Do doctors' attachment styles and emotional intelligence influence patients' emotional expressions in primary care consultations? An exploratory study using multilevel analysis

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Abstract

Objective: To investigate whether and how doctors' attachment styles and emotional intelligence (EI) might influence patients' emotional expressions in general practice consultations.

Methods: Video recordings of 26 junior doctors consulting with 173 patients were coded using the Verona Coding Definition of Emotional Sequences (VR-CoDES). Doctors' attachment style was scored across two dimensions, avoidance and anxiety, using the Experiences in Close Relationships: Short Form questionnaire. EI was assessed with the Mayer-Salovey-Caruso Emotional Intelligence Test. Multilevel Poisson regressions modelled the probability of patients' expressing emotional distress, considering doctors' attachment styles and EI and demographic and contextual factors.

Results: Both attachment styles and EI were significantly associated with frequency of patients' cues, with patient- and doctor-level explanatory variables accounting for 42% of the variance in patients' cues. The relative contribution of attachment styles and EI varied depending on whether patients' presenting complaints were physical or psychosocial in nature.

Conclusion: Doctors' attachment styles and levels of EI are associated with patients' emotional expressions in primary care consultations. Further research is needed to investigate how these two variables interact and influence provider responses and patient outcomes.

Practice Implications: Understanding how doctors' psychological characteristics influence PPC may help to optimise undergraduate and postgraduate medical education.

1. Introduction

Effective patient-provider communication (PPC) is an integral part of high-quality healthcare [1, 2]. In addition to aiding effective diagnosis, treatment, referral and decision-making, effective PPC confers a number of patient benefits, including greater satisfaction with the standard of care, increased understanding of health concerns and treatment options, better recall of information and increased treatment adherence [3-10]. As such, PPC is identified by regulatory bodies as a core component of clinical practice [11, 12], and is an integral part of undergraduate and postgraduate medical education curricula worldwide [1, 13-16].

Effective PPC arguably plays a particularly valuable role in primary care, given that, in the United Kingdom, primary care consultations often represent patients' first access to medical or mental health services [17], yet last, on average, only 7 to 10 minutes [18]. However, there remains substantial variation in primary care providers' ability to identify and respond to patients displaying signs of emotional distress, indicating a need for targeted investigation of the factors associated with individual differences in their PPC [19]. Two related psychological theories may provide a theoretical framework for understanding why providers demonstrate different PPC behaviours when faced with the same situational stimuli: attachment theory, and the theory of emotional intelligence (EI) [20-25][26-34].

Attachment theory is a theory of psychosocial development, which posits that individuals form enduring patterns of interpersonal behaviour through internalisation of interactions with their primary carer(s) in infancy [35]. These patterns are represented cognitively in the form of an internal working model (IWM) of attachment, which subsequently influences behaviour in close relationships throughout the lifespan, particularly care-giving or care-seeking relationships such as the patient-provider relationship [23, 35]. Two main dimensions of adult attachment have been proposed: attachment anxiety (characterised by habitual preoccupation and over-involvement in close relationships combined with fear of abandonment), and attachment avoidance (characterised by difficulty in trusting others, devaluation of close relationships and avoidance of intimacy) [36]. Emotional intelligence develops in childhood partly as a function of attachment style [37], and can broadly be defined as the ability to understand, perceive, use and manage their own and others' emotions [38]. As such, EI is a multifaceted ability which encompasses skills in not only empathy (the ability to understand and share another's emotions) but also in emotional regulation, management and self-perception [38].

Prior research indicates that both attachment style and EI are independently associated with PPC, particularly providers' abilities to acknowledge and respond to patients' cues of

emotional distress [20, 22, 39-42]. However, whilst attachment is thought to remain relatively stable throughout the lifespan [43], EI is developmental [44] and can be enhanced throughout medical education using targeted educational interventions [45, 46].

Informed by these data, we developed a theoretically-informed model of PPC in which we hypothesised that attachment would indirectly influence providers' PPC by negatively influencing their EI. We tested this model in first- and second-year medical students, communicating in a summative Objective Structured Clinical Examinations (OSCE) [20, 22]. In both studies, support for this model was gained, but interestingly, EI had a stronger influence when more global PPC competence was considered [47]. Collectively, these data provide insight into the influence of early-year medical students' attachment styles and EI on their PPC during early undergraduate medical education, and have important educational implications for undergraduate medical curricula. However, the generalisability of these findings to real life clinical practice is unclear, given that medical students' PPC with patients in simulated settings may differ significantly from their PPC with real patients in a clinical setting [48, 49]. The current study aims to builds on the findings of Cherry et al. [20, 22] by investigating whether and how doctors' attachment styles and emotional intelligence (EI) influence real patients' emotional expressions in general practice (GP) consultations. By doing so, we will be better able to make theoretically-informed and evidence-based suggestions on how to improve undergraduate and postgraduate training and education.

