The Multimodal Assessment Model of Pain

A Novel Framework for Further Integrating the Subjective Pain Experience Within Research and Practice

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Objectives: Pain assessment is enigmatic. Although clinicians and researchers must rely upon observations to evaluate pain, the personal experience of pain is fundamentally unobservable. This raises the question of how the inherent subjectivity of pain can and should be integrated within assessment. Current models fail to tackle key facets of this problem, such as what essential aspects of pain are overlooked when we only rely on numeric forms of assessment, and what types of assessment need to be prioritized to ensure alignment with our conceptualization of pain as a subjective experience. We present the multimodal assessment model of pain (MAP) as offering practical frameworks for navigating these challenges.

Methods: This is a narrative review.

Results: MAP delineates qualitative (words, behaviors) and quantitative (self-reported measures, non–self-reported measures) assessment and regards the qualitative pain narrative as the best available root proxy for inferring pain in others. MAP offers frameworks to better address pain subjectivity by: (1) delineating separate criteria for identifying versus assessing pain. Pain is identified through narrative reports, while comprehensive assessment is used to infer why pain is reported; (2) integrating compassion-based and mechanism-based management by both validating pain reports and assessing underlying processes; (3) conceptualizing comprehensive pain assessment as both multidimensional and multimodal (listening/observing and measuring); and (4) describing how qualitative data help validate and contextualize quantitative pain measures.

Discussion: MAP is expected to help clinicians validate pain reports as important and legitimate, regardless of other findings, and help

our field develop more comprehensive, valid, and compassionate approaches to assessing pain.

Pain is an enigmatic phenomenon that is challenging to treat and study. One challenging attribute is its subjective nature. Pain is defined as a subjective experience,[1] which means that it cannot be directly observed by those who are not experiencing it. Yet, clinicians and researchers rely upon observations and measures to assess and infer the pain experienced by other people. This raises the fundamental question of how the inherent subjectivity of pain can and should be addressed and integrated within its assessment.

Current frameworks for guiding pain assessment do not adequately tackle this problem. For instance, biopsychosocial frameworks encourage a multidimensional approach to pain assessment. However, they do not specify the different ways through which this assessment can be conducted. They also do not delineate how different forms of assessment relate to the subjective experience of pain. Different approaches to assessment include observing direct expressions of pain, such as the words and behaviors used by the person in pain. They also include administering quantitative measures of pain, such as self-report questionnaires as well as physiological and psychophysical measures. The overwhelming emphasis in the pain literature is on quantitative methodologies. As a result, pain assessment strategies are typically focused on aspects of pain most readily communicated through numbers, such as pain intensity ratings or pain threshold levels. Although quantitative pain measures are vital to understanding and targeting mechanisms and benchmarking management, they often overlook important attributes of the subjective experience, such as personal context and meaning, which can profoundly shape the experience of pain. Current models do not adequately emphasize what aspects of the pain experience can be uniquely accessed through more qualitative forms of assessment, such as talking, observing, and listening. Previous reports show that patients with pain often do not feel listened to or understood by their health care providers.[2–6] These findings highlight the need for assessment models that specifically emphasize how to address subjectivity related to pain.

Current models of pain assessment also fail to provide adequate guidance on what forms of assessment should be

prioritized to best align with our conceptualization of pain as a subjective experience. This creates ambiguity in what should be regarded as a root proxy for the pain experience. Specifying an observable, root proxy for pain is an essential step in establishing a conceptual bridge between the non-observable experience of pain and our assessment methodology. Recent debate on how to best integrate physiological measures of brain activity within pain assessment illustrates the ambiguity in this area. On the one side, there have been calls for using measures of brain activity as objective biomarkers of the pain experience,[7–9] whereas on the other, self-report is prioritized as the best root proxy for pain.[10,11] Ambiguity in this area raises important challenges for people assessing pain. For instance, when faced with discrepancies across different forms of assessment, clinicians report uncertainty in trying to decide which of their assessment findings should be relied upon as indicators for the non-observable pain experience.[12–16] Although there is preliminary consensus among leaders in brain imaging research that self-reports of pain should be prioritized over physiological measures,[17] there is still a lack of clarity in what this means for clinical practice and research. For instance, what do we mean by self-reports of pain? If the intention is to support patient autonomy, should self-report measures be regarded on equal footing with direct narrative reports of pain? Also, from a research perspective, how should objective measures of pain be best anchored to more subjective forms of assessments? Assessment frameworks are needed to help inform decision-making around these questions.

