CROSS-CUTTING EDGE

The cross-cutting edge: Medical selection and education viewed through the lens of emotional intelligence

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Abstract

Context: Evidence suggesting the benefits of compassionate, person-centred care, for both patients and physicians is accruing. Medical selection, for example, aims to choose future health professionals that possess the correct attitudes, beliefs and personal attributes to deliver such care. Moreover, once in training, these desirable personal qualities should be developed and maintained, sometimes in the face of adverse health care service conditions. However, advances in selecting for, and developing, these abilities and attributes in health care have been hindered by a lack of clarity regarding how the relevant skills and traits should be defined, measured, developed and maintained in clinicians.

Methods: In this article, we demonstrate how developments in the emotional intelligence (EI) field can be applied to the challenge of selecting for, and developing, relevant interpersonal care skills in medical students and physicians. The concept of EI itself has been somewhat controversial. However, a more nuanced understanding of EI has evolved in the light of research findings that can be applied to medical selection and education. Specifically, we propose modifications to the existing 'cascading' model of EI. This model identifies, and relates, several key socioemotional skills and traits that could be considered as 'the elementary particles' of EI required to deliver compassionate, person-centred care.

Conclusions: Our model of EI, which is relevant to care delivery, identifies putative targets for both medical selection and training. Selection for medical school and subsequent clinical education should focus on screening out those with low levels of the traits and abilities less amenable to training. Conversely, medical education should be concerned with developing and maintaining the socioemotional skills, attitudes and behaviours critical to the delivery of compassionate, person-centred care. This is especially important for specialties characterised by high levels of emotional labour and possible resultant compassion fatigue.

"The good physician treats the disease; the great physician treats the patient with the disease"

Sir William Osler (1849–1919)

"I think the most important thing is to invest in emotional intelligence and mental balance, because the hardest challenges will be psychological …"

Yuval Noah HarariAuthor of 'Sapiens', 'Homo Deus' and '21 Lessons for the 21st Century'[1]

1 | SELECTING AND EDUCATING FOR PERSON-CENTRED CARE

The aim of medical education is to recruit and train physicians with the correct personal attributes and skills to deliver high quality patient care. What this goal looks like may vary across specialties and geographies. However, it should generally account for the needs and preferences of the individual patient. Definitions of such person-centred care vary. The Health Foundation states: "*A person-centred approach means focusing on the elements of care, support and treatment that matter most to the patient, their family and carers.*"[2] [page 33]. However, other definitions also stress the collaborative element of this process, with patients being supported in being active partners in their care. For example, "*Person-centred care means treating patients as individuals and as equal partners in the business of healing; it is personalised, coordinated and enabling*"[3] [page 114]. Thus, in general, 'person-centred care' refers to an approach where clinicians collaborate with patients to deliver treatment that accounts for their needs and preferences. The term is sometimes used interchangeably with the phrase 'patient-centred care'. However, the latter is sometimes used in a narrower sense, to focus on health care, rather than broader needs.[4]

There have been previous attempts to operationalise and psychometrically measure this construct from a patient perspective. Factor analyses of responses to instruments attempting to measure the perceived degree of person-centredness have been carried out previously. The findings from these studies suggest that either one, two or three dimensions tend to underlie responses to instruments.[5–7] For example, the responses to the items of the Person-Centred Community Care Inventory (PERCCI) load mainly on two underlying factors: one, reflecting the nature of interpersonal relationships and the other the organisational aspects of care. It is recognised that the development of professional identity, interprofessional learning opportunities and the continuity (or otherwise) of clinical training placements also influence how a learner develops an understanding of these relational and organisational aspects of care.[8,9]

Consequently, for the purposes of this article we will define person-centred care as '*the ability to collaboratively coordinate the provision of healthcare in such a way which accounts for the patient's needs and preferences*'. This has two main functional elements. The first relates to development of an authentic rapport or relationship with the patient that facilitates the elicitation of the patient's values preferences and relevant beliefs. This should also be experienced as compassionate by the patient and their significant others. Indeed, there is existing evidence for the benefits of compassion in medicine.[10,11] The second element is the ability to effectively respond to this knowledge of the patient by coordinating resources in a way that optimises the meeting of their health and, where appropriate, non-health related needs. Ideally, this should result in reduced symptomatic illness and also improved quality of life and psychological well-being.

