Manual Therapy 21 (2016) 277–281

Contents lists available at ScienceDirect

Manual Therapy

journal homepage: www.elsevier.com/math

Professional issue

# The role of clinician emotion in clinical reasoning: Balancing the analytical process

Neil Langridge*, Lisa Roberts, Catherine Pope

*University of Southampton, Faculty of Health Sciences, Building 67, Highfield, Southampton, SO17 1BJ, UK*

ARTICLE INFO

*Article history:*
Received 7 July 2014
Received in revised form
26 May 2015
Accepted 12 June 2015

*Keywords:*
Memory
Emotion
Physiotherapy
Reasoning

ABSTRACT

*Introduction:* This review paper identifies and describes the role of clinicians' memory, emotions and physical responses in clinical reasoning processes. Clinical reasoning is complex and multi-factorial and key models of clinical reasoning within musculoskeletal physiotherapy are discussed, highlighting the omission of emotion and subsequent physical responses and how these can impact upon a clinician when making a decision.

*Discussion:* It is proposed that clinicians should consider the emotions associated with decision-making, especially when there is concern surrounding a presentation. Reflecting on practice in the clinical environment and subsequently applying this to a patient presentation should involve some acknowledgement of clinicians' physical responses, emotions and how they may play a part in any decision made. Presenting intuition and gut-feeling as separate reasoning methods and how these processes co-exist with other more accepted reasoning such as hypothetico-deductive is also discussed.

*Conclusion:* Musculoskeletal physiotherapy should consider the elements of feelings, emotions and physical responses when applying reflective practice principles. Furthermore, clinicians dealing with difficult and challenging presentations should look at the emotional as well as the analytical experience when justifying decisions and learning from practice.



## 1. Introduction

Clinical reasoning is defined in many ways and lacks any single developed framework or model from which musculoskeletal clinicians are able to enhance their practice or use as a reflective tool in their professional development (Case et al., 2000; Edwards et al., 2004). The process of clinical reasoning is multifarious and clinicians of all levels of ability and experience look to develop the cognitive elements of decision-making to enhance practice and improve patient-care (Benner, 1984; Higgs, 1992; Neistadt, 1996). This synthesising process involves considering many facets of patient data, clinician experience, clinician knowledge, and the literature (Higgs and Jones, 2008; Simmons, 2010). This interactive process then further evidences the clinical decision (Orme and Maggs, 1993; Noll et al., 2001; Doody and McAteer, 2002; Childs et al., 2003; Curran et al., 2006). Musculoskeletal physiotherapy research has seen common reference to models such as hypothetico-deductive, pattern-recognition, narrative reasoning and clinical prediction (Mattingly and Fleming, 1994; Jensen et al., 2000; Childs et al., 2004; Jones et al., 2008). Models such as these and others have described the components of the process of reasoning and explained temporal sequencing, however they take little account of the role of emotion and physical responses that the clinician may experience when reasoning through a patient presentation.

This theoretical paper makes a case for reconsidering the processes involved in reasoning within musculoskeletal physiotherapy which traditionally has employed more analytical models. It is proposed that if musculoskeletal physiotherapists do not consider how their own emotions and subsequent physical responses influence their clinical reasoning and the cognitive system that constructs the diagnosis, then they may be limiting their own reasoning acumen. It is also proposed that these emotions and physical responses that may influence reasoning are an important adjunct to the process of reflective practice.

### 1.1. Methods of reasoning

Physiotherapy research has conceptualised clinical reasoning in a number of different ways. Evaluative work surrounding expertise

* Corresponding author. Lymington New Forest Hospital, Wellworthy road, Lymington, Hants, SO41 8QD, UK. Tel.: +44 01590 663263; fax: +44 01590 663264.
*E-mail address:* neil.langridge@southernhealth.nhs.uk (N. Langridge).