Polarities of opinion in what should be regarded as a root proxy for pain emphasize the potentially competing pillars of what we value in pain assessment. Objective measures of pain are valued, in part, for their usefulness in guiding mechanism-based management.[7–9] Self-report is valued, in part, for its ability to support patient autonomy and to provide compassion-based care.[10,11,18] Failure to support both of these pillars is associated with important risks. For instance, failure to

identify underlying pain mechanisms can result in, at best, a waste of time for the patient and clinician and, at worst, iatrogenesis by providing a rationale for potentially harmful treatments. Similarly, failure to validate pain reports and show compassion can increase patient distress, degrade therapeutic alliance, and undermine hope for improvement.[5,16,19,20] Current models of assessment do not provide adequate guidance on how to navigate these competing values. Without guidance in this area, there is increased potential for conflating the validation of a pain experience with the identification of its underlying mechanisms. For instance, pain reports that can be linked to specific mechanisms may be validated as legitimate, while reports without clear links may be dismissed as spurious. Not delineating these aspects of assessment raises the risk that people living with pain continue to feel stigmatized and alienated when certain findings from their assessment are used to invalidate their reports of pain.[2–6,20,21] Assessment frameworks are needed to help establish criteria for both legitimizing pain and supporting the principles of mechanism-based management.

This paper introduces the multimodal assessment model of pain (MAP; Table 1 and Fig. 1), a novel framework that aims to address these gaps by: (1) specifying a root proxy for the subjective pain experience; (2) characterizing how different assessment methodologies relate to pain subjectivity; and (3) offering frameworks to further integrate the subjective pain experience within pain research and practice. The first sections of this paper aim to delineate MAP's nomenclature, postulates, and applications to clinical practice and research. This is followed by a general discussion of how MAP relates to the broader literature and implications for future work.

MAP NOMENCLATURE AND POSTULATES

MAP classifies the experience of pain and the observable attributes related to this experience within the following

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TABLE 1. Key Postulates and Applications of the MAP

Perspectives, assumptions, and postulates	Implications/applications
(1) MAP portrays pain assessment from the third-person perspective of clinicians and researchers	(1) The experience of pain is not observable but words, behaviors, and physiological processes that may be related to this experience are
(2) MAP delineates qualitative expressions of pain (words, behaviors) from quantitative measures of pain and assumes that only subsets of expressions are quantified as measures	(2) Qualitative expressions of pain have a greater capacity to assess subjectivity than quantitative measures of pain
(3) MAP regards the qualitative pain narrative as the best available root proxy for inferring the experience of pain	(3) Subjective reports of pain cannot be invalidated by other observed behaviors or measures of pain
Clinical frameworks	Implications/applications
(1) Distinct frameworks are used for identifying vs. assessing pain. Pain is identified through narrative reports, while comprehensive assessment is used to infer why pain is reported	(1) Assessment findings are not used to invalidate reports of pain
(2) Compassion-based and mechanism-based management are integrated by both validating pain reports and by assessing underlying processes	(2) Pain is validated and addressed with compassion even when mechanisms are unclear. Management strategies are designed to target the underlying causes of pain
(3) Comprehensive pain assessment is conceptualized as both multidimensional and multimodal	(3) Qualitative assessment (eg, talking, observing, listening) is valued and purposefully integrated with quantitative measures
Research frameworks	Implications/applications
(1) Pain measures are identified through their direct or indirect links to qualitative pain report and contextualized by evaluating the scope with which they capture different qualitative expressions of pain	(1) Qualitative and mixed methodologies are valued for their ability to uniquely access pain subjectivity and to create, validate and interpret quantitative pain measures

