The intergroup empathy bias among incoming medical students

Julian A. Nasello, Marie-Sophie Triffaux and Jean-Marc Triffaux

ABSTRACT

Background: Previous studies revealed a significant empathy decline over time among medical students. Scientific literature also supports the influence of group belonging on the empathy expression.

Objective: Through this study, we aimed to demonstrate whether group belonging (peers or patients) significantly influences empathy levels before students undertake their education in medicine.

Design: A total of 194 incoming medical students participated in our study. All participants filled-in the Interpersonal Reactivity Index under three primed situations (a general; a peers’ one; a patients’ one) at three different points in time during a session of information.

Results: Analyses revealed significant main effects of: gender; situations; and empathy dimensions. We also obtained a significant interaction effect between dimensions and situations.

Conclusions: We showed that empathy levels were modulated by group belonging (25% of the variance was explained by group belonging). Post hoc analyses showed that the differences between the peers’ and patients’ situations tend to reveal an appropriate professional attitude with regard to patients because they displayed: (1) lower scores on personal distress and fantasy; (2) higher scores on perspective taking (as for peers); (3) stable scores on empathic concern in peers’ and patients’ situations. However, integrating empathy lessons in the educational program of medical students remains a priority. In a long-term perspective, these findings suggest an investigation of the impacts of group belonging on the evolution of students’ empathy scores through their medicine studies.

Introduction

Empathy is a fundamental characteristic in human interactions and clinical settings. However, several researchers and one of our recent research reported a striking and progressive decline of empathy levels among medical students over time of education [1,2]. Several interpretations were proposed: changes from idealism to realism [3]; overusing of technologies [4]; promotion of emotional detachment, affective distance and clinical neutrality [5]. Therefore, psychological or environmental factors and personality influence the decline of empathy among medical students. On the basis of these previous researches, a piece of interpretation was missing: the influence of group belonging.

Group belonging (i.e., the shared group membership) can strongly facilitate perspective taking and concern [6]. Authors call this phenomenon ‘The Intergroup Empathy Bias’ [7]. The intergroup empathy bias showed that people tend to distinguish others from in- and out-group and to modulate their own empathy levels in favor of the in-group [7]. Following this bias, we can assume that medical students progressively build self-representations that led themselves to be strongly bound to peers and progressively disconnected from patients.

In an educational perspective, it is crucial to understand the different factors that influence significantly the empathy decline phenomenon. Should it be interpreted as a negative or a positive phenomenon? In the negative perspective, what should be promoted for these students? The main purpose of this work aims to provide nuanced answers on the empathy decline among medical students, with regards to the intergroup empathy bias.

We firstly investigate whether incoming students already present empathy differences according to the group belonging. Therefore, we assume that, according to the group belonging (i.e., peers versus patients), an empathy gradation should be present for incoming students: significant higher empathy scores are expected for peers than patients.

Materials and methods

A total of 194 incoming students in medicine participated in this study (Nwomen = 143, Nmen = 51).
The whole sample was composed of young adults (\(M_{\text{age}} = 18.9; \ SD = 1.77\)) aiming to undertake medicine studies. The study was performed during an information session on the medicine program at Liège University (Belgium). Participants were recruited on a voluntary basis and completed the Interpersonal Reactivity Index questionnaire (IRI [8]; French version [9]) under three primed situations of tests, filled at three different points in time. The three questionnaires had the same structure. They only differed because of the textual priming that invited participants to represent themselves under three different situations: 1) a general situation: the classical form of the IRI; 2) a peers’ situation: an IRI form directed through peers (i.e., scholar colleagues and professionals in medicine); 3) a patients’ situation: an IRI form directed through patients. Participants filled-in the questionnaires during the information session: at the beginning, they all completed the general form; after 30 min and at the end of the session, they filled-in randomly the peers or patients’ forms. The whole session lasts one hour and a half. Inclusion criteria: all participants must be fluent French speakers and have from 18 to 35 years old.

The IRI scale is a self-reported questionnaire composed of 28 items measures with a 5-Likert scale (i.e., from ‘strongly disagree’ to ‘strongly agree’) that assesses four empathy dimensions. The four dimensions are: 1) Empathic concern (EC: individuals’ feeling of compassion and concern for others); 2) Personal distress (PD: the extent that an individual feels uneasiness or worry when exposed to the negative experiences of others); 3) Fantasy (FS: the likelihood that a person identifies with a fictional character); 4) Perspective taking (PT: unplanned attempts to adopt others’ points of view). As previously mentioned, the IRI questionnaire was completed under three primed situations. The scale displayed good internal consistency: for the general form (\(\alpha = .81\)); for the peers’ form (\(\alpha = .82\)); and for the patients’ form (\(\alpha = .80\)).

We performed a mixed MANOVA with repeated measures on the four dimensions of empathy (i.e., EC, PD, FS, and PT), with an independent variable: the gender. Fisher’s LSD post hoc tests were also performed. We used the program IBM SPSS, 24th version [10].

