Research Article

Dental Students' Perceptions of Dentist-Patient Interactions: An Exploration of Empathy in Dental Students

Eileen Hoskin [1], Karl Woodmansey [2, *], Lynn Beck [3] and Tobias Rodriguez [4]

[1]Rutgers School of Dental Medicine
[2]Center for Advanced Dental Education, Saint Louis University
[3]The University of the Pacific and Senior Consultant for the Academy for Academic Leadership
[4]Academy for Academic Leadership (AAL)

*Corresponding author: Karl Woodmansey, D.D.S., M.A., Endodontics, Center for Advanced Dental Education, Saint Louis University, 3320 Rutger St, St Louis, MO 63104-1122, E-mail: kfw@prodigy.net

Abstract

Background and Objectives: Healthcare providers must endeavor to treat patients with empathy if they expect to practice successfully. Empathy is especially relevant to dentists who provide treatment that is usually associated with pain and invasion of personal space boundaries. A 2011 study by Konrath and O'Brien showed that undergraduate college students have less empathy than the past generations. Anecdotal reports and the author's personal experiences also suggest a reduction in empathy among current dental students. This study was designed to assess empathy in a dental student cohort at a dental school in the United States.

Methods: This study examined empathy levels in third- and fourth-year dental students at a dental school in the United States using existing validated medical education psychometric assessments modified for dental education. Specifically, the Jefferson scale of physician empathy-health professional (JSPE-HP) and patient-practitioner orientation scale (PPOS) questionnaires were modified for use in the dental education domain by substituting the word "dentist" for "physician" and replacing "medical procedures" with "dental procedures." E-mails were sent to all 240 third- and fourth-year dental students at the Rutgers school of dental medicine (RSDM) inviting them to participate in a brief online survey about their perceptions of dentist-patient interactions.

Results: Of the 240 invited students, 84 participated in the survey (27%). All questions were answered with a high empathy rating except for two questions - "It is difficult for me to view things from my patient's perspective" and "I can treat and relate best to patients who look like me and have similar beliefs." The calculated Cronbach's coefficient alpha was 0.71 indicating acceptable internal consistency reliability.

Conclusions: This study did not confirm the hypothesis that students lacked empathy. Only two statements were answered in ways that suggested a decrease in empathic cognition. The responses to the open-ended questions provided an insight into the students' self-interested thought processes.

Keywords: Empathy, Dental, Dental Education, Dental Student

1. Background and Objectives

Basic to each human's psyche is the need to feel understood, loved, and cared for (1). In today's competitive healthcare environment, successful practitioners express themselves by communicating with warmth and appreciation for patient's feelings. Such interpersonal communications are the essence of empathy.

Hojat et al. defined empathy as a cognitive attribute that involves an understanding of the inner experiences and perspectives of another person combined with a capacity to communicate this understanding (2, 3). As such, empathy is multi-faceted. To be empathetic, a caregiver must have both the capacity and desire to "take a walk in another's shoes" and the ability to communicate with the "owner of the shoes." Clinicians with empathic communication skills have been shown to produce better patient health outcomes, and "Communication and Interpersonal Skills" is listed as the third domain in the American dental education association's competencies for the new general dentist (4, 5).

A study by Konrath et al. showed that undergraduate college students have less empathy than the past generations (6). Although widely studied among medical students and those of other health disciplines, to date, empathy has received limited attention within the domain of dental education (7-13). Most of the limited published dental research report moderate overall empathy scores

and document that empathy may decrease throughout students' dental education tenure; however, varying study designs make accurate comparisons difficult (7-13). Anecdotal reports of dental educators and the authors' personal experiences similarly suggest a reduction in empathy among current dental students.

A variety of empathy assessment instruments have been validated, primarily in medical education research such as the Jefferson scale of physician empathy-health professional (JSPE-HP), the patient-practitioner orientation scale (PPOS), Interpersonal Reactivity Index (IRI), the E-scale, and the empathy quotient-short (2, 14-17). Sherman and Cramer reported that the JSPE-HP could reliably and validly assess the levels of empathy in a dental school population (12). Additionally, Krupat et al. showed that the PPOS could be utilized to determine whether physicians were doctor- or disease-centered versus patient-centered (14, 18, 19). The primary aim of this study was to use modified statements from the JSPE-HP and PPOS to evaluate the current status of empathy within a select dental school student population. Empathic levels would be compared to those of medical students and utilized as baseline data for future comparisons.