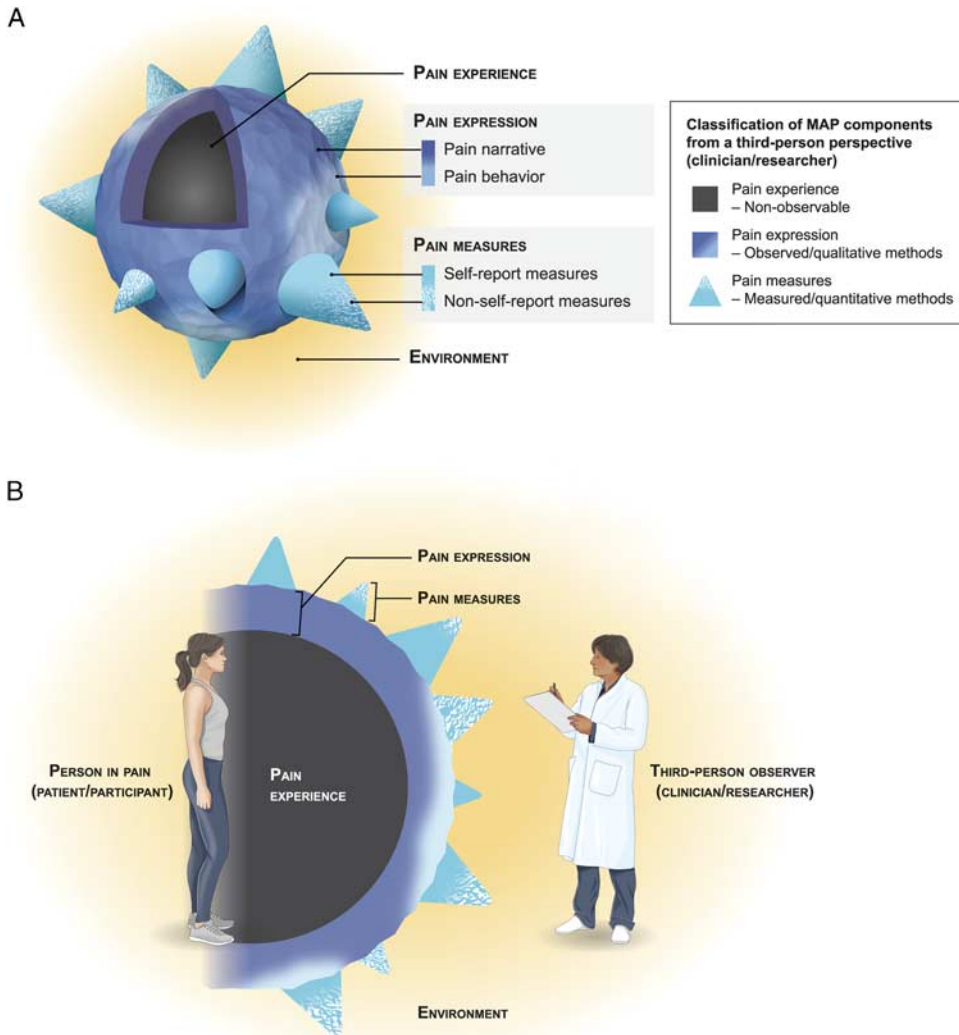MAP indicates multimodel assessment model of pain.

FIGURE 1. The MAP. A, MAP components are shown from a third-person perspective. This 3-dimensional view emphasizes the non-observable nature of the pain experience and the relative breadth and scope of the different model components. B, MAP components are depicted in 2-dimensional cross-section and are oriented to both first-person and third-person perspectives. This view emphasizes how pain experience is a function of the whole person, who is influenced by environmental and contextual factors, and how this person relates to different assessment methodologies used in research and practice settings. In both images, the size and shape of MAP components reflect their capacity to address subjectivity related to pain; components with greater breadth and volume have greater potential to address pain-related subjectivity. The textured surface of pain expression represents the idiosyncratic collection of words and behaviors that any particular individual may use to express pain. This is in contrast to the smooth surface of pain measures, which require expressions of pain to be translated into standardized metrics. Cone size represents the relative ability of different pain measures to quantify different aspects of pain expression; measures with relatively larger cones indicate that they address a broader scope of pain expression. Gradients are used to depict the intimate link between the pain narrative and pain behavior, as well as the measures that bridge traditional classification as either self-report or non–self-report (eg, psychophysical measures). MAP indicates multimodal assessment model of pain.

3 components: pain experience, pain expression, and pain measures. Pain experience is defined as an unpleasant sensory and emotional experience,[1] and is understood to be a function of the whole person. Pain expression is the broad collection of qualitative words and behaviors that communicate pain and is divided into 2 subcomponents—pain narrative, representing the words used to describe pain, and pain behavior, representing pain-related nonverbal and para-verbal behaviors. Pain measures are the quantitative tools used to assess pain and are subcategorized into self-report measures and non–self-report measures.

