



Contents lists available at ScienceDirect

Patient Education and Counseling

journal homepage: www.elsevier.com/locate/pateducou



Mimicking non-verbal emotional expressions and empathy development in simulated consultations: An experimental feasibility study

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ARTICLE INFO

Article history:

Received 5 April 2017

Received in revised form 14 June 2017

Accepted 27 August 2017

Keywords:

Mimicry

Non-verbal emotion

Empathy

Experimental design

ABSTRACT

Objective: To explore the feasibility of applying an experimental design to study the relationship between non-verbal emotions and empathy development in simulated consultations.

Method: In video-recorded simulated consultations, twenty clinicians were randomly allocated to either an experimental group (instructed to mimic non-verbal emotions of a simulated patient, SP) or a control group (no such instruction). Baseline empathy scores were obtained before consultation, relational empathy was rated by SP after consultation. Multilevel logistic regression modelled the probability of mimicry occurrence, controlling for baseline empathy and clinical experience. ANCOVA compared group differences on relational empathy and consultation smoothness.

Results: Instructed mimicry lasted longer than spontaneous mimicry. Mimicry was marginally related to improved relational empathy. SP felt being treated more like a whole person during consultations with spontaneous mimicry. Clinicians who displayed spontaneous mimicry felt consultations went more smoothly.

Conclusion: The experimental approach improved our understanding of how non-verbal emotional mimicry contributed to relational empathy development during consultations. Further work should ascertain the potential of instructed mimicry to enhance empathy development.

Practice implications: Understanding how non-verbal emotional mimicry impacts on patients' perceived clinician empathy during consultations may inform training and intervention programme development.

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1. Introduction

During the last decade, healthcare communication researchers have been focusing on verbal expressions of emotional exchange and made significant contributions to the understanding of the relationship between emotional language and empathy during doctor-patient interaction [1,2]. In contrast, how non-verbal expressions of emotion contribute to empathy establishment in applied settings seems not to be well researched. This is largely due to under-developed theories in non-verbal emotional expressions in realistic settings and limited methodological development in the field of healthcare communication.

Building on breakthroughs in neuroscience, in particular the discovery of a human mirror neuron system [3], recent theories of embodied cognition [4] illuminate new ways to study

mechanisms of empathy development in healthcare settings. Theories of embodied emotion suggest that when individuals adopt emotion-specific postures or facial expressions, they experience associated emotions [5,6]. A traditional theoretical interpretation of this behaviour is the matched motor hypothesis, according to which behavioural mimicry is an automatic motor response that reflects a basal perception – behaviour link (also known as the chameleon effect [7]). Mimicry can be broadly defined as “doing what others are doing” [e.g.,8]. It consists of verbal and non-verbal behaviours that range from lexical repetitions over gestural and postural alignment to the imitation of facial expressions.

Behavioural mimicry is known to lead to improved interpersonal relationships, as shown in the chameleon effect [7,9]. For example, imitating an interactive partner's gesture, posture or speech can enhance social bonds and improve empathizing with others' emotions in a social setting. Given this known social function of behavioural mimicry, it may be useful from a practical perspective to study behavioural mimicry in a healthcare

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communication context because of its potential to improve the doctor–patient relationship. Specifically, instructing a clinician to mimic a patient’s behaviour may increase the inter-personal (relational) empathy, and thus may improve the level of perceived empathy in the patient.

Applying the theoretical proposition of the embodied emotion [4] to doctor–patient interaction, a key prediction is that imitating the bodily expressions of the patient will help the doctor experience the patient’s emotional state. Behavioural mimicry serves as an initial skill development, and experiencing patients’ emotional state functions as developing affective empathy, which contributes to attitude formation. Consequently, when this emotional mimicry goes well, it leads to affective sharing and lays a strong foundation for relational empathy development [7,10]. Therefore, we hope to enhance clinicians’ consultation skills through instruction of behavioural mimicry, which in turn will help improve clinicians’ baseline empathy as a personality trait for attitude development. As a result, the quality of the doctor–patient relationship is expected to be improved, which will be measured in the form of perceived relational empathy in the patient.

Other cognitive aspects, such as the capacity to take the other’s perspective and one’s own ability for healthy emotion regulation [11,12], are also important and should be taken into account when conducting experiments on the effects of emotional mimicry on empathy development.

