

Master's level study: learning transitions towards clinical expertise in physiotherapy

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Abstract

Background Evidence suggests that practitioners who successfully complete a UK Master's level course, accredited by the Manipulation Association of Chartered Physiotherapists (MACP), enhance their clinical practice and demonstrate attributes of clinical expertise. What remains unclear is the process by which practitioners change and enhance their practice. Greater understanding of the learning process would help to inform programme design and delivery, and enhance the quality of the educational experience and impact for practitioners.

Objective To explain the learning process experienced by physiotherapists on completion of an MACP-approved Master of Science (MSc) course.

Design A naturalistic inquiry was conducted using a single theory-seeking case study. Dimensional analysis was used to develop a substantive theory of the learning transition.

Participants Twenty-six semi-structured interviews were carried out with 11 alumni from one MACP-approved MSc programme.

Results The learning transition was from uncritical practice knowledge with routine, therapist-centred clinical practice to critical understanding of practice knowledge that enabled patient-centred practice and the capability to learn in, and from, practice. This development towards clinical expertise was primarily facilitated by critical evaluation of practice knowledge, particularly through mentorship in clinical practice. This highly challenging experience was helped by high levels of support from the mentor. The learning transition varied between participants and depended on a host of moderating factors.

Conclusion This is the first documented theoretical explanation of how physiotherapists enhance their clinical practice and develop attributes of clinical expertise within an MACP-approved MSc course. This explanatory theory may be of value for educational programmes that seek to facilitate practitioners' development towards clinical expertise. This study also offers a novel model of learning transition that may be applicable to other educational settings.

Keywords: Learning transitions; MSc; Physiotherapist; Clinical expertise

Introduction

In the UK, there are currently 11 Master's level courses approved by the Manipulation Association of Chartered Physiotherapists (MACP). These courses follow the educational standards of the International Federation of Orthopaedic Manipulative Physical Therapists with a

minimum of 200 hours of neuromusculoskeletal physiotherapy theory, 150 hours of practical skill development and 150 hours of mentored clinical practice. A major focus of these courses is to develop clinical expertise and enable successful practitioners to obtain advanced clinical practice and extended-scope practitioner roles [1].

Two qualitative studies have explored the impact of an MACP-approved Master of Science (MSc) degree on practitioners [2,3]. A phenomenological study [3] using focus group interviews found that practitioners changed their practice in ways that suggested enhanced clinical expertise. They

adopted a patient-centred approach, a holistic view of problematic clinical situations, had broader options in clinical decision-making, gave more attention to educate and coach patients, and learnt how to learn. In the other study [2], postal questionnaires were used to explore the career development and roles of 48 alumni from an MACP-approved MSc course. Participants gained enhanced clinical and manual skills, a greater depth of knowledge, improved clinical reasoning, and an ability to evaluate research and apply evidence-based practice. Similar findings have been reported following a year-long advanced manual therapy course in the USA [4], as well as from UK Master's level study by occupational therapists [5] and nurses [6]. While these studies suggest that practitioners enhanced their practice, there is no unifying conceptual or explanatory framework for this change. Understanding how practitioners learn and develop is important if educational programmes are to efficiently and effectively facilitate practitioners' development towards clinical expertise.

The conceptual framework of learning transition theory coined by Scholes [7] informed the focus of this study. The term 'learning transition' is used here to refer to the process of change (in attitude, knowledge and behaviour) of a practitioner as a consequence of a learning experience. It has its roots within role transition theory [8] with which it shares key terms. Learning transition follows a number of stages: antecedent conditions, expectations of the learning experience, learning contradiction that triggers learning, the reaction of the individual to this contradiction, and learning outcomes. Moderating factors are the personal characteristics of the practitioner that influence each stage. Antecedent conditions identify particular factors present at enrolment that influence expectations of learning. While expectations that are met may lead to increased confidence, this does not create the cognitive dissonance necessary for learning [9,10]. Fundamental to learning transition theory is the need for new knowledge and experience to contradict previously held knowledge and experience [7,11–13], and is often associated with strong emotional reactions [7,14–18]. The learning outcome of contradiction triggers change in practitioners' knowledge, attitude and behaviour, as they re-interpret past assumptions and experiences [7], and modify personal theories [19–21]. A variety of moderating factors influence and help to explain why individuals experience quite different learning transitions [7,8]. The aim of this study was to develop an explanatory theory of the learning transition of neuromusculoskeletal physiotherapists on completion of an MACP-approved MSc programme.