There are research findings that suggest this approach is associated with a range of positive patient physical and mental health outcomes, at least in a variety of clinical settings. Such outcomes may include improved health and reduced hospitalisation, often facilitated by better engagement and treatment adherence, as well as improved self-management and care.[2,12] However, there remains a need for further well-designed studies that explore the potential impact of person-centred approaches across health care settings.

2 | WHAT PERSONAL QUALITIES SHOULD BE SELECTED FOR AND DEVELOPED BY MEDICAL EDUCATORS?

There has been much debate and confusion of terminology and conceptualisation about the relevant traits, skills and abilities that are relevant to the professional and effective practice of medicine. It is often asserted in policy that health care staff should hold desirable *values*, such as those mandated by the UK National Health Service (NHS) Values Based Recruitment (VBR) policy.[13] 'Values' themselves can be defined as enduring beliefs held about what is desirable.[14] However, values are difficult to categorise and problematic to measure, certainly in an objective, cost-efficient manner. In practice, a variety of approaches are used in medical selection to support values-based recruitment. These include interviews, personal statements and situational judgement tests (SJTs).[15] SJTs, in this context, generally test knowledge of interpersonal effectiveness by presenting a test-taker with a series of social scenarios that challenge personal or professional judgement. The test-taker must then respond, usually via a multiple-choice format, in a way that indicates they understand the most appropriate and effective behavioural response to the situation. SJTs have gained traction as an assessment device for evaluating procedural knowledge related to interpersonal skills and professionalism.[16] In this context, SJTs may be designed to assess Implicit Trait Policies (ITPs).[17] ITPs are conceptualised as sets of implicit beliefs about causal relationships between personality traits and behavioural effectiveness. The ITP concept is more useful than the vaguer construct of 'values'. However, the scores from SJTs used to assess ITPs do not generally conform to the tenets of 'fundamental measurement'. This includes an assumption that the scores can be interpreted as a common metric (i.e. are additive measurement units) and evaluate a single construct (unidimensionality).[18,19] Thus, if medical educators are going to be capable of choosing and developing individuals capable of consistently delivering person-centred care, a more explicit and detailed conceptualisation of the relevant traits and abilities is needed.

To be useful, such a conceptualisation would need to address both ontological and epistemological issues. That is, ontologically, are such traits and abilities discrete and definable constructs? And, epistemologically, can we gain knowledge of them via acceptably precise measurement processes?

One way to advance our understanding is to apply the lens of 'emotional intelligence' (EI) to the problem of person-centred care delivery. EI can be defined as the ability to understand and respond effectively to emotions. Staff with higher levels of EI are associated with better patient–clinician relationships and teamwork, and thus are essential to person-centred care.[20] Moreover, higher levels of EI in clinicians are also associated with increased patient satisfaction,[21] whilst simultaneously resulting in a reduced risk of physician burnout.[22] In this case, we would need to first identify the key elements of EI required to understand and exhibit behaviours consistent with person-centred care delivery. Second, existing approaches to measuring these elements could then be used (or adapted for use) to assess those applying for health care roles. Moreover, facets of EI could be targeted for training, education and development for those already working in the health professions. However, before we explore the measurement issues relating to EI, given its controversial status over the years, we will first examine its more recent conceptualisations.

3 | THE RISE AND FALL … AND REVIVAL OF EI

EI is defined by the Oxford English Dictionary as "*the capacity to be aware of, control, and express one's emotions, and to handle interpersonal relationships judiciously and empathetically*".[23] In the context of medical selection and education, constructs related to EI are sometimes subsumed under the umbrella term of 'non-academic' skills or qualities.[24] At times, they have also been referred to as 'non-cognitive' traits.[25] However, neither term is entirely satisfactory as the two-way relationship between EI and cognitive performance is now well recognised[26] and the contribution of 'softer', interpersonal skills to academic achievement is also evidenced.[27]

