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Psychological Flexibility, Chronic Pain, and Health

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Annu. Rev. Psychol. 2024. 75:601–24

First published as a Review in Advance on August 16, 2023

The *Annual Review of Psychology* is online at psych.annualreviews.org

https://doi.org/10.1146/annurev-psych-020223-124335

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Keywords

psychological flexibility, psychological inflexibility, psychological models, chronic pain, health, well-being, process-based therapy

Abstract

Psychological flexibility is a model of human performance and well-being. It essentially entails an approach to life circumstances that includes openness, awareness, and engagement. It has roots in behavior analysis, and it is linked to a philosophy of science called functional contextualism and to a specific therapy approach called Acceptance and Commitment Therapy. One of the earliest and most developed research areas in which this model and therapy have been applied is chronic pain. This review describes psychological flexibility and its facets in more detail, sets them in a context of relevant psychological models, and examines related assessment and treatment methods. It also examines evidence, current challenges, and future directions. It is proposed that psychological flexibility, or an expanded model very much like it, could provide a basis for integrating current research and treatment approaches in chronic pain and health generally. This, in turn, could produce improved treatments for people with chronic pain and other conditions.

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INTRODUCTION

In a previous review of psychological flexibility in the context of chronic pain, we defined psychological flexibility as "the capacity to persist or to change behavior in a way that (*a*) includes conscious and open contact with thoughts and feelings, (*b*) appreciates what the situation affords, and (*c*) serves one's goals and values" (McCracken & Morley 2014, p. 225). These many years later, this definition seems accurate and reasonably understandable. It also fits consistently with definitions that describe psychological flexibility as skills including the ability to act in ways that are open, aware, and engaged (Hayes et al. 2011).

Psychological flexibility is a multifaceted quality of action. It is a way of interacting with the world both inside and outside the skin. It includes behavior that reflects healthy purposes, and it is sensitive and adaptable. It is able to accommodate failure and translate into either persistence or change in the action being taken, depending on one's purpose and what is available to achieve. If life includes changes, this pattern of behavior includes the capacity to change, too. This flexibility is complex in some ways, particularly as it is functionally conceived, contextually based, and multicomponent. This review will further define and develop what psychological flexibility means today in psychological research and treatment development, and it will do this from a contextual

behavioral science perspective (Hayes et al. 2012a). It will also focus specifically on the context of chronic pain and health. It will look at relevant history, theory, practical assessment and treatment methods, evidence, current challenges, and future directions.

PSYCHOLOGICAL FLEXIBILITY FURTHER DESCRIBED

The spirit of psychological flexibility existed even before the term was widely used. It existed as the set of processes underlying Acceptance and Commitment Therapy (ACT), a specifically contextual and process-based form of Cognitive Behavioral Therapy (CBT) (Hayes et al. 1999). The term may have first appeared with reference to ACT around 2004 (Hayes et al. 2004a). There are now many different definitions of psychological flexibility in the available literature. As one understands psychological flexibility more precisely, one sees that all true definitions will be functionally the same but can differ in the exact words used. This makes it worthwhile to discuss the concept further.

Psychological flexibility has been defined as "the ability to contact the present moment more fully as a conscious human being, and to either change or persist when doing so serves valued ends" (Hayes et al. 2004a, p. 5). This definition can sound unusual, because some of the elements seem to require further definition or clarification, such as "more fully as a conscious human being." The definitions offered so far include an aspect called contact, which is probably unusual as well. This is, however, a rather core feature of psychological flexibility and it is difficult to express in another way. When the individual facets of psychological flexibility are defined, this will become clearer, as will the aspect referring to "a conscious human being." In the meantime, consider it this way: A person can be in the place where an event is occurring and have available the sensory and psychological qualities of this event, but they may fail to register them in awareness or fail to be psychologically present with them. This is failure in contact, like eating a meal without actually tasting it, such as while daydreaming about some other place or time or ruminating on some mishap.

In psychological flexibility, the most commonly occurring barrier to contact is when the influence of our own thinking dominates over our direct experiences of the situations in which we find ourselves. Once again, this may sound a little unusual, and it is worth repeating. Psychological flexibility includes a set of processes for reducing unhelpful verbal/cognitive regulation over behavior while enhancing regulation by direct experiences that are present when we engage with the world around us (Hayes et al. 2013). It also includes increasing helpful verbal/cognitive regulation linked to what people want in life, as will also become clearer in discussing the part of the model that includes values.

The unusual sound of some of the definitions of psychological flexibility, particularly when considering it from a scientific perspective, can be understood in relation to the purposes of the term. Psychological flexibility was not designed as a technical scientific term, although it has been used to guide a great deal of research since it first appeared (Li et al. 2022). Psychological flexibility is mainly a clinical term for a set of concepts or tools to be used during treatment delivery. This term emerged as a way to organize the efforts of therapists in assessing and interacting with treatment recipients in the process of delivering ACT, as mentioned.

One could say that psychological flexibility is a practical clinical model that can be translated either into easier-to-understand terms, such as when speaking with a treatment recipient, or into more technical and scientific terms when one wants to more deeply understand the psychological principles in operation. It is in this sense that the terms employed within the psychological flexibility model are called mid-level terms (McCracken & Morley 2014).

FACETS OF PSYCHOLOGICAL FLEXIBLITY

Openness

Psychological flexibility is typically associated with six facets. These six facets can be organized as three summary skill sets or capacities, including openness, awareness, and engagement (Hayes et al. 2011). Each of these summary skill sets, in turn, includes two facets. For openness these facets, or component parts, are acceptance and cognitive defusion. These facets are similar because they both focus on behavior patterns that counteract domination by unwanted, or behavior-restricting, influences. Both promote behavior variability and can reduce or compete with avoidance.

Acceptance is essentially an act of allowing. It can also be described as engagement in meaningful action in the context of potentially avoidance-promoting experiences while refraining from avoidance. This can also be called engagement with willingness or without resistance (McCracken 2010). In the context of chronic pain this acceptance can include the willingness to feel pain, but also the willingness to feel any other feelings that might be a part of taking the actions ones wants to take, including feelings of fear, anxiety, sadness, guilt, embarrassment, and so on. Acceptance, as defined within the psychological flexibility model, is an "in the moment" response. It is a choice, an act of openness to what is present now, not forever. One of the easiest ways to think about it is that in any moment one can say yes or no to what is present in one's psychological experience, and acceptance is an act of saying yes (Hayes et al. 2012b), particularly as a way to empower what one wants to do.

If acceptance is the ability to have feelings without being dominated by them, cognitive defusion is the ability to have thoughts without being dominated by them, or without needing to follow/do what they say (Hayes et al. 1999). Cognitive fusion is what happens in the context of thoughts in which the content becomes combined with the events to which the thoughts refer, or with the person having the thought. This is an automatic process in human language and thinking, but also one that is contextually determined and modifiable.

In human experience, thought content blends with events and modifies what the events mean, or how they influence our emotions and behavior, and it does so typically without us being aware that it is happening. As a result, we are left living in, and interacting with, a world shaped by our thoughts, without direct contact with what the world is like outside of these thoughts and the opportunities available there. Cognitive defusion is the process of seeing this happen and separating the meaning and influence of misleading thoughts from the events they overshadow, allowing behavior to proceed outside of the influence of this thought content, according to direct contingencies in the environment or other positive verbally constructed purposes (Hayes et al. 1999). To have essentially tolerable pain plus fusion with the thought "I can't stand this pain" is to experience intolerable pain.

