Exploring the Relationship between Socioemotional Skills and Decision-Making Styles in Health Students

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Abstract

Higher education in health study programs is particularly focused on the development of technical skills, despite there being a consensus on the importance of training students regarding socioemotional and life skills. The aim of this study was to characterize and explore correlations between socioemotional skills and decision-making styles in undergraduate health students. Undergraduate students (18–25 years old) were recruited at a School of Health Sciences in Portugal. Participants were characterized in terms of sociodemographic data, socioemotional skills (Study on Social and Emotional Skills questionnaire) and decision-making styles (Melbourne Decision Making questionnaire). Descriptive statistics and correlations between questionnaires´ subscales were calculated. Students presented higher scores in tolerance (34.8±3.4), cooperation (34.7±2.4), empathy (31.1±3.2), vigilance (16.0±1.9), and procrastination (9.9±2.1). Assertiveness presented negative correlations with buck-passing *(rho*=-0.43, $p<0.01$) and procrastination (*rho*=-0.38, $p<0.01$) and positive correlation with vigilance (*rho*=0.22, $p=0.03$). Students demonstrated higher values in empathy, cooperation, and tolerance skills, meaning they tend to be kind and care for others' well-being. Vigilance style is related to assertiveness characterizing hard working leaders able to pay attention to others' needs. Training that involves socioemotional skills might be crucial for the style of decision-making in future health professionals.

Keywords: decision-making styles, health students, interdisciplinary study programs, socioemotional skills

Introduction

Higher education in health study programs is particularly focused on technical skills development, despite there being a consensus on the importance of training students in regard to socioemotional and life skills (Ribeiro, Severo, & Ferreira, 2016; Rodríguez-Nogueira, Moreno-Poyato, Álvarez-Álvarez, & Pinto-Carral, 2020). In this context, it is crucial to include the training of transversal skills in the academic curriculum of health students, as these skills can facilitate interpersonal relationships, accountability, and decision-making in a clinical setting (Çinar, Dinler, & Yakut, 2019). The quality of interpersonal relationships in health professionals relies on socioemotional skills, and it is reflected in ineffective or effective communication. Ineffective communication can make patients feel anxious, uncertain, and generally unsatisfied with their care, while it is also linked to increased stress, lack of job satisfaction, and emotional burnout amongst health professionals (Moore, Rivera, Bravo-Soto, Olivares, & Lawrie, 2018).

The care, respect, and tolerance that occur while a health professional is taking care of someone are strong indicators of quality in health practices (Gazarian et al., 2021). For example, the ability to establish an empathic relationship between health professionals and patients is a key transversal skill that might be crucial not only to encourage patients' adherence to treatments but also to promote patients' outcomes (Moudatsou, Stavropoulou, Philalithis, & Koukouli, 2020). In fact, for attaining high standards in patients' care, it is essential to include social skills training for stimulating the inter-professional working performance (Singh & Salisbury, 2019; Wang, Shi, Bai, Zheng, & Zhao, 2015). In addition, when a health professional uses non-assertive communication, this might happen because of low self-image and confidence, which consequently can hamper shared decision-making and decrease patients' empowerment (Pakarinen, Parisod, Smed, & Salanterä, 2017). Another important social skill for health professionals is cooperation, which characterizes the ability to coordinate decisions and actions through constructive dialogue. This skill is one of the most important elements for interprofessional and multidisciplinary efficient work in health teams (Molleman, Broekhuis, Stoffels, & Jaspers, 2008). Interestingly, the higher the complexity of the health care is, the more important is cooperation (Jünger, Pestinger, Elsner, Krumm, & Radbruch, 2007).

Training adaptable and innovative health professionals was identified as an urgent need in biomedical fields (Rodríguez, Díez, Pérez, Baños, & Carrió, 2019; Royce, Hayes, & Schwartzstein, 2019; Scott, Leritz, & Mumford, 2004). To reach this profile, health professionals should develop skills such as creativity, critical thinking, and problem solving and be specially trained in flexible and open environments (Rodríguez et al., 2019; Royce et al., 2019; Scott et al., 2004). These skills are major contributors for decision-making by health care professionals, which is particularly characterized by low level of structuredness (Brock et al., 2013; Morley & Cashell, 2017; O'Daniel & Rosenstein, 2008; Pitel & Mentel, 2017). Poor decision-making abilities may prejudice team collaboration between health professionals, having impact in the quality of care (Brock et al., 2013; Morley & Cashell, 2017; O'Daniel & Rosenstein, 2008). Therefore, further understanding of the major coping patterns in decision-making in this field, including their associated risks and advantages, should be recommended earlier in undergraduate study programs (Pitel & Mentel, 2017).