Though the term EI was first used in the 1960s, it was Goleman's subsequent book, of the same name, that popularised the term. This encapsulated prior concepts, including 'social skills' and 'empathy'.[28] Despite the initial public, if not academic, enthusiasm for EI, over the last three decades or so the concept has been subject to some degree of criticism. First, the analogy with intellectual ability, which can be, at least crudely, summarised with a single number ('intelligence quotient [IQ]') turns out to be untrue. Indeed, the often culturally specific, and poorly correlating facets of EI make the concept of an 'emotional quotient' (EQ) meaningless.[29] Second, the overblown claims that EI is a better predictor of occupational performance than cognitive ability ignores the fact that such research has been conducted in populations largely pre-selected (directly or indirectly) based on intellectual performance. Third, there appears to be a lack of empirical support for many of the earlier models cited, with many adding little to existing theories

of personality.[30] In the absence of robust models it becomes unclear how the differing facets of EI should be measured.

Despite these issues, given the potential implications for physician performance,[31] many in medical education remain relatively enthralled with the concept of EI. For example, EI has sometimes been proposed as an emergent phenomenon, and a distributed and ecological activity.[32] Whilst there is some merit to considering EI in this manner, more recent advances in conceptualisation and measurement are more likely to prove useful in a clinical education context. Indeed, it has even been suggested that the teaching of EI should be included in the medical school curriculum.[33]

4 | THE ELEMENTARY PARTICLES OF EI? THE CASCADING MODEL

Much of the EI-related research in the early 2000s was marked by acrimony between two schools of thought. One conceptualised EI as a trait, in line with personality theory and best measured using self-report assessments. The alternative school considered EI as a set of related skills, akin to cognitive ability, measured through performance on particular tasks. Thankfully, more recently, these alternative views have been reconciled and integrated into 'mixed models' of EI that recognise interacting traits and abilities that are important in navigating both the emotional and social environment. More recently, such a model has been both extended to include cognitive ability and the relevant personality traits of conscientiousness and emotional stability (see Figure 1). This model is named the 'cascading model' as the facets of EI are postulated to be hierarchically dependent on each other. It has been empirically tested with data from published studies. Moreover, the findings from meta-analyses used to test the cascading model highlight that ability-based measures of EI tend to positively predict performance in jobs involving significant levels of emotional labour.[34]

The cascading model is an extension of an earlier, 'four branch' ability model of EI that described how individuals perceive, regulate and think about emotions.[35] The four branches are the following: *perceiving emotions* (recognising emotions in oneself and others), *using emotions* (the ability to generate emotions and use them to guide thought and action), *understanding emotions* (comprehending emotions and their meanings and appropriateness in context) and *managing emotions* (regulating emotions in oneself and others). The cascading model extends this model by hypothesising that a hierarchical relationship exists between some of these elements, and other relevant constructs, to achieve effective job performance. It posits that the ability to emotionally self-regulate is important to maintaining the correct mental states (e.g. positive mood, arousal level etc.) to optimally perform at work. This, in turn, depends heavily on an ability to understand emotions, both in oneself and in others. This, likewise, requires a sufficient ability to perceive and accurately label emotions in oneself and in others. This postulated ability to maintain in oneself the correct mental state to optimise work performance has clear implications for the consistent delivery of health care that is compassionate and
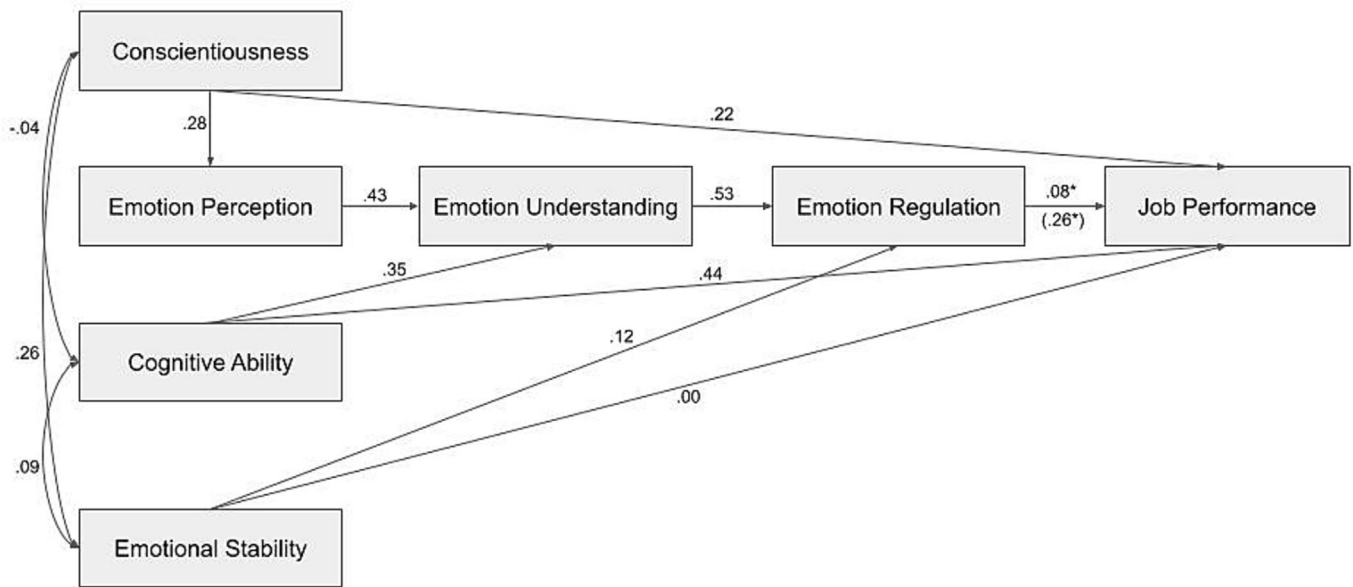
FIGURE 1 The cascading model of emotional intelligence. (Adapted from Joseph and Newman[34]). *For jobs involving emotional labour the coefficient was 0.26 and only 0.08 otherwise.

