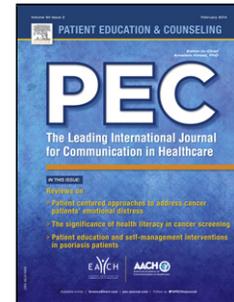


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Attachment styles and clinical communication performance in trainee doctors

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Highlights

- **Trainee doctors' attachment style predicts summative communication and clinical performance**
- **Attachment anxiety predicts clinical competency and examiner global impression of communication**
- **Attachment avoidance additionally predicts interviewing style**

Abstract

Objective: To investigate the relationship between trainee doctors' attachment style and their performance in qualifying clinical and communication skills assessments.

Methods: Participants were 190 undergraduate medical students whose performance was assessed by examiners across two areas (communication and clinical skills) during their qualifying Objective Structured Clinical Examination (OSCE). Simulated patients also rated communication skills. Participants' attachment style was rated across two dimensions, avoidance and anxiety, with the Relationship Questionnaire (RQ).

Results: Lower levels of attachment avoidance and anxiety were significant predictors of higher performance in both communication and clinical skills.

Conclusion: Trainee doctors' attachment styles are associated with patient communication and clinical performance. Further research is needed to investigate the impact of attachment on consultations between doctors and patients within clinical settings.

Practice implication: Attachment theory can inform our understanding why, for some student doctors, interacting with patients may be particularly challenging and require additional support by medical educators.

Key words: Attachment, OSCE, doctor-patient communication, clinical skills

1. Introduction

Effective health-care requires practitioners to understand biological, psychosocial and cultural factors of relevance for each patient [1]. Successful provider-patient communication is crucial for the identification of such factors, and has been associated with improved health outcomes [2-5]. With a shift in medical practice towards advocating and emphasising patients' views, concerns and emotions, patient-centred communication skills have become an important aspect of the medical education curriculum [6-7]. It is expected that through a combination of teaching and clinical experience, medical students will improve and develop their communication skills throughout training [8]. Trainee doctors are commonly assessed through Objective Structured Clinical Examinations (OSCEs) which provides a systematic method for testing specific clinical and communication skills [7, 9]. OSCEs often involve an encounter with a 'simulated patient' (an actor trained to play the part of the patient) and scenarios target different skills including communication with patients. Simulated patients (SPs) are used widely in medical education for teaching and assessment purposes, and provide a standardized method for assessing students' skills [10-11]. Using SPs within OSCEs is viewed as a useful method of assessing medical students' communication skills within a clinical consultation [9, 12]. Reliable and valid measures have been developed to assess clinical communication during these types of exams e.g. Liverpool Communication Skills Assessment Scale (LCSAS) [13-14].

The role of attachment processes in provider-patient relationships has been suggested by a number of researchers [16-19]. Attachment theory posits that an early child-caregiver relationship leads to internal working models which will continue to influence relationships in adult life [20-23]. Within the general population, attachment security provides a foundation

for care-oriented feelings and care-giving behaviours, whereas attachment insecurity can interfere with care towards others and provides a theoretical explanation for why some adults experience difficulty in forming interpersonal relationships and avoid intimacy [24-25]. Attachment status can be conceptualised as two dimensions: Anxiety/dependency (horizontal axis) and Avoidance of intimacy (vertical axis) [26-28]. *Attachment anxiety* is characterised by fear of rejection, unwarranted need for approval and distress if support is not available from close partners. *Attachment avoidance* is indicated by fears of intimacy and dependence on others, self-reliance and non-disclosure.

Attachment theory is becoming increasingly recognised as relevant to provider-patient relationships and interaction styles, however, the focus has principally been on patients' attachment style [30-31]. It is argued that when threatened by illness, patients can view doctors as an attachment figure and their working models of attachment relationships influences how they communicate during medical consultations. Recently the influence of the doctor's own attachment style has been considered within this interaction. It has been hypothesised that practitioners with positive working models of relationships will have the necessary internal resources to respond to patients' emotional needs. Whereas those who have less positive models of relationships will find managing interactions with patients, particularly those that are emotionally charged, more challenging [32, 33].