Acceptance and cognitive defusion do not focus on reducing feelings, or changing the frequency or message in thoughts, but on altering the influence these feelings and thoughts exert on behavior patterns. Imagine having a thought such as "I am having a heart attack" and not caring about or believing the content of what it says—clearly a different process from changing that thought into "I am not having a heart attack." The six facets of psychological flexibility are represented in **Figure 1**.

Awareness

As with openness, there are also two facets of awareness, present-focused awareness and self-as-context. The facet called present-focused awareness is somewhat more than that. It is the attention- and awareness-related skill set in psychological flexibility. It is better conceived as the ability to focus attention intentionally, in the moment, on direct experience and to shift

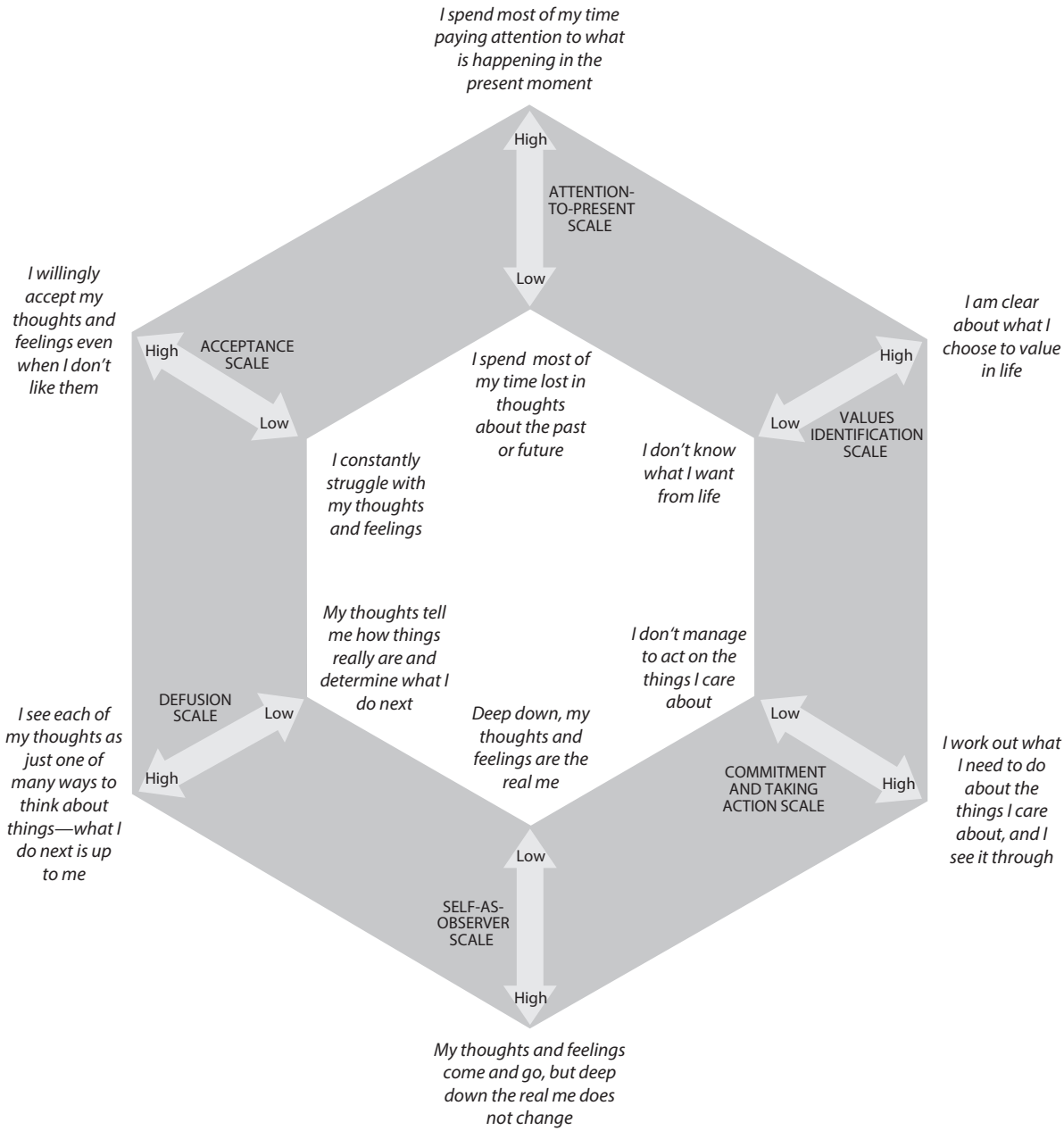

Figure 1

The psychological flexibility model, the therapeutic focus of Acceptance and Commitment Therapy. Figure adapted from the ACT ADVISOR Psychological Flexibility Measure by David Chantry (at **http://contextualpsychology.org/act_advisor_psychological_flexibility_measure**) with permission from the author.

attention when needed—for example, focusing on one event and then another or "zooming in" or "zooming out" in a situation (Hayes et al. 2012b). This is perhaps the facet that most includes the sense of making contact with events reflected in the overall definition of psychological flexibility. When people think about mindfulness or note parallels between psychological flexibility and mindfulness, it is typically this facet that is regarded as the overlap (McCracken & Velleman 2010).

Probably the most confusing and least understood facet of psychological flexibility is the one called self-as-context. As a reflection of the confusion surrounding this facet, it is also the one that is most variously described, with slightly different terms presented as roughly synonymous, including self-as-observer, observer self, self-as-distinction, self-as-awareness, pure awareness, continuous self, self-as-perspective, and others. Somewhat provocatively, and quite accurately, this sense of self is regarded as something we can do, as opposed to something that we are as a matter of identity. This sense of self can be called selfing, to reflect its active quality, or, similarly, perspective taking (McHugh & Stewart 2012). This is a sense of self in which we create or conceive ourselves and then experience, either directly or as a matter of belief, that this is our true self, but normally we do not see this process. In a sense, we can see or frame our self as equal to all of the things we think and feel (e.g., I am a person who is responsible, follows the rules, and feels confident most of the time) or, alternatively, as a point of view or context for these thoughts and feelings (i.e., I see that I have thoughts and feelings but do not define myself as these thoughts and feelings). Once again, this notion sits outside our day-to-day experience and therefore it is difficult to grasp from verbal description alone.

The particular utility of the self-related facet in psychological flexibility is that it provides a way to deal with the many challenges around self and identify that people experience when they have chronic pain or similar health problems, such as feeling that the self is unable, overwhelmed, or lost. It does this by showing people how to experience a sense of who they are that is not a story, that does not identify with the content of psychological experience, that has or contains psychological experiences but is not defined by these experiences nor harmed by them. It relates the experienced self to a context or container that is bigger than the psychological experiences and is consistent and unchanging, like a consistent point of view or arena. From this separate vantage point, thoughts or judgements do not need to be positive. There can be strong emotions and intense pain, and this sense of self contains it all inertly. To use a commonly used metaphor, self and psychological experiences can be seen as analogous to the sky that contains the weather.

Engagement

The final pair of terms that make up psychological flexibility both include aspects of what people want to do, how they want to do it, and how to make that persist and further develop as a process of behavior change. These parts can be called the motivational, overt behavior change or the activation parts of the model. These two final facets are values-based action and committed action. In fact, committed action is itself a form of values-based action, but the two notions include slightly different emphases or steps as unfolding processes.