**Results**

We obtained main effects of (see Table 1): the Situation (\(\Lambda = .746; F_{(2, 194)} = 32.5; p < .001\); the Dimensions (\(\Lambda = .214; F_{(3, 190)} = 232.5; p < .001\)); and the Gender (\(F_{(1,192)} = 14.9; p < .001\)); women reported significant higher scores than males (see Table 2). We also obtained a significant interaction effect (see Table 1) between Dimensions and Situations (\(\Lambda = .611; F_{(6, 187)} = 19.8; p < .001\)). No interaction effects (see Table 1) were found: between Dimensions and Gender (\(\Lambda = .984; F_{(5, 190)} = 1.03; p = .380\)); between Situations and Gender (\(\Lambda = .983; F_{(2, 194)} = 1.66; p = .192\)); and between Dimensions, Situation and Gender (\(\Lambda = .974; F_{(6, 187)} = .822; p = .554\)). As displayed by Figure 1 and Table 2, the higher significant scores were obtained in the general situation for all dimensions, with the exception of the PT dimension (i.e., the general situation presented the lower significant scores). Post hoc tests revealed significant lower scores for the patients’ situation in the PD (\(p < 0.01\)) and FS (\(p < 0.01\)) dimensions, in comparison with the peers’ and general situations. However, we found barely significant differences in

---

**Table 1. Mixed MANOVA with repeated measures analysis.**

| Effects          | \(\Lambda\) | \(F\) | \(df\) | \(d_{\text{within}}\) | \(p\) | \(\eta^2\) |
|------------------|-------------|-------|--------|------------------------|------|-----------|
| Dimensions       | .214        | 232.5 | 3      | 190                    | .000 | .786      |
| Situations       | .746        | 32.5  | 2      | 191                    | .000 | .254      |
| Gender           | -           | 14.9  | 1      | 192                    | .000 | .072      |
| Dimensions*Gender| .984        | 1.03  | 3      | 190                    | .380 | .016      |
| Situations*Gender| .983        | 1.66  | 2      | 191                    | .192 | .017      |
| Dimensions*Situations| .611    | 19.8  | 6      | 187                    | .000 | .389      |
| Dimensions*Situations*Gender| .974 | .822  | 6      | 187                    | .554 | .026      |

---

**Table 2. Means and standard deviations of all empathy dimensions for all situations.**

| Dimensions | Gender | M     | SD    | N   |
|------------|--------|-------|-------|-----|
| FS – Gen.  | W      | 24.65 | 4,780 | 194 |
|            | M      | 22.49 | 3,977 | 51  |
| Total      |        | 24.08 | 4,671 | 194 |
| FS – Peers | W      | 22.47 | 4,418 | 143 |
|            | M      | 20.71 | 4,168 | 51  |
| Total      |        | 22.01 | 4,532 | 194 |
| FS – Patients| W    | 20.84 | 3,930 | 143 |
|            | M      | 19.27 | 3,894 | 51  |
| Total      |        | 19.70 | 3,917 | 194 |
| PD – Gen.  | W      | 17.75 | 4,295 | 143 |
|            | M      | 15.92 | 4,025 | 51  |
| Total      |        | 16.83 | 4,165 | 194 |
| PD – Peers | W      | 15.59 | 4,447 | 143 |
|            | M      | 14.57 | 4,797 | 51  |
| Total      |        | 15.08 | 4,551 | 194 |
| PD – Patients| W   | 14.58 | 4,400 | 143 |
|            | M      | 14.27 | 4,721 | 51  |
| Total      |        | 14.45 | 4,476 | 194 |
| PT – Gen.  | W      | 26.64 | 4,129 | 143 |
|            | M      | 25.49 | 5,159 | 51  |
| Total      |        | 26.02 | 4,438 | 194 |
| PT – Peers | W      | 27.80 | 3,705 | 143 |
|            | M      | 26.45 | 4,268 | 51  |
| Total      |        | 27.13 | 4,438 | 194 |
| PT – Patients| W  | 28.20 | 3,845 | 143 |
|            | M      | 27.14 | 3,980 | 51  |
| Total      |        | 27.68 | 3,939 | 194 |
| EC – Gen.  | W      | 27.95 | 4,051 | 143 |
|            | M      | 25.80 | 5,404 | 51  |
| Total      |        | 26.87 | 4,359 | 194 |
| EC – Peers | W      | 26.47 | 3,768 | 143 |
|            | M      | 24.86 | 4,336 | 51  |
| Total      |        | 25.65 | 3,821 | 194 |
| EC – Patients| W | 27.05 | 3,659 | 143 |
|            | M      | 25.08 | 3,851 | 51  |
| Total      |        | 25.90 | 3,801 | 194 |

This table displays the women’s and men’s total means and standard deviations of all empathy dimensions for all situations (i.e., general; peers; and patients). FS: Fantasy; PD: Personal Distress; PT: Perspective Taking; EC: Empathic Concern.
the PT dimension ($p = 0.049$) and no significant difference in EC dimension ($p = 0.14$) when we compared the patients’ and the peers’ situations.