collaborative in nature. This is especially true given the evidence that positive, desirable attitudes can quickly be eroded by the challenges of the actual health care environment.[36] The cascading model could be adapted in ways that would increase its relevance to educating students, and to practitioners in a way that supports them in consistently delivering person-centred care.

5 | WHAT EI-RELATED TRAITS AND ABILITIES ARE REQUIRED FOR 'PERSON-CENTREDNESS'?

Responding agreeably to interpersonal challenges may be an important component of delivering person-centred care. However, it is clear that this approach requires more than this factor. Achieving clinical competence and consistently striving to meet patients' needs require a certain level of conscientiousness. This is defined as the personality trait of being careful or diligent.[37] Within the concept of conscientiousness, there are other facets, such as *attention to detail*, *dependability*, *efficient goal-getting*, *achievement striving*, *time management* and *perseverance* that will be important to effective health care delivery.[38] Likewise, acquiring both semantic and procedural knowledge and skills required for effective clinical practice requires cognitive ability. To provide truly collaborative care, numerous socioemotional 'microprocesses' are also involved. For example, the patient should feel that the clinician has a genuine concern for their well-being, leading to a good rapport. This will require that the clinician is able to accurately perceive the emotional state in the patient, as well as regularly observe and reflect on their own feelings and responses. An understanding of the patient's attitudes, preferences, hopes, fears and values should be elicited and understood. The clinician must then

respond, verbally and non-verbally, in a way that optimises the probability of achieving a positive, shared future goal. This response will consider how the available resources (including the patient's) can be collaboratively coordinated in order to meet as many of the presenting health and quality of life needs as possible.

This complex set of interpersonal interactions could be considered fractal in nature. That is, the closer we look, the more granular the picture, with activation of specific brain areas involved with empathy, emotional regulation and decision making. However, for the purposes of considering workforce recruitment, selection and education, it is neither necessary nor desirable to descend to the neuronal level. Rather, what is needed is a model that identifies the key traits and abilities that are at least necessary, if not individually sufficient, conditions for delivering person-centred care. There should be evidence that such factors are measurable, at least to a degree that is pragmatically useful for personnel selection purposes. The ability to quantitatively measure these constructs would also allow such a model to be empirically tested across a variety of clinical and educational settings.