Research findings concerning health providers suggest provider attachment style can affect responses to patients' emotional/psychological distress: with securely-attached mental-health case managers better able to attend and respond to patient [34]. Attachment avoidance has been associated with difficulties making psychological inferences about patients' behaviour

in psychiatric setting, and higher attachment anxiety is significantly related to lower levels of therapeutic alliance [35]. Elsewhere it has been shown that GPs' interpersonal models affects whether they are likely to propose somatic interventions for patients presenting with medically unexplained symptoms [36]. It has been asserted that securely-attached doctors can respond most flexibly to client needs and trainee doctors should learn about their own attachment styles, to better understand how their relationship experiences may influence their clinical capabilities [37]. Hence, doctors' attachment style might have important bearing on communication within doctor-patient relationships.

The attachment paradigm may be particularly important to explore within health professionals who are still training: It has been found that dimensions of attachment (avoidance and anxiety) of trainee counsellors was associated with their level of emotional empathy and it is argued that training programmes should focus on the personal development of students [38]. During the phase of training, there is evidence that attachment styles can develop which makes this an ideal opportunity to intervene [39]. Hence it is important to understand further the relationship between attachment and trainee doctors' interactions with patients.

A systematic review of the literature tentatively suggested evidence for a relationship between medical provider attachment status and communication [40] identified only one published study that had explored doctors during their training [41] which was replicated more recently (Cherry et al, 2013). Both focused on formative communication assessments in students very early in their training and found only tentative evidence for a relationship [42]. To date, no study has investigated whether attachment style influences trainee doctors'

performance in qualifying assessments of both communication and clinical skills. The main prediction was that securely-attached medical students would perform better than those with insecure attachment styles, and specifically medical students with lower attachment anxiety and/or lower attachment avoidance scores will have higher communication and clinical performance OSCE scores.

2. Methods

2.1. Participants

The study was conducted at a large UK medical school. At this institute, students are assessed in a final summative OSCE on their competency across clinical and communication domains at the end of their 4th year of undergraduate study. This marks the end of their undergraduate studies. All students registered for this qualifying examination were invited to take part in the study, which was approved by a University Research Ethics committee.

2.2. Procedure

The entire cohort (n=291) was informed about the investigation approximately one month prior to their summative examinations. Consent was collected and self-report questionnaires completed in a briefing session immediately prior to the participants attending their summative OSCEs. All students were offered the option to take part and gave written consent. Those that didn't stayed in the waiting room and took the exam with the other students. This was a pragmatic arrangement because prior to the exam students are geographically dispersed on clinical placements. There were 24 OSCE stations, one of which was designed to assess history taking communication in a psychiatry theme, in which simulated patients presented with symptoms of depression and suicidal ideation. Participants

were unaware of the simulator's clinical history or presentation and they received standardised instructions from the examiner in the station, who instructed them to conduct a consultation with the patient to find out why they had come to see a GP. The investigators made an *a priori* decision to focus on the psychiatry OSCE station because the scenarios were designed as emotive consultations which would maximise the opportunities for students to respond to patient distress, allowing an optimal platform to investigate the relationship between attachment theory and clinical communication. The SP script was developed through a collaboration of medical educators and clinicians with experience in psychology and psychiatry. As part of the medical school assessment procedures, training sessions were held with all SPs and examiners as a calibration exercise. Clinical competency was assessed across the remaining 23 stations. Our analysis did not seek to categorise students as failing or passing, and the OSCE measure was used as a continuous variable. Hence no threshold was identified. Participants were not offered individual results but an overall summary of the study findings were available on request.

2.3. Measures

Attachment was assessed with the Relationship Questionnaire (RQ) [43] which has been demonstrated to be a valid and reliable self-report measure of adult attachment [44, 45], measuring strength of attachment along two dimensions of anxiety and avoidance. The measure has been employed to assess attachment styles in both patients and doctors (e.g. 46, 47), and used by all studies identified in a recent systematic review as the principal methodology used to assess attachment within medical education research [40], [46-49]. Attachment theory suggests that under highly emotional challenging situations, validity of the attachment measure will be greatest, because individuals are more likely to default to their internal working model of attachment [20, 21].

Participants were presented with four short descriptions of differing attachment style and instructed to select one most like them and then rate each description on a seven point Likert scale from 1 “*very like me*” to 7 “*not at all like me*”. The RQ generates a negative to positive score (-12 to +12) on the attachment dimensions of anxiety and avoidance, with higher scores indicating less anxiety and avoidance respectively.