2. Methods

The study was approved as exempt by both the institutional review boards at Rutgers school of dental medicine and the University of the Pacific. An e-mail cover letter was sent to all 240 third- and fourth-year dental students of the Rutgers school of dental medicine (RSDM) inviting their participation in an online survey. This dental school has a 4-year curriculum, with years 1 and 2 consisting of pre-clinical education and years 3 and 4 involving clinical patient interactions. Because cognitive empathy is the capacity utilized during health professionals' patient interactions, only the third- and fourth-year dental students were selected for the study because they had experienced patient care.

The survey was sent from the director for institutional effectiveness at the RSDM inviting the students to participate in a brief online survey about their perceptions of dentist-patient interactions (2015 Survey Monkey; Palo Alto, Ca.). The survey was opened on September 11, 2015, with a follow-up reminder letter sent two weeks later. The study was subsequently closed on September 27, 2015. No incentives were offered for participation in the survey, and all responses were anonymous. The authors were careful to mask the intent of the survey by naming it "Dental Students' Perceptions of Dentist-Patient Interactions" to mitigate any potential bias.

The initial questions asked the basic demographics: gender and age. Following this, 13 statements were adapted from the JSPE-HP and PPOS (2, 3, 14, 18, 19). The questions were adapted from the JSPE-HP and PPOS for dental students by substituting the word "dentist" for "physician" and replacing "medical procedures" with "dental procedures." The students were asked to rate these statements on a five-point Likert scale (strongly agree to strongly disagree). An example of these statements is "I treat patients as if they were partners in their treatment."

The scoring and wording of the questions are shown in Table 1. Both scales had negative and positive wordings to control for acquiescence bias. A total empathetic score was calculated for each question (Figure 1). Wilcoxon signed-rank tests were used for comparing the rating between our modified statement and the original JSPE-HP or PPOS statement (Table 2). The average total score was compared between males and females and between the two age groups using two-way analysis of variance (ANOVA) (Table 3). The internal consistency reliability of the empathy rating was analyzed using Cronbach's coefficient alpha. IBM SPSS Statistics 21 software (IBM, Armonk, New York) was used to analyze the data. The null hypothesis was that no differences in empathy would be measured between any evaluated groups, with the significance level set at $P < 0.05$.
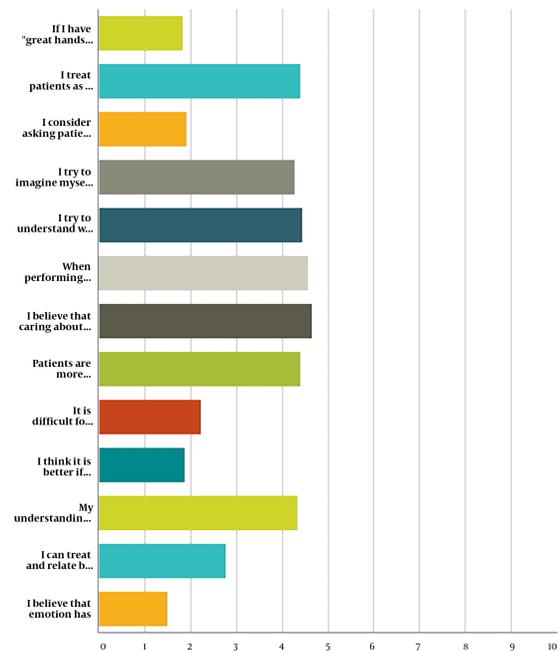

Figure 1. Empathy rating scale scores

Additionally, students were asked six open-ended ques-

Table 1. Empathy Rating Scale Results[a]