Previous studies already discussed the importance of socioemotional skills and decision-making styles for high quality practices in health care. Most of these studies focused on real clinical settings, such as palliative care and chronic diseases (Bloomer et al., 2018; Kryworuchko, Strachan, Nouvet, Downar, & You, 2016). Fewer studies focused on analysing

these skills in undergraduate health students, mainly characterising these abilities in the context of a specific study program (e.g., nursing) (K. L. Brooks & Shepherd, 1990; Expósito, Jiménez-Rodríguez, Agea, Izquierdo, & Costa, 2019; Mauriz, Caloca-Amber, Córdoba-Murga, & Vázquez-Casares, 2021; Noohi, Karimi-Noghondar, & Haghdoost, 2012). However, socioemotional and decision-making skills are particularly relevant in multi-disciplinary scenarios (Chong, Aslani, & Chen, 2013; Hofstede et al., 2013; Soukup et al., 2018; Uitdewilligen & Waller, 2018), providing crucial abilities, for example in the registration and management of interprofessional clinical information. As such, before starting to think about interdisciplinary educational programs for health students, it would be important to characterize students' socioemotional and decision-making profiles (Gordon, Hill, Stojan, & Daniel, 2018). Therefore, this study aimed to characterize socioemotional skills and decision-making styles in undergraduate health students at a Portuguese health school with interdisciplinary health programs. As a secondary objective, this study explored possible correlations between students' decision-making styles and socioemotional skills.

Methodology

A descriptive quantitative cross-sectional study was conducted using self-report high-quality instruments, allowing the characterization of students' socioemotional skills and decision-making styles, and establishing relationships between them.

Participants and Setting

Data were collected between October and November 2020 at the School of Health Sciences of the Polytechnic Institute of Leiria. A call for participation was posted in the school's community website targeting undergraduate students. Students interested in participating were invited to provide informed consent through an electronic form. Respondents under 18 and over 25 years old were excluded. Eligible students received an online link providing access to the questionnaires used for data collection. All electronic data collection procedures were delivered using Google Forms.

Sociodemographic Questionnaire

Sociodemographic characterization of the recruited students was based on the following variables: age (years), sex (female; male), study program, and academic year of the study program (1st year; 2nd year; 3rd year, 4th year).

Study on Social and Emotional Skills

The Study on Social and Emotional Skills (SSES) instrument was developed to assess social and emotional skills in children and young people and how they interact with their life contexts, namely regarding family, at school, and in the community (Kankaraš & Suarez-Alvarez, 2019). For this purpose, the Organization for Economic Cooperation and Development (OECD) proposed the development of an instrument that assesses these skills to characterize the socioemotional domain of children and young people around the world.

In its original version, the SSES evaluated 15 social and emotional competences. After the literature review process, 14 of the competencies assessed by the instrument were added to contribute to the assessment of the program's target competencies. Thus, the SSES instrument was organized into subdomains or dimensions of the target competencies (Chernyshenko, Kankaraš, & Drasgow, 2018; Kankaraš, Feron, & Renbarger, 2019).

Each subdomain consists of eight items, corresponding to eight questions, which are randomly reorganized. The final full version of SSES has 12 sets of eight items each, making a total of 96 items. Each item is evaluated on a 5-point Likert scale: 1 corresponds to "Strongly disagree" and 5 corresponds to "Strongly agree". For this study, seven subdomains were selected, (assertiveness (ASS), cooperation (COO), creativity (CRE), empathy (EMP), sociability (SOC), tolerance (TOL), and trust (TRU)). For each of subdomains selected, a final score was calculated as the sum of the corresponding items after inverting the values associated with items ASS5, COO4, CRE3, CRE7, CRE8, EMP8, SOC4, TOL6, and TRU5. The final score of each subdomain ranged between 8 and 40 points. Higher values represent a higher degree on the domain being evaluated.

This instrument was designed to allow the triangulation of information between parents and children/young people, with a version for parents/guardians and another for children/young people. However, given that the participants were students of a higher education institution, the parents' version of the instrument was not used. The SSES instrument is applicable to students between the ages of 8 and 25 years, approximately. The response time limit for this instrument is expected to be a maximum of thirty minutes.

Melbourne Decision Making Questionnaire

The Melbourne Decision Making Questionnaire (MDMQ) (Mann, Burnett, Radford, & Ford, 1997) is an improvement of the Flinders Decision Making Questionnaire (FDMQ) developed by Mann (1982), which intended to identify the decision-making styles based on several patterns of coping behavior. MDMQ showed itself to be applicable to different ages and genders and can be easily and quickly applied. MDMQ is available in European Portuguese to evaluate stress-related patterns while making decisions, enabling comparison within and between different subjects, which is not only useful for training purposes but also for other studies of decision-making (Filipe, Alvarez, Roberto, & Ferreira, 2020). MDMQ characterizes attitudes, behaviors, or thoughts of individuals concerning decision-making by evaluating the respondent's rating to 22 statements using a 3-points Likert scale (1—not true about me; 2—sometimes true; 3—true about me). These 22 statements are organized in four subscales: vigilance (six statements), buck-passing (six statements), hypervigilance (five statements), and procrastination (five statements). Vigilance reflects a careful and well-planned approach to decision-making, while hypervigilance is associated with impulsive and unplanned actions in the face of the decision-making situation (Cotrena, Branco, & Fonseca, 2017). On the other hand, procrastination and buck-passing are linked with defensive and evasive attitudes toward decision-making.