The environment is understood to include everything surrounding the person in pain and influences all MAP components. Examples of environmental factors include the characteristics of the people around the person in pain, such as their visual appearance, demeanor, and relationship to the person reporting pain, as well as the characteristics of the physical environment, such as lighting, physical objects, and familiarity to the person in pain. Consistent with past research, dynamic processes are understood to link MAP components, such as those involving the personal encoding of pain experience into pain expression and pain measures

and the observer decoding of pain expression and pain measures.[22–26] Both environmental and personal factors are understood to shape these processes.

Considering Pain Assessment From a Third-Person Perspective

MAP delineates first-person and third-person perspectives related to pain (Fig. 1B). The first-person perspective is from the person experiencing pain (eg, patients, participants). The third-person perspective is from those observing this person (eg, clinicians, researchers). MAP is designed for clinicians and researchers and is therefore categorized from a third-person perspective. From this third-person perspective, pain expression and pain measures can be assessed, whereas pain experience cannot be observed.

Delineating the Capacity of Different Methodologies to Assess Subjectivity

Assessment methodologies that target pain expression and pain measures differ in their capacity to accommodate different expressions of the subjective pain experience. Compared with pain measures, pain expression has a greater capacity to assess subjectivity as it can accommodate more variance in the idiosyncratic ways that pain can be communicated. The person (MAP is designed for use among people who are able to provide meaningful self-report; existing frameworks address how to ethically approach pain assessment among those who cannot provide self-report [please see Table 2 for references]) in pain can use a broad, personally derived and unique collection of words and behaviors (eg, analogies, facial expression, postures) to express different aspects and ideas related to the subjective pain experience.[23,29,43,50–56] These expressions of pain can be directly observed by clinicians and assessed via qualitative methodologies by researchers.

Alternatively, clinicians must rely on validated measures, and researchers must use quantitative methodologies, to translate these different expressions of pain into pain measures (eg, numeric ratings, thresholds, brain-activation patterns[39,57–60]). In theory, this quantification process could at best match the richness and complexity of qualitative expressions of pain. In practice, however, this would involve generating validated measures for every potential combination of words and behaviors (and each of their conveyed personal meanings[61]) that individuals associate with pain. Accordingly, MAP assumes that only a subset of pain expression is quantified as pain measures. Thus, pain measures have comparatively less potential for accommodating idiosyncratic expressions of pain as they are selected and generated by the assessor and only permit expression via standardized metrics.

Identifying a Proxy for Pain Experience

MAP identifies the qualitative pain narrative as the best available root proxy for pain experience. Establishing an observable, root proxy is intended to serve as a link between the nonobservable pain experience and assessment methodology and can be used to help identify people in pain and to establish correlates of pain. By definition, such a proxy cannot be invalidated by other pain-related measures or expressions. Although there is no perfect proxy for the nonobservable pain experience,[10] there are several reasons why pain narrative is best suited for this role.

As described in Table 2, when compared with other model components: (1) pain narrative is the most conceptually aligned with the definition of pain; (2) best supports ethical

principles when applied to practice; and (3) is commonly regarded as a root source of validity in research and practice. Narrative is understood to be the richest medium for communicating a subjective experience as it permits unique access to personal meaning and is highly sensitive to personal context.[27–32] This richness is an essential attribute of a proxy for pain experience as it creates a more robust foundation for establishing other potential correlates of pain. Consistent with the foundational arguments in previous critiques,[24,62,63] the qualitative pain narrative is preferred as a proxy over quantitative self-report measures as it provides a more comprehensive medium for expressing subjectivity. Pain narrative is also preferred over pain behavior as it offers greater precision as a medium for communication and avoids important ethical challenges to autonomy that occur when observable behaviors are used to invalidate reported experiences.[18,33–35,45–49]

THE ROLE OF MAP IN FURTHER INTEGRATING PAIN SUBJECTIVITY WITHIN CLINICAL PRACTICE

Dissociating Assessment Findings From the Validation of the Pain Experience

The historical inclination to only legitimize pain reports linked to pathology can result in treatment being contingent on the identification of "real" pain.[14,15,64,65] When pain is a clear symptom of tissue damage (ie, "real" from a clinicopathologic paradigm[14]), treatment is provided; otherwise pain reports may be dismissed as having purely psychological or socially motivated origins and clinically neglected. Although this approach is not consistent with current evidence or biopsychosocial models of practice, many clinicians still find it challenging to accept pain without a link to pathology and many patients still feel stigmatized by clinicians who dismiss their reports of pain.[2–6,12–16,20,21,66,67] The challenge for patients in these clinical encounters is that assessment findings are being used to validate or invalidate their experience of pain. This challenge can persist when applying current mechanism-based management paradigms[68–71] to pain reports that cannot be adequately explained.