http://dx.doi.org/10.1016/j.math.2015.06.007
1356-689X/

and novice practice shows similarities between professions, especially in common decision-making skills (Mattingly, 1991; Curran et al., 2006; Hoben et al., 2007). Expert practice in physiotherapy has been proposed to involve a combination of knowledge, clinical reasoning, movement and virtues (Jensen et al., 2000), whilst "master" or expert practice when compared to novice has been shown to be separated by the ability to use time, develop frameworks, communicate, teach, and predict clinical outcomes (Jensen et al., 1992). The musculoskeletal physiotherapy literature surrounding therapists and reasoning suggests that clinicians commonly may generate initial hypotheses and subsequently test them via questioning or physical examination procedures (hypothetico-deductive) in a deductive way from a general presentation resulting to one that is more specific (Jones, 1995, 1997; Loftus and Smith, 2008). They attempt to recognise clinical patterns that have been experienced before (pattern-recognition) (Patel et al., 1997), clinicians may create an understanding of the patient story (narrative reasoning) (Mattingly, 1991; Mattingly and Fleming, 1994) or identify a number of clinical variables that when presented together suggest a treatment plan (clinical prediction) (Childs et al., 2004). In addition to these commonly cited musculoskeletal models there are other less familiar methods of reasoning identified such as ethical and procedural: Ethical reasoning requires the knowledge of ethical principles, codes of conduct and professional standards and applies these when confronted by a clinical dilemma (Barnitt and Partridge, 1997; Edwards and Delany, 2008). Ethical reasoning is also associated with issues such as confidentiality, whistle-blowing or clinical decisions surrounding the most appropriate intervention to choose (Clawson, 1994). Procedural reasoning explores how therapists assess the physical performance of patients' (such as climbing stairs) and then subsequently links this to the integration of home adaptation/equipment into the diagnosis and plan (Fleming, 1991). The models above suggest that musculoskeletal physiotherapy reasoning is commonly a rational analytical process with a lack of emphasis on clinician emotion and its possible effects on cognition.

### 1.2. Cognition and emotional markers

It is recognised that the process of decision-making at a cognitive level has been purported to involve stimuli, interpretation, reaction, and evaluation of outcome, whilst acknowledging the role of personal experience (Ullsperger and von Cramon, 2006; Sailer et al., 2007; Croskerry, 2009; Ellamil et al., 2012). Furthermore, this cognitive process is reported to be assisted by emotion-related signals, known as emotional/somatic markers (Velasquez, 1998). Emotional/somatic markers can be described a homeostatic changes that occur in different levels of the brain and body in given situations, and link the body to the emotional response (Dunn et al., 2006). When making decisions an emotional reaction to an option is generated and is suggested to create what is known as an emotional/somatic marker which includes sensations from the viscera, skeletal and smooth muscles. These markers are suggested to serve as an indicator of the value of what is represented, and are linked to the emotional areas of the brain thus creating a marker which has physical and emotional components (Damasio et al., 1996; Bechara and Damasio, 2005).

This process is in contrast to economic theory which suggests decisions are devoid of emotion and are led by a rule-based approach assessed over a period of time (Kim and Lee, 2011). Rule-based decision-making requires conscious weighing of the options available, whilst taking a slower, reasoned approach towards alternatives (Bunge, 2004), whereas the emotional/somatic marker theory suggests emotions can rapidly guide or bias our decisions and may have a supportive role in faster decision-making (Damasio et al., 1996; Bechara and Damasio, 2005).

Some health-related decisions appear stressful and happen quickly, yet these still require confidence in an outcome, based on the rapid interpretation of the clinical scenario. For example, in an emergency situation, a deliberate rule-based approach may not be appropriate as a quick decision is needed as length of time could have a detrimental effect on outcome, unlike a decision involved in long-term condition management which can be considered over a protracted time period. An example in the musculoskeletal literature of a fast decision system are clinical prediction rules which enable the identification of common variables to support a decision yet this rule-based system fails to acknowledge clinicians beliefs and experiences upon the decision made. Decision-making, whether fast or slow, requires interpretation of the information, and the clinician reaction to the consequence of this decision may be psychological, emotional, physical, or perhaps all (Krawczyk, 2002).

The emotional component that inter-links with the cognitive element of the clinical examination is generated by the clinicians' empathy and the ability to interpret and appreciate the patient experience enhancing the patients' sense of being listened to and understood (Mattingly, 1991; Orme and Maggs, 1993). This clinician and patient relationship has been described as intuitive practice (English, 1993; Smith et al., 2004; Gore and Sadler-Smith, 2011) and is well documented in nursing literature. A qualitative study that explored the opinions and beliefs of nurses' intuition, suggested that it is an interaction of attributes including: expertise; knowledge; personality; and the environment (McCutcheon and Pincombe, 2001).

Within musculoskeletal physiotherapy there is a lack of reference towards the role of intuition and "gut feeling" which have been noted with greater reference in the nursing and medical literature. Intuition has been described as emotional awareness (Strick and Dijkstrerhuis, 2011), and "intuitive knowing" (Smith et al., 2004), whilst gut-feeling has been highlighted as a mechanism for describing unease, and a signal to be more deliberate in decision-making for assessing patient cases (Woolley and Kostopoulou, 2013). This gap in the literature suggests that the cognition required to make a decision may involve clinicians' emotions and subsequent physical reactions such as a stress response, which has been demonstrated in other forms of decision-making, as yet this is to be acknowledged in musculoskeletal physiotherapy.