Communication performance in the OSCE was measured with a validated examiner scoring sheet with 13 items, each scored on a 4-point Likert scale from 0 ‘unacceptable’ to 3 ‘good’ (maximum = 39) [14]. This measure assessed five areas: 1) greetings and introduction; 2) general; 3) respect and empathy; 4) questionings; 5) giving information. The measure was developed explicitly to assess communication with this population (undergraduate medical students) and within OSCE settings [13].

Patient Satisfaction with the consultation was rated by the simulated patients on a Likert scale from 0 ‘not at all satisfied’ to 10 ‘very satisfied’.

Clinical competency was assessed independently in 23 clinical skills stations by examiners who were blind to the study hypotheses. The scores from the 23 clinical skills OSCE stations were summed to compute a measure of overall clinical competence (minimum = 0, maximum = 49) for each student.

2.4. Data analysis

Group comparisons conducted with either X^2 (exact method option), or independent samples t-tests that were adjusted for unequal size variance if deemed necessary by Levene's test. The underlying dimensions of the examiner communication scores were identified with principal components analysis, and relationships between variables were assessed with Pearson's r . Variables with significant relationships to communication performance and patient satisfaction with the consultation were entered into multiple linear regression models to determine their relative importance. The data analysis was performed with IBM SPSS version 20.

3. Results

3.1. Participant characteristics

Two hundred and ninety-one students were examined in the summative OSCE, of which 190 (65.3%) consented and completed the questionnaires, of which 123 were female (64.7%) and 67 male (35.3%). There were no gender differences between non-participants and participants ($X^2 = 1.59$, $df = 1$, $p = 0.21$). The mean age of non-participants (24.27 years) was higher than participants (22.93 years); however despite the statistical difference the mean difference (1.3 years) between the two groups was small ($t = 2.73$, $df = 138.5$, $p < 0.001$).

3.2. OSCE examiner communication data

A principal components factor analysis with a Varimax rotation was conducted with the clinical communication examiner scores awarded in the psychiatry OSCE station. The data were adequate for factor analysis e.g. Kaiser-Meyer-Olkin Measure of Sampling Adequacy (0.87) and Bartlett's Test of Sphericity ($X^2 = 1297.5$, $df = 66$, $p < 0.001$). Two factors were

identified that were positively correlated with other ($r = 0.66$, $p < 0.001$), and they accounted for 51.7% of the variance in the clinical communication scores: factor one (29.4%), and factor two (22.3%) respectively (Table 1). Seven items loaded on factor one and described the '*interviewing style*' of the trainee doctors, with 5 items loaded onto factor two which indicated their '*global impression*' aspects of clinical communication with 5 items. A summary score for each factor was generated by summing the scores of the items that loaded onto interviewing style (0 to 21) and global impression (0 to 15). A single item was discarded ('Greeting and introduction') because it loaded with approximately equal values and opposite signs onto both components, and this particular item assessed whether the trainee doctors had both greeted the patient and undertaken a patient identity check e.g. name and date of birth.

[INSERT TABLE 1 ABOUT HERE]

3.3. Clinical communication, patient satisfaction, and clinical competency

Initially data from the participants ($n = 190$) and non-participants ($n=101$) were compared and there were no differences found between: clinical communication (interviewing style, global impression), simulator satisfaction, and overall clinical competency: Interviewing style ($t = 0.26$, $df = 289$, $p = 0.79$, global impression ($t = 1.28$, $df = 228.3$, $p = 0.20$), satisfaction ($t = 1.29$, $df = 289$, $p = 0.20$), and overall clinical competency ($t = 0.51$, $df = 289$, $p = 0.61$). The range of scores for participants included in the analysis ($n = 190$) were; interviewing style 7 to 21, global impression 8 to 15, satisfaction 4 to 10, and overall clinical competency 39 to 49.