6 | MEASURING RELEVANT ASPECTS OF EI AND RELATED PERSONALITY TRAITS

Existing instruments developed to measure key elements of EI have been criticised on several grounds. One of the major objections raised has been the difficulties in selecting a valid scoring system.[32,39] That is, should scoring be based on theory, the majority choice ('wisdom of the crowd') or what the individual portrayed in a scenario was actually feeling? It is likely that the most valid scoring system will depend on which of these possible validity-criteria are selected. In this context, the validity-criterion is another measure or outcome that can be used

to evidence the usefulness of a test. More generally, the correlation of test scores with other variables known to be related to the construct under evaluation provides evidence of construct-validity (i.e. that the test measures what it purports to).

Despite these challenges, a range of instruments exist that aim to estimate both key elements of both EI-related abilities and traits.[40] However, in terms of medical selection, it is the EI ability-related measures that have most potential. Indeed, self-report measures of personal qualities tend to show little relationship with either future academic performance[25] or conduct problems during medical school.[41] The most researched and supported measure of ability-based EI is the Mayer, Salovey, Caruso Emotional Intelligence Test (MSCEIT).[42] It is conceptually based upon the 'four branch' model of EI, on which the cascading model is derived. The MSCEIT aims to measure the dimensions of *perceiving emotions*, *facilitating thought*, *understanding emotions* and *managing emotions*. However, the test is time-consuming and relatively expensive to use; hence, it may be challenging to implement at scale. It is also worth noting that a previous study failed to observe a meaningful relationship between the total MSCEIT score at medical school application and subsequent performance in a structured clinical licensing examination.[43]

SJT format assessments have been widely used and have compelling validity evidence for evaluating 'non-academic' qualities in medical selection.[44] However, as highlighted earlier, such instruments rarely conform to the assumptions underlying fundamental measurement and, in particular, that of unidimensionality.[18] This poses some practical challenges in using them. For example, it is not always clear what specific constructs are actually being assessed. There are also challenges in 'test-equating' across different forms of a traditional SJT. Test-equating is a statistical process that ensures fairness to candidates by creating scores from different versions of an assessment that are comparable. This is an important consideration when tests need to be regularly refreshed in order to maintain integrity (e.g. prevent cheating). However, 'construct-driven' SJT-format tools are also being developed.[45] These could potentially address this issue by focussing on measuring only one tightly defined construct.[18] Indeed, SJT format assessments have already been developed to evaluate key aspects of EI. These include the Situational Test of Emotion Management (STEM)[46] and the Situational Test of Emotional Understanding (STEU).[47] The STEM aims to measure emotional self-regulation whilst the STEU is a test of emotional understanding. Some of the principles of the STEU have been recently extended in the Empathic Agent Paradigm Test (EAPT). The EAPT depicts conversations and test-takers must demonstrate emotional understanding of the characters.[39] The Diagnostic Analysis of Non-verbal Accuracy (DANVA) scale is also a validated measure of accuracy of perceiving emotion in others, from non-verbal cues.[48] Such tests, or their derivatives, could theoretically be used both in medical selection and diagnostically (i.e. feeding into the training of clinicians). The SJT format has also been suggested as a possible way of capturing situational-specific interactions with personality traits.[49] Indeed, it is likely to be the situational-specific nature of EI-related behaviours that has posed challenges when conceptualising and measuring the construct. This

can, theoretically, be at least partly addressed by applying taxonomies of social situations to the design of such SJTs.[50] This assumes that specific elements within common situations (e.g. the need to resolve conflict) will activate certain traits in test-takers. However, it is unclear at present whether such 'construct-driven' SJTs are resistant to faking and social desirability effects.[18]

As shown in Figure 1, the personality traits of conscientiousness and emotional stability (i.e. the 'inverse of neuroticism') are also included in the cascading model, though not conceptualised as facets of EI themselves. When dealing with the trait of conscientiousness, it may be that objective markers have more predictive validity for important outcomes, compared with scores from self-report measures.[51,52] These include how efficiently an individual completes administrative tasks required as part of the admissions process. However, this approach raises some ethical issues and may disadvantage certain candidates with less supportive educational and home environments. It is important that the use of such assessments in selection processes does not unduly and adversely impact certain groups being targeted as part of widening access to medicine programmes.