Intuitive thought is suggested to be a sub-conscious decision process that is difficult to conceptualise but linked to emotion (Hammond, 1996), whilst remaining largely invisible when attempting to articulate it (Standing, 2008). Strick and Dijkstrerhuis (2011) suggest that intuition uses senses, feelings and thoughts to provide a depth of understanding that is linked to emotions. A study that explored this further asked 63 participants to analyse information regarding the choice of selecting an apartment under different circumstances. One apartment was "loaded" to be the more attractive option based on its facilities suggesting this would lead to a feeling of that particular apartment being the right choice. The decision accuracy was reported to be 36% in the group with time to make a decision, 47% in the group without time, yet 59% in the group with time and who were also distracted (Dijksterhuis, 2004). This result was explained as stemming from a weighting principle that gives less conscious thought the ability to link the importance of various attributes in a decision and create a sense of confidence that supports a successful outcome.

The use of emotion has classically differentiated analytical and less rational systems of decision-making (Damasio et al., 1996), yet there is evidence that emotion and decision-making are inter-

linked and paying attention to our emotions may enhance the process of decision-making. Consider why recalling an earlier decision, either perceived as good or bad, no matter how long ago it was, can sometimes induce a physical reaction, as a link is made back to that marker (emotional memory) and its outcome (Ohira, 2010). The clinician, reflecting on a difficult/complex decision that led to a significant consequence is able to recollect and articulate those feelings when prompted to reflect on the experience. The memory linked to clinical reasoning and its relationship to a physical response (such as increased heart-rate) is a reaction felt by clinicians (Ohira, 2010). The clinician is likely to be recalling and reacting to these experiences and whilst this knowledge has been described as patterns (Tanner, 2006), it is associated patterns linked to the experience from where they were developed (i.e. previous clinical scenarios) rather than the current clinical features that are presented to the clinician that provide relevance. For example, if a current clinical scenario is linked cognitively to a previous successful or unsuccessful intervention for a specific clinical presentation then this current pattern would converge with the emotional memory that was originally stored, thereby generating a positive or negative emotional memory response as part of the pattern recognition process leading to the clinician experiencing an emotion. As therapists the importance of understanding the emotional side of the patient experience has been recognised and is considered essential to really gaining a better understanding of the patient (Nicholas et al., 2011), it is therefore reasonable to suggest that clinicians should consider the emotional factors in relation to their own experience and reasoning processes. Memory and emotions may be relevant and important for clinicians to consider and reflect on how they impact upon the decision-making process.

### 1.3. Physical responses to emotional markers

It has been suggested that the link between memory, emotion and physical responses such as increased sweating, or muscle tone is characterised by “associative construction”. This is the reactivation, retrieval and integration of semantic, contextual and sensory components (Hassabis and Maguire, 2007) such as the interaction with a patient, the integration of clinical data and the subsequent emotional or physical reaction to a clinical decision. Studies that evaluate this physical process link autonomic reactions to decisions that may have a consequence, such as losing at a game of cards. Critchley (2009) suggests that autonomic arousal (physical reaction) results in physical responses (e.g. changes in heart rate/blood pressure) occurring via the anticipation/expectation of what might happen as a consequence of a decision. One method of evaluating this reaction is via the Iowa Gambling Task (IGT), a method that simulates decision-making by asking participants to choose cards that may win or lose them money (Bechara et al., 1994; Northoff et al., 2006). This method has shown that advantageous decisions are responded to, before the advantageous strategy is known as skin conductance responses (SCR) are experienced prior to making a valuable decision (Bechara et al., 1997), suggesting that there is a sub-conscious sympathetic nervous system reaction to a decision, which could be linked to an emotional/somatic marker. In essence, the participants were aware of the consequence of a decision autonomically/sub-consciously before they verbally offered their response to the decision-making process.

Evidence that these physical, emotional and cognitive elements are linked has been demonstrated by Gutbrod et al. (2006), in a study using the IGT with participants who had experienced damage to the forebrain, resulting in amnesia. The study highlighted that with patients experiencing amnesia, SCR did not occur and there was no learning mechanism to supplement the response. Healthy controls showed anticipatory autonomic responses to a poor decision in the game. These findings suggest that associated memory is linked to the autonomic nervous system, creating visceral and physical reactions in response to decision-making. In clinical practice this would suggest that decision-making outcomes will be influenced by our physical responses (such as a sensation in the stomach) and these may precede the conscious realisation of the decision itself. What is not known is how these physical responses linked to emotion (such as anxiety) directly impact upon the decision-making process, which is now considered.

The relevance of emotional states upon physical responses and decision-making was demonstrated in a study that involved provoking a state of anxiety by asking participants to complete a letter based decision task concurrently with an intermittent uncomfortable noise (Barrett and Armony, 2006). The researchers measured decision accuracy, as a measure of cognitive output, and SCR, as a measure of raised autonomic activity. With increased anxiety, the SCR was raised, yet the decision speed and accuracy improved, suggesting that the autonomic response heightened the cognitive ability of making a decision. It should be recognised that these methods of assessing decision-making do not fully reflect the multi-factorial process of clinical decisions and therefore only provide a linear understanding. Autonomic arousal, according to Critchley (2005), is based around the role of anticipation feedback, which is then re-enforced with a physiological reaction, such as heart-rate or sweating. This could be suggested to enhance learning, as the memory of that decision will have a combined and linked physiological and emotional marker. It also suggests that the cognitive, autonomic and physical responses create a consciousness of thought which give the decision more relevancy as the systems activated here all contribute to confidence in the decision. Therefore, when clinicians sense pressure and anxiety it can improve decision-making in certain scenarios. These physiological changes to sub-conscious pressure/anxiety and cognitive effort have been described as “gut feelings” (Stolper et al., 1996), and are suggested to be linked emotionally to stress, dependent on whether the associative memory can confirm whether the decision is advantageous (Critchley et al., 2001). It is therefore possible that gut-feeling/visceral responses may heighten awareness, if the decision is believed to affect safety or is seen as especially important. Clinicians may therefore use these physical feelings to guide a decision in cases where there is concern, such as a clinical presentation of a patient with red flags.

Clinicians perhaps need to take into account the responses in their own visceral and emotive systems and how they potentially affect the feelings of right and wrong, and then consider testing those responses cognitively to judge relevance in order to make it a more conscious retrieval of information informing an explicit decision. This is likely to involve intuition and or gut-feeling processes that are best described in terms of cognitive and visceral physical responses.

Therefore, when considering how intuition and gut-feeling compare to more analytical models of clinical reasoning such as hypothetico-deductive and pattern recognition, it appears that a clinician needs to consider their own emotive and physical response components to the cognitive process of reasoning. Consider the clinician who had a very negative experience with a certain presentation: This could range from a mis-diagnosis, not recognising serious pathology, or perhaps ineffective communication with a patient. If a similar scenario were to emerge again it could influence the clinician, for example creating hyper-vigilance or anxiety that may raise an index of suspicion (Siegert and Taylor, 2004). Consider the clinician who has suspected a mechanical back pain and after time it emerges that the patient had something more sinister. As the clinician reflects, this could create

concern and would be "marked" in the memory more so than the mechanical low back pain presentation which followed an expected clinical trajectory. The clinician, who has success with an assessment and interaction involving a specific clinical case, will have the response of confidence the next time they engage with a similar clinical presentation. There is little acknowledgement of emotion in many clinical reasoning models, yet within decision-making and reflective practice perhaps it needs greater representation.

As clinicians working within a bio-psychosocial model of health-care it is perhaps time to reflect this on our own clinical decision-making, and accept the bio-psychosocial influence on our own decision-making processes. The clinician should acknowledge how their reactions, and experiences, when contextualised may affect clinical reasoning in a positive way. It is perhaps timely to suggest that a further hypothesis category is needed to represent this influence on clinical reasoning to enable clinicians to give credibility to intuitive reaction, gut-feelings and physical/emotional responses.

## 2. Conclusion

Clinical reasoning in musculoskeletal physiotherapy has been understood and presented as an analytical process, with limited reference to associative emotions and physical responses. Hypothetico-deductive, pattern recognition, narrative and clinical prediction models are examples of models that do not challenge the clinician to consider their gut-feelings, intuitions, emotions, and physical responses to decision-making. Clinicians are expected to clinically reason based on the clinical/person centred data, when sometimes these decisions provoke fear, concern and a "feeling" that something is not correct within the clinicians themselves. The evidence from studies of decision-making highlights that conscious analysis is under-pinned by physical and emotional responses, that when used effectively can enhance reasoning. Physiotherapy practice could be enhanced in the knowledge that some decisions are influenced by clinicians emotions and physical reactions associated with the decision-making process. These emotions potentially are linked to personal, clinical, and life experiences of the clinician, therefore it is the task of the clinician to then delve deeper into their reasoning to explore these and how they influence their clinical practice. Armed with the research presented here, the authors challenge physiotherapists to identify their own emotions, fears and beliefs when formulating their clinical decisions, and consider the impact of those feelings when exploring the process of reflective practice. When considering a clinical presentation the clinician should be reactive to the less analytical methods of decision-making and be able to acknowledge the role of gut-feeling and intuition in their practice.

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