Question	Strongly Disagree (1)	Disagree (2)	Neutral (3)	Agree (4)	Strongly Agree (5)	NA	Total	Weighted Average
1. If I have "great hands," create anatomic functional restorations and cause little to no pain it is less important that I communicate well.	39 (44.83)	37 (42.53)	2 (2.30)	5 (5.75)	4 (4.60)	0 (0.00)	87 (100)	1.83
2. I treat patients as if they were partners in their treatment.	0 (0.00)	1 (1.15)	5 (5.75)	38 (43.68)	42 (42.28)	1 (1.15)	87 (100)	4.41
3. I consider asking patients about what is happening in their lives an unimportant factor in understanding their ailments.	33 (37.93)	39 (44.83)	5 (5.75)	9 (10.34)	1 (1.15)	0 (0.00)	87 (100)	1.92
4. I try to imagine myself in my patients' shoes when providing care to them.	0 (0.00)	2 (2.30)	9 (10.34)	36 (41.38)	38 (43.68)	2 (2.30)	87 (100)	4.29
5. I try to understand what is going on in my patients' mind by paying attention to their nonverbal cues and body language.	1 (1.15)	1 (1.15)	3 (3.45)	34 (39.08)	45 (51.72)	3 (3.45)	87 (100)	4.44
6. When performing dental procedures I should "check in" with the patient at regular intervals to determine their comfort level.	1 (1.15)	1 (1.15)	0 (0.00)	28 (32.18)	54 (62.07)	3 (3.45)	87 (100)	4.58
7. I believe that caring about the well-being of a patient is an important therapeutic factor in dental treatment.	1 (1.15)	0 (0.00)	1 (1.15)	23 (26.44)	58 (66.67)	4 (4.60)	87 (100)	4.65
8. Patients are more comfortable in the dental chair when I understand how they are feeling.	1 (1.15)	0 (0.00)	5 (5.75)	36 (41.38)	48 (49.43)	2 (2.30)	87 (100)	4.41
9. It is difficult for me to view things from my patients' perspective.	14 (16.09)	47 (54.02)	19 (21.64)	6 (6.90)	1 (1.15)	0 (0.00)	87 (100)	2.23
10. I think it is better if patients do not have a full explanation of their dental procedure.	33 (38.82)	38 (44.71)	9 (10.59)	2 (2.35)	3 (3.53)	0 (0.00)	87 (100)	1.87
11. My understanding of my patients' feelings gives them a sense of validation, but that is therapeutic.	1 (1.15)	0 (0.00)	9 (10.34)	34 (39.08)	42 (48.28)	1 (1.15)	87 (100)	4.35
12. I can treat and relate best to patients who look like me and have similar beliefs.	11 (12.79)	34 (39.53)	17 (19.77)	11 (12.79)	13 (15.12)	0 (0.00)	87 (100)	2.78
13. I believe that emotion has no place in the treatment of illness.	56 (64.37)	23 (26.44)	4 (4.60)	3 (3.45)	1 (1.15)	0 (0.00)	87 (100)	1.51

[a] Values are expressed as No. (%).

tions about their relatively new relationships with their patients. These questions were intended to qualitatively examine student introspection concerning their relationships with their patients.

3. Results

The survey was e-mailed to 240 students, with 84 responding (27%). Of these, 60% were female and 40% male. The age of the students ranged from 20 - 36 years, with the median age group of 20 - 25 years. A two-way ANOVA showed that there were no significant differences in the total scores between males and females (P = 0.174) and between the age groups of 20 - 25 years and 26 years and older (P = 0.247). The descriptive statistics for gender and age group and two-way ANOVA results are shown in Table 3.

The calculated Cronbach's coefficient alpha was 0.71 indicating that the internal consistency reliability of the empathy rating was acceptable. Wilcoxon signed-rank tests showed that Question #2 (our modified question) had a significantly higher score than question #10 (PPOS#4) (P = 0.033), indicating more empathetic rating for #2 compared with #10. Question #7 (our modified question) had a significantly higher rating than question #11 (JSPE#2) (P = 0.009), indicating more empathetic rating for #7 compared with #11. There were no significant differences in the empathetic rating between question #6 (our modified question) and question #5 (JSPE#4) (P = 0.083) and between question #8 (our modified question) and question

#4 (JSPE #4) (P = 0.156). Table 2 shows the empathetic rating comparisons.

The dental students answered all questions with a high empathy rating except for two questions - "It is difficult for me to view things from my patient's perspective," and "I can treat and relate best to patients who look like me and have similar beliefs." For the first statement, 26 students answered neutral or agree to strongly agree, and for the second statement, 41 students answered the same (Table 1).

The six open-ended questions were intended to continue the students' thought processes on human interactions. Many participants used these questions as an opportunity to voice their frustrations with the clinical scholastic issues within the dental school. For example, when asked "What kind of support would be helpful to you in achieving ideal relationships with patients?" one student replied, "Being complimented on doing a good job on the procedure by the faculty or not being embarrassed if I don't know what I am doing or if I made a mistake." When asked the question, "Please describe what was challenging about the transition from mannequin practice to patient treatment?" many students listed all of the dental procedures that they did not feel qualified enough to perform on a live patient. Only 16.4% of students mentioned patients and communication when answering this question.