For each MDMQ subscale, a final score was calculated as the sum of the corresponding statements. For vigilance and buck-passing, the final score value ranged between six and 18 points; for hypervigilance and procrastination, the final score value ranged between five and 15 points. Higher values represent a higher degree on the subscale being evaluated.

Statistical analysis

Descriptive statistics of sociodemographic and academic data, social emotional skills (SSES), and decision-making styles (MDMQ) are presented as absolute and relative frequencies or as mean and standard deviation (SD) as appropriate. To explore the relationship between SSES subdomains and MDMQ decision-making subscales, Spearman's correlation coefficients (*rho*) were calculated. Correlations values were interpreted as follows: 0-0.09 negligible correlation; 0.1-0.29 weak correlation; 0.3-0.49 moderate correlation; 0.7-0.89 strong correlation; 0.9-1 very strong correlation (Cohen, 1988).

All statistical analysis were performed using the Statistical Package for Social Sciences (SPSS©) software Version 27.0 (IBM, Armonk, New York, USA). The level of statistical significance was set to $p \leq 0.05$.

Results

Sociodemographic Characterization

In total, 97 (n=97) students volunteered for the study; from these, two did not provide complete information and were excluded from the sample. Therefore, the final sample consisted of 95 students enrolled in undergraduate health study programs (bachelor; four-year study programs) and higher technical courses (CTeSP; two-year study program). Table 1 presents students' sociodemographic and academic information. Students had a mean (±standard deviation (SD)) age of 20.28 (±2.90) years old and were mostly women (n=83, 87.4%). Most students were enrolled in undergraduate study programs (n=89; 93.7%), with only six (6.3%) students enrolled in the Assistive Health Products higher technical course. Distribution by undergraduate study program was as follows: physical therapy (n=28, 29.5%), dietetics and nutrition (n=24, 25.3%), nursing (n=18, 18.9%), occupational therapy (n=18, 18.9%), and speech therapy (n=1, 1.1%). Thirty-three (n=33, 34.7%) students were registered in the first year of the study program; 26.6% (n=25) were registered in the second year, 29.5% (n=28) in the third year, and 9.5% of the students (n=9) were registered in the fourth year.

Table 1

Sociodemographic and academic characterization (n=95)

	Students
Age (years), Mean±SD	20.28±2.90
Sex, n (%)	
Female	83 (87.4)
Male	12 (12.6)
Study Program, n (%)	
Dietetics and nutrition	24 (25.3)
Nursing	18 (18.9)
Occupational therapy	18 (18.9)
Physical therapy	28 (29.5)
Speech therapy	1 (1.1)
Assistive health products	6 (6.3)
Academic Year, n (%)	
1st year	33 (34.7)
2nd year	25 (26.3)
3rd year	28 (29.5)
4th year	9 (9.5)

Abbreviations: SD, standard deviation

Social and emotional skills characterization. Table 2 summarizes the responses in the individual items and the total score in the selected subdomains of SSES. Health students presented higher total scores in tolerance (34.8±3.4), cooperation (34.7±2.4), and empathy (31.1±3.2), followed by creativity (29.1±4.7), trust (28.1±4.1), sociability (28.0±2.9), and assertiveness (22.7±5.9).

Table 2
Social and emotional skills characterization (n=95)

Item	ASS	COO	CRE	EMP	SOC	TOL	TRU
1	3.1±0.9	4.8±0.4	4.0±0.6	4.2±0.5	3.6±0.8	4.8±0.4	3.6±0.7
2	2.7±1.0	4.3±0.5	3.5±0.8	4.8±0.4	3.2±0.8	4.0±0.7	3.5±0.9
3	3.1±0.8	4.1±0.5	2.1±0.9	3.8±0.8	4.7±0.5	3.7±0.8	3.9±0.6
4	2.9±0.9	2.3±0.9	3.5±0.7	3.6±0.8	3.6±1.1	4.8±0.5	3.3±0.9
5	2.8±1.0	4.7±0.5	3.4±1.0	3.4±0.7	4.0±0.7	4.5±0.6	3.1±0.9
6	2.5±1.0	4.4±0.6	3.7±0.9	3.6±0.6	4.2±0.7	1.5±1.0	4.2±0.7
7	2.9±1.0	4.3±0.6	2.4±0.9	3.8±0.7	3.4±1.0	4.2±0.7	3.2±0.9
8	2.3±0.9	4.5±0.5	2.5±0.9	2.2±0.9	2.5±1.0	4.5±0.6	3.5±0.7
TOTAL	22.7±5.9	34.7±2.4	29.1±4.7	31.1±3.2	28.0±2.9	34.8±3.4	28.1±4.1