Another possible measurement approach for evaluating relevant personality traits might be considered: the forced-choice assessment format. This method requires the test-taker to choose between two or more options, typically presented in pairs. The format offers several potential advantages. For example, it may reduce the risk of various biases, including social desirability bias and 'faking'. This occurs when candidates in a high-stakes test (e.g. in medical selection) may deliberately, or unconsciously, provide answers that they believe will be viewed more favourably by the assessors. However, for this to be the case, the alternative responses presented must appear, on average, equally desirable, and the related traits orthogonal (uncorrelated) to each other.[53] Forced-choice assessments may also be amenable to test-equating processes.[54] Agreeableness could be, in theory, evaluated in this manner so that scores remain valid, even in high-stakes settings.

Cognitive ability is already extensively (some may say, excessively) tested in medical selection. However, it is interesting to note that it is verbal, rather than non-verbal reasoning performance, that tends to be most predictive of ratings in subsequent clinical simulations.[55] This may be partly due to the close relationship between verbal and social ability.[56] However, scores on more accurate tests of relevant 'non-academic' abilities could be traded off against measures of academic or cognitive performance in a 'pareto-optimal' manner.[57] Pareto-optimality describes the most efficient trade-offs that can made to balance one or more, usually competing, outcomes from a system against each other. A pareto-optimal state is thus present only if there are no alternative states that would improve one outcome without worsening the other. For example, in this context, this may mean a system achieving the best possible average academic performance from selected entrants, given an overall level of non-academic ability in the chosen population. This approach is likely to result in a more diverse workforce better able to meet a population's health needs.

Thus, our capacity to measure important aspects of EI, and related constructs, is increasing. However, given the breadth of medical practice it is unlikely that each component is equally important or even substantially relevant in every care context. This is an important issue that should be further explored by practitioners interested in both medical selection and clinical education.

7 | A MODEL OF EI RELEVANT TO MEDICAL CARE

The model we presented in Figure 1 can be modified in several ways to make it more relevant to the delivery of high-quality, person-centred care (see Figure 2). Here, we substituted 'job performance' for 'person-centred care' as the workplace activity of interest. In the original model (Figure 1), the relationship between 'emotion regulation' and 'job performance' is relatively weak, albeit statistically significant ($p < 0.05$). For jobs involving emotional labour, the coefficient was 0.26 and only 0.08 otherwise. Therefore, this facet of EI has been relegated to the role of a mediator between 'emotional understanding' and 'interpersonal effectiveness'. The concept of 'interpersonal effectiveness' is, in this context, drawn from Dialectical Behaviour Therapy, a psychological therapy originally developed for improving emotional regulation, distress tolerance and personal (and interpersonal) functioning in chronically suicidal patients.[58] 'Interpersonal effectiveness' is defined here as the ability to respond to emotions (both in oneself and others) in a way that increases the probability of achieving mutually beneficial goals. The facet of interpersonal effectiveness has been introduced for several theoretical and empirical reasons. First, whilst the idea of 'social intelligence' is often viewed as distinct from EI, it is historically the forerunner of the concept.[59] Second, one's emotional life cannot be effectively disembodied from the social environment. Indeed, EI itself could be viewed as a (sometimes loosely) affiliated set of traits and abilities required for effectively navigating the social world. From an empirical perspective there is evidence that concepts of EI that do not encompass elements of social behaviour (unsurprisingly) do not tend to predict actual workplace performance so effectively.[60] However, the model postulates that emotional regulation (or lack thereof) is likely to impact on interpersonal effectiveness. A widely used and validated model of personality is that of the 'Big Five' or 'OCEAN' model.[61] The acronym 'OCEAN' represents the traits of *openness*, *conscientiousness*, *extraversion*, *agreeableness* and *neuroticism* (the inverse of 'emotional stability'). Regarding personality, another modification we have made to the original cascading model of EI has been our introduction of the trait of agreeableness. Thus, now three of the five OCEAN model traits are represented in our modified model of EI. Specifically, we postulate that, in terms of delivering person-centred care, in additional to some level of emotional stability and conscientiousness, agreeableness would also be required. This would be especially true in specialties requiring higher levels of emotional labour. Agreeableness is defined as "behavioural characteristics that are perceived as kind, sympathetic, cooperative, warm, and considerate".[37] In this sense, agreeableness would seem more relevant to the delivery of person-centred care than neuroticism/emotional stability.[62] Indeed, whilst the scores from traditional SJTs tend to predict work-relevant interpersonal performance, a substantial proportion of their variance is explained by the test-taker's level of agreeableness.[63] It may be that other personality traits, such as extraversion, are also relevant to a lesser extent, but their inclusion in this model would not seem to be warranted without some theoretical and empirical justification.