Values are what we intentionally hold as important. As applied to behavior, these are the purposes we want our behavior to reflect, the qualities that make actions meaningful and important to do. Values are formally defined in the context of ACT 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). This is to say that values-based action is not under aversive or socially mediated influences. It is action in verbal behavior that relates behavior to motivating events, in a way that gives the very act of doing a values-based action the power to motivate (Plumb et al. 2009). Values provide direction and guidance for what we do, which can be extremely

useful in the context of chronic pain. They can function as an alternative to having the purpose to avoid pain as a guide. Values-based action is like goals-based action, except that goals are reachable and values are ongoing. Being a loving partner, being a nurturing parent, or treating oneself with self-compassion are possible examples of core values.

Committed action is relatively straightforward to define: It is an extension of values-based action. Committed action is values-based action with the added features that it persists, expands, and integrates (Hayes et al. 2012b, McCracken 2022). If producing values-based action includes clarifying values and then initiating first steps toward them, committed action is building these small initial steps into wider patterns of behavior that carry on over time, possibly diversify in form while maintaining the same function, and generalize across an increasing range of situations and contexts. This includes building patterns of behavior that meet consequences in the world and are then shaped, refined, spread, and maintained because they are inherently reinforcing to do and successful.

Psychological Inflexibility

It is worth mentioning that there is a companion model to the psychological flexibility model that specifies the processes that can move one away from successful performance and well-being. This is called, perhaps naturally, psychological inflexibility (Hayes et al. 2012b). The components of this model includes the opposite ends of the dimensions of flexibility. These are called experiential avoidance; cognitive fusion; preoccupation with the past or future; attachment to, or dominance of, the conceptualized self; absence of values-based action; and inaction, or impulsive or avoidant persistence. To avoid too much repetition, each one of these will not be defined here, particularly as their meaning can be easily derived from the definitions of the flexibility facets—though it is worth noting that, when assessed, the inflexibility behavior patterns appear somewhat independent of the flexibility patterns, and one cannot consider them as simply the absence of the latter (Rolffs et al. 2018), including in the context of chronic pain (Sundström et al. 2023). **Figure 1** shows some inflexibility facets inside the inner hexagon.

THE CONTEXT OF CHRONIC PAIN

While the psychological flexibility model has been applied to many diverse problems in physical health, mental health and well-being, performance and well-being at work, and so on, chronic pain is possibly the area with the largest number of total studies. A bibliometric analysis showed that three chronic pain studies are among the most cited studies of ACT (Li et al. 2022). Some of the earliest studies of what later became identified as facets of psychological flexibility (McCracken 1998) and some of the earliest treatment outcome studies applying this model appeared in the area of chronic pain (Dahl et al. 2004, McCracken et al. 2005).

Chronic pain is a huge problem around the world. It is one of the most common complaints in primary care, is among the leading causes of disability in work, is typically the second most frequent reason for sick leave from work, and is extremely expensive in health care and for society (Mills et al. 2019). As a health problem it is almost invariably complex and difficult to solve. On the surface, there seems to be an obvious fit between chronic pain and psychological flexibility. Because chronic pain is ordinarily not a condition that can be entirely cured, and is known to be characterized by avoidance, the focus of psychological flexibility on acceptance would appear directly relevant. After all, one might consider accepting what one cannot change. While to an extent this is true, the fit runs much deeper than this. In truth, every element of psychological flexibility is relevant to chronic pain considered generally. The wide scope of the model is a valuable asset in the assessment and management of the many varied impacts of chronic pain on

emotional, neurocognitive, physical, self-related, and social functioning. This will become clear below when reviewing the evidence for the model.

PSYCHOLOGICAL MODELS AND CHRONIC PAIN: A HISTORICAL REVIEW

For most current researchers and clinicians working with chronic pain today, the first recognized psychological model applied to chronic pain was the operant model developed by Fordyce (1976). This approach soon expanded with the rise of cognitive therapy and cognitive models and the emergence of CBT approaches. In these, thoughts and beliefs about pain, expectations, self-efficacy, and how people intend to cope with pain became important (Turk et al. 1983). Somewhat later, what is called the fear-avoidance model of chronic pain emerged, describing a chronic pain and disability cycle made up of catastrophizing, fear, avoidance, hypervigilance, and so on (Vlaeyen & Linton 2000).

Psychological flexibility, particularly as it applies to chronic pain, is primarily an extension of the operant approach of Fordyce in the field of chronic pain. It did not arise in mainstream conventional CBT, and it does not adhere to some of its key assumptions and principles. The psychological flexibility model is not based on belief, and it is not intended as a model of how to cope with pain. It does share some features with the fear-avoidance model: Both approaches integrate operant and cognitive elements, include avoidance as a central part, and emphasize exposure-based treatments. A distinction between the two, however, is that the fear-avoidance model appears to adopt a more conventional CBT approach to cognition, rather than the more functional contextual approach of psychological flexibility. The psychological flexibility approach is also wider in scope, including more potential processes of disability and of therapeutic change.

Mindfulness and self-compassion are other developments worth mentioning as a part of the historical context of psychological flexibility. An early demonstration of mindfulness for chronic pain appeared in the 1980s (Kabat-Zinn et al. 1985). Self-compassion is well known from the work of Kristin Neff (Neff 2003) and Paul Gilbert (Gilbert & Procter 2006) and also has been studied in relation to chronic pain (Davey et al. 2020). While neither one of these approaches was fundamental in the development of psychological flexibility or ACT, both clearly run in parallel with it (e.g., Veehof et al. 2016). From the point of view of psychological flexibility, both of these approaches considerably overlap with processes of acceptance, cognitive defusion, present-moment awareness, and self-as-context—though the overlap is not complete. Both include separable and dynamically interrelated parts, and self-compassion has been called something a person can do and not just a thought or belief (Neff 2023), similar to psychological flexibility. Some differences are the somewhat narrower focus of both mindfulness and self-compassion in terms of component processes, a narrower method set, and a focus mainly on alleviating suffering (e.g., Neff 2023). While application of psychological flexibility can result in alleviation of suffering, this is not the primary outcome specified in the model (Hayes et al. 1999, 2012b).

THEORETICAL AND CONCEPTUAL DISTINCTIONS

The philosophy of science behind psychological flexibility is functional contextualism, a present-day extension of radical behaviorism. Functional contextualism is essentially a set of assumptions about subject matter, ontology, epistemology, and criteria for what is regarded as true. Assumptions like these are important because they help to coordinate theory, data, and methods over time, and they are also highly practical. They hold the field of research together and help it progress systematically.

Functional contextualism has as its explicit goal the prediction and influence of psychological events with precision, depth, and scope (Hayes et al. 2012a). The subject matter in functional

contextualism is the act in context, regarded as a whole. Walking, exercising, avoidance, or depression do not specify acts in context, first because there is no context, and in the case of depression also because it is a hypothetical construct and not an act as such. Refusing an invitation to avoid embarrassment, or going from doctor to doctor to find a coherent explanation of one's pain, is more like an act or behavior pattern in context. The causes or sources of influence in functional contextualism are contextual factors, as these are regarded as manipulable. A manipulation can be verbal, naturally, and if the manipulation is being made by a person other than oneself, it necessarily remains outside the realm of internal psychological experiences. When one asks, "What feeling is showing up in your body right now?" or "What else could you do right now?" these are small contextual manipulations that alter what one is doing or could do. They create a context for identifying experiences, for example, and create contact with those experiences, which then creates a setting for taking related action. On the other hand, thought content such as the content specified in measures of catastrophizing is not regarded as directly manipulable.