MAP addresses this challenge by offering clinicians distinct frameworks for identifying and assessing pain. These are centered on 2 fundamental questions—(1) how do I identify "real" pain? and (2) how can I understand the processes that have led my patient to report pain? The first question is directly addressed by identifying pain narrative as the best available proxy for the nonobservable pain experience. Using pain narrative as a clinical proxy for the subjective experience of pain is expected to help clinicians acknowledge and legitimize all patient reports of pain as valid and important experiences, which is an essential element in compassionate and ethical pain management.[15,34,72,73]

The second question is addressed through a triangulation process that integrates all of MAP's observed and measured components. Although pain narrative is arguably the best way to identify a "real" pain experience, it is insufficient (when considered in isolation) in the comprehensive assessment of pain.[22,24] Comprehensive pain assessment should consider all data that can potentially help explain the factors and processes that have led a patient to report pain.[9,10,22,24,40,65,74] Potentially explanatory data are accessed via a range of assessment strategies, including talking, observing, and listening to patients as well as having them complete standardized questionnaires, tasks,

TABLE 2. Rationale for Selecting Pain Narrative as the Root Proxy for Identifying the Nonobservable Experience of Pain

Conceptual alignment with the IASP definition of pain
Pain is defined as an experience.[1] Qualitative assessment methodologies provide a rich medium for assessing subjective experiences.[27–32] The qualitative pain narrative permits unique and comprehensive access to these subjective aspects by enabling the person in pain to use his or her own idiosyncratic language to characterize and describe the subjective experience of pain

Alignment with medical ethics, the IASP Declaration of Montreal and universal human rights
A fundamental principle of medical ethics is respect for patient autonomy.[33] One application of this principle is that patients should be regarded as an authority on their personal experiences, such as pain.[18,33–35] Thus, using pain behavior or pain measures to challenge the authenticity of a patient's narrative report of pain could be interpreted as a violation of his or her right to autonomy
The IASP's Declaration of Montreal calls for the "right of people in pain to acknowledgment of their pain" to be a universal human right.[36] The most comprehensive way to acknowledge a person's pain is to accept the clinical adage that "pain is what the person says it is and exists whenever he or she says it does."[37] This adage is directly consistent with identifying the pain narrative as the best root proxy for the subjective experience of pain

Narrative as a root source of validity within pain research
Selection criteria for empirical pain research among humans are grounded to personal descriptions of pain. To establish a sample of people with or without pain, researchers are dependent on some form of direct or indirect self-report regarding the presence and quality of a potential pain experience
Personal descriptions of pain are also a root source of validity for identifying which behaviors or physiological processes are potentially *pain-related*.[10,11,38] For instance, when sensory stimuli are used to evoke experimental pain among healthy controls, self-report is used to verify that the stimulus has generated the target experience.[39] Behaviors and physiological processes can only be deemed to be "pain-related" once they are associated with this *reported* experience[10,17,40]
Aspects of the qualitative pain narrative are commonly regarded as root sources of validity in the development of self-report questionnaires. For instance, the McGill Pain Questionnaire was originally designed to capture the descriptive words used by people living with pain.[41–43] Similarly, an important criterion in validating the use of self-report measures of pain within clinical trials is to ensure that questionnaires align with how patients perceive their experiences.[44] In turn, self-report questionnaires are typically used as a source of validity for establishing non–self-report measures of pain. In this manner, pain narrative can be understood to be a direct or indirect (ie, via self-report measures) root source of validity for pain measures

Narrative as a root source of validity within clinical practice
The following descriptions (in italics) of clinical populations and fictional scenarios illustrate the clinical reliance and emphasis on pain narrative
Populations without pain narrative. Populations that are unable to produce meaningful verbal descriptions of pain (eg, infants, elderly people with dementia) are commonly regarded as some of the most challenging patients to assess.[45–47] A core challenge is deciphering whether certain behaviors (eg, crying, grimacing) are signs of pain vs. other forms of stress (eg, hunger, fatigue). As a medium for communication, pain behavior lacks the specificity and precision of the pain narrative, which is one

(Continued)