Data are represented as mean ± standard deviation. ASS–assertiveness; COO–cooperation; CRE–creativity; EMP–empathy; SOC–sociability; TOL–tolerance; TRU–trust. ASS1–I am a leader; ASS2–I want to command; ASS3–I know how to convince others to do what I want; ASS4–I like to lead others; ASS5–I do not like to lead a team; ASS6–I like to be leader in my class; ASS7–I like to be the leader of a group; ASS8–I am dominant, and I act as a leader. COO1–I like to help others.; COO2–I get along well with others; COO3–I work well with other people; COO4–I start arguments with others; COO5–I treat others with respect; COO6–I am always willing to help my classmates; COO7–I am ready to help anybody; COO8–I am polite and courteous to others. CRE1–I find new ways of doing things; CRE2–I am original, and new ideas always come up; CRE3–I have a hard time imagining things; CRE4–I sometimes find a solution that other people do not see; CRE5–I like to invent things; CRE6–I have a good imagination; CRE7–I find it difficult to imagine new things; CRE8–I am not very creative. EMP1–I am helpful and unselfish with others; EMP2–It is important to me that my friends are okay; EMP3–I can sense how others feel; EMP4–I know how to comfort others; EMP5–I predict the needs of others; EMP6–I understand what others want; EMP7–I am warm toward others; EMP8–I rarely ask others how they are feeling. SOC1–I am outgoing and sociable; SOC2–I have many friends; SOC3–I like being with my friends; SOC4–I like to be alone; SOC5–I like to talk to many different people; SOC6–I like to spend my free time with others; SOC7–I make friends easily; SOC8–I have a hard time making friends. TOL1–I am interested in being friends with people from other cultures; TOL2–I ask questions about other cultures; TOL3–I feel comfortable in new cultural environments; TOL4–I want to travel to other countries; TOL5–I like to hear about other cultures and religions; TOL6–I am not interested in other countries and cultures; TOL7–I learn a lot from people of different beliefs; TOL8–I like to learn about other countries and cultures. TRU1–I think that most of my colleagues keep their promises; TRU2–I believe that my friends will never betray me; TRU3–I believe that my friends keep my secrets; TRU4–I believe that most people are kind; TRU5–I mistrust people; TRU6–I believe that other people will be able to help me; TRU7–I believe that most people are honest; TRU8–I trust others.

Responses to the items in subdomain tolerance showed that health students were inclusive (TOL1: 4.8±0.4) and open to knowing other countries and cultures (TOL4: 4.8±0.5; TOL6: 1.5±1,0). Cooperation outcomes revealed that health students like to help (COO1: 4.8±0.4) and respect others (COO5: 4.7±0.5) while tending to avoid conflicts and arguments with others (COO4: 2.3±0.9). Empathy outcomes showed that the health students strongly agree that it is important to know that their friends are doing well (EMP2: 4.8±0.4) and assume themselves as generous (EMP1: 4.2±0.5) and empathetic (EMP3: 3.8±0.8) to others. However, students revealed difficulty in knowing how to comfort others (EMP4: 3.6±0.8) and in predicting what others feel (EMP5: 3.4±0.7). In the responses to the items in the creativity subdomain, health students were shown to enjoy finding new solutions (CRE1: 4.0±0.6) and to have a good imagination (CRE6: 3.7±0.9) and creativity (CRE8: 2.5±0.9). Trust results showed that students stated clearly that they can count on others to help them (TRU6: 4.2±0.7) and believe in their friends (TRU3: 3.9±0.6). However, lower scores were observed in items about kindness (TRU4: 3.3±0.9), honesty (TRU7: 3.2±0.9), or trustfulness (TRU5: 3.1±0.9) of others. Sociability outcomes indicated that health students enjoy spending time with their friends (SOC3: 4.7±0.5; SOC6: 4.2±0.7), and that they have no difficulty in making new friends (SOC8: 2.5±1.0). However, it seems to be difficult for them to assume they have many friends

(SOC2: 3.2±0.8). Finally, responses to the items in the assertiveness subdomain seemed to be more diverse. Health students have difficulty in assuming a leader position (ASS1: 3.1±0.9) and consider themselves not to have the persuasive ability to convince others (ASS3: 3.1±0.8). Results also showed that participants do not like to be leaders of their class (ASS6: 2.5±1.0) and do not consider themselves to be dominant (ASS8: 2.3±0.9).

Decision-Making Styles Characterization

The characterization of decision-making styles based on MDMQ can be found in Table 3. Results obtained revealed that health students present higher scores in vigilance (16.0±1.9) and procrastination (9.9±2.1) styles, followed by buck-passing (10.8±2.8) and hypervigilance styles (8.4±1.9).

Table 3

Decision-making styles characterization based on MDMQ (Mann et al., 1997) (n=95)