Methods

Study design

A naturalistic inquiry [22,23] using a single theory-seeking case study design [24,25] was used. Through

Table 1
Profile of participants ($n = 11$).

Mean age	38.2 (range 31 to 52)
Mean years in clinical practice at the start of the study	8.5 (range 3 to 24)
Practice setting	4 in private practice 7 in NHS: 1 at Band 7, 4 at Band 8A and 2 at Band 8b
Mean years since completed MACP-approved MSc	2.4 (range 2 months to 5 years)

NHS, National Health Service; MACP, Manipulation Association of Chartered Physiotherapists; MSc, Master of Science.

description of an individual's learning experience, shared understanding and meaning were co-constructed by the participants and the researcher (NJP).

Participants

Thirty-five alumni who had successfully completed the MSc Neuromusculoskeletal Physiotherapy course at one UK university were identified from the open access pages of the MACP website (<http://www.macpweb.org>). Purposeful sampling was used to ensure a wide range of experiences and perceptions from across cohort years, graduation years, work settings and gender. Eleven alumni agreed to participate and gave informed consent; their biographical information is given in Table 1. Approval for the study was obtained from the University of Brighton Research Ethics and Governance Committee.

Data collection and analysis

Data collection and analysis followed an iterative process and was carried out by the researcher, who was course leader and module leader of MACP-specific modules when participants had undertaken the MSc course. This prior knowledge over a 10-year span was considered data in the form of observational memory and helped to inform data analysis.

The study sought to explore the learning experience perceived by alumni after completion of the course, and for that reason, the primary data were collected through individual interviews. A total of 28 audio-recorded, semi-structured interviews (amounting to 19 hours) were conducted face to face or via the telephone between January 2005 and April 2007. All but one of the participants was interviewed two or three times. Each interview was transcribed by the researcher and sent to the participant to check for accuracy. Once agreed, the transcription became research data. The first round of interviews explored their experience completing the MSc course and its influence on their clinical practice. Data analysis was facilitated by role transition theory [8]. Mapping the data to this conceptual framework identified further questions and led to the second round of interviews. The literature on learning transition theory [7] and social learning theory

[26,27] guided further analysis and led to the third and final round of interviews.

The transcriptions were read and reread to allow familiarisation with the data. Dimensional analysis [28,29] was used and involved three inter-related stages. The first expanded the data into various attributes designated as dimensions with associated properties; this aimed to identify ‘what *all* is involved here’ [29, p. 310]. Differentiation then determined the salience and relationship of dimensions to each other to create an explanatory matrix [30]. Finally, integration involved writing a theoretical account of the matrix, which prompted further analysis and its adaptation into a coherent substantive theory.

Trustworthiness

Insider research requires strategies to minimise researcher and participant bias that would otherwise threaten the trustworthiness of the study [31]. The researcher offset bias by taking a reflexive and critically reflective stance throughout the 3 years of data collection and analysis. The extended period of time allowed development of a strong researcher identity with disengagement from the roles of course and module leader. Bias was also offset by frequent verification checks of the analysis by participants. Participant bias was offset by a respectful and trusting researcher–participant relationship that developed and became established over a prolonged period of time (1–2 years).

Results

The theoretical explanation of the learning transition experienced by participants is portrayed in Fig. 1 and involves a developmental process indicated by arrowheads from left to right; each of these stages will be explored in turn, supported by illustrative extracts. Participants are identified as P1, P2, etc. A variety of moderating factors help to explain differences in the learning transition experienced by participants (Table 2). How these factors appeared to influence all stages of the learning transition is discussed below, in particular how participants managed their reaction to the learning contradiction. To enhance clarity of the theory, the model demonstrates polar extremes; however, it is more likely that participants were somewhere along the continuum. A more detailed review of the findings can be found elsewhere [32].