TABLE 2. (*continued*)

reason why pain behavior is only relied on as a surrogate for the pain experience when pain narrative is unavailable.[45–49]
When "pain-like" behavior conflicts with the pain narrative. *A clinician assesses a patient with a nonpainful facial tick that mimics pain-related behavior. Observing the behavior, the clinician seeks to clarify whether the patient is experiencing pain. When the patient denies any pain, the clinician accepts this interpretation as valid.* In this case, the patient's narrative is prioritized over nonverbal facial expression. The reverse situation would involve an absurd scenario in which the clinician informs the patient that she is in pain and provides treatment for a pain experience that, according to the patient, does not exist
When there is no pain behavior. *A patient verbally reports pain, but is unable to generate typical pain behaviors due to partial paralysis.* In this situation, it would be expected that the clinician accepts a verbal description of pain in the absence of pain behavior—it would, however, be exceptional for a clinician to insist that due to the absence of pain behavior that there is, in fact, no pain experience. Again, the pain narrative is being prioritized above pain behavior.

IASP indicates International Association for the Study of Pain.

and physiological measures. Because each assessment methodology is associated with unique advantages and limitations, there is inherent value in strategically combining them to best explain the processes and factors that have led a patient to report pain.[9,10,22,24,40,65] Triangulation is commonly conceptualized as combining multiple data sources to evaluate convergence on a particular domain.[31,75,76] The proposed triangulation process involves evaluating how all observed and measured components of MAP converge to explain the processes that have led a patient to report pain. By shedding light on underlying processes, this triangulation strategy is expected to assist clinicians in classifying and diagnosing patients and thereby help implement current mechanism-based models of management.[68–71]

Integrating Mechanism-based and Compassion-based Management

Mechanism-based pain management has many advantages, but raises the risk of stigmatizing unexplained pain.[14] Accepting patients' pain narratives as accurate representations of their experiences mitigates stigma by ensuring that at a minimum—even when mechanisms are unclear and no viable treatment can be provided—a potential suffering experience is validated and addressed with compassion (This call to validate all reports of pain in the context of pain assessment is not intended to restrict therapeutic interventions that may help patients critically reflect on, and potentially amend, the content and meaning of their pain narratives). MAP is also expected to help clinicians shift their thinking about pain, from a symptom and diagnosis, to a subjective experience. An analogy for this conceptual shift is the difference between feelings of sadness versus a diagnosis of clinical depression. When feelings of sadness are reported to a clinician, he or she may conduct a comprehensive assessment to determine whether these feelings are reflective of a broader clinical depression. However, even if the clinician concludes that the diagnostic criteria for clinical depression are not met, the patient's report of sadness

are still validated as legitimate and important. Similarly, MAP facilitates thinking about pain report as a means of communicating a personal experience (like reports of sadness), rather than something that can be confirmed or rejected through links to pathology, known mechanisms or diagnostic criteria (like clinical depression). This conceptual shift may help clinicians better validate patients' subjective pain experiences while simultaneously advocating management strategies that are designed to target its root causes. Future research will determine whether MAP can help integrate these principles within clinical training programs to reduce stigma and better empower patients.

Emphasizing That Comprehensive Pain Assessment is Both Multidimensional and Multimodal

Related to this triangulation process, MAP can be used to further expand how comprehensive pain assessment is characterized. Past work has emphasized a multidimensional approach to pain assessment as a means of investigating different pain-related biopsychosocial factors. Guidelines typically advocate assessing these factors through a battery of validated pain measures.[44,58,65,77–80] Although this approach has numerous benefits, it does not specifically guide clinicians to qualitatively assess pain expression and thus may overlook important aspects of pain subjectivity. The MAP triangulation process addresses this by emphasizing multimodal assessment, which specifically combines both qualitative and quantitative assessment strategies.

It should be noted that multimodal assessment, in and of itself, is not novel within current clinical practice. Indeed, even the most biomedically oriented pain assessment would typically include qualitative (eg, what brings you in today?) and quantitative (eg, please rate your pain on this 0 to 10 scale) components. The novel contribution of MAP in this regard is that it provides a framework for prioritizing and integrating these different forms of assessment. This may be particularly useful in helping clinicians avoid narrowly focusing on quantitative measures. For instance, when confronted with a patient that rates his pain intensity as 12 on a 10 point scale, some clinicians may be inclined to focus on the fact that, from a quantitative perspective, this is not a valid response. This focus may in turn lead to increased skepticism about the patient's report of pain and undermine the therapeutic alliance with the patient. In contrast, by emphasizing the central importance of narrative, MAP may help shift the clinician's focus to what the patient is trying to communicate, asking for instance, how this rating fits with the patient's broader narrative. This may in turn facilitate greater understanding and collaboration with the patient. By specifically emphasizing multimodal assessment, MAP may increase the clinical importance of talking, observing, and listening within pain assessment[29,56,62,81] and further encourage treatment strategies that focus on qualitative narrative for therapeutic benefit.[82–89]