MDMQ Statements	Mean±SD
Vigilance	16.0±1.9
2. I like to consider all the alternatives.	2.8±0.4
4. I try to find out the disadvantages of all alternatives.	2.6±0.6
6. I consider how best to carry out the decision.	2.7±0.5
8. When making decisions I like to collect lots of information.	2.5±0.6
12. I try to be clear about my objectives before choosing.	2.8±0.5
16. I take a lot of care before choosing.	2.7±0.5
Buck-passing	10.8±2.8
3. I prefer to leave decisions to others.	1.7±0.6
9. I avoid making decisions.	1.8±0.6
11. I do not like to take responsibility for making decisions.	1.8±0.6
14. If a decision can be made by me or another person, I let the other person make it.	1.8±0.6
17. I do not make decisions unless I really must have to.	1.5±0.7
19. I prefer that people who are better informed decide for me.	2.1±0.7
Hypervigilance	8.4±1.9
5. I waste a lot of time on trivial matters before getting to the final decision.	2.0±0.7
7. Even after I have made a decision, I delay acting upon it.	1.9±0.7
10. When I have to make a decision, I wait a long time before starting to think about it.	1.4±0.6
18. I delay making decisions until it is too late.	1.4±0.5
21. I put off making decisions.	1.7±0.6
Procrastination	9.9±2.1
1. I feel as if I'm under tremendous time pressure when making decisions.	2.3±0.5
13. The possibility that small things might go wrong causes-me to swing abruptly in my preferences.	1.8±0.6
15. Whenever I face a difficult decision, I feel pessimistic about finding a good solution.	1.9±0.7
20. After making a decision, I spend a lot of time convincing myself it was the right decision.	1.9±0.7
22. I cannot think straight if I have to make decisions in a hurry.	2.0±0.7

Abbreviation: SD, standard deviation

In the vigilance style, health students were shown to consider several alternatives and disadvantages (statement 2, 2.8±0.4) and to be clear about their objectives (statement 12, 2.8±0.5) before making a decision. Regarding the buck-passing style, data showed that students prefer to let other people decide when they are better-informed (statement 19, 2.1±0.7). Results on the procrastination style indicated that students feel tremendous pressure when they need to make decisions (statement 13, 2.3±0.5) and do not feel comfortable when they must make rush decisions (statement 22, 2.0±0.7). Finally, the results on the hypervigilance style revealed that students waste significant time before making a decision (statement 5, 2.0±0.7), and even after deciding, they take time to put it into practice (statement 7, 1.9±0.7).

Correlations Between Socio-Emotional Skills and Decision-Making Style

Table 4 presents the Spearman correlation coefficients (*rho*) between the total scores of socio-emotional skills and decision-making styles. Statistically significant weak and moderate correlations can be observed between socio-emotional skills and decision-making styles.

Table 4

Correlations between socio-emotional skills (SSES) and decision-making styles (MDMQ)

	Vigilance	Buck-passing	Hypervigilance	Procrastination
Assertiveness	0.22*	-0.43**	-0.19	-0.38**
p-value	*0.03*	*<0.01*	*0.06*	*<0.01*
Cooperation	0.18	0.01	-0.14	-0.02
p-value	*0.09*	*0.93*	*0.18*	*0.89*
Creativity	0.15	-0.31**	-0.12	-0.16
p-value	*0.14*	*<0.01*	*0.27*	*0.12*
Empathy	0.24*	-0.20	-0.14	-0.11
p-value	*0.02*	*0.06*	*0.17*	*0.29*
Sociability	0.16	-0.15	0.01	0.02
p-value	*0.12*	*0.14*	*090*	*0.88*
Tolerance	0.19	-0.21*	-0.12	0.05
p-value	*0.06*	*0.04*	*0.23*	*0.64*
Trust	0.13	-0.11	-0.30**	-0.17
p-value	*0.20*	*0.28*	*<0.01*	*0.09*

* Correlation is significant at the *p-value*≤0.05. ** Correlation is significant at the *p-value*≤0.01.

Assertiveness showed negative moderate correlations with buck-passing *(rho*=-0.43, *p*<0.01) and procrastination (*rho*=-0.38, *p*<0.01) and a positive weak correlation with vigilance (*rho*=0.22, *p*=0.03). These results indicated that more assertive students tend to be less prone to buck-passing and procrastination but more prone to vigilance in their decision-making style. Creativity presented a negative moderate correlation with buck-passing *(rho*=-0.31, *p*<0.01). Thus, students with higher creativity scores seem to be less willing to adhere to buck-passing in the process of making a decision.

A positive weak correlation was found between empathy and vigilance *(rho*=0.24, *p*=0.02), that is, when empathy scores increased, vigilance scores also tended to increase. On the other hand, tolerance showed a weak negative correlation with buck-passing *(rho*=-0.21, *p*=0.04), meaning that students with higher scores in tolerance exhibited lower scores of buck-passing. The negative moderate correlation between trust and hypervigilance (*rho*=-0.30, *p*<0.01) indicated that students who trust others (higher scores in trust) seem to adopt a less hypervigilant style (lower scores in hypervigilance) when making a decision.

No significant correlation was found between skills cooperation and sociability and MDMQ decision-making styles.

Discussion

The main objective of this study was to characterize socioemotional skills and decision-making styles in undergraduate health students at a Portuguese Health School with interdisciplinary health programs. This study is a first step for the critical overview of Portuguese health students' profiles in terms of transversal competences. This critical overview is determinant for guiding the experimentation of innovative learning methodologies to increase the students' performance as health care providers in collaborative and multidisciplinary scenarios.