8 | IMPLICATIONS FOR MEDICAL SELECTION, EDUCATION AND REGULATION

The potential usefulness of our model depicted in Figure 2 is that it provides both traits and abilities that could be targeted by both medical selection and educational processes. Specifically, medical selection could focus on screening out those with low levels of the traits less amenable to training. The potential for EI measures to enhance medical selection is not a new suggestion.[64] However, the issue is likely to
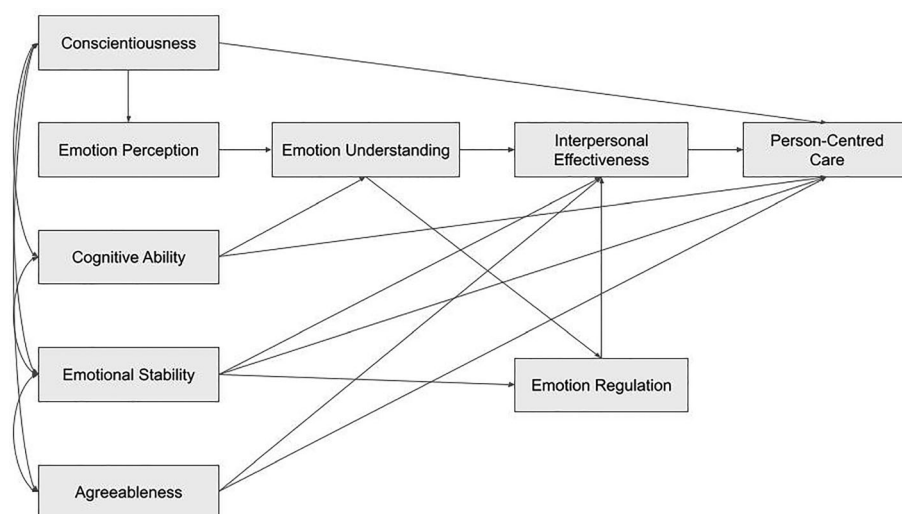
FIGURE 2 A model of emotional intelligence (EI) in relation to the ability to deliver person-centred, adapted from the "cascading model" of EI.[34]

be complex. The desirable traits should not be assumed to have a linear relationship with the outcome of interest. That is, it is possible that a threshold of 'conscientiousness' is required, after which increasing levels of this trait may not add, or even impair, interpersonal or workplace effectiveness.[65] Moreover, it has been suggested that, regarding empathy, it is a medical school applicant's *potential* to develop this ability, rather than their absolute level, that is of most importance.[66]

Once selected candidates enter training, and indeed practice, efforts should be made to develop educational programmes that develop and maintain the skills, attitudes and behaviours critical to the delivery of person-centred care. Meta-analytic evidence suggests that aspects of EI can be taught.[67] For example, varieties of educational approaches have been shown to potentially improve empathy in clinicians, for example, where it is highly pertinent to care, in mental health services.[68] Moreover, interpersonal skills training (including emotional regulation) may reduce clinicians' feelings of burnout in 'high emotional labour' workplaces.[69] Staff training can also reduce coercive practices in mental health care.[70] As mentioned earlier, scores from SJTs used in medical selection generally predict interpersonal effectiveness and professionalism.[44] This implies they have potential to be used, educationally, as 'scenario-based learning' simulation tools, as well for selection. Indeed, there have been some attempts to develop such tools for newly qualified schoolteachers.[71]

Advances in digital educational approaches also provide an opportunity to extend the reach of human trainers with interactive approaches improving learner engagement.[72] The use of emotionally engaging narratives in training material can also foster cultural competence, empathy and ethical insights.[73] Thus, existing literature, though of variable quality, highlights the elements of training approaches likely to improve key aspects of EI. These should be personalised, immersive, emotionally connecting, include regular feedback, longer term (e.g. involve 'top-up' training) and enhance, rather than replace, the work of human trainers.[67] Elements of 'gamification' (e.g. 'league tables') can also improve learner engagement.[74] Thus, in a post-COVID world, such training can be delivered online, facilitating access to regular, 'bite-sized' training experiences.