The goals of prediction and influence are important in functional contextualism as they form the basis for knowledge. This enables truth to be a pragmatic matter: Knowledge is based on the demonstration of successful prediction and influence. In turn, these truth criteria extend beyond the science context of psychological flexibility and into therapy delivery. In both, goal achievement is the guiding principle rather than the intent to demonstrate some form of truth based on coherence or consistency. In a sense, success is in what works, regardless of whether it makes sense. This is important because people with chronic pain and other chronic health conditions often struggle to make sense of their experience as a way to deal with it more effectively, and in many ways this effort can be fruitless and exhausting (McCracken & Scott 2023). People may need a way out of this. This pragmatic truth criterion is a highly practical bit of philosophy.

PSYCHOLOGICAL FLEXIBILITY AS A BASIS FOR INTEGRATION

When we reviewed the early success and future possibilities of the psychological flexibility model for chronic pain in 2014 (McCracken & Morley 2014), we noted that among the available models, the psychological flexibility model includes a particular capacity to integrate across models. We pointed out at that time that there seems to be a never-ending series of new key variables in psychological studies of chronic pain. These include concepts such as distraction, control beliefs, pacing, helplessness, self-efficacy, catastrophizing, hypervigilance, fear, avoidance, and so on. When some variables emerge from research, they emerge alone or come to dominate as a single variable, in most cases of a cognitive nature. Catastrophizing or self-efficacy are good examples. In these cases, it seems obvious, or at least likely, that no single variable will account for all the processes needed to understand health and functioning or to make change happen. Some models are a little more complex and multivariate, such as the fear-avoidance model. Even this model, however, clearly describes a relatively specific pathway of fear, avoidance, and disability, a pathway that is clearly not valid for all people with chronic pain and leaves out many other ways that people with chronic pain can become stuck and suffer (Wideman et al. 2013).

The psychological flexibility model essentially includes functional processes for addressing problems in behavior patterns based on domains of emotion, attention, cognition, self, motivation, behavior change, and maintenance. To take an example, perhaps the most highly researched variable in psychological research into chronic pain is catastrophizing. Most likely, if a catastrophic thought is creating problems in functioning, generally this means it is being believed or taken seriously. Likewise, it probably entails emotional reactions (such as fear) that further lead to withdrawal or avoidance. It probably stifles the impact of other available influences (such as goals), and it undermines what people care about. In terms of psychological inflexibility these processes are called cognitive fusion, experiential avoidance, loss of contact with the present

moment, and a failure in values-based action. Based on an analysis like this, available therapeutic flexibility processes can be readily studied or applied. Similar analyses and accommodations can be made for most other variables in current use, from overactivity to pacing and from self-efficacy to self-compassion. Behind each of these, there are potential emotional, attentional, cognitive, self-related, motivational, behavior change, and maintaining processes that can be addressed with facets of psychological flexibility. The potential strength of the model is in the breadth of psychological processes available and the ability to accommodate variables from other models by offering concepts for use in functionally analyzing their impact.

ASSESSMENT METHODS

A curious fact is that the first published and formally developed measure of a facet of psychological flexibility may have been a measure of acceptance of pain (McCracken 1998). The item pool from which this was produced was the same item pool that yielded the first general measure intended to focus on aspects of psychological flexibility. This later measure included a nine-item Acceptance and Action Questionnaire (AAQ) (Hayes et al. 2004b). The AAQ was conceived as a measure of experiential avoidance, a facet of psychological inflexibility. Its name is confusing, as its content does not reflect acceptance and action but the opposite. Soon there were attempts to improve the AAQ, including its internal consistency. This led to the seven-item AAQ-II (Bond et al. 2011). Initially the AAQ-II was well received and widely used, and it was at one time the most widely used measure in studies related to ACT. It is worth noting, however, that the AAQ was in development before psychological flexibility was born as a term. Naturally, during the more than 20 years since the first AAQ items were conceived, our understanding of psychological flexibility, and of how to measure it, has developed.

A recent scoping review of measures of psychological flexibility and related processes found 23 different constructs in the literature (Cherry et al. 2021). This is a confusing number of constructs, and some organization of them is needed. Be that as it may, in this review and in other reviews, the AAQ-II was criticized, mainly because it does not have adequate discriminant validity in relation to measures of emotional distress, and its content is too narrowly defined to be regarded as reflecting psychological flexibility as a whole (McAndrews et al. 2019, Ong et al. 2020). It seems no longer appropriate to use the AAQ-II, if one can avoid it, either as a measure of acceptance and action or as a measure of psychological flexibility (Rogge et al. 2019).

In chronic pain research, approaches to assessment for many years focused almost exclusively on acceptance, in the form of the Chronic Pain Acceptance Questionnaire (McCracken 1998), revised in 2004 (McCracken et al. 2004) and then again in 2010 (Fish et al. 2010). After that, separate instruments were developed and validated for each facet, including values (McCracken & Yang 2006), committed action (McCracken 2013, McCracken et al. 2015), cognitive fusion (Gillanders et al. 2014, McCracken et al. 2014), and self-as-context (Yu & McCracken 2016; Yu et al. 2016, 2021a). There is also at least one instrument that captures two facets and not just one, the Psychological Inflexibility in Pain Scale (PIPS) (Wicksell et al. 2008), which includes avoidance and cognitive fusion. To complete the set of facets assessed, mindfulness measures have also been used to reflect present-moment awareness (e.g., McCracken & Velleman 2010). This multi-instrument approach eventually captured all or most facets of the psychological flexibility model (Vowles et al. 2014, Scott et al. 2015). Such an approach is not ideal, however, because the assessment of the facets is confounded with the use of different instruments and it is not efficient, as the instruments taken together include too many items for treatment or research participants to complete.

More recently, a wider choice of measures has been produced in response to the weaknesses of the AAQ and AAQ-II. These measures include the Comprehensive assessment of Acceptance and

Commitment Therapy processes (CompACT) (Francis et al. 2016) and the Multidimensional Psychological Flexibility Inventory (MPFI) (Rolffs et al. 2018). Both of these measures were designed as general measures, not specific to chronic pain. Both started with a mix of items from existing measures and included modified or new items to create the initial item pools. The CompACT adopted a three-part model, including openness and detachment, self-awareness and perspective taking, and motivation and activation. This research group then generated their item pool, submitted them to an expert Delphi-consensus review, and later confirmed the factor structure (Francis et al. 2016). For the MPFI, the full 12 facets of psychological flexibility and inflexibility were adopted as the model. The initial item pool was analyzed in multiple studies, including exploratory factor analysis, item response theory–based analyses, and confirmatory factor analysis (Rolffs et al. 2018).

Both the CompACT and MPFI have achieved good internal consistency, factor structure, and convergent and discriminant validity so far. These measures are clearly demonstrated as superior to the AAQ-II—for example, as they account for greater variance in outcome and provide a more complete and meaningful picture of relevant behavior (Rogge et al. 2019). These measures are increasingly adopted, but with a few exceptions they have not been extensively used yet in studies of chronic pain. Exceptions include a large survey study of people with chronic pain in Sweden, designed as a validation study of the MPFI (Sundström et al. 2023) and a study of psychological flexibility, depression, anxiety, and insomnia in people with persistent pain during COVID-19 (McCracken et al. 2023).

In both of the recent studies of the MPFI in chronic pain, the instrument generally performed well as a measure of the flexibility and inflexibility facets (McCracken et al. 2023, Sundström et al. 2023). One exception to the successful performance of the MPFI is the failure of the acceptance scale to adequately correlate with measures of functioning and well-being. An interesting additional finding is that the inflexibility dimension demonstrated better prediction of outcomes than the flexibility dimension, although this is possibly due to the fact that all the outcomes are framed negatively, including pain interference, depression, and work and social (mal)adjustment. **Table 1** includes a summary of measures used to assess psychological flexibility facets in studies of chronic pain.