Antecedent conditions

Participants had not shared and critically explored their theoretical knowledge and clinical practice with colleagues prior to enrolment on the MSc course. While they may have occasionally discussed patients with colleagues, they did not generally observe each other with patients and their practice was ‘hidden’ behind screened cubicles. In addition, participants tended to regard knowledge as right or wrong, and

uncritically accepted knowledge from those in authority; that is, they had ‘received practice knowledge’ [33]. This view of certain, unproblematic knowledge was then applied in practice to solve simple predictable clinical problems. ‘Practice knowledge’ is used here as an umbrella term to refer to all types of knowledge (propositional, practical, tacit, etc.) and processing of knowledge (cognition, metacognition, clinical reasoning) by a practitioner in clinical practice [34–38].

Clinical practice was characterised as routine and therapist centred. Participants used habitual, repetitive ways, with minimal deliberation, to examine, treat and manage people with neuromusculoskeletal conditions, rather than adapting and fine tuning to each individual. These findings were deduced from enhanced criticality gained through completion of the MSc course. A typical comment from participants was:

‘I’d do the subjective [examination] and ask the patient routine questions. I’d not really take information from my subjective into the objective. I’d do a routine objective examination.’ (P4)

Expectations

Participants expected to enhance their knowledge and skills progressively through didactic teaching from a skilled and informed tutor. They expected to be given information and be told how to perform skills:

‘One thing I was surprised with was that I thought the teaching would be more prescriptive, I thought when I was being taught, I would be told do like this, this and this and somebody would come in and tell me how to do it. But it wasn’t actually like that; it was quite student led with lots of discussions.’ (P7)

‘The practical hands-on skill were taught differently than I was used to and the way I expected. On the weekend clinical courses, there was a way to do something. On the MSc, techniques were taught more openly, less prescriptive, which was liberating really.’ (P3)

Learning contradiction

The contradiction that triggered learning involved critical evaluation of their practice knowledge. This was particularly pertinent within musculoskeletal-specific modules that involved 6 weeks of classroom-based teaching and 6 weeks of clinical practice. Some aspects of practice knowledge were more challenging than others. Giving and receiving critical feedback on their handling skills posed relatively little challenge; they were familiar with this during in-service training and weekend courses. Critical classroom discussion that explored theoretical knowledge and reasoning was less familiar and posed a greater challenge. By far the greatest challenge and most powerful learning experience was an MACP mentor directly observing their clinical practice with patients, and providing critical evaluation and feedback of their per-