9 | DIRECTIONS FOR FUTURE RESEARCH

We have highlighted how some of the fundamental elements of EI have now been identified and the means to measure them are being developed. In medical education, it may be more fruitful to examine the associations between these specific skills and traits with patient-related outcomes of interest, rather than with EI as a more multidimensional construct. For example, the study reporting a relationship between physician empathy and patient adherence.[75] There are currently very few examples of such research.

It will be important to develop new measures for key aspects of EI, and related traits, that are able to accurately differentiate individuals even under high-stakes testing conditions during medical selection. It is important that such assessments do not adversely impact

certain groups being targeted for widening access to medicine. Moreover, constructs related to EI are known to vary across geographies and cultures.[76] This must be accounted for when designing both measurement systems and associated scoring rubrics, as well as educational interventions. However, many of the skills required for 'cultural competence' are encapsulated by our model shown in Figure 2; for example, the ability to observe discomfort in a patient during a clinical consultation and respond to it appropriately. Moreover, even the concept of person-centred care may vary across cultures. Nevertheless, it has been highlighted that the concept of cultural competence and person-centred care are interdependent. Both are said to rely on abilities encapsulated by key aspects of EI, including identifying and negotiating different styles of communication, decision-making preferences and issues of mistrust.[77]

It might be that the emerging field of 'computational psychometrics', which combines predictive, artificial intelligence (AI)-based approaches with other digital technologies, may be invaluable in addressing this challenge.[78] Moreover, if EI is also to be recognised as an emergent property of groups, then it is possible to use computational psychometrics to model how an individual behaves or emotionally reacts when he/she is part of a team, for example, when competing in a video game.[79] Such dynamic approaches to measuring or developing clinically relevant aspects of EI may also be better able to capture its situationally specific components.[80] Likewise, developing and maintaining key aspects of EI in practising clinicians could harness such technologies, presumably to extend rather than replace, the role of human trainers. This blended digital/human approach may be particularly useful in teams that do shift work, which makes access to training opportunities more difficult to access.[73] Gamification and emotionally connecting narratives as part of role-played simulations would also likely support learner engagement and increased empathy with patients, carers and colleagues.[67,72,74]

Importantly, it will be vital to evaluate whether attempts to select on, and develop, EI-related abilities and traits result in actual patient benefit. Indeed, it has been highlighted that whilst progress has been made with regard to the measurement of components of EI, there is relatively little evidence to link the construct with desirable clinical outcomes.[29,64] Approaches to selecting for, or developing, EI-related abilities are complex interventions. As such they are context-dependent and have both intended and unintended outcomes. Thus, process-type evaluations, including realist approaches, perhaps alongside randomised controlled trials, may be required.

10 | CONCLUSION

A lack of clear conceptualisation, validated measures and robust research has slowed the advance of evidence-based 'values-based recruitment' in medicine. Indeed, the emphasis on 'values' may have hindered attempts to effectively select and develop health care staff capable of actually delivering compassionate and effective care. By creating a model of the 'elementary particles' that are needed for person-centred care, we have provided a roadmap that can direct

future research and policy developments in this area. Moreover, as medicine becomes more automated, the human qualities of physicians will become increasingly important to health care delivery.

AUTHOR CONTRIBUTIONS

PAT led on the conception and writing of this article. RDR also contributed to the writing of the paper and appraising, reviewing, and editing the content. The views and opinions expressed in this article are those of its authors, and do not necessarily represent any of the authors' host affiliations.

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CONFLICT OF INTEREST STATEMENT

The authors do not have any conflicts of interest to declare.

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ETHICS STATEMENT

Ethical approval was not required.

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