Table 2. Wilcoxon Signed-Rank Test Result for Empathetic Rating Comparisons Between Selected Questions

	Question	Medium	P Value
#2 vs. #10	#2. I treat patients as if they were partners in their treatment.	4.5	0.033*
	#10. It is often best for patients if they do not have a full explanation of their dental condition. (PPOS#4)	4.0	
#6 vs. #5	#6. When performing dental procedures I should "check in" with the patient at regular intervals to determine their comfort level.	5.0	0.083
	#5. I try to understand what is going on in my patient's mind by paying attention to their nonverbal cues and body language. (JSPE#4)	5.0	
#7 vs. #11	#7. I believe that caring about the well-being of a patient is an important therapeutic factor in dental treatment.	5.0	0.009*
	#11. My understanding of my patients' feelings gives them a sense of validation that is therapeutic. (JSPE #2)	4.5	
#8 vs. #4	#8. I try to imagine myself in my patients' shoes when providing care to them.	5.0	0.156
	#4. I try to imagine myself in my patients' shoes when providing care to them (JSPE #1)	4.0	

Table 3. Descriptive Statistics for Gender and Age Group and Two-Way ANOVA Result

	N	Mean $\pm$ SD	P Value
Gender			0.174
Female	49	54.6 $\pm$ 4.8	
Male	34	54.2 $\pm$ 4.7	
Age group, y			0.247
20 - 25	41	54.5 $\pm$ 5.0	
$\geq$ 26	42	55.6 $\pm$ 4.6	
Interaction of Gender and age group			0.824

4. Discussion

Many years have passed since Hojat and Gonnela wrote physician empathy: definition, components, measurement and relationship to gender and specialties (2). Since then, the psychometrically proven JSPE test (all forms) has been used in a myriad of research studies examining empathy. In 2005, Sherman and Cramer adapted the JSPE for use with dental students in their study entitled measurement of changes in empathy during dental school (12). That study documents that health professions students begin their education with a theoretical expectation of empathic practice; however, this virtuous intent often dissipates. Sherman and Cramer posit that the decline in empathy could be a defense mechanism that accompanies fear and insecurity when new health practitioners first begin treating patients or may be due to emulation of the peers (12).

In 2009, Yarascavitch et al. examined empathy among students at two Canadian dental schools using a hybridized assessment instrument designed to distinguish between emotive and cognitive empathy (13). Emotive empathy is considered an innate ability to unconsciously respond to the emotions of others whereas cognitive empathy is largely a conscious drive to recognize accurately and understand another's emotional state. In that context, cognitive empathy is the capacity utilized during health professionals' patient interactions. Yarascavitch et al. reported increases in cognitive empathy that coincided with the dental school tenure (13).

A 2015 study by Raja et al. surveyed patients to help generate ideas for changes in the dental school curriculum regarding patient rapport and empathic communication (20). The patients clearly reported feeling dehumanized by their student doctors. Similarly, in 2006, Henzi and Davis surveyed dental students and found that the students "worried that dental education requirements made it difficult to prioritize patients' needs" (21). They felt that "procedures were done for the sake of requirements without looking at the patient holistically."

The results of the current survey showed that, in general, students have an appreciation of empathy. Only two questions specifically found contrary outcomes. Despite replicating a well-validated medical education empathy survey, the current results may not reliably translate to

a true reflection of dental students' empathic behaviors. Two potential biases may have impacted the outcomes of this survey: selection bias and demand characteristics. First, selection bias could have occurred if only more empathic or less empathic students chose to participate in the survey. To mitigate the possibility of such bias, the provided title of the survey was intentionally void of any mention of empathy.

Behavior in an experimental situation, such as this survey, can be affected by a bias termed "demand characteristics." Demand characteristics are when participants form an interpretation of the experiment's purpose and subconsciously change their behavior to fit that interpretation (22). As such, dental students may have answered to meet their expected objectives of the survey. Students with poor attitudes toward patients may know what answers are expected of professional dentists; however, their ideals and actions may be misaligned.

The answers to the open-ended questions were far from the expected qualitative examination of student's thought processes on human interactions. When asked a question like "What kinds of support would be helpful to you in achieving ideal relationships with patients?" the students' responses addressed faculty and scheduling systems. This may indicate that their primary concern is not thinking about their patient. This finding becomes magnified when, earlier in the survey, these students were queried with 13 statements to rate their perceptions about patients.