[INSERT TABLE 2 ABOUT HERE]

Relationships between demographic data (gender, age) and the participants' clinical communication (interviewing style, global impression), overall clinical competency, simulator satisfaction, and attachment styles (anxiety, avoidance) were examined. There were no gender differences across the measures. There was a positive correlation between age and global impression communication scores ($r = 0.18$, $p = 0.01$), indicating that older students scored higher global impression communication scores. Age and attachment anxiety were negatively correlated ($r = -0.17$, $p = 0.02$) with increases in age associated with increases in anxiety, because lower attachment style scores indicated higher levels of anxiety or avoidance.

To test the study predictions, the relationships between attachment styles (anxiety, avoidance) and OSCE performance (clinical communication, overall clinical competency) were examined. Attachment anxiety and avoidance were both positively correlated with global impression clinical communication and overall clinical competency scores, and attachment avoidance was also positively correlated with interviewing style clinical communication. The direction of all these relationships indicated that lower levels of attachment anxiety and avoidance were associated with higher communication and overall clinical competency scores. Attachment styles were not related to simulator satisfaction ratings. See Table 3.

[INSERT TABLE 3 ABOUT HERE]

A series of multivariate linear regressions examined the degree to which attachment anxiety and avoidance predicted communication and overall clinical competency. Both age and

gender were entered into the initial regression models with the attachment measures. See Table 4.

Interviewing style communication was only significantly predicted by attachment avoidance.

Global impression communication was predicted by participants' age, attachment anxiety, and attachment avoidance.

Clinical competency was predicted by both attachment anxiety and attachment avoidance.

The direction of attachment anxiety and avoidance variables replicated the results from the correlation analyses i.e. lower levels of attachment anxiety and/or avoidance predicted higher global communication and clinical competency examination scores. In addition, increases in age predicted higher global communication scores. Lower levels of attachment avoidance predicted higher interviewing style scores.

[INSERT TABLE 4 ABOUT HERE]

4. Discussion and Conclusion

4.1. Discussion

This is the first study to consider whether final year undergraduate students' attachment styles are related to their performance on a clinical communication OSCE, and the results support the research hypotheses. There were significant relationships between attachment styles and participants' communication with simulated patients based on objective OSCE

measures. In general, attachment avoidance had a greater influence on forms of communication identified in this investigation than attachment anxiety, whereas both attachment styles similarly impacted on the assessment of the trainee doctors' levels of clinical competency.

An unexpected finding was that there was no association between attachment style and ratings by simulated patients, as the simulators were interacting directly with the students. Although the literature on simulated patients suggests they are invaluable in teaching and assessment situations [12, 50], evaluations as proxy measures of patient experiences are problematic because simulators are inevitably involved in the training and it is unclear what factors may contribute to a single item score as used in this study. Interestingly, a more recently published version of the OSCE communication instrument no longer includes simulated patient rating [51] and the authors argue that, although SP ratings should correlate with examiner ratings (as they did in our study), the quality of clinical interactions extends beyond 'customer communication' and SP ratings should not be used within high-stakes university assessments [51]. In contrast, the examiners assessments, which were multi-item and guided by specific marking criteria for each item and across the exam stations, gave less opportunity for individual variability in marking. The influence of attachment styles on both global impression communication and overall clinical competency illustrates that the examiners assessments were probably still subject to the overall manner of the trainee doctors. This suggests that trainees with high levels of attachment avoidance and/or anxiety may demonstrate a less intensive, more evasive interaction style due to their avoidance in relationships with others which was apparent to the examiners. These findings and interpretation are in accord with attachment theory which posits that individuals with low attachment anxiety and/or avoidance are comfortable with emotional closeness in

relationships with other people, whereas those with high attachment anxiety and/or avoidance tend to be distrusting in relationships with others [43].

Our findings with trainee doctors support the findings from other studies with qualified healthcare professionals that demonstrate that attachment style influences the behaviours in clinical settings. For example, mental health case managers classified as having a preoccupied-dismissing attachment style (high levels of attachment avoidance) were observed to intervene less intensively with patients, compared to managers with secure attachment (low levels of attachment anxiety and avoidance) [34]. Other investigators have reported that psychiatric staff, identified as having high levels of attachment avoidance, have also been observed to have had problems making psychological inferences about patients behaviours [35]. This study suggests that associations are already in place during health professionals training.