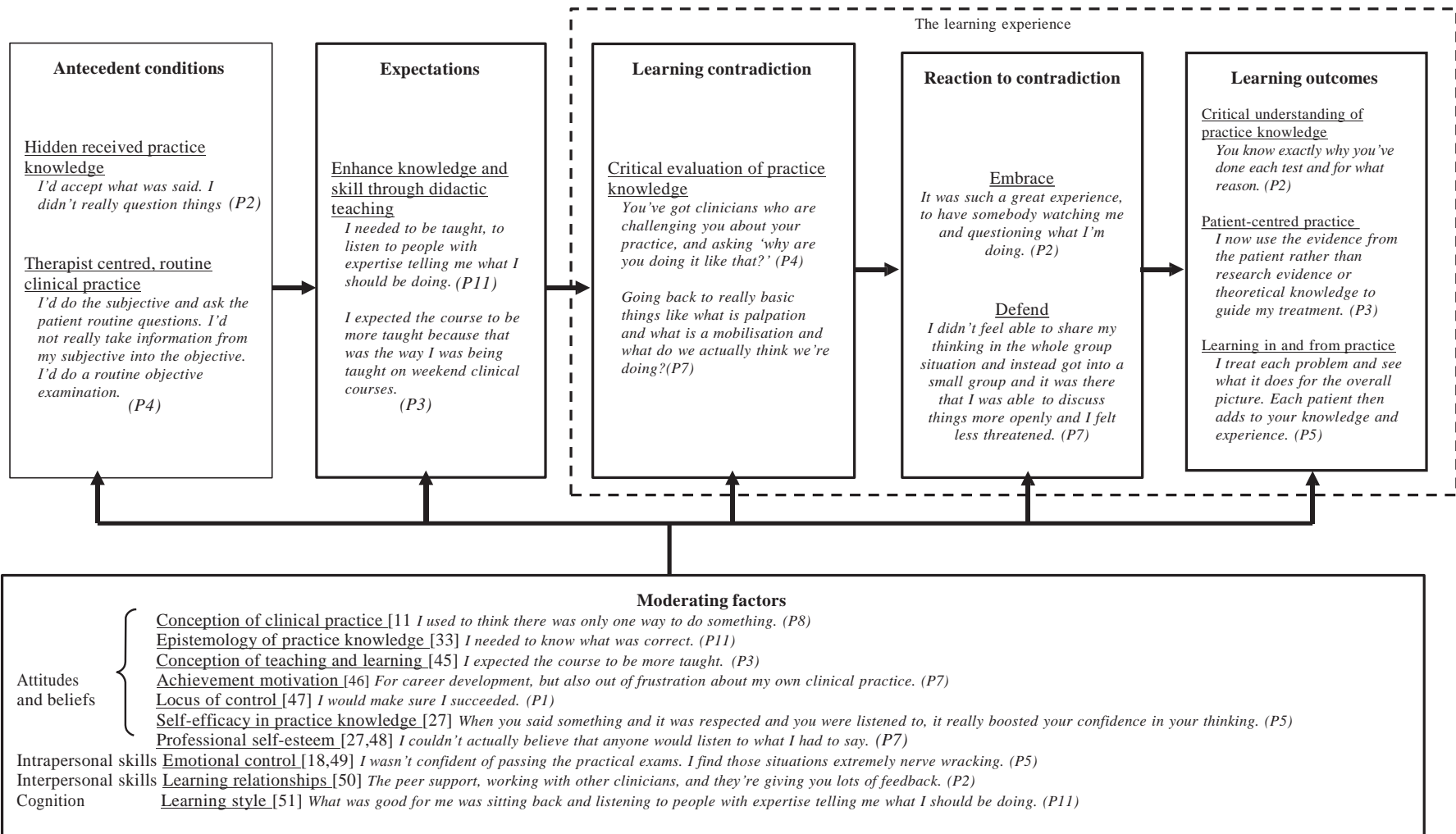


Fig. 1. Explanatory theory of the learning transitions experienced by physiotherapists on completion of a Master of Science degree. The antecedent conditions provide the precourse contextual factors relevant to the learning experience. Expectations of the learning experience influenced the perception of the experience. The learning experience incorporates the learning contradiction that triggered learning, the subsequent reaction of the practitioner and the learning outcomes. Moderating factors are the personal characteristics of the practitioner that influenced the process.

Table 2

Moderating factors and properties that influenced whether participants were receptive or defensive towards critical evaluation of their practice knowledge.

Moderating factors		Receptive	Defensive
Attitudes and beliefs	Conception of clinical practice	Professional artistry: consider practice knowledge as temporary, dynamic and problematic; seek critical evaluation to aid understanding	Technical rationality: consider practice knowledge concrete, permanent and unproblematic; critical evaluation not necessary
	Epistemology of practice knowledge	Relativist, constructed knowledge: may seek critical discussion with peers and tutors	Received knowledge: may seek 'right' answers from those in authority
	Conception of teaching and learning	Student-centred facilitation of learning: seek to learn from others (peers and tutors)	Didactic transmission of knowledge: seek to learn from tutor
	Achievement motivation	Learning goals: focused on learning	Performance goals: focused on formal assessments and expectations of tutor to ensure success
	Locus of control	Internal: proactive in their learning, looked within themselves	External: passive learners and may have adopted a learned helplessness
	Perceived self-efficacy in practice knowledge	Realistic estimation: aware of need to learn and engage with others	Underestimation: reluctant to participate, believing they had little to offer others Overestimation: unaware of a need to enhance and develop their knowledge and reluctant to listen to others to hear alternative views
	Professional self-esteem as a physiotherapist	Realistic estimation: self-awareness and appreciation of others to help facilitate learning	Underestimation: sense of inadequacy to offer a valuable contribution to others and thus a reluctance to engage Overestimation: self-sufficiency and reluctant to listen and learn from others
Intrapersonal skills	Emotional control	Learning satisfaction and pleasure: able to participate and engage	Learning anxiety and stress: reluctant to participate and engage
Interpersonal skills	Learning relationships	Adult stance: safe, supportive and constructive learning relationships with student peers and tutors	Child or parent stance: unsupportive and destructive relationships with student peers and tutors
Cognition	Learning styles preference	Reflective observation and abstract conceptualisation: comfortable with critical discussions that trigger thinking and reflection	Active experimentation with concrete experience: impatient with critical discussions, preferring action-orientated activities such as practical hands-on skills

