *Psychotherapy in Australia*, 12(4), 70.
- Harris, R. (2009). *ACT made simple: An easy-to-read primer on acceptance and commitment therapy*. New Harbinger Publications.
- Hayes, S. C. (2004). Acceptance and commitment therapy, relational frame theory, and the third wave of behavioral and cognitive therapies. *Behavior therapy*, 35(4), 639-665.
- Hayes, S. C., Barnes-Holmes, D., & Wilson, K. G. (2012). Contextual Behavioral Science: Creating a science more adequate to the challenge of the human condition. *Journal of Contextual Behavioral Science*, 1(1-2), 1-16.

- Hayes, S. C., Bissett, R. T., Korn, Z., Zettle, R. D., Rosenfarb, I. S., Cooper, L. D., & Grundt, A. M. (2012). The impact of acceptance versus control rationales on pain tolerance. *The Psychological Record, 49*(1), 3.
- Hayes, S. C., Levin, M. E., Plumb-Villardaga, J., Villatte, J. L., & Pistorello, J. (2013). Acceptance and commitment therapy and contextual behavioral science: Examining the progress of a distinctive model of behavioral and cognitive therapy. *Behavior therapy, 44*(2), 180-198.
- Hayes, S.C., Luoma, J.B., Bond, F.W., Masuda, A., & Lillis, J. (2006). Acceptance and Commitment Therapy: Model, processes and outcomes. *Behaviour Research and Therapy, 44*(1), 1–15.
- Hayes, S. C., Strosahl, K.D., & Wilson, K.G. (1999). *Acceptance and Commitment Therapy: An experiential approach to behavior change*. New York: The Guilford Press.
- Hayes, S. C., Strosahl, K.D., & Wilson, K.G. (2011). *Acceptance and Commitment Therapy: The process and practice of mindful change*. New York, NY: The Guilford Press.
- Hernández-López, M., Luciano, M. C., Bricker, J. B., Roales-Nieto, J. G., & Montesinos, F. (2009). Acceptance and commitment therapy for smoking cessation: a preliminary study of its effectiveness in comparison with cognitive behavioral therapy. *Psychology of Addictive Behaviors, 23*(4), 723.
- Hesser, H., Westin, V., Hayes, S. C., & Andersson, G. (2009). Clients' in-session acceptance and cognitive defusion behaviors in acceptance-based treatment of tinnitus distress. *Behaviour research and therapy, 47*(6), 523-528.
- Hudson, J.L., Bundy, C., Coventry, P.A., & Dickens, C. (2014). Exploring the relationship between cognitive illness representations and poor emotional health

- and their combined association with diabetes self-care. A systematic review with meta-analysis. *Journal of Psychosomatic Research*, 76, 265-274.
- Jones, C. J., Smith, H. E., & Llewellyn, C. D. (2015). A systematic review of the effectiveness of interventions using the Common Sense Self-Regulatory Model to improve adherence behaviours. *Journal of Health Psychology*, 1359105315583372.
- Karekla, M., & Constantinou, M. (2010). Religious coping and cancer: Proposing an acceptance and commitment therapy approach. *Cognitive and Behavioral Practice*, 17(4), 371-381.
- Karekla, M., Constantinou, P., Ioannou, M., Gloster, A., & Kareklas, I (under review). Meta-analysis of third wave cognitive behavioral treatment dropouts.
- Karekla, M., Kapsou, M., Ioannou, V.A., Gregoriou, I., Christodoulou, A., & Gkλιαou, M.A. (2010). Pilot results from an acceptance and commitment therapy-enhanced smoking cessation intervention for adolescents. *Psychology and Health*, 25 (6), 250.
- Karekla, M., & Panayiotou, G. (2011). Coping and experiential avoidance: Unique or overlapping constructs?. *Journal of behavior therapy and experimental psychiatry*, 42(2), 163-170.
- Karekla, M., Stavrinaki, M., Paraskeva-Siamata, M., Constantinou, C., Loizou, C., Phellas, C., & Christou, S.(2015). The effectiveness of an ACT protocol for improving well-being in Thalassemia patients. *European Health Psychologist*, 17(S), 327.
- Kashdan, T. B., Barrios, V., Forsyth, J. P., & Steger, M. F. (2006). Experiential avoidance as a generalized psychological vulnerability: Comparisons with