2. Methods

2.1 Ethical approval

UK National Health Service (NHS) ethical approval was granted (reference 10/H1005/64).

2.2 Participants and procedure

Junior doctors and their patients were recruited from 20 GP practices within North West England, UK. Doctors were recruited during their GP placement; patients (aged 18 years or over) were recruited in the order that they attended consecutive appointments with participating GPs. Participation was voluntary and informed written consent was sought. Consultations were video-recorded; the camera was only directed at the doctors, no physical examinations were recorded and only the doctor and patient were present during the consultation.

2.3 Measures

Patients completed a demographic questionnaire assessing age range, perceived health status, and whether they had seen the doctor before. Doctors completed a demographic questionnaire (assessing age, gender and ethnicity), a measure of adult attachment and a measure of EI.

Adult attachment was assessed using the 12-item Experiences in Close Relationships: Short Form (ECR-SF) questionnaire [50]. Participants rate the extent to which each item describes their feelings about close relationships (e.g. "I need a lot of reassurance that I am loved by my partner") using a 7-point Likert scale. Responses produce two subscale scores, attachment avoidance and attachment anxiety, which correspond to the two-dimensional model of adult attachment [36]. Both subscales range from six to 42, with low scores indicating low levels of attachment avoidance and/or attachment anxiety. The ECR-SF demonstrates acceptable construct validity with the original ECR, and displays good internal consistency and six-month test-retest reliability [50]. We did not estimate the internal consistency of the ECR-SF in this sample because our sample size did not exceed the minimum recommended sample size for calculating Cronbach's alpha (REF).

EI was assessed using the Mayer-Salovey-Caruso Emotional Intelligence Test (MSCEIT) [44], a 141-item ability-based measure of the perception, facilitation, understanding and management of emotions in oneself and others. Responses produce four Branch scores (Figure 1), from which Area and Total EI scores can be calculated. All are computed as empirical percentages positioned on a normal distribution curve (mean = 100; standard deviation = 15). The measure demonstrates high reliability (total EI score of 0.92, experiential EI score of 0.90 and strategic EI score of 0.85 [44]); it was not possible to determine the psychometric properties of the MSCEIT in this study given that scores are computed by the test publisher.

2.4 Coding Cues and Concerns

The Verona Coding Definition of Emotional Sequences (VR-CoDES) [51], a well-validated coding scheme, was used to code patients' utterances of emotional distress. The VR-CoDES handbook defines a cue as "a verbal or non-verbal hint which suggests an underlying unpleasant emotion and that lacks clarity", and a concern as "a clear and unambiguous expression of an unpleasant current or recent emotion where the emotion is explicitly verbalised" [51]. MGC was first trained in the use of the VR-CoDES by IF, an expert coder who helped to develop the VR-CoDES. A random sample of 20 practice transcripts were coded to establish inter-rater reliability; Krippendorff's alpha was .93, indicating the MGC was competent to code data independently. MGC coded all videos directly so as to preserve tone of voice and context. Coding was overseen by IF.

2.5 Analysis

Cues and concerns were collapsed together (referred to as 'cues/concerns' from hereon in). Pearson's product-moment correlations, independent sample t-tests, Chi-squared tests and

one-way ANOVAs were used as appropriate for preliminary data exploration. Relevant patient-level and doctor-level variables were then transformed into dummy variables for analysis. A series of multilevel models investigated the predictive value of both patient-level and doctor-level variables on the outcome measure. As patients (Level 1) were grouped within doctors (Level 2), the general framework of multilevel models was assumed where the dependent variable(s) were assumed to follow a distribution belonging to the exponential family. A two-level random intercept Poisson model was fitted, in which patients were assumed to be random units sampled from the larger patient population. Doctors' unique study numbers were used to account for clustering at the doctor level (equivalent to incorporating a doctor-specific random effect into the modelling framework). Number of cues was first modelled as a function of the characteristics collected for each patient until a final patient-level model was obtained. Backward selection was based on Wald tests and non-significant covariates were removed from the model ($\alpha = .05$). All excluded covariates were evaluated for their potential confounding effect by evaluating their influence on the coefficient of the remaining variables in the model. Doctor-level explanatory variables were then added to the model. Descriptive and exploratory analyses were performed in SPSS 20.0.1 [52]. Stata (version 12.0) was used to fit the Poisson models [53].