formance. They had not experienced this since qualifying as a physiotherapist:

'I found the placements really, really helpful and even though it was very, very difficult, it was probably the most positive thing to come out of the course. In my practice, I'm still using aspects of the clinical reasoning and the key criteria that I learnt on placement and use it in my undergraduate and postgraduate teaching.' (P7)

'I could see that within 1 week, my practice was already changing and improving. Within 3 weeks, my practice had completely altered, it was such a fantastic experience.' (P10)

Reaction to the contradiction

The reaction of participants to critical evaluation of their practice knowledge lay along a continuum from defending against to being receptive of the experience. Defensive behaviours involved avoidance of classroom discussion and peer learning, and a preference for receiving knowledge from tutors. A defensive position tended to be associated with anxiety and stress, while those who embraced the new experience and opportunity it afforded felt pleasure and satisfaction.

Direct observation and feedback by a MACP mentor while on clinical placement severely limited defence against critical evaluation of their practice. Some participants felt 'terrified' and 'scared to death' at the prospect of such close scrutiny of their practice, but their fears were quickly allayed as they received constructive feedback and support from the mentor. Letting go of past thinking and habits, gaining new knowledge and skills, and receiving positive feedback were associated with optimistic feelings of pleasure and satisfaction described as 'enjoyable' (P7), 'interesting' (P3), 'great' (P2) and 'fantastic' (P10, 11). For a few participants, however, the placement was 'painful' (P1) and 'traumatic' (P8) as they became aware of gaps and errors, received negative feedback, and tried out new ways to think and practice. The 'high intellectual interference' [7, p. 148] and high challenge associated with the placement required high levels of support from the mentor; where this was not forthcoming, strong negative emotions were experienced. The more participants genuinely engaged in critical evaluation of their practice knowledge, the more they experienced a radical and powerful transformation of their practice knowledge and clinical practice. Explicating practice knowledge enabled it to become less personally embedded [39], liberating and empowering [40] participants to seek contradiction:

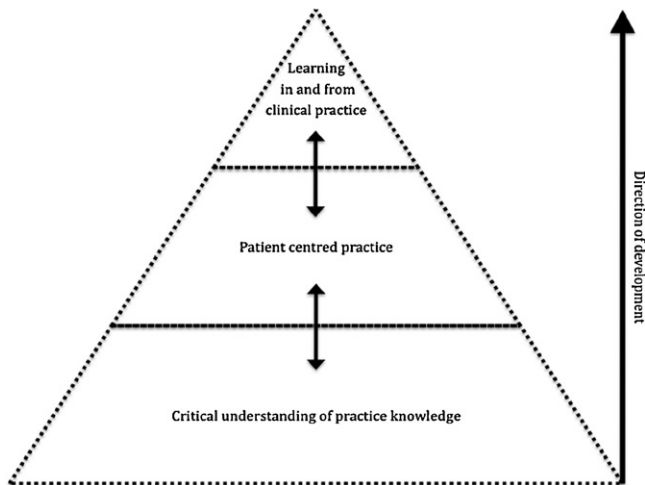


Fig. 2. Learning outcomes: critical understanding was the initial change that led to patient-centred practice which then led to a capability to learn in, and from, practice.