THE ROLE OF MAP IN FURTHER INTEGRATING PAIN SUBJECTIVITY WITHIN RESEARCH

Using Qualitative Pain Expressions to Identify and Contextualize Pain Measures

Recent work recommends using personal reports of pain to differentiate measures of pain from measures of nociception.[10,17,40] Figure 1 may help implement these recommendations by serving as a visual framework for differentiating these measures. Measures with direct or indirect (indirect links with pain narrative may be established via links to self-report pain measures and pain behavior) links to pain narrative can be classified as pain measures, while other measures may not. This framework may help researchers evaluate potential links between newly developed measures and pain subjectivity and thus help inform the integration of physiological biomarkers within pain assessment.[9–11,17,40]

Recent work highlights the limited ability of different pain measures to adequately represent the experiences of people living with pain. For instance, pain intensity ratings have been criticized for being too narrow to adequately capture a meaningful cross-section of pain expression.[24,62,90–94] This can lead to an overly narrow focus on the sensory aspects of pain and contribute to an overreliance on pharmacological interventions as a means of lowering intensity ratings.[94] MAP can serve as a high-level heuristic for framing these concerns by addressing the potential alignment between the relative scopes of pain measures versus pain expression. Figure 1 helps to visualize this relationship through the relative surface area of pain expression that is covered by a given pain measure (eg, measures that quantify additional aspects of pain expression cover a proportionally larger surface area, see note in Fig. 1 for details). This may guide further mixed-method research that anchors different pain measures within qualitative pain expression and that evaluates their potential advantages/disadvantages in representing the subjective experiences of people living with pain.[43,95–99]

Promoting Qualitative Pain Research

Qualitative methodologies have historically been poorly integrated within leading pain journals, despite their unique ability to access pain subjectivity.[29,31,75,76] MAP's central emphasis on qualitative methodologies highlights their importance for pain research and provides a framework for further integrating them within the pain literature.

DISCUSSION

MAP aligns with and builds on a recent consensus statement by a presidential task force of the International Association for the Study of Pain (IASP) that addresses recent debate on whether brain imaging data should be prioritized over subjective reports of pain.[17] Consistent with MAP, the IASP task force recommends that self-reports of pain should be regarded as the sole criteria for identifying the pain experience and that the use of neurophysiological data related to pain should be limited to understanding underlying mechanisms and personalizing treatment. MAP extends these conclusions in 3 ways. First, MAP adds specificity by further delineating between qualitative and quantitative forms of self-report data and by providing an argument for why the qualitative pain narrative should be regarded as the best root proxy for the pain experience. Second, MAP helps contextualize brain imaging data with other qualitative and quantitative behavioral and physiological data by encouraging multimodal approaches to assessment. Third, MAP provides frameworks for how this consensus recommendation might be applied within both clinical and research contexts. Within the context of clinical practice, this involves dissociating multimodal assessment findings from the validation of the pain experience. Within a research context, this involves linking the value of

neuroimaging data as a measure of pain to the breadth and depth with which it maps onto different qualitative expressions of pain.

One concern with these conclusions that has been previously raised in the literature, is that relying on self-report as a proxy for the pain experience will result in validating potentially dishonest reports of pain.[24,100] This concern has fueled ongoing debate regarding how to define pain. Williams and Craig, for instance, have proposed to amend the current definition of pain, in part, to limit its prioritization of self-report data and thereby provide a clearer mechanism for identifying and challenging pain reports that are judged to be dubious.[101–103] MAP aims to provide a fresh lens to consider these concerns and to lay the foundation for clinical management frameworks that will help address them.