- coping and emotion regulation strategies. *Behaviour research and therapy*, 44(9), 1301-1320.
- Kashdan, T. B., & Rottenberg, J. (2010). Psychological flexibility as a fundamental aspect of health. *Clinical psychology review*, 30(7), 865-878.
- Kasteleyn, M. J., Gorter, K. J., Stellato, R. K., Rijken, M., Nijpels, G., & Rutten, G. E. (2014). Tailored support for type 2 diabetes patients with an acute coronary event after discharge from hospital—design and development of a randomised controlled trial. *Diabetology & metabolic syndrome*, 6(1), 5.
- Lee, T.J., Cameron, L.D., Wünsche, B., & Stevens, C. (2011). A randomized trial of computer-based communications using imagery and text information to alter representations of heart disease risk and motivate protective behaviour. *British Journal of Health Psychology*, 16, 72-91.
- Leventhal, H., Benyamini, Y., Brownlee, S., Diefenbach, M., Leventhal, E.A., Patrick-Miller, L. & Robitaille, C. (1997). Illness Representation: Theoretical foundations. In Weinman J. & Petrie, K. (Eds.), *Perceptions of health and illness*. London: Harwood Publisher.
- Leventhal, H., Diefenbach, M., & Leventhal, E.A. (1992). Illness cognition: Using common sense to understand treatment adherence and affect cognition treatment. *Cognitive Therapy and Research*, 16, 223-230.
- Leventhal, H., Halm, E., Horowitz, C., Leventhal, E.A., & Ozakinci, G. (2005). Living with chronic illness: A contextualized, self-regulation approach. In S. Sutton, A. Baum & M. Johnston (eds.), *The SAGE handbook of health psychology* (pp. 197-240). London, UK: Sage.

- Leventhal, H., Leventhal, E.A., & Breland, J.Y. (2011). [Cognitive science speaks to the "common-sense" of chronic illness management.](#) *Annals of Behavioral Medicine, 41*, 152-63
- Leventhal, H., Meyer, D., & Nerenz, D. (1980). The common-sense representations of illness danger. In S. Rachman (Ed.), *Medical psychology* (vol. 2, pp. 7-30). New York: Pergamon.
- Leventhal, H., Weinman, J., Leventhal, E.A., & Phillips, L.A. (2008). Health psychology: The search for pathways between behavior and health. *Annual Review of Psychology, 59*, 477-505.
- Lundgren, T., Dahl, J., Melin, L., & Kies, B. (2006). Evaluation of acceptance and commitment therapy for drug refractory epilepsy: a randomized controlled trial in South Africa—a pilot study. *Epilepsia, 47*(12), 2173-2179.
- Maes, S., & Boersma, S.N. (2004). Applications in health psychology: How effective are interventions? In S. Sutton, A. Baum & M. Johnston (Eds.), *The Sage handbook of health psychology* (pp. 299-325). London: Sage.
- McAndrew, L.M., Musumeci-Szabo, T.J., Mora, P.A., Vileikyte, L., Burns, E., Halm, E.A., Leventhal, E.A., & Leventhal, H. (2008). Using the common sense model to design interventions for the prevention and management of chronic illness threats: From description to process. *British Journal of Health Psychology, 13*, 195-204.
- McCracken, L. M., & Vowles, K. E. (2008). A prospective analysis of acceptance of pain and values-based action in patients with chronic pain. *Health Psychology, 27*(2), 215.