TREATMENT METHODS

Currently CBT is a diverse family of therapy types. ACT and other forms of CBT have a great deal in common and considerably overlap in such things as a focus on evidence and science, the inclusion of behavioral principles, and being relatively short-term therapies intended to produce long-term patterns of behavior change. Many, though not all, of the methods in ACT and in conventional CBT are the same, such as goal setting, behavior activation, exposure, skills training in general, behavior rehearsal, contingency management, and more. They also differ, however, such as in their underlying assumptions in the philosophy of science, their focus on what they deem as acceptable targets for change, and their acceptable or preferred outcomes. Very briefly, most of CBT adopts an agreement-oriented truth criterion, adopts thoughts and feelings as targets for change, and includes symptoms of distress or psychiatric diagnosis as outcomes. ACT, on the other hand, adopts a stance of demonstrated success as truth, accepts only manipulable events as causes, and considers behavior change or behavior patterns/performances as outcomes. With all of this in mind, there are probably both treatment process similarities and differences between ACT and other types of CBT, and some of what is done in other types of CBT most probably increases psychological flexibility.

While ACT is the main context for the study of psychological flexibility, it is not the only treatment type for which it has been studied. It has been shown in a large study in a specialty

Table 1 Measures of psychological flexibility used in chronic pain research

Instrument	Authors	Items	Processes assessed
Chronic Pain Acceptance Questionnaire (CPAQ)	McCracken (1998), McCracken et al. (2004)	20	Acceptance of pain, including pain willingness and activity engagement
	Fish et al. (2010)	8	
Acceptance and Action Questionnaire (AAQ-II)	Hayes et al. (2004b)	9	Psychological inflexibility
	Bond et al. (2011)	7	
Chronic Pain Values Inventory	McCracken & Yang (2006)	12	Values, including values importance and success
Psychological Inflexibility in Pain Scale (PIPS)	Wicksell et al. (2008)	16	Psychological inflexibility, including avoidance and cognitive fusion
Committed Action Questionnaire (CAQ)	McCracken (2013)	18	Committed action
	McCracken et al. (2015)	8	
Cognitive Fusion Questionnaire (CFQ)	Gillanders et al. (2014)	7	Cognitive fusion
Self Experiences Questionnaire (SEQ)	Yu et al. (2016)	15	Self-as-context, including self-as-distinction and self-as-observer
	Yu et al. (2021a)	8	
Comprehensive assessment of Acceptance and Commitment Therapy processes (ComPACT)	Francis et al. (2016)	23	Acceptance and Commitment Therapy processes, including openness to experience, behavioral awareness, and valued action
Multidimensional Psychological Flexibility Inventory (MPFI)	Rolffs et al. (2018)	60 (full version), 24 (short version)	Global psychological flexibility and inflexibility, including six facets of psychological flexibility and six facets of psychological inflexibility

pain treatment center in Sweden, based predominantly on conventional CBT, that acceptance of pain improved significantly and that this change was correlated with improvements in outcome, correlating with these more highly than did measures of affective distress, life control, or social support (Åkerblom et al. 2015). These data suggest that even if a psychological treatment is not explicitly focused on this change process, successful participants demonstrate increased acceptance.

There was a recent study of mediation in a trial of online exposure therapy of fibromyalgia (Hedman-Lagerlöf et al. 2019). In this study it was shown that among three possible mediators—avoidance, mindful nonreactivity, and worry—only avoidance reduction was shown both to have a significant mediating relationship and to demonstrate a convincing theoretically consistent, unidirectional, temporal relationship with fibromyalgia impact, the primary outcome. The particular measure used to capture avoidance was the PIPS (Wicksell et al. 2008).

Neither of the non-ACT studies described here represents a full involvement of all of the components of the psychological flexibility model in the forms of treatment, not because they were examined and failed but because they were not assessed. Both studies, however, do show involvement of key psychological flexibility components as potential processes of change.

EVIDENCE FOR PSYCHOLOGICAL FLEXIBILITY IN CHRONIC PAIN

As a way to examine the evidence for psychological flexibility and chronic pain, I conducted an electronic search in OVID, including the EMBASE, MEDLINE, and PsychInfo databases up to January 24, 2023. The search terms included terms for chronic pain (chronic pain, persistent pain,

fibromyalgia, arthritis, headache, migraine) and terms for psychological flexibility (psychological flexibility, psychological inflexibility, cognitive defusion, Acceptance and Commitment Therapy) included as keywords. These sets of terms are not exhaustive but do capture the terms most commonly used. While this search could have employed the full set of facets of psychological flexibility, most of these are not specific enough to facilitate the search. For example, "acceptance," which is a key term and was the focus of most of the early studies, is not a highly precise search term, nor is "values," as another example. On the other hand, "cognitive defusion" is a highly specific search term, and "defusion" (not diffusion) is a neologism, made up in the context of ACT.

A total of 889 hits were found after deduplication in the electronic search described here. This is consistent with the 799 studies found in a systematic search for all studies of ACT and chronic pain from the Web of Science Core Collection database up to January 1, 2021 (Li et al. 2022). Interesting additional results from this earlier search and review demonstrated that the 799 studies identified were published in 314 different journals by 2,862 authors in 52 countries.

Figure 2 includes a plot of the number of publications identified for the current review, with the results arranged by year. Excluded from these data are 13 studies that focused on acceptance of chronic pain conducted prior to 2004 and 1 Spanish-language report on two cases of people with chronic pain treated with ACT, published in 2001 (Luciano et al. 2001), apparently the very first demonstration of ACT for chronic pain. The figure reveals a pattern of steady growth up to the present and a current publication rate of about one paper every 3.65 days on average.

There are now studies of almost every type on psychological flexibility and chronic pain, including qualitative studies, cross-sectional observational, prospective observational, instrument development, randomized controlled trials (RCTs), mediation and moderation analyses of RCTs, single-case experimental design studies, and systematic reviews with and without meta-analyses. Naturally it is not possible to report the findings of all of these 889+ studies here. Some of the more up-to-date reviews and syntheses as well as recent, noteworthy individual studies are described below.

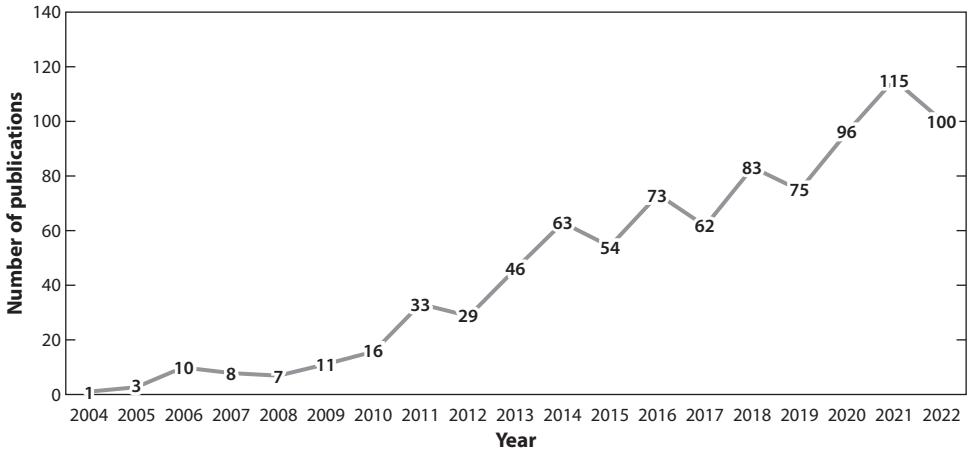

Figure 2

Number of publications per year related to psychological flexibility and chronic pain, 2004 to 2022. Data based on OVID search of Embase, MEDLINE, and PsychInfo up to January 24, 2023.