The students involved in this study demonstrated higher values in empathy, cooperation, and tolerance skills. The strong evidence of these socioemotional skills demonstrates that students are kind and care for others' well-being. Gustin (2017) explained that empathy relates to compassion, which is a core concept in caring science. The author stated that health professionals need compassion for promoting high quality care but also to guarantee professionals' well-being (Gustin, 2017). Furthermore, participants included in this study valued the interconnection as well as the importance of teamwork and mutual help items in the cooperation domain of the SSES instrument. In fact, the constant changes in the health care system and the complex health needs of patients require effective communication, teamwork, and interprofessional cooperation. According to Homeyer et al. (2018), health professionals that demonstrate effective cooperation can understand roles and responsibilities to efficiently communicate with peers and are most likely to feel increased job satisfaction. Finally, students demonstrated that they are open to different points of view and value foreign people and cultures. In future health professionals, tolerance was associated with originality, higher mental flexibility, openness to new ideas, and ethnic respect (Homeyer et al., 2018). Globally, empathy, cooperation, and tolerance are extremely important skills in a clinical context, as they are crucial for multidisciplinary teamwork, avoiding conflicts and fostering shared decisions.

Additionally, data from the present study demonstrated that one of the most evident decision-making styles was the vigilance style. This shows that health students can set high standards for themselves, work hard, and focus their attention on the current tasks to achieve personal goals (Cotrena et al., 2017). The results obtained also showed that vigilance is related to empathy and assertiveness, which means that leaders that can pay attention to the needs of others tend to make decisions using a vigilance style. In fact, empathy is related to cognitive functioning that affects decision-making, as empathetic people are kind and compassionate, which leads to the ability to listen to others' needs, studying various alternatives and establishing pros and cons before choosing without being domineering (Moore et al., 2018). Ioannidou & Konstantikaki (2008) stated that vigilance associated with empathy is a characteristic of emotional intelligence, describing it as a concept that involves skill and ability, which allows one to better manage the emotions of oneself, others, and groups. Success in different aspects of human life requires more than a significant intelligence quotient, since we all know people who are academically brilliant but are socially and interpersonally unfit (Ioannidou & Konstantikaki, 2008). Emotional intelligence is something that can be learned, thus it is important that young students in the health field exercise these skills, with the role of teachers being extremely relevant, since much of the learning in these professions is also done by modeling by experts (Goleman, 2001).

Students who participated in the present study used procrastination as a decision style, which indicates that they tend to feel pressure in decision-making and worry about being wrong because they want to make the right decision (Cotrena et al., 2017). Procrastination is related to assertiveness. In fact, being able to make the right decisions at the right time is a crucial part of leadership. Nevertheless, the lack of a proactive attitude can cause not only decisions getting delayed but leaders failing to effectively make decisions about key challenges in health care. Making decisions under pressure is a challenge in healthcare, thus assertiveness must be worked on to avoid stressful situations that can lead to anxiety and burnout (Zavala, Day, Plummer, & Bamford-Wade, 2018).

Studies on self-regulation theory versus externally regulated learning (de la Fuente-Arias, 2015, 2017) raised the hypothesis that a higher level of self-regulation is associated with a lower level of procrastination and, consequently, a higher level of procrastination is related to a lower level of performance. Steel (2007) showed that procrastinating students tend to have a higher number of negative results and lower average grades. In a study that involved 363 university students from two Colombian universities, Garzón-Umerenkova et al. (2018) pointed out that low levels of self-regulation are commonly observed among students who procrastinate. On the other hand, a negative association was found between procrastination and academic performance, which highlights the impact of procrastination on students' achievements (Garzón-Umerenkova & Flores, 2017).

Although buck-passing was not a dominant decision-making style for students that participated in this study, significant and negative correlations with assertiveness, creativity, and tolerance skills were observed. Previous studies observed that extraversion and openness to experience negatives predict buck-passing (Foti & Hauenstein, 2007; Rahaman, 2014). Buck-passing is a style that avoids decisions and responsibilities by delegating them to others. Delegation can result in a better decision when someone is more knowledgeable, which allows people to feel some relief and less responsible for negative outcomes (Brooks et al., 2015; Palmeira et al., 2015). Specifically, in health care contexts, it is important to be open to different points of view, developing leadership and creative thinking, since these socioemotional skills predict higher levels of job performance, adequate job attitudes, and an efficient team performance (Judge, Heller, & Mount, 2002).

In general, the results presented suggest that critical improvements are required on training decision-making in future health professionals. In fact, designing interprofessional programs to foster emergent and structured decision-making might be crucial in health students' training. In this context, innovative strategies have been proposed. For example, serious games were experienced for training decision making in students from biomedical courses, by involving students and educators in the cocreation of game-based scenarios and decision-tree game flow (Kaczmarczyk, Davidson, Bryden, Haselden, & Vivekananda-Schmidt, 2016). Also, virtual reality has been explored for training teamwork, communication, and situation awareness, by simulating scenarios of critical medical decisions that must be taken in a team context, with time constraints and immediate feedback (Bracq, Michinov, & Jannin, 2019). Although, these methodologies can potentially advance clinical decision training in health students, this topic has only been scarcely explored, and needs further investigation.