MAP brings a novel perspective to this debate by being one of the first models to adopt a third-person perspective on pain assessment. One advantage of this perspective is that it aligns with the third-person, empirical view that is most commonly used to study pain and thus enables us to more clearly delineate, and work within, the limits of our scientific methodologies. From this perspective, the puzzle of how to identify dishonest reports of pain cannot be solved. This is consistent with a recent review of behavioral assessment strategies which indicates that there are no objective proxies that may accurately identify whether a reported pain experience is or is not valid.[104] It is also consistent with the conclusions of the IASP task force who indicate that brain imaging data cannot function as a "lie-detector" to validate or invalidate a self-reported pain experience.[17] Thus, there are no methodologies that currently exist, or that are expected to be developed, that can be used to objectively verify subjective reports of pain. In light of these methodological limitations, MAP aims to shift the focus of this debate from its unsolvable attributes to more actionable management strategies. It does this by not putting the legitimacy of pain reports into question, but instead, focusing on understanding why the person is reporting pain. Once the reasons for reporting pain can be classified, appropriate treatment can be offered. This shift in focus raises 2 important questions for future research—(1) how to classify patients whose reports of pain have no apparent alignment with other assessment findings? and (2) what to do about their management? The development of such frameworks is no small feat and may end up challenging traditional ways of conceptualizing and classifying pain. However, MAP helps clarify some solid first principles from which to approach this work, namely that it does not make empirical or ethical sense to invalidate subjective reports of pain.

Although we have outlined several of the potential advantages of applying MAP to research and practice, it is important to also point out its potential limitations. For instance, from a clinical perspective it could be argued that an increased focus on pain narratives may be overly burdensome for the time constraints of daily practice and, if implemented, may inadvertently encourage patients to fixate on their pain. Expanding the qualitative aspects of pain assessment does raise the risk of increased time spent on assessment. However, this can potentially be mitigated by research that helps identify the best approaches for navigating qualitative pain assessment—there is surprisingly little research in this area—such as which questions should be asked and guidelines on how to frame them. This may help make the qualitative aspects of pain assessment more efficient. Clinical training programs will also likely be needed to translate these findings into practice and to help

ensure that an increased focus on pain during the initial assessment does not derail evidence-based approaches to treatment that focus on improving function and quality of life. However, even if a MAP-based approach to clinical assessment may be more labor intensive, it is possible that this initial investment of resources will be offset by improved patient outcomes and result in a net savings of resources and costs across the duration of treatment.

From a research perspective, there may also be important challenges in bridging the cultural gulf between quantitative and qualitative methodologies. For instance, quantitative pain researchers may have difficulty interpreting theoretical jargon used in qualitative methodologies and may perceive qualitative findings to have limited relevance due to their inherent subjectivity and limited generalizability. An essential step in facilitating this process will be identifying key areas of pain research that are both uniquely suited to qualitative methodologies and that hold strong potential for advancing the broader field. One area that is primed to benefit from additional qualitative research is pain-related suffering. Suffering is given a central place within foundational models of pain,[105–108] yet remains empirically underdeveloped within the pain literature. Moreover, the limited research on suffering within the pain literature has primarily focused on numeric ratings of its intensity.[106] Although easily quantified, intensity ratings provide no information about the nature, meaning or source of suffering and thus may be of limited value in directing patient care. Qualitative and mixed methodologies, on the other hand, can be used to more fully characterize the construct of pain-related suffering and to develop tools to help clinicians better recognize and assess this experience. For instance, these methodologies could be used to develop brief qualitative interview guides that help primary-care clinicians have a conversation with their patients about pain-related suffering and probe the perceived cause, impact, and preferred course of action. Additional qualitative research on pain-related suffering may eventually provide primary-care clinicians with an evidence-base to develop alternate models of care that are not exclusively directed at the sensory aspects of pain[15,109]—a potentially important contribution in navigating the ongoing challenges related to opioid use in pain management.[94]

CONCLUSIONS

More than a half-century ago, McCaffery[37] highlighted the importance of validating patient narratives about pain when she wrote, the now classic maxim, that "pain is what the person says it is and exists whenever he or she says it does." Since then, there have been considerable technological advancements that have introduced important new methodologies for assessing pain. In recent years, our field has been challenged to discern how to best integrate these developments with the fundamental values of supporting people in pain. MAP aims to provide practical frameworks to help clinicians and researchers navigate these challenges. It does this by first highlighting that the most subjective aspects of the pain experience are not readily quantified, and then by providing a conceptual bridge to link qualitative methodologies, which target these subjective aspects, to our most objective measures of pain. MAP also offers pragmatic frameworks for better integrating this full range of multimodal assessment strategies within both research and practice. The overarching goal of MAP is to help develop more comprehensive, valid and compassionate approaches to pain

assessment that can be used to reduce the widespread and deep feelings of invalidation and suffering that are all too commonly reported by people living in pain.

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