Summaries of Evidence for the Psychological Flexibility Model

A particularly persuasive case for the psychological flexibility model is made by a systematic review and meta-analysis of 66 laboratory-based studies of the facets of psychological flexibility (Levin et al. 2012). This review identified significant benefits for acceptance, defusion, present-moment awareness, and values, plus mindfulness components, compared to inactive comparison conditions. There were larger effect sizes for theoretically specified outcomes, meaning better effects for performance outcome as compared to outcome focused on feelings, and larger effect sizes for experimental conditions that included experiential methods, such as metaphor or direct skills training, compared to comparison conditions with a rationale alone. Committed action was not investigated here, as it was deemed that previous reviews of methods such as behavioral activation and goal-setting had already demonstrated its benefits (e.g., McEwan et al. 2016). Hence, the model appears fully supported in experimental laboratory evidence, with one exception. The self-as-context facet of psychological flexibility did not appear as an isolated component in the available studies at the time. Relevant to the current review, pain exposure was one of the more frequently used challenges in these studies.

There have been two recent reviews that applied meta-analysis to overall measures of psychological flexibility and inflexibility (Fang & Ding 2022) and to the six facets of psychological flexibility (Ding & Zheng 2022). Both of these reviews included comprehensive electronic searches (on PsychINFO, PubMed, CINALH, and Web of Science) and employed three-level meta-analyses to synthesize effect sizes. This type of analysis is especially aimed at summarizing effect sizes and conducting moderator analyses in a way that is able to examine sampling variance, within-study variance, and between-study variance in observed effect sizes. Both reviews included 36 cross-sectional studies, with 7,779 participants in total in the first study and 7,812 in the second.

In the analyses of the wider overall process of psychological flexibility there was a significant, medium-sized, inverse association with pain and functional impairment (Fang & Ding 2022). For psychological inflexibility, the association with pain was positive and small, while the association with functional impairment was also positive and medium, nearly large. The summary data clearly showed a large positive association between psychological inflexibility with anxiety and depression and a nearly large inverse association with quality of life. There were few or no studies that examined these variables in relation to psychological flexibility. A limitation in these results is that the largest proportion of studies used the AAQ-II (19 out of 36), and as reviewed earlier, this measure has been criticized for inadequate discriminant validity and for not reflecting the full range of facets of the psychological flexibility/inflexibility model. Results regarding the moderation of relations by measurement instrument, age, country of study, and gender were null or limited.

The methods for the review of the individual facets (Ding & Zheng 2022) were similar to those used in the review of the overall processes. Results from the analyses of facets showed a nearly large positive association of acceptance with functioning, and the associations with overall and psychological functioning were both large and larger than the association with physical functioning (Ding & Zheng 2022). For defusion, the association with functioning was similarly positive and small, and it did not differ with respect to domain of functioning. For present-moment awareness, the association with functioning was medium and positive, and the association with psychological functioning was substantially larger than that with physical functioning. For the self-related facet, the overall association was positive and small, and the associations were much larger for overall and psychological functioning as compared with physical functioning. For the values facet, the overall association was positive and medium, and the association with psychological functioning was substantially larger than the association with physical functioning. Finally, for committed action, the overall association with functioning was positive and medium, and the association with overall functioning was larger than the association with psychological functioning. Generally

speaking, gender, age, country, and measurement instrument were not significant moderators. To summarize, there were, on average, medium-sized positive associations with functioning for all facets, and most of the facets showed stronger associations with psychological functioning, except for cognitive defusion, which showed no difference across domains, and committed action, which showed a stronger association with physical functioning.

Treatment Outcome

If a model of human functioning and well-being is valid, and particularly if it has utility, treatments designed according to this model should demonstrate positive impacts on key outcomes. Evidence supports that this is the case for psychological flexibility. There are at least six recent systematic reviews and meta-analyses that support the conclusion that treatments designed to increase psychological flexibility are able to improve functioning, health, and well-being for people with chronic pain (McCracken et al. 2022a). One of these is a meta-analysis of 11 RCTs ($N = 863$) of face-to-face ACT for chronic pain, delivered either individually or in groups (Hughes et al. 2017). This review demonstrated significant summary effects, including a small effect for functioning and medium effects for anxiety and depression post-treatment, as well as a small effect for functioning, a small-to-medium effect for anxiety, and a medium-to-large effect for depression at follow-up.

More up-to-date reviews are similarly positive. One of these included meta-analysis of five RCTs ($N = 746$) of ACT delivered online (Trindade et al. 2021). These analyses showed a significant medium effect for pain interference post-treatment and a small effect for depression, and a medium effect for interference and small effects for pain, anxiety, and depression at follow-up.

In addition to the positive clinical outcomes, these meta-analyses also showed significant effects on pain acceptance, the aspect of psychological flexibility most routinely assessed in trials up to this point. These included a large post-treatment and medium follow-up effect in the face-to-face treatment (Hughes et al. 2017) and medium effects at both time points for the online trials (Trindade et al. 2021). The latter review of online treatment also showed significant small effects for psychological inflexibility and mindfulness, but each of these was based on just two RCTs. Published RCTs of ACT continue to accumulate: There are now more than 33 published RCTs, and the accumulated evidence remains largely in line with what has been reviewed here. The overall conclusion supported by current evidence is that ACT is superior to inactive controls and neither superior nor inferior to conventional CBT for chronic pain (McCracken et al. 2022a, Lai et al. 2023). Because ACT is defined specifically as a treatment designed to enhance psychological flexibility, these results lend support to the psychological flexibility model.

Treatment Processes of Change, Mediation, and Mechanism

For many years the focus on processes of therapeutic change in studies of ACT for chronic pain has concentrated exclusively on acceptance (McCracken et al. 2005), due primarily to a lack of measures of other facets. Perhaps the first reasonably comprehensive investigation of psychological flexibility as processes of therapeutic change in chronic pain treatment included measures of pain acceptance, cognitive fusion, decentering (a process related to mindfulness that taps into cognitive defusion and self-as-distinction), and committed action (Scott et al. 2016). In this observational cohort study ($N = 384$), people attending a specialty service for chronic pain including treatment based on ACT showed significant medium-to-large within-group effects for pain, social and physical functioning, and depression. They also showed significant small-to-medium within-group effects on the process variables related to psychological flexibility. Notable for the discussion here was the demonstration, based on regression analyses of change in outcomes, that changes in acceptance, defusion, decentering, and committed action accounted for significant variance in changes

in physical and social functioning and depression. The variance accounted for ranged from 15% to 27% post-treatment and from 8% to 27% at follow-up, which were typically between two to six times the variance accounted for by pain as a process (Scott et al. 2016). These analyses were limited because they did not include clear measures of each of the six facets of psychological flexibility, as they were missing precise measures of present-moment awareness and values-based action.

Recently, another systematic review and meta-analysis was conducted focusing on mediation and moderation in studies of psychological treatments for chronic pain (Murillo et al. 2022). There were 28 studies included in the examination of mediation, and 13 of these were included in a meta-analysis. The results showed that pain-related fear, catastrophizing, and self-efficacy mediated the effects of CBT on disability, based on up to 10 trials. Moreover, acceptance and psychological flexibility mediated the effects of ACT on disability, based on 8 trials. The methodological quality of the mediation results, however, was regarded as low. There were no clear moderation effects.