Although this study describes a relevant socioemotional and decision-making profile of health students, which might contribute for designing education training programs, there are limitations in methodology that need to be considered. First, the sample of students involved in this study is small and provides an inadequate representation of the school's students both

in terms of distribution by program study and academic year of attendance. Second, data were collected using self-reported instruments which may subject to several biases such as exaggeration. Furthermore, SSES transcultural adaptation and validation into Portuguese are ongoing tasks. Finally, some subdomains of SSES may not be the most suitable for the population studied and the intended characterization. In particular, the subdomain tolerance mainly focuses on interest and respect for other countries, cultures, and religions rather than on essential competence for health professionals such as acceptance of the other, of a different point of view, or of a behavior. In future studies, it would be interesting to include non-clinical healthcare students, as they have also an important role in planning health care programs, and they are rarely considered in research studies. In addition, future research in this field could be particularly focused on the importance of socioemotional and decision-making skills in health care provision during the COVID-19 crisis.

Conclusion

Socioemotional skills and decision-making styles were studied in undergraduate health students at a Portuguese health school with interdisciplinary health programs. Students demonstrated higher values in empathy, cooperation, and tolerance skills, which means that they tend to be kind and care for others' well-being. The most evident decision-making style was vigilance style, which is related to empathy and assertiveness, characterizing hard-working leaders able to pay attention to others' needs. The students also demonstrated use of procrastination as a decision style, which might be a risk factor for academic negative results and for lower response to health care challenges. Interestingly, negative correlations between buck-passing and assertiveness, creativity, and tolerance skills highlight the importance of training these emotional skills to avoid this decision-making style in future health professionals. Understanding socioemotional and decision-making students' profile is a relevant information for guiding the experimentation of innovative learning methodologies, in order to increase the students' performance as health care providers in collaborative and multidisciplinary scenarios.

Funding. This work was funded by Fundação Calouste Gulbenkian through Gulbenkian Academies for Knowledge Program (ref. Gym2BeKind) and by Portuguese national funds provided by Fundação para a Ciência e Tecnologia (FCT) (UI/05704/2020).

References

Bloomer, M. J., Botti, M., Runacres, F., Poon, P., Barnfield, J., & Hutchinson, A. M. (2018). Communicating end-of-life care goals and decision-making among a multidisciplinary geriatric inpatient rehabilitation team: A qualitative descriptive study. *Palliative Medicine*, *32*(10), 1615–1623. https://doi.org/10.1177/0269216318790353

Bracq, M., Michinov, E., & Jannin, P. (2019). Virtual reality simulation in nontechnical skills training for healthcare professionals: A systematic review. *Simulation in Healthcare : Journal of the Society for Simulation in Healthcare*, *14*(3), 188–194. https://doi.org/10.1097/SIH.0000000000000347

Brock, D., Abu-Rish, E., Chiu, C.-R., Hammer, D., Wilson, S., Vorvick, L., … Zierler, B. (2013). Interprofessional education in team communication: working together to improve patient safety. *BMJ Quality & Safety*, *22*(5), 414–423. https://doi.org/10.1136/bmjqs-2012-000952

Brooks, A. W., Gino, F., & Schweitzer, M. E. (2015). Smart people ask for (my) advice: Seeking advice boosts perceptions of competence. *Management Science*, *61*(6), 1421–1435. https://doi.org/10.1287/mnsc.2014.2054

Brooks, K. L., & Shepherd, J. M. (1990). The relationship between clinical decision-making skills in nursing and general critical thinking abilities of senior nursing students in four types of nursing programs. *The Journal of Nursing Education*, *29*(9), 391–399. https://doi.org/10.3928/0148-4834-19901101-05

Chernyshenko, O. S., Kankaraš, M., & Drasgow, F. (2018). *Social and emotional skills for student success and well-being*. (173). https://doi.org/https://doi.org/https://doi.org/10.1787/db1d8e59-en

Chong, W. W., Aslani, P., & Chen, T. F. (2013). Multiple perspectives on shared decision-making and interprofessional collaboration in mental healthcare. *Journal of Interprofessional Care*, *27*(3), 223–230. https://doi.org/10.3109/13561820.2013.767225

Çinar, M. A., Dinler, E., & Yakut, Y. (2019). The Effect Of Creative Drama On Empathic Tendencies, Communication Skills And Critical Thinking Of Physiotherapy Students. *CBU International Conference Proceedings*, *7*, 711–716. https://doi.org/10.12955/cbup.v7.1443

Cohen, J. (1988). *Statistical Power Analysis for the Behavioral Sciences* (2nd ed.). United States of America: Lawrence Erlbaum Associates.