‘We’d listen to each other and when you said something and it was respected and you were listened to, it really boosted your confidence in your thinking and in your opinions.’ (P5)

‘With my first patient, I was watched and I thought ‘oh no, what are they going to think about me’, but that feeling very quickly disappeared. . . I thought ‘I’m here to learn, I’m here to get something out of this placement, and therefore I want them to look at what I’m doing and say, ‘don’t do it like that, perhaps do it like this’ . . . Within 3 weeks, my practice had completely altered, it was such a fantastic experience. In the final week and a half, I was asking my educator to come and watch me. . . and give me their input and feedback.’ (P10)

Learning outcomes

Three inter-related learning outcomes are depicted in Fig. 2. Critical understanding was the initial change that enabled practitioners to become patient centred, and this led to capability to learn in, and from, their clinical practice.

Critical understanding of practice knowledge

‘I’ve improved my thought processes behind what I’m doing and why I’m doing it; my ability to reflect, my ability to deduce what information that test has given me and the value of that information in terms of the evidence base.’ (P10)

‘I can move logically, but still quite creatively, and can justify what I am actually doing and have some logic to my treatment.’ (P7)

Participants gained an enhanced understanding of the subjective and physical examination process, and how to make sense and assess the findings from an individual patient examination. They were better able to choose and apply appropriate treatment and management strategies for their patients, and considered they were more efficient and effective clinicians. They became more critically evaluative of their practice

knowledge and that of others, and were better able to justify their clinical decisions to themselves, their patients and other health professionals.

Critical evaluation of taken-for-granted assumptions, beliefs, values, expectations, perceptions, judgements and actions may generate new perspectives, actions and meanings [41]. With continued critical evaluation, these may then become more discriminating, integrated, differentiated, open [42], dependable and justified [43], leading to more complex and comprehensive embodied understanding [20,44]. Engagement in the process of critical evaluation may also foster a tentative, experimental and sceptical attitude towards practice knowledge [19]. Thus, critical evaluation may enhance both understanding of, and criticality towards, practice knowledge.

Patient-centred practice

Participants adapted their examination, treatment and management strategies to the individual patient, becoming more deliberate and creative. This enhanced their ability to manage people with more complex presentations. They used information from the patient to guide their management. They were critically reflective of their practice, habitually evaluating the effectiveness of their decisions through patient re-assessment.

Capability to learn in and from clinical practice

A critically reflective stance towards their clinical practice led to habitual cycles of assessment–re-assessment to guide patient management. This enabled them to evaluate the effectiveness of their clinical decisions and learn from their patients; in this way, they were able to learn in, and from, their clinical practice:

‘You have the basics and you have the patients and then you’ve got to learn from that. . . just reflecting on why things worked or didn’t.’ (P6)

‘I treat each problem and see what it does for the overall picture. Each patient then adds to your knowledge and experience so you become more efficient.’ (P5)

Limitations of the study

Limitations of this study have already been explored within the section on trustworthiness. This single case study was conducted in one UK university. The learning transition described here provides a ‘fuzzy’ [24] generalisation of what may happen in other situations; the findings may be transferable elsewhere. The reader is reminded that the theory has been constructed by the researcher from data co-created with the participants, and as such is caught in time and place. Further research is needed to test the theory in other educational settings.

Conclusion

This study offers the first documented theoretical explanation of the learning transition of practitioners within a MACP-approved MSc course. The key trigger to their learning and development towards clinical expertise was the learning contradiction of critically evaluating their practice knowledge, and this was most significant in clinical practice with an MACP mentor.

The key findings from this study are that, prior to enrolment on to the MSc course, participants had hidden received practice knowledge and engaged in therapist-centred practice. The course involved critical evaluation of practice knowledge, which was particularly challenging in clinical practice with an MACP mentor. This highly challenging experience was helped by high levels of support from the mentor. The reaction of participants to this contradictory learning experience was influenced by a number of moderating factors that affected the learning outcomes. Participants gained, to varying degrees, critical understanding of practice knowledge, patient-centred practice and capability to learn in, and from, practice. This explanatory theory offers understanding of how practitioners learnt and developed which may be of value for educational programmes that seek to facilitate practitioners' development towards clinical expertise. This study also offers a novel model of learning transition that may be applicable to other educational settings.

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