Just a quick note on mechanism. Mechanism is regarded as the step-by-step processes by which treatments exert their effect, that is, as the process or processes by which the benefits of treatment come about (Kazdin 2007). Mediation alone is not the same thing as mechanism, although it is potentially an important part of it. Mediation is merely a demonstration of a statistically significant relationship between a treatment comparison and outcome variables. Additional demonstrations are needed before a mediator can be regarded as a mechanism, including specificity of effect, consistency across studies, demonstration of an order of events consistent with cause and effect, theoretical coherence, and a dose–response relationship (Kazdin 2007).

The Context of COVID-19

The COVID-19 pandemic was an exceptional event for world health, health care, and related research. It tested the general applicability of our models of health and well-being and the robustness of our health care services and indeed of our health care personnel. Naturally, health care providers and researchers interested in psychological flexibility participated in providing help and conducting research. As examples relevant to the current review, there were numerous studies that showed that processes from the psychological flexibility model were significantly related to population well-being and to both psychological and physical health (Dawson & Golijani-Moghaddam 2020, McCracken et al. 2022b), including for people with persistent pain conditions (Yu et al. 2021b, McCracken et al. 2023). There were rapid transformations of pain services and modes of treatment delivery in research trials to make them feasible during the pandemic. There were studies of ACT converted to virtual delivery, and these appear to have yielded successful outcome for participants.

One example of a research trial that was rapidly redesigned to operate with the pandemic context was a three-arm trial of ACT versus behavioral activation versus treatment as usual, converted from face-to-face to videoconferencing-based delivery (Sanabria-Mazo et al. 2023). In this trial ($N = 234$), ACT demonstrated superior results to treatment as usual in terms of reduced pain interference and catastrophizing, both post-treatment and at follow-up, with consistently medium-sized effects.

The results reported here demonstrate that psychological flexibility appears applicable to understanding human health and well-being during pandemic times as during ordinary times, and that the treatments designed rapidly to circumvent extraordinary barriers to access, and based on psychological flexibility, can provide benefits.

ASSESSMENT OF EVIDENCE

The evidence for psychological flexibility, and ACT in particular, is large and consistently supportive, in general. Both individual studies and summaries of studies appear supportive. When

evidence syntheses have concluded otherwise (e.g., Ost 2014), it has been shown that the methods used appeared flawed, and reanalyses of the same data produced different conclusions (Atkins et al. 2017). Where there are important studies of the model or the treatment, generally there has been replication. Yet, as in almost every area of clinical psychology research, there are studies of inadequate quality and unacceptable risk of bias. There appears to be high allegiance among researchers in this area, and there may be too much enthusiasm, which appears to have provoked some resistance and criticism. Researchers may not always hold an impartial view with respect to their results. At the same time, the substantial volume of evidence and the remarkable consistency and generality of results across countries, populations, measures, research designs, and research groups make it seem highly doubtful that further studies could alter the current conclusions. The model appears broadly applicable and supports prediction of health and well-being, and treatments associated with this model provide significant benefits for a substantial number of people who receive them.

CURRENT CHALLENGES FOR THE PSYCHOLOGICAL FLEXIBILITY MODEL

There are several challenges that the psychological flexibility model will need to address to continue to develop and to improve its utility in practice. One challenge that was probably noticed in the studies reviewed so far is that the model has two sides, each with six parts summarized as one thing: psychological flexibility on the one hand and psychological inflexibility on the other. These 12 facets are highly useful for the opportunity they provide for clinicians and the choices they provide for obtaining data. At the same time, they do not always work well statistically, and they are not always easy to assess. It has been difficult to create short measures that tap into all of the facets in such a way that each facet is demonstrated to be significant and unique. Essentially, there is no consistent demonstration of the validity and utility of the full model at the level of facets. It is generally almost always the case that a couple or few of the facets appear to make significant contributions in multivariate analyses. The choice of whether to assess psychological flexibility or inflexibility is another source of confusion, and so the model (or models) presents challenges in research.

We are accustomed to thinking about a model and its parts as something that should be shown to be valid when all of the parts are simultaneously demonstrated as significant. Perhaps this is not something that can be demonstrated in group data with the methods we use. The model is probably best conceived as a dynamic model for treatment delivery where the facets become relevant and are able to exert a significant impact in a complex progressive or interactive way over time, not simultaneously for all people (see also Hofmann et al. 2020).

Up to this point, all of the established measures of psychological flexibility rely on conventional self-report measures demonstrated as adequate mainly based on internal consistency and significant correlations with theoretically related measures. This is not ideal, because these development and validation processes do not incorporate individual nor contextual factors very well (Cherry et al. 2021). They sample average behavior patterns over time in ways that obscure moment-to-moment variation, and they unfortunately fall prey to recall bias. Conventional psychometric measures probably do not have adequate precision and are not direct enough, as they do not focus on specific behavior patterns in the setting and at the time they occur.

In addition to the statistical performance of measures based on the model and the limits of conventional self-report measures, there is at least one more challenge, which relates to fitness for the future. The question is, Will the psychological flexibility model be able to evolve and integrate with other useful evidence-based processes and methods? Will psychological flexibility remain

composed of six facets? Should it incorporate other processes, such as self-compassion (Carvalho et al. 2020, Davey et al. 2020) or others, or even processes from which it appears more distinct, such as catastrophizing or self-efficacy (Turner et al. 2016)? Should it integrate with these? Is it comprehensive enough? The answers to these questions seem to be that we do not yet know.

FUTURE DIRECTIONS

The Need to Individualize

One major limitation in the research on psychological flexibility and chronic pain is that the overwhelming majority of studies, with few exceptions (Chisari et al. 2022), have included aggregated group data and group means and have relied on interindividual variability rather than intraindividual variability. These studies show relations between variables between people, but not how these variables operate within the day-to-day life of particular people. Most studies have focused on relatively large sample sizes and a very small number of observations, typically no more than three time points, rather than on a smaller number of people studied intensively over time in a way that is individually and contextually sensitive. This is despite demonstrations that there is most likely a lack of group to individual generalizability in our psychological data (Molenaar 2004, Fisher et al. 2018).

The arguments for the need to individualize include the fact that generalizing results from group to individuals violates a statistical assumption that is necessary for validity (Molenaar 2004, Fisher et al. 2018). This is called the assumption of ergodicity. Practically speaking, we know that psychological treatments are not improving and new approaches are needed (McCracken 2023). We know that group mean effects will not apply to most people who participate in treatments. In fact, people with chronic pain are extremely diverse, much more diverse than our typical classification schemes can accommodate. Attempts to split the larger population of people with chronic pain into smaller groups or subtypes have so far not demonstrated superior effects, probably because these are still groups and not individual people. Furthermore, our ability to assess people before treatment and predict who will succeed and who will fail has appeared to be extremely limited and inconsistent (McCracken 2023). Even our approaches to mediation analysis, which appears to be at the forefront of our current methods for improving treatment, are criticized for being too imprecise, inadequately linear and nondynamic, not at all moment to moment, and insufficient for understanding individual processes of therapeutic change (Hofmann et al. 2020). For all of these reasons and more, our field, and the study of psychological flexibility in particular, could very likely benefit from an individualized or idiographic approach (Hayes et al. 2019).

While ACT for chronic pain has been delivered according to protocols with little tailoring to the individual, or in groups that essentially constrain extensive individualizing of content, both ACT and psychological flexibility are by their nature meant to be highly individual.