Some answers were poignant, however. When asked about effective communication, one student replied, "sometimes I get too focused on the procedure I am performing, and I forget to communicate." Many spoke about the difficulty of explaining procedures to patients where language or hearing was a barrier. Some spoke about patients indirectly; for instance, when asked what was challenging about the transition from mannequin to patient, many mentioned saliva, tongue, cheeks, and patients' inability to open wide. When asked about support for ideal relationships, a student stated that he/she would like more training on management of patients with phobias, anxieties, and other psychiatric conditions.

The self-directed responses to the open-ended questions may be a reflection of this generation of dental students. Much has been written recently in trade journals and mainstream media about the millennial generation and their apparent inability to look others in the eye when communicating (23). Their social skills or lack thereof have been honed staring at a phone or computer screen (24). The effects of these generational conditions on empathy, however, are unknown.

In reviewing the literature on empathy and healthcare providers, most research studies reported that female subjects demonstrate greater empathy than males (6, 25). This gender difference was not substantiated in our study. This result could be attributed to the small sample size.

4.1. Conclusions

From the observations of students treating patients, the authors hypothesized that there was an empathic gap in the "soft" skills of dental students. A novel hybridized survey instrument was used. Only two statements were answered in ways that suggested a decrease in empathic cognition. Consequently, this study did not confirm the hypothesis that students lacked empathy. The responses to the open-ended questions provided an insight into the students' self-interested thought processes and suggested the students' incapacity to communicatively act on what they inherently know.

As empathy requires both verbal and nonverbal communication skills, inadequate communication can adversely impact dentist-patient relationships. A directive built into the clinical curriculum, specific for communication and empathic dental student behavior, may be a way to build-on or encourage these skills in students as would requiring discussions on humanism and empathy in all clinical evaluations and treatment. Further research is needed to determine the best pedagogical practices.

Footnote

Conflict of Interests: The authors declare no conflict of interests regarding this work.

References

1. Aanstoos CM. *Maslow's hierarchy of needs. Salem press encyclopedia of health.* 2016. Available from: http://eds.a.ebscohost.com/eds/detail/detail?vid=1&sid=b1541eeb-8c48-4a79-99b2-8a7b969d3ec5%40sessionmgr4009&bdata=JnNpdGU9ZWRzLWxpdmU%3d#AN=93872091&db=ers.

2. Hojat M, Gonnella JS, Nasca TJ, Mangione S, Vergare M, Magee M. Physician empathy: definition, components, measurement, and relationship to gender and specialty. *Am J Psychiatry*. 2002;**159**(9):1563–9. doi: 10.1176/appi.ajp.159.9.1563. [PubMed: 12202278].

3. Hojat M, Gonnella JS, Nasca TJ, Mangione S, Veloksi JJ, Magee M. The Jefferson Scale of Physician Empathy: further psychometric data and differences by gender and specialty at item level. *Acad Med*. 2002;**77**(10 Suppl):S58–60. [PubMed: 12377706].

4. Nelson LP, Maramaldi P, Kinnunen TH, Kalenderian E. Early performance in a humanistic medicine course as a predictor of dental students' later clinical performance. *J Dent Educ*. 2013;**77**(8):1006–12. [PubMed: 23929570].

5. American Dental Education Association. Competencies for the New General Dentist:(As approved by the 2008 ADEA House of Delegates). *J Dent Educ*. 2008;**72**(7):823–6.

6. Konrath SH, O'Brien EH, Hsing C. Changes in dispositional empathy in American college students over time: a meta-analysis. *Pers Soc Psychol Rev.* 2011;**15**(2):180–98. doi: 10.1177/1088868310377395. [PubMed: 20688954].

7. Waldrop D, Nochajski T, Davis EL, Fabiano J, Goldberg L. Empathy in Dentistry: How Attitudes and Interaction With Older Adults Make a Difference. *Gerontol Geriatr Educ.* 2016;**37**(4):359–80. doi: 10.1080/02701960.2014.993065. [PubMed: 25495912].

8. Aggarwal VP, Garg R, Goyal N, Kaur P, Singhal S, Singla N, et al. Exploring the missing link - Empathy among dental students: An institutional cross-sectional survey. *Dent Res J (Isfahan).* 2016;**13**(5):419–23. [PubMed: 27857767]. [PubMed Central: PMC5091000].