3. Results

3.1 Sample characteristics

The final sample comprised 26 doctors consulting with 173 patients. Doctors were primarily White British (*n* = 24; 92.31%) and female (*n* = 21; 80.77%), with a mean age of 26.61 years (SD = 3.32, range 24 to 38). The mean number of video-recoded consultations per doctor was 6.65 (SD = 1.92, range 4 to 11); mean consultation length was 17 minutes and 20 seconds (SD = 56.40 seconds). Most patients were female (*n* = 99; 57.23%), aged between 25 and 44 years (*n* = 65; 37.57%) and rated their health as good, very good or excellent (n = 134; 77.45%). Two thirds of patients (*n* = 112; 64.74%) were consulting with the participating doctor for the first time. Participating doctors recorded patients' presenting complaints to be psychosocial in nature for 26 patients (15.03%) and physical for 147 patients (84.97 %). Psychosocial presenting complaints included panic attacks, low mood, dissociation and anxiety. Physical health complaints included chest infections, urinary tract infections, and lower back pain.

Table 1 displays doctors' ECR:SF and MSCEIT scores. No significant differences in participating doctors' scores were found according to their gender, age or ethnicity. Significant negative correlations between attachment avoidance and Branch 1 (Perceiving Emotions; r = -.40, p < .05), Area 1 (Strategic EI; r = -.39, p < .05) and total EI scores (r = -.43, p < .05) were found. Attachment anxiety was not significantly correlated with any EI score.

[INSERT TABLE 1 HERE]

3.2 Number of cues/concerns and responses

The mean number of cues/concerns per consultation was 2.33 (SD = 3.86, range 0-24); 79 consultations (45.67%) contained no cues. Patients with psychosocial complaints presented significantly higher numbers of cues (M = 5.02, SD = 4.64) than those with patients with physical health complaints (M =1.15, SD = 2.69), t(171) = 6.85, p = .00). No significant differences in the number of cues/concerns elicited per consultation were found relative to either doctor or patient gender. Table 2 displays examples of cues and concerns presented during consultations.

[INSERT TABLE 2 HERE]

3.3 Multilevel modelling

History with the doctor (i.e. whether it was the patient's first visit to the doctor) and type of presenting complaint (i.e. psychosocial or physical) were included in the final patient-level model. Both significantly influenced cue/concern presentation and increased the variation in cue/concern presentation between doctors (Model 1 σ_u = .51 (SE =.10), Model 2 σ_u = .61 (SE=.11)), accounting for 31.47% of the variance in cue/concern presentation between patients (calculated using proportionate change in log likelihood). Number of cues/concerns was then modelled as a function of the characteristics collected for each doctor, which were entered collectively into the final patient-level model. Attachment anxiety was the only doctor-level explanatory variable significantly associated with cue presentation, with a decrease of .11 cues/concerns per one unit increase in attachment anxiety (p = .00). Neither total EI nor attachment avoidance significantly influenced cue/concern presentation. Consideration of doctor-level explanatory variables further increased the variation in cue/concern presentation between doctors (Model 2 σu = .61 (SE = .11), Model 3 σu = .78 (SE = .16)), accounting for an additional 2.94% of the variance in cue/concern presentation

between patients (calculated using proportionate change in log likelihood). To assess the interaction between doctor-level characteristics and patients' presenting complaint, an interaction variable was calculated for attachment avoidance, attachment anxiety and total EI by multiplying each by the 'psychosocial' patient covariate. These interaction variables were then entered collectively into Model 3 (Table 3).

[INSERT TABLE 3 HERE]

Attachment anxiety was significantly negatively associated with cue/concern presentation in patients presenting with a physical health problem, with a decrease of .15 cues/concerns per one unit increase in attachment anxiety (p = .00). There was no significant difference in effect of attachment anxiety between those presenting with psychosocial health problems and those presenting with physical health problems. Inclusion of the interaction terms to Model 3 resulted in a significant positive association between EI and cue/concern presentation, with a decrease of .05 cues/concerns per one unit increase in total EI (p = .00) in patients presenting with a physical health problem. There was a significant difference in the effect of total EI between those presenting with psychosocial health problems and those presenting with physical health problems, with an increase of .07 cues/concerns per one unit increase in total EI (p = .00) in patients presenting with psychosocial health problems compared with those presenting with physical health problems. Attachment avoidance had no influence on cue/concern presentation in patients presenting with a physical health problem but significantly positively influenced cue/concern presentation in patients presenting with psychosocial health issues, with an increase of .23 cues/concerns per one unit increase in attachment avoidance (p = .00) compared with those presenting with physical health problems. Consideration of the interaction terms in addition to the doctor- and patient-level variables in Model 3 reduced the variation in cue/concern presentation between doctors (Model 2 σu = .61 (SE = .11), Model 3 σu = .80 (SE = .16)) and accounted for an additional 10.43% of the variance in cue/concern presentation between patients (calculated using proportionate change in log likelihood).

4. Discussion and Conclusions

4.1 Discussion

This study investigated whether and how doctors' attachment styles and emotional intelligence (EI) might influence patients' emotional expressions in GP consultations. Both

attachment and EI were significantly associated with patients' emotional expressions, with patient- and doctor-level explanatory variables accounting for 41.90% of the variance in patients' cue/concern presentation. Collectively, these data support previous findings and indicate the importance of considering the influence of doctors' psychological characteristics on PPC.

After controlling for significant patient-level explanatory variables, doctors' attachment anxiety was significantly associated with patients' cue presentation, with a decrease of .11 cues per one unit increase in attachment anxiety. Attachment anxiety is characterised by hyper activation of affect regulation strategies, in which the individual overreacts to negative feelings in order to gain support from others [35]. As such, it is possible that doctors high in attachment anxiety may have elicited fewer cues from patients than those lower in attachment anxiety due to adopting an over-intensive questioning style when initially presented with cues/concerns, thus resulting in less chance of patients re-presenting their cues/concerns [25, 41, 54, 55]. Interestingly, no differences were found in the effect of attachment anxiety on cue presentation between patients presenting with psychosocial health problems and those presenting with physical health problems, potentially indicating a standardised approach to cue responding regardless of patients' presenting complaints. However, it must be stressed that the focus of the study was on patients' cue presentation; because we did not consider doctors' responses to patients' cues, this interpretation, although theoretically-informed, should be considered speculative at present.

Whilst attachment avoidance had no influence on cue presentation in patients presenting with a physical health problem, it significantly positively influenced cue presentation in patients presenting with psychosocial health issues, with an increase of .23 cues per one unit increase in attachment avoidance when compared to patients with physical health problems. Salmon et al. [25] hypothesise that attachment processes are only activated in consultations characterised by psychosocial discussion, such as those typical of patients presenting with psychosocial health complaints. When presented with cues of emotional distress, doctors high in attachment avoidance may withdraw from the doctor-patient interaction by demonstrating less intensive and more evasive responses to cues, hence resulting in re-presentation of cues from this patient group only. This explanation is in-keeping with the findings of Del Piccolo et al. [54], who suggest that cue frequency may be a result of doctors' attributions of patients' psychosocial distress, rather than an antecedent. However, further sequence analysis is

required in order to clarify the relationship between doctors' responses and patients' subsequent cue presentation.

Total EI had a negative influence on cue presentation in patients presenting with a physical health problem, with a decrease of .05 cues per one unit increase in total EI. EI may therefore be positively related to ability to assess appropriateness of response; doctors with high EI may realise when it is appropriate to enquire about emotion and when, instead, to pursue a purely biomedical agenda in line with the patients' needs, thus reducing their cue presentation. This in in keeping with Mayer and Salovey's ability model of EI, which posits that individuals high in EI do not merely demonstrate empathic understanding and response to another's distress, but rather have the ability to adequately recognise, understand, use and manage both another's distress *and* one's own emotions in the most appropriate way [38]. Interestingly, total EI significantly positively influenced cue presentation in patients presenting with psychosocial health issues, with an increase of .07 cues per one unit increase in total EI. Doctors with high EI may therefore be better able to identify patients' psychological distress, and thus elicit more cues than their less able counterparts in patients with psychosocial health complaints [56, 57]. They may also be more likely to use facilitative behaviours when interacting with patients showing emotional distress, which have been shown to increase cue presentation in patients with psychological health problems [57]. This is an area that would benefit from further research, given the preliminary nature of the findings.

4.1.1 Methodological Strengths, Considerations and Possible Limitations

The current study is the first to explore the relationships between attachment styles, EI and PPC in a postgraduate doctor sample consulting in a clinical setting. A strength is in the precision of baseline data and the triangulation and further investigation of the findings of Cherry et al. [20, 22]. However, several limitations must be considered. The sample size was somewhat lower than the recommended 30/30 (i.e. 30 at Level 2 each consulting with 30 at Level 1 [58-60]), which may have reduced the robustness of the analyses. The self-selecting nature of the cohort may have limited the generalisability of the findings. Furthermore, it was not possible to examine differences in characteristics or presenting complaints between consenting and non-consenting patients. Fourth, although analyses and interpretation of findings were theoretically-informed, the cross sectional nature of the study means that we are unable to imply causation or directionality from the data. Finally, we were unable to

adjust models for consultation time because we did not have accurate information recorded (some doctors turned off the cameras prior to physical examinations). As a recommendation for future research, we would suggest that consultation time is accurately recorded, thereby permitting control for this factor in statistical analyses.

4.2 Conclusions

Although exploratory in nature and limited by the relatively low numbers of doctors, this study provided preliminary data in support of the findings of Cherry et al. [20, 22], namely that providers' attachment styles and EI are related to their PPC. These data add to the growing body of literature suggesting the importance of considering attachment theory and EI with respect to PPC.

4.3 Practice Implications

Further research should focus on investigating how these two variables interact and influence both provider responses and patient outcomes, drawing from larger and more representative patient and doctor populations. In particular, sequence analysis would provide rich data regarding the relationships between attachment, EI, providers' responses and patients' cues, and may allow determination of whether emotional expressions are always desirable and one criteria of a successful consultation, or whether they point to missed opportunities by doctors. Consideration of this initial research recommendation would allow for further confidence in the stability and validity of these data. Providing that these findings are generalisable to other populations and settings, three practice points can be proposed. First, PPC skills should continue to be formally taught and assessed during undergraduate and postgraduate medical education, and should encourage development of the skills involved in identification and responding to patients' cues. Second, educating students about the potential influence of their attachment styles on their PPC may form a valuable contribution to undergraduate and postgraduate medical education curricula. This could help students to understand how their conscious feelings about close relationships may influence their PPC and develop students' awareness of their own attachment styles and how to use them, or compensate for them, effectively. Education may also assist practising doctors to identify situations in which their attachment styles may influence their PPC. Third, EI should be viewed as an attribute that can be nurtured throughout an individual's undergraduate medical education [45]. Curricula should consider integrating teaching designed to improve or develop students' EI into existing PPC skills' teaching at undergraduate level. This teaching

should be based on a solid, ability-based conceptual framework, such as Salovey and Meyer's[61] four-branch ability model [61], and should i) emphasise the relationship between attachment and EI and ii) specifically focus on the influence of medical students' emotional reactions on their behaviours, cognitions and subsequent learning experiences [62]. This would allow for students to be aware of the influence of their attachment styles prior to interacting clinically with patients or simulated patients, and also provide students with the maximum opportunity to develop EI-related skills prior to graduation.

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1 Table 2: Examples of cues and concerns presented during consultations

Emotional expression	**Definition**	**Examples**
CONCERN *Clear verbalisation of an unpleasant emotional state*	Emotion is current or recent and issue of importance is not stated.	*P: I think I'm down a little bit* *P: I'm worried about my health*
	Issue of recent or current importance is stated (life events, social problems, symptoms, other issues).	D: Do you think there are any worries that keep you up? *P: Yes, my job does worry me, I have to say, and I do lay awake at night thinking 'what if?'* *P: This [medical complaint] won't go away and I'm getting quite worried about it now*
CUE *Expression in which the emotion is not clearly verbalized or might be present* *The criteria of currency/recentness is not applicable*	a. Words or phrases in which the patient uses vague or unspecified words to describe his/her emotions.	D: How are you doing? *P: Not very good…* D: How are you? *P: I'm getting there…*
	b. Verbal hints to hidden concerns (emphasizing, unusual words, unusual description of symptoms, profanities, metaphors, ambiguous words, double negatives, exclamations, expressions of uncertainties and of hope regarding stated problems).	*P: I've got the whirlies a little bit, in my head* D: How do you feel? *P: I still feel like I'm about to burst* *P: I feel like I'm getting electric shocks all in my leg*

	c. Words or phrases which emphasize (verbally or non-verbally) physiological or cognitive correlates (regarding sleep, appetite, physical energy, concentration, excitement or motor slowing down, sexual desire) of unpleasant emotional states	*P: I can't sleep at night, I'm up and down* *P: I am knackered [tired] all the time... I am knackered*
	d. Neutral words or phrases that mention issues of potential emotional importance which stand out from the narrative background and refer to stressful life events and conditions.	P: *I'm finishing my PhD off at the moment* P: *My father died of a heart attack*
	e. A patient-elicited repetition of a previous neutral expression (repetitions of a neutral expression within the same turn are not included).	None identified in the videoed consultations
	f. Non-verbal expressions of emotion	*Crying* *Sighing* *Sobbing*
	g. Clear expression of an unpleasant emotion, which occurred in the past (more than 1 month ago) or is without time frame	*P: I've had anxiety in the past* *P: We didn't talk for the first six weeks of the new year. It affected me a lot. I was very depressed.* *P: My mood was really erratic for about six months.*

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