Process-Based Therapy

It has been argued that ACT—once again, the principal example of a therapy focused specifically on psychological flexibility—has laid the groundwork for the development of a new approach to psychological treatment called Process-Based Therapy (PBT) (Hayes et al. 2022). This is because ACT is not designed around set diagnostic syndromes but is generally applicable. Its key defining feature is that it is based on a multidimensional model of change, and its clinical methods are intentionally designed to be applied in a highly individual and contextually sensitive manner. In this way, ACT is a kind of a prototype of PBT.

PBT itself has been defined as the "contextually specific use of evidence-based processes linked to evidence-based procedures to help solve the problems and promote the prosperity of particular

people. In contrast to treatments focused on syndromes, PBT targets theoretically derived and empirically supported processes that are responsible for positive treatment change" (Hofmann & Hayes 2019, p. 38). In turn, processes are defined as "a set of theory-based, dynamic, progressive, and multilevel changes that occur in predictable empirically established sequences oriented toward the desirable outcomes" (Hofmann & Hayes 2019, p. 38). Processes are meant to be targeted session by session or moment to moment based on individual, intensive, longitudinal data that ideally track both potential process of change and outcomes. The heart of PBT is this ongoing dynamic tailoring, whereby the course of treatment is able to address just what the treatment participant needs, according to what they want to achieve, in the situation they need it, and in a way that is as efficient as it can be.

It is not possible to fully explain all of the principles and methods of PBT in the space available here, but the main points to take home are that it is individual by design and that psychological flexibility has already figured into its development. Psychological flexibility could easily represent a set of processes that could be targeted in PBT, although the aspiration within this approach is clearly for something wider and more integrative than this (Hofmann & Hayes 2019).

There has been a significant step forward toward individualized and process-based therapy just recently. This is in the form of an attempt to catalog candidate processes of change to form a jumping-off point for PBT. In this effort, a research group conducted a review and summarized all of the world's literature on mediation of psychological interventions for health conditions between 1985 and 2018 (Hayes et al. 2022). The researchers screened 54,633 studies, read 1,353 full texts, and identified 1,050 mediational findings in 624 studies. Their methods were rather extensive, but for the point of this discussion, they found 66 mediators that were replicated and 16 that were replicated four or more times. **Figure 3** includes a graph of percentages of mediators identified, organized according to the conceptual clusters created by the authors (Hayes et al. 2022). What

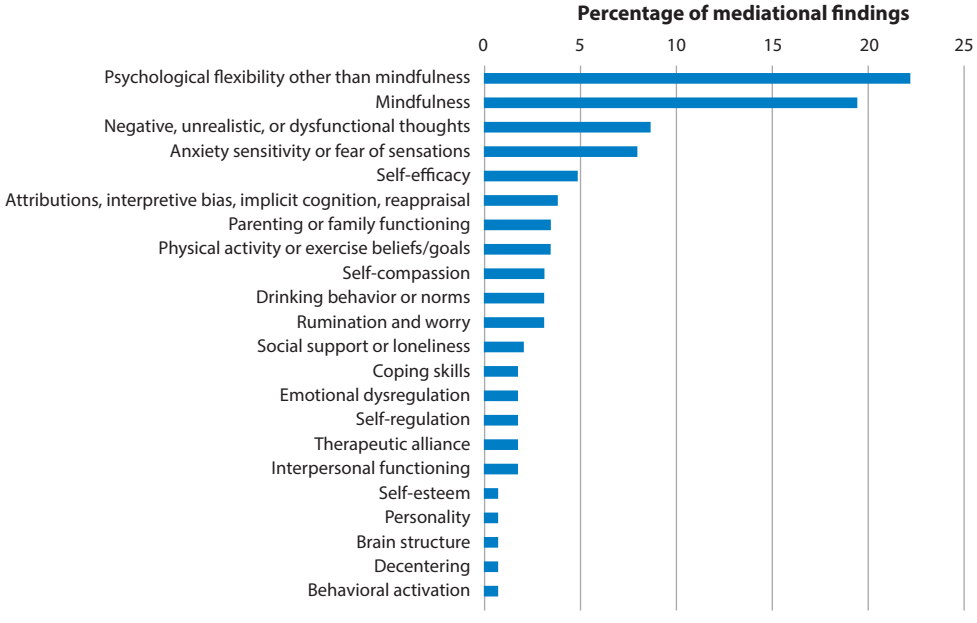

Figure 3

Percentage of replicated mediators from trials of psychological treatment identified by Hayes et al. (2022), organized by conceptual clusters. Figure adapted with permission from Hayes et al. (2022).

is profoundly clear from these analyses is that psychological flexibility and mindfulness concepts predominate in the results.

The recent results from the review of mediators will not be the last word on processes of change. In fact, we know there are limitations built into these results, as they are based on several assumptions: that mediators operate in a more or less linear fashion over time, that they operate more or less in the same way for different people, and that a small number of mediators will operate within any particular treatment—assumptions that may be flawed (Hofmann et al. 2020). Nonetheless, as the authors point out, this is a starting point, a justifiable set of candidate processes of change on which to pursue further study and, potentially, the agenda of PBT (Hayes et al. 2022).

CONCLUSIONS

Psychological models in general, and as applied to chronic pain, do not stay the same but continue to evolve. One wonders how we can hasten this evolution. In the meantime, there is steadily growing interest within applied research on chronic pain and other relevant health conditions in what is called psychological flexibility. Psychological flexibility is a broadly applicable, multidimensional, contextual, process-based model of human performance, well-being, and health. It is unique in many ways compared to other currently available models, it is perhaps broader, and at the same time it overlaps with some of them substantially. It is proposed that it could provide a basis for the integration of current models into one model, perhaps in an expanded form. As the model behind ACT, it has succeeded in translating theory into a treatment approach that produces clear benefits for people with chronic pain. It has also helped to usher in a fresh perspective on how treatment could be delivered, referred to as PBT. The individual, dynamic, process-focused, and potentially integrative nature of this approach is highly appealing. Whether this will create improvement remains to be seen. Either way, doing things we have not done before is where evolution comes from.

SUMMARY POINTS

1. Psychological flexibility is a functional and contextually conceived, multifaceted quality of behavior that entails the capacity to face unwanted experiences openly and to act without being adversely dominated by cognitive processes, in a way that is connected to the present and guided by what is personally meaningful and reinforcing.
2. The facets of psychological flexibility include acceptance, cognitive defusion, flexible present-focused awareness, self-as-context, values-based action, and committed action; these can be summarized as behavior patterns that are open, aware, and engaged.
3. In chronic pain research, the psychological flexibility model is the most recent step in a series of evolving theoretical models, including operant, conventional cognitive, mindfulness, and fear and avoidance models. The psychological flexibility model seems able to update, accommodate, and integrate previous and current models.
4. There is a large evidence base for the beneficial role or psychological flexibility in relation to chronic pain and similar conditions, now including more than 800 published studies and more than 33 randomized controlled trials of Acceptance and Commitment Therapy (ACT), the principal treatment approach designed to enhance psychological flexibility.

5. It is suggested that in the future psychological research into chronic pain, including research into psychological flexibility, ought to adopt a more individual and process-focused approach, essentially based on theoretically consistent, evidence-based mechanisms of change. ACT is a prototype of a treatment that is process based and best delivered in an individual fashion.

DISCLOSURE STATEMENT

The author is not aware of any affiliations, memberships, funding, or financial holdings that might be perceived as affecting the objectivity of this review.

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