**Discussion**

Our key finding shows that incoming medical students presented significant differences in empathy dimensions’ levels according to the group belonging (i.e., according to the situation of test). As displayed, group belonging had a great power of explanation: 25% of the variance was explained by group belonging. This result is in line with previous researches that revealed an intergroup empathy bias [7]. We also showed that women presented significant higher scores than men, yet another bias that has been largely reported in scientific literature [11,12].

Several studies [1–4] have investigated the evolution of empathy scores for medical students throughout their education in medicine, and reported a significant empathy decline from the beginning to the end of their education. This study attempted to show whether incoming medical students were inclined to reveal significant differences in empathy levels according to the population of reference. Our results confirm this main hypothesis. We found significant reductions of Fantasy and Personal Distress dimensions regarding patients in comparison with peers. Also, only a tendency of increasing scores were obtained in the Perspective Taking dimension in favor of patients. Finally, no significant changes were found for the Empathic Concern dimension when comparing peers’ with patients’ forms. In either case, this adjustment of empathy seems adequate to treat their potential patients in a proper way. Fantasy and Personal Distress tend to be reduced in the presence of patients. These reductions mean that the incoming medical students would be less prompt to get involved in fictional situation in the presence of patients or to experience distress or discomfort in response to patients’ emotional distress. Also, the Perspective Taking tends to be at its highest level with the presence of patients, while Empathic Concern appears as stable through situations. These results revealed that incoming medical students would present higher abilities to adopt patients’ perspective and constant tendencies to experience feeling of compassion for them. Even though these first results appear to be encouraging, integrating and developing empathy lessons in medical education remains a priority.

Our long-term goal is to investigate the evolution of the impact of group belonging on empathy dimensions among medical students during the course of their study in medicine.

**Limitations**

We assessed empathy through self-reported measures. Therefore, we cannot assume that these measures represent the whole phenomenon of empathy and the effective behaviors performed in concrete situations. Also, we used data from a single medical school which might limited the generalization of the present findings.

**Authors contributions**

All procedures performed in our study were in accordance with the ethical standards of the 1964 Helsinki declaration and its later amendments or comparable ethical standards. Informed consent was obtained from all individual participants included in the study.

**Acknowledgments**

The authors would like to thank Olivier Monseur for his critical revision of our manuscript.
Disclosure statement
No potential conflict of interest was reported by the authors.

ORCID
Julian A. Nasello http://orcid.org/0000-0003-0188-1025
Jean-Marc Triffaux http://orcid.org/0000-0002-0058-6190

References
[1] Hojat M, Mangione S, Nasca TJ, et al. An empirical study of decline in empathy in medical school. Med Educ. 2004;38(9):934–941.
[2] Triffaux J-M, Tisseron S, Nasello J. Decline of empathy among medical students: dehumanization or useful coping process? Encéphale. 2018. DOI:10.1016/j.encep.2018.05.003
[3] Nunes P, Williams S, Sa B, et al. A study of empathy decline in students from five health disciplines during their first year of training. Intern Jour of Med Educ. 2011;2:12–17.
[4] Hojat M, Vergare MJ, Maxwell K, et al. The devil is in the third year: a longitudinal study of erosion of empathy in medical school. Acad Med. 2009;84 (9):1182–1191.
[5] Halpern J. From detached concern to empathy: humanizing medical practice. Oxford: Oxford University Press; 2001.
[6] Turner J, Hogg M, Oakes P, et al. Rediscovering the social group: a self-categorization theory. Cambridge: Blackwell; 1987.
[7] Fourie MM, Subramoney S, Gobodo-Madikizela P. A less attractive feature of empathy: intergroup empathy bias. In: Kondo M, editor. Empathy: an evidence-based interdisciplinary perspective. INTECH (London); 2017. p. 45–61.
[8] Davis MH. A multidimensional approach to individual differences in empathy. JSAS Catalog of Sel Doc in Psycho. 1980;10:85.
[9] Gilet A-L, Mella N, Studer J, et al. Assessing dispositional empathy in adults: a French validation of the Interpersonal Reactivity Index (IRI). Can J Behav Sci. 2013;45(1):42–48.
[10] IBM Corp. Released. IBM SPSS Statistics for Windows, Version 24.0. Armonk (NY): IBM Corp; 2015.
[11] Schulte-Rüther M, Markowitsch HJ, Shah NJ, et al. Gender differences in brain networks supporting empathy. NeuroImage. 2008;42(1):393–403.
[12] Carré A, Stefaniak N, D’Ambrosio F, et al. The Basic Empathy Scale in Adults (BES-A): factor structure of a revised form. Psych Assess. 2013;25 (3):679–691.