4.2. Methodological considerations

The standardised scenario ensured that the trainee doctors would have similar opportunities to respond to emotionally distressed simulated patients. There is much literature attesting to the validity of the use of simulated patients [11,12,50,52] and studies investigating potential bias have failed to find consistent patterns or effects [53,54]. However, the standardised exam context does somewhat limit generalisability to 'real' clinical settings. The six-function model of medical communication specifies that doctors are expected to: foster the relationship, gather information, provide information; make decisions, enable disease/treatment-related behaviour, and respond to emotions [55]. The nature and function of the psychiatry OSCE is likely to have influenced the trainee doctors, who were aware that it was an assessment of their history taking clinical communication skills. Therefore, developing a relationship with

the simulator and responding to their emotions would be viewed as crucial aspects of the interaction, as well taking a history of the presenting problem, which they were required to present in a subsequent OSCE station along with their formulation of the presenting problem. These functions clearly map onto four of the aspects outlined in the six-function model and are likely to have some degree of generalisability to clinical practice, but with an added assessment dimension. The communication assessment tool used covers a wide range of communication behaviours and considers trainee doctors' interactions with simulators in terms of: showing empathy, respecting patients' views, using open/closed/clarifying/summarising questions effectively, tackling personal issues with sensitivity, appropriate eye contact, and appropriate non-verbal behaviour. The psychiatry communication OSCE score therefore takes into account the participant's empathy and sensitivity, as well as the clinical appropriateness of their questions. However, the study was limited by focusing on one aspect of communication, and a single measure of communication should not be interpreted as reflective of the trainee doctors' communication abilities across different situations.

4.2. Conclusion

The study provides novel information on the relationship between trainee doctors' attachment styles and their clinical and communication performance during summative assessment. It adds to the growing body of evidence attesting to the importance of considering attachment theory with respect to doctor-patient relationships, specifically regarding doctor-patient communication and, interestingly, clinical competency. It furthermore suggests that an understanding of attachment theory may be beneficial to the teaching of clinical communication in medical education, by highlighting the role and importance of developing a sense of relationship with patients and helping to understand why some students may

particularly struggle with this [33]. Future research should investigate whether these findings are replicated with ‘real’ patients in clinical practice, and whether doctors’ attachment styles influence patient judgements of their perception of the quality of the consultation i.e. to include and focus on patients’ ratings of clinical communication.

4.3. Practice implications

Findings indicated that attachment style influences trainee doctors’ ability to communicate with patients in a way that is currently valued in modern medical education, in terms of communication and clinical competency. As well as adding to the increasing evidence base concerning the importance of considering doctors’ attachment style within the context of the doctor-patient relationship [18, 32, 36], this finding has potential implications for the medical curriculum. It supports the view that an understanding of attachment theory may have a role in the development and delivery of providing effective medical training [37]. There is a growing understanding of the importance of patient attachment style in engaging with health care (e.g. 16, 30, 31), and increasing awareness in the interaction role of doctor attachment style [17, 36). The findings may help begin to understand why some students find communicating with patients more challenging than others [33] and are less able to seek support under high stress conditions [56]. They also point towards the value of medical educators to be informed of the role that student attachment has in their ability and interest when engaging with patients. Making all medical students aware of these issues could benefit consultation skills generally [37], by reflecting upon and understanding their own responses to different interactions, and having exposure to peers and SPs portraying differing attachment styles in practice consultations to gain experience of differing patient needs as to their preferred communication approach. Furthermore, if medical students with insecure attachment styles are performing poorly on communication OSCEs because they find it

difficult to respond effectively to patients' underlying needs, an explicit emphasis on attachment theory may have particular benefit in terms of these students' communication and clinical skills – helping them to recognise the value to patients of interviewing skills and how they can provide an impression of trust e.g. via experiential learning through video feedback. It is too simplistic to conclude that a secure attachment style is always going to be beneficial for patient care [32], nor that giving facilitative responses to cues will *always* be appropriate and helpful. With the application of attachment theory to medical care comes an understanding that sometimes providers will need to respond in ways that counter inappropriate dependence in their patients [32]. There may be value however in helping medical students and other health-care providers to think about their own experiences in relationships, how these may influence the way they relate to others, and their abilities to communicate effectively with patients in emotional distress.