- McCracken, L. M., & Vowles, K. E. (2014). Acceptance and commitment therapy and mindfulness for chronic pain: model, process, and progress. *American Psychologist, 69*(2), 178.
- McSharry, J., Moss-Morris, R., & Kendrick, T. (2011). Illness perceptions and glycaemic control in diabetes: a systematic review with meta-analysis. *Diabetic Medicine, 28*, 1300-1310.
- Orbell, S., & Verplanken, B. (2015). The strength of habit. *Health psychology review, 9*(3), 311-317.
- Petrie, K.J., Cameron, L.D., Ellis, C.J., Buick, D., & Weinman, J. (2002). Changing illness perceptions after myocardial infarction: an early intervention randomized controlled trial. *Psychosomatic Medicine, 64*, 580-586.
- Petrie, K.J., Perry, K., Broadbent, E., & Weinman, J. (2012). A text message programme designed to modify patients' illness and treatment beliefs improves self-reported adherence to asthma preventer medication. *British Journal of Health Psychology, 17*, 74-84.
- Peytremann-Brideveaux, I., Ardit, C., Gex, G., Brideveaux, P.O., & Burnand, B. (2015). Chronic disease management programmes for adults with asthma. *Cochrane Database of Systematic Reviews, 5*. Art No.: CD007988.
- Phillips, L.A., Cohen, J., Burns, E., Abrams, J., & Renninger, S. (2016). Self-management of chronic illness: the role of 'habit' versus reflective factors in exercise and medication adherence. *Journal of Behavioral Medicine, 39*, 1076-1091.
- Phillips, L.A., Leventhal, H., & Leventhal, E.A. (2013). Assessing theoretical predictors of long-term medication adherence: Patients' treatment-related

- beliefs, experiential feedback and habit development. *Psychology and Health*, 28, 1135-1151.
- Richardson, A.E., Tennant, G., Morton, R.P., & Broadbent, E. (2017). A self-regulatory intervention for patients with head and neck cancer: Pilot randomized trial. *Annals of Behavioral Medicine*, 51, 629-641.
- Ruiz, F. J. (2012). Acceptance and commitment therapy versus traditional cognitive behavioral therapy: A systematic review and meta-analysis of current empirical evidence. *International journal of psychology and psychological therapy*, 12(3).
- Sánchez, L. C., & Luciano, C. (2005). Acceptance and Commitment Therapy (ACT) in multiple sclerosis patients. How does it influence on psychological processes and on the neurodegenerative course of the disease. In *9th European Congress of Psychology, Granada, España*.
- Sansom-Daly, U.M., Peate, M., Wakefield, C.E., Bryant, R.A., & Cohn, R.J. (2012). A systematic review of psychological interventions for adolescents and young adults living with chronic illness. *Health Psychology*, 31, 380-393.
- Schneiderman, N., Antoni, M.H., Penedo, F.J., & Ironson, G. (2010). Psychosocial-behavioral interventions and chronic disease. In A. Steptoe (Ed.), *Handbook of behavioral medicine: Methods and applications*. (pp: 989-1008). New York: Springer.
- Scott, W., & McCracken, L. M. (2015). Psychological flexibility, acceptance and commitment therapy, and chronic pain. *Current Opinion in Psychology*, 2, 91-96.
- Siemonsma, P.C., Stuive, I., Roorda, L.D., Vollebregt, J.A., Walker, M.F., Lankhorst, G.J., & Lettinga, A.T. (2013). Cognitive treatment of illness perceptions in

- patients with chronic low back pain: A randomized controlled trial. *Physical Therapy*, 93, 435-448.
- Tanenbaum, M.L., Leventhal, H., Breland, J.Y., Yu, J., Walker, E.A., & Gonzalez, J.S. (2015). Successful self-management among non-insulin-treated adults with Type 2 diabetes: a self-regulation perspective. *Diabetic Medicine*, 32, 1504-1512.
- Taylor, R.R. (2006). *Cognitive behavioral therapy for chronic illness and disability*. New York: Springer.
- Theunissen, N.C.M., de Ridder, D.T.D., Bensing, J.M., & Rutten, G.E.H.M. (2003). Manipulation of patient-provider interaction: discussing illness representations or action plans concerning adherence. *Patient Education and Counselling*, 51, 247-258.
- van der Heijden, I., Abrahams, N., & Sinclair, D. (2017). Psychosocial group interventions to improve psychological well-being in adults living with HIV. *Cochrane Database of Systematic Reviews*, 3. Art No.: CD010806.
- Wicksell, R. K., Ahlqvist, J., Bring, A., Melin, L., & Olsson, G. L. (2008). Can Exposure and Acceptance Strategies Improve Functioning and Life Satisfaction in People with Chronic Pain and Whiplash-Associated Disorders (WAD)? A Randomized Controlled Trial. *Cognitive behaviour therapy*, 37(3), 169-182.
- Wilson, K. G., Sandoz, E. K., Kitchens, J., & Roberts, M. (2010). The Valued Living Questionnaire: Defining and measuring valued action within a behavioral framework. *The Psychological Record*, 60(2), 249.