Although there is currently a renewed debate about whether and how facial feedback influences emotions [13], the available literature on facial expression mimicry indicates similar effects of spontaneous and instructed mimicry [14,15]. Given the perceived lack of studies on how non-verbal expressions of emotion contribute to empathy establishment in applied settings, our study aims to explore the feasibility of this instructional approach. Specifically, it aims to generate experimental evidence on how mimicking simulated patients’ non-verbal emotional expressions contributes to the development of relational empathy as perceived by the patient. Research questions are: (i) Can non-verbal emotional expressions be mimicked by clinicians in simulated consultations? (ii) Does non-verbal emotional mimicry improve relational empathy during simulated consultations? (iii) Is an experimental design to study the relationship between non-verbal emotion and empathy development feasible?

2. Methods

2.1. Participants and design

We adopted an experimental design to study empathy development during simulated consultations. Our key manipulation was to instruct half of our participating clinicians to actively mimic the patient’s behaviours. Twenty staff members with clinical experience (Table 1) and one simulated patient (SP) within the School of Medicine at University of St Andrews were recruited as staff and patient participants, respectively. Staff were randomly allocated to either the experimental ($n = 10$, instructed to mimic

non-verbal emotional expressions of the SP) or the control group ($n = 10$, no such instruction). Based on the differences on the relational empathy (with means and standard deviation) and with clinician baseline empathy as covariate, we anticipated a larger relational empathy in the experimental group than the control group. We then performed a power analysis for a power level of 80%, given α of 0.05 and assuming a large effect size of 0.80. According to G-Power3 [16], 21 participants would be needed for each group to detect the directional effect of instructed mimicry. This estimate exceeds our actual sample size (10 for each group) and indicates insufficient statistical power to detect a relatively large effect. However, the focus of the study was to explore the feasibility of the experimental approach, we will discuss the results in light of the sample size limitation.

2.2. Procedure

The SP was provided with a scripted scenario (irritable bowel syndrome), trained to display five non-verbal emotional expressions (Appendix A in Supplementary material) during simulated consultations, and blind to the experimental condition. Before consultation, staff completed a questionnaire for their baseline empathy using the Interpersonal Reactivity Index (IRI) [17], along with their demographic and clinical experiences. While controlling for gender, age, clinical experience and baseline empathy scores, staff were randomly allocated to one of two instruction groups. They were either instructed or not instructed to mimic non-verbal SP emotional expressions during consultation and both groups were video recorded. After each of the twenty individual consultations, the SP rated the level of empathy received from the staff by using the Consultation and Relational Empathy (CARE) measure [18]. This validated and standardized tool is frequently used to measure the quality of the doctor–patient relationship during clinical consultations. Consultation smoothness was rated by both staff and SP on a 7-point Likert scale (1 = not smooth at all, 7 = extremely smooth). Staff in the experimental condition also reported retrospectively, for each observed mimicry event, their emotional state while watching the recording of their consultation.

After inspection of sample videos, a behavioural coding scheme (Appendix B in Supplementary material) was developed specifically for the study by the principal investigator (YZ). Mimicry behaviour was defined as intentionally (in the experimental group) or unintentionally (in the control group) imitating the SP’s non-verbal emotional expressions (including facial, gesture and postures). If the SP’s other non-verbal emotional behaviours were mimicked (than the five instructed behaviours), the code ‘mimic other’ was assigned. All mimicry behaviours (in the experimental condition only) were entered with an associated affective state, collected from interviews rather than video observations. We coded both the frequency and the duration of the mimicry behaviour. The consultations were coded by a single research assistant through applying the coding scheme onto the Noldus™ Observer XT 10.0 system [19]. The principal investigator subsequently performed inter-coder reliability checks on the research

Table 1
Participant group characteristics before consultation.

Variables	Experiment Group ($n = 10$)	Control Group ($n = 10$)	Test for difference	<i>P</i> value
Gender (male%)	50%	50%	n/a	
Age (year)	41.90 (12.77)	40.20 (14.62)	$t(18) = 0.277$	>0.05
Clinical experience (year)	2.90 (0.32)	2.70 (0.68)	$t(18) = 0.849$	>0.05
IRI total score (empathy baseline)	65.20 (13.80)	67.10 (8.61)	$t(18) = 0.369$	>0.05

- Continuous variables were presented with mean and standard deviation; categorical variables were presented with percentage.
- IRI (interpersonal reactivity index) to measure empathy as a baseline personality characteristic.

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