Author contributions

SP and IF conceived of the study and oversaw data collection. IF acts as guarantor for the study. RM collated the data and led the analysis and initial drafting of the manuscript. All authors were involved in revisions to the paper and approved the final version.

References

- [1] Gude T, Vaglum P, Anvik T, Baerheim A, Eide H, Fasmer OB, et al. Observed communication skills: How do they relate to the consultation content? A nation-wide study of graduate medical students seeing a standardized patient for a first-time consultation in a general practice setting. *BMC Medical Education* 2007; 7:43.
- [2] Hall JA. Some observations on provider-patient communication research. *Patient Education and Counseling* 2003; 50: 9-12.
- [3] Taylor K. Paternalism, participation and partnership - The evolution of patient centeredness in the consultation. *Patient Education and Counseling* 2009; 74: 150-155.
- [4] Stewart MA. Effective physician-patient communication and health outcomes: A review. *Canadian Medical Association Journal* 1995; 152: 1423-1433.
- [5] Street Jr RL, Makoul G, Arora NK, & Epstein RM. How does communication heal? Pathways linking clinician-patient communication to health outcomes. *Patient Education and Counseling* 2009; 74: 295-301.
- [6] Brown J. How clinical communication has become a core part of medical education in the UK. *Medical Education* 2008; 42: 271-278.
- [7] von Fragstein M, Silverman J, Cushing A, Quilligan S, Salisbury H, & Wiskin C. UK consensus statement on the content of communication curricula in undergraduate medical education. *Medical Education* 2008; 42: 1100-1107.
- [8] General Medical Council. *Tomorrow's doctors*. London: GMC, 2009.
- [9] Hodges B, Turnbull J, Cohen R, Bienenstock A, Norman G. Evaluating communication skills in the objective structured clinical examination format: reliability and generalizability. *Medical Education* 1996; 30: 38-43.
- [10] Kurtz S, Silverman J, & Draper J. *Teaching and learning communication skills in medicine* (2nd ed) 2004. Oxford, England: Radcliffe.

- [11] Sanson-Fisher RW & Poole AD. (1980). Simulated patients and the assessment of students' interpersonal skills. *Medical Education*; 14: 249-253.
- [12] Bokken L, Rethans J, Jobsis Q, Duivivier R, Scherpbier A, van der Vleuten C. Instructiveness of Real Patients and Simulated Patients in Undergraduate Medical Education: A Randomized Experiment. *Academic Medicine* 2010; 85: 148-154.
- [13] Humphris GM & Kaney S. Assessing the development of communication skills in undergraduate medical students. *Medical Education* 2001; 35: 225-231.
- [14] Humphris GM & Kaney S. The Liverpool brief assessment system for communication skills in the making of doctors. *Advances in Health Sciences Education* 2001; 6: 69-80.
- [16] Ciechanowski PS, Katon WJ, Russo JE, Walker EA. The patient-provider relationship: Attachment theory and adherence to treatment in diabetes. *American Journal of Psychiatry* 2001; 158: 29-35.
- [17] Tan A, Zimmermann C, Rodin G. Interpersonal processes in palliative care: An attachment perspective on the patient-clinician relationship. *Palliative Medicine* 2005; 19: 143-150.
- [18] Salmon P & Young B. Core assumptions and research opportunities in clinical communication. *Patient Education and Counseling* 2005; 58: 225-234.
- [19] Hooper LM, Tomek S, Newman CR. Using attachment theory in medical settings: Implications for primary care physicians. *Journal of Mental Health* 2012; 21: 23-37.
- [20] Bowlby J. The making and breaking of affectional bonds. *British Journal of Psychiatry* 1977; 130: 201-210.
- [21] Bowlby J. A secure base: Parent-child attachment and healthy human development. New York: Basic, 1988.
- [22] Hazan C & Shaver P. Romantic love conceptualized as an attachment process. *Journal of Personality and Social Psychology* 1987; 52: 511-524.