Cotrena, C., Branco, L. D., & Fonseca, R. P. (2017). Adaptation and validation of the Melbourne Decision Making Questionnaire to Brazilian Portuguese. *Trends in Psychiatry and Psychotherapy*, *40*, 29–37. https://doi.org/10.1590/2237-6089-2017-0062

de la Fuente-Arias, J. (2015). Competence of Learning, Study and Performance under STRESS (CLSPS) Model. Self-Help Guide for University Students, Graduates and Professional Examination Candidates. *Education & Psychology I+D+I*. Almería, Spain.

de la Fuente-Arias, J. (2017). Theory of Self- vs. Externally-Regulated Learning(TM): Fundamentals, Evidence, and Applicability. *Frontiers in Psychology*, *8*, 1675. https://doi.org/10.3389/fpsyg.2017.01675

Expósito, J. S., Jiménez-Rodríguez, D., Agea, J. L. D., Izquierdo, M. D. C., & Costa, C. L. (2019). Impact of Socio-Emotional Skills On The Performance of Clinical Nursing Practices. *International Journal of Nursing Education Scholarship*, *16*(1). https://doi.org/10.1515/IJNES-2019-0064

Filipe, L. P., Alvarez, M.-J., Roberto, M. S., & Ferreira, J. A. (2020). Validation and invariance across age and gender for the Melbourne Decision-Making Questionnaire in a sample of Portuguese adults. *Judgment and Decision Making*, *15*(1), 135–148. Retrieved from http://journal.sjdm.org/19/190917/jdm190917.pdf

Foti, R. J., & Hauenstein, N. M. A. (2007). Pattern and variable approaches in leadership emergence and effectiveness. *The Journal of Applied Psychology*, *92*(2), 347–355. https://doi.org/10.1037/0021-9010.92.2.347

Garzón-Umerenkova, A., de la Fuente, J., Amate, J., Paoloni, P. V., Fadda, S., & Pérez, J. F. (2018). A linear empirical model of self-regulation on flourishing, health, procrastination, and achievement, among university students. *Frontiers in Psychology*, *9*, 536. https://doi.org/10.3389/fpsyg.2018.00536

Garzón-Umerenkova, A., & Flores, J. G. (2017). Propiedades Psicométricas de la Versión en Español de la Prueba Procrastination Assessment Scale-Students, PASS. *Revista Iberoamericana de Diagnóstico y Evaluación-e Avaliação Psicológica, 1*(43), 149-163. https://doi.org/10.21865/RIDEP43_149

Gazarian, P. K., Morrison, C. R. C., Lehmann, L. S., Tamir, O., Bates, D. W., & Rozenblum, R. (2021). Patients' and care partners' perspectives on dignity and respect during acute care hospitalization. *Journal of Patient Safety*, *17*(5), 392–397. https://doi.org/10.1097/PTS.0000000000000353

Goleman, D. (2001). Emotional intelligence: Issues in paradigm building. In C. Cherniss & D. Goleman (Eds.), *The emotionally intelligent workplace* (p. 26). San Francisco, USA: Jossey-Bass.

Gordon, M., Hill, E., Stojan, J. N., & Daniel, M. (2018). Educational interventions to improve handover in health care: An updated systematic review. *Academic Medicine*, *93*(8), 1234. https://doi.org/10.1097/ACM.0000000000002236

Gustin, L. W. (2017). Compassion for self and others as key aspects of well-being in changing times. *Scandinavian Journal of Caring Sciences*, *31*(3), 427–433. https://doi.org/10.1111/scs.12536

Hofstede, S. N., Marang-van de Mheen, P. J., Wentink, M. M., Stiggelbout, A. M., Vleggeert-Lankamp, C. L. A., Vliet Vlieland, T. P. M., & van Bodegom-Vos, L. (2013). Barriers and facilitators to implement shared decision making in multidisciplinary sciatica care: a qualitative study. *Implementation Science : IS*, *8*, 95. https://doi.org/10.1186/1748-5908-8-95

Homeyer, S., Hoffmann, W., Hingst, P., Oppermann, R. F., & Dreier-Wolfgramm, A. (2018). Effects of interprofessional education for medical and nursing students: enablers, barriers and expectations for optimizing future interprofessional collaboration - a qualitative study. *BMC Nursing*, *17*, 13. https://doi.org/10.1186/s12912-018-0279-x

Ioannidou, F., & Konstantikaki, V. (2008). Empathy and emotional intelligence: What is it really about? *International Journal of Caring Sciences*, *1*(3), 118.

Judge, T. A., Heller, D., & Mount, M. K. (2002). Five-factor model of personality and job satisfaction: a meta-analysis. *The Journal of Applied Psychology*, *87*(3), 530–541. https://doi.org/10.1037/0021-9010.87.3.530

Jünger, S., Pestinger, M., Elsner, F., Krumm, N., & Radbruch, L. (2007). Criteria for successful multiprofessional cooperation in palliative care teams. *Palliative Medicine*, *21*(4), 347–354. https://doi.org/10.1177/0269216307078505

Kaczmarczyk, J., Davidson, R., Bryden, D., Haselden, S., & Vivekananda-Schmidt, P. (2016). Learning decision making through serious games. *The Clinical Teacher*, *13*(4), 277–282. https://doi.org/10.1111/TCT.12426

Kankaraš, M., Feron, E., & Renbarger, R. (2019). *Assessing students' social and emotional skills through triangulation of assessment methods*. (208). https://doi.org/10.1787/717ad7f2-en

Kankaraš, M., & Suarez-Alvarez, J. (2019). *Assessment framework of the OECD Study on Social and Emotional Skills*. (207). https://doi.org/10.1787/5007adef-en

Kryworuchko, J., Strachan, P. H., Nouvet, E., Downar, J., & