

1 **The Intergroup Empathy Bias among Incoming Medical Students**

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10 **Abstract**

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

14 **Objective:** Through this study, we aimed to demonstrate whether group belonging (peers or
15 patients) significantly influences empathy levels before students undertake medicine studies.

16 **Design:** One hundred and ninety-four incoming medical students participated in our study. All
17 participants filled-in the Interpersonal Reactivity Index under three primed situations (a
18 general; a peers' one; a patients' one) at three different points in time during a session of
19 information.

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

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

32 **Keywords:** Empathy Decline; Gender bias; Group Belonging; Education Perspectives.

33 **Introduction**

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

42 Group belonging (i.e., the shared group membership) can strongly facilitate
43 perspective taking and concern [6]. Authors call this phenomenon "The Intergroup Empathy
44 Bias" [7]. The intergroup empathy bias showed that people tend to distinguish others from in-
45 and out-group and to modulate their own empathy levels in favor of the in-group [7].

46 Following this bias, we can assume that medical students progressively build self-
47 representations that led themselves to be strongly bound to peers and progressively
48 disconnected from patients.

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

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

58 **Material and Methods**

59 One hundred and ninety-four incoming students in medicine participated in this study
60 ($N_{women} = 143$, $N_{men} = 51$). The whole sample was composed of young adults ($M_{age} = 18.9$; SD
61 $= 1.77$) aiming to undertake medicine studies. The study was performed during an
62 information session on the medicine program at ----- University (-----). Participants were
63 recruited on a voluntary basis and completed the Interpersonal Reactivity Index questionnaire
64 (IRI: [8]; French version [9]) under three primed situations of tests, filled at three different
65 points in time. The three questionnaires had the same structure. They only differed because of
66 the textual priming that invited participants to represent themselves under three different
67 situations: 1) a general situation: the classical form of the IRI; 2) a peers' situation: an IRI
68 form directed through peers (i.e., scholar colleagues and professionals in medicine); 3) a
69 patients' situation: an IRI form directed through patients. Participants filled-in the

70 questionnaires during the information session: at the beginning, they all completed the general
71 form; after 30 minutes and at the end of the session, they filled-in randomly the peers or
72 patients' forms. The whole session lasts one hour and a half. Inclusion criteria: all participants
73 must be fluent French speakers and have from 18 to 35 years old.

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

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

87 **Results**

88 We obtained main effects of (see Table 1): the Situation ($\lambda = .746$; $F_{(2, 191)} = 32,5$; $p <$
89 $.001$; the Dimensions ($\lambda = .214$; $F_{(3, 190)} = 232,5$; $p < .001$); and the Gender ($F_{(1,192)} = 14,9$; $p <$
90 $.001$): women reported significant higher scores than males (see Table 2). We also obtained a
91 significant interaction effect (see Table 1) between Dimensions and Situations ($\lambda = .611$; $F_{(6,$
92 $187)} = 19,8$; $p < .001$). No interaction effects (see Table 1) were found: between Dimensions
93 and Gender ($\lambda = .984$; $F_{(3, 190)} = 1.03$; $p = .380$); between Situations and Gender ($\lambda = .983$;

94 $F_{(2, 191)} = 1.66 ; p = .192$); and between Dimensions, Situation and Gender ($A = .974 ; F_{(6, 187)}$
95 $= .822 ; p = .554$). As displayed by Figure 1 and Table 2, the higher significant scores were
96 obtained in the general situation for all dimensions, with the exception of the PT dimension
97 (i.e., the general situation presented the lower significant scores). *Post hoc* tests revealed
98 significant lower scores for the patients' situation in the PD ($p < 0.01$) and FS ($p < 0.01$)
99 dimensions, in comparison with the peers' and general situations. However, barely significant
100 differences were found in the PT ($p = 0.049$) and no significant difference in EC ($p = 0.14$)
101 dimensions when we compared the patients' and the peers' situations.

102 [Table 1 near here]

103 [Figure 1 near here]

104 [Table 2 near here]

105 **Discussion**

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

113 Several studies [1-4] have investigated the evolution of empathy scores for medical
114 students throughout their education in medicine, and reported a significant empathy decline
115 from the beginning to the end of their education. This study attempted to show whether
116 incoming medical students were incline to reveal significant differences in empathy levels

117 according to the population of reference. Our results confirm this main hypothesis. We found
118 significant reductions of Fantasy and Personal Distress dimensions regarding patients in
119 comparison with peers. Also, only a tendency of increasing scores were obtained in the
120 Perspective Taking dimension in favor of patients. No significant changes were found for the
121 Empathic Concern dimension when comparing peers' with patients' forms. In either case, this
122 adjustment of empathy seems adequate in order to treat their potential patients in a proper
123 way. Fantasy and Personal Distress tend to be reduced in the presence of patients, meaning
124 that the incoming medical students would be less prompt to get involved in fictional situation
125 in the presence of patients or to experience distress or discomfort in response to patients'
126 emotional distress. Also, the Perspective Taking tends to be at its highest level with the
127 presence of patients, while Empathic Concern appears as stable through situations. These
128 results revealed that incoming medical students would present higher ability to adopt patients'
129 perspective and constant tendency to experience feeling of compassion for them. Even though
130 these first results appear to be encouraging, integrating and developing empathy lessons in
131 medical education remains a priority.

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

134 **Limitations**

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

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145 **Authors contributions**

146 All procedures performed in our study were in accordance with the ethical standards of the
147 1964 Helsinki declaration and its later amendments or comparable ethical standards. Informed
148 consent was obtained from all individual participants included in the study.

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