- [23] Waters E, Merrick S, Treboux D, Crowell J, Albersheim L. Attachment security in infancy and early adulthood: A twenty-year longitudinal study. *Child Development* 2000; 71: 684-689.
- [24] Bartholomew K. Avoidance of intimacy: An attachment perspective. *Journal of Social and Personal Relationships* 1990; 7: 147-178.
- [25] Mikulincer M, Shaver PR, Gillath O, Nitzberg RA. Attachment, caregiving and altruism: Boosting attachment security increases compassion and helping. *Journal of Personality and Social Psychology* 2005; 89: 817-839.
- [26] Brennan KA, Clark CL, Shaver PR. Self-report measurement of adult attachment: An integrative overview. In: Simpson JA & Rholes WS, eds. *Attachment theory and close relationships*. New York: Guilford, 1998; 46-76.
- [27] Fraley RC, Waller NG, Brennan KA. An item response theory analysis of self-report measures of adult attachment. *Journal of Personality and Social Psychology* 2000; 78: 350–365.
- [28] Mikulincer M, Shaver PR, Pereg D. Attachment theory and affect regulation: The dynamic development, and cognitive consequences of attachment-related strategies. *Motivation and Emotion* 2003; 27: 77–102.
- [30] Stuart S & Noyes R. Attachment and interpersonal communication in somatization. *Psychosomatics* 1999; 40: 34-43.
- [31] Ciechanowski PS, Walker EA, Katon WJ, Russo JE. Attachment theory: A model for health care utilization and somatization. *Psychosomatic Medicine* 2002; 64: 660-667.
- [32] Salmon P & Young B. Dependence and caring in clinical communication: The relevance of attachment and other theories. *Patient Education and Counseling* 2009; 74: 331-338.
- [33] Peters S, Young K, McCracken C. What do medical trainees think is so difficult about communicating with patients? *Patient Education and Counseling* 2011; 85:e150-e154.

- [34] Dozier M, Cue KL, Barnett L. Clinicians as caregivers: Role of attachment organization in treatment. *Journal of Consulting and Clinical Psychology* 1994; 62: 793-800.
- [35] Berry K, Shah R, Cook A, Geater E, Barrowclough C, Wearden A. Staff attachment styles: A Pilot study investigating the influence of adult attachment styles on staff psychological mindedness and therapeutic relationships. *Journal of Clinical Psychology* 2008; 64: 355-363.
- [36] Salmon P, Wissow L, Carroll J, Ring A, Humphris GM, Davies JC, Dowrick CF. Doctors' attachment style and their inclination to propose somatic interventions for medically unexplained symptoms. *General Hospital Psychiatry* 2008; 30:104-11.
- [37] Wilkinson SR. *Coping and complaining: Attachment and the language of dis-ease*. England: Brunner-Routledge, 2003.
- [38] Trusty R, Ng K, Watts RE. Model of effects of adult attachment on emotional empathy of counselling students. *Journal of Counseling & Development* 2005; 83: 66-77.
- [39] Kaya N. Attachment styles of nursing students: A cross-sectional and a longitudinal study. *Nurse Education Today* 2010; 30: 666–673.
- [40] Cherry MG, Fletcher I, O’Sullivan H. The influence of medical students’ and doctors’ attachment style and emotional intelligence on their patient-provider communication. *Patient Education and Counselling* 2013; 93: 177-187.
- [41] Atherton K, Chisholm A, Rutter L, Peters S, Fletcher I. Breaking barriers in clinical communication: are securely attached doctors more empathic doctors? *Reinvention J Undergraduate Research*. 2009; 2.
- [42] Cherry MG, Fletcher I, O’Sullivan H. Exploring the relationships among attachment, emotional intelligence and communication. *Medical Education* 2013; 47: 317-325.
- [43] Bartholomew K & Horowitz LM. Attachment styles among young adults: A test of a four-category model. *Journal of Personality and Social Psychology* 1991; 61: 226-244.