9. Rosenzweig J, Blaizot A, Cougot N, Pegon-Machat E, Hamel O, Apelian N, et al. Effect of a Person-Centered Course on the Empathic Ability of Dental Students. *J Dent Educ.* 2016;**80**(11):1337–48. [PubMed: 27803206].

10. Tsiantou D, Lazaridou D, Coolidge T, Arapostathis KN, Kotsanos N. Psychometric properties of the Greek version of the Toronto Composite Empathy Scale in Greek dental students. *Eur J Dent Educ.* 2013;**17**(4):208–17. doi: 10.1111/eje.12037. [PubMed: 24127761].

11. Beattie A, Durham J, Harvey J, Steele J, McHanwell S. Does empathy change in first-year dental students? *Eur J Dent Educ.* 2012;**16**(1):e111–6. doi: 10.1111/j.1600-0579.2011.00683.x. [PubMed: 22251333].

12. Sherman JJ, Cramer A. Measurement of changes in empathy during dental school. *J Dent Educ.* 2005;**69**(3):338–45. [PubMed: 15749944].

13. Yarascavitch C, Regehr G, Hodges B, Haas DA. Changes in dental student empathy during training. *J Dent Educ.* 2009;**73**(4):509–17. [PubMed: 19339438].

14. Krupat E. The fit between doctors and patients: can it be measured? *J Gen Intern Med.* 1996;**11**:134.

15. Davis MH. Measuring individual differences in empathy: Evidence for a multidimensional approach. *J Pers Soc Psychol.* 1983;**44**(1):113–26. doi: 10.1037/0022-3514.44.1.113.

16. Leibetseder M, Laireiter AR, Köller T. Structural analysis of the E-scale. *Pers Individ Differ.* 2007;**42**(3):547–61. doi: 10.1016/j.paid.2006.08.002.

17. Wheelwright S, Baron-Cohen S, Goldenfeld N, Delaney J, Fine D, Smith R, et al. Predicting Autism Spectrum Quotient (AQ) from the Systemizing Quotient-Revised (SQ-R) and Empathy Quotient (EQ). *Brain Res.* 2006;**1079**(1):47–56. doi: 10.1016/j.brainres.2006.01.012. [PubMed: 16473340].

18. Krupat E, Rosenkranz SL, Yeager CM, Barnard K, Putnam SM, Inui TS. The practice orientations of physicians and patients: the effect of doctor-patient congruence on satisfaction. *Patient Educ Couns.* 2000;**39**(1):49–59. [PubMed: 11013547].

19. Krupat E, Bell RA, Kravitz RL, Thom D, Azari R. When physicians and patients think alike: patient-centered beliefs and their impact on satisfaction and trust. *J Fam Pract.* 2001;**50**(12):1057–62. [PubMed: 11742607].

20. Raja S, Shah R, Hamad J, Van Kanegan M, Kupershmidt A, Kruthoff M. Patients' Perceptions of Dehumanization of Patients in Dental School Settings: Implications for Clinic Management and Curriculum Planning. *J Dent Educ.* 2015;**79**(10):1201–7. [PubMed: 26427779].

21. Henzi D, Davis E, Jasinevicius R, Hendricson W. North American dental students' perspectives about their clinical education. *J Dent Educ.* 2006;**70**(4):361–77. [PubMed: 16595529].

22. Orn EM. Demand characteristics and the concept of quasi-controls. In: Rosenthal R, Rosnow R, editors. *Artifacts in Behavioral Research.* Oxford: Oxford University Press; 2009. p. 110–37.

23. Shellenberger S. *Just look me in the eye already- the workplace peril of staring at our phones and elsewhere.* Wall Street Journal; 2013. Available from: https://www.wsj.com/articles/SB10001424127887324809804578511290822228174.

24. Uhls YT, Michikyan M, Morris J, Garcia D, Small GW, Zgourou E, et al. Five days at outdoor education camp without screens improves preteen skills with nonverbal emotion cues. *Comput Human Behav.* 2014;**39**:387–92. doi: 10.1016/j.chb.2014.05.036.

25. Fields SK, Mahan P, Tillman P, Harris J, Maxwell K, Hojat M. Measuring empathy in healthcare profession students using the Jefferson Scale of Physician Empathy: health provider–student version. *J Interprof Care.* 2011;**25**(4):287–93. doi: 10.3109/13561820.2011.566648. [PubMed: 21554061].