- [44] Bartholomew K & Shaver PR. Methods of assessing adult attachment: Do they converge? In: Simpson JA & Rholes WS, eds. Attachment theory and close relationships. New York: Guilford, 1998; 22-45.
- [45] Scharfe E & Bartholomew. Reliability and stability of adult attachment patterns. *Personal Relationships* 1994; 1: 23-43.
- [46] Salmon P, Wissow L, Carroll J, Ring A, Humphris GM, Davies JC, Dowrick CF. Doctors' attachment style and their inclination to propose somatic interventions for medically unexplained symptoms. *General Hospital Psychiatry* 2007; 29:454-460.
- [47] Clarke L, Beesley H, Holcombe C, Salmon P. The influence of childhood abuse and adult attachment style on clinical relationships in breast cancer care. *General Hospital Psychiatry* 2011; 32: 579-86.
- [48] Ciechanowski PS, Russo JE, Katon WJ, Walker EA. Attachment theory in health care: The influence of relationship style on medical students' specialty choice. *Medical Education* 2004; 38: 262-270.
- [49] Ciechanowski PS, Worley LLM, Russo JE, Katon WJ. Using relationship styles based on attachment theory to improve understanding of specialty choice in medicine. *BMC Medical Education* 2006; 6: 3.
- [50] Lane C & Rollnick S. The use of simulated patients and role-play in communication skills training: A review of the literature in August 2005, *Patient Education and Counseling* 2007; 67: 13-20.
- [51] Huntley CD, Salmon P, Fisher P, Fletcher I, Young B. LUCAS: a theoretically informed instrument to assess clinical communication in objective structured clinical examinations. *Medical Education* 2012; 46: 267-76.

- [52] Cohen L, Baile WF, Henninger E, Agarwal SK, Kudelka AP, Lenzi, R. et al. Physiological and psychological effects of delivering medical news using a simulated physician–patient scenario. *Journal of Behavioral Medicine* 2003; 26: 459-71.
- [53] Colliver JA, Swartz MH, Robbs RS. The effect of examinee and patient ethnicity in clinical-skills assessment with standardized patients. *Advances in Health Sciences Education* 2001; 6: 5-13.
- [54] De Champlain AF, Schoeneberger, J, Boulet JR. Assessing the impact of examinee and standardized patient ethnicity on test scores in a large-scale clinical skills examination: Gathering evidence for the consequential aspect of validity. *Academic Medicine* 2004; 79(S10): 12-14.
- [55] de Haes H. & Bensing J. Endpoints in medical communication research, proposing a framework of functions and outcomes. *Patient Education and Counseling* 2009; 74: 287-94.
- [56] Adshead G. Becoming a caregiver: attachment theory and poorly performing doctors. *Medical Education* 2010; 44: 125–131.

Table 1

Factor loadings in the psychiatry clinical communication OSCE.

OSCE examiner scoring item	Factor one	Factor two
	'Interviewing style'	'Global impression'
a. Greetings and introduction	0.36	-0.34
b. Introduction of self and role		0.74
c. Audibility and enunciation	0.22	0.84
d. Eye contact	0.29	0.60
e. Non-verbal behaviour	0.46	0.55
f. Respect of patients views	0.72	0.24
g. Empathy-reflection patients feelings	0.80	0.15
h. Method of questioning	0.59	0.22
i. Clarification and summarising	0.61	0.18
j. Sensitivity of questions	0.68	0.13
k. Clarity of language	0.36	0.55
l. Checking understanding and closing	0.61	0.18
m. Professional attitude and behaviour	0.58	0.43

 Values in bold identified with a factor

Table 2

Trainee doctors' clinical communication and overall clinical competency scores.

Category	Participants n = 190	Non-participants n=101
	Mean (SD)	Mean (SD)
Interviewing style communication	15.7 (3.3)	15.6 (3.0)
Global impression communication	12.9 (2.0)	13.2 (1.8)
Simulator satisfaction	7.0 (1.4)	6.8 (1.6)
Clinical competency	45.2 (2.5)	45.0 (2.5)

Table 3

Correlations between attachment styles, clinical communication and clinical competency.

Assessment	Attachment anxiety	Attachment avoidance
Interviewing style communication	0.10	0.15*
Global impression communication	0.19**	0.23**
Clinical competency	0.19**	0.21**
Simulator satisfaction	0.04	0.02

* <0.05

** <0.01

Table 4

Regression results of attachment styles, age, gender on clinical communication and competency.

Variables	Interviewing style	Global impression	Clinical competency
Attachment anxiety	0.11	0.20**	0.16*
Attachment avoidance	0.15*	0.19**	0.19**
Age	0.13	0.21**	0.01
Gender	0.01	0.01	0.03
F values ^a	3.86	8.37	6.96

Values are standardized regression coefficients.

^aF values from the final model with significant variables.

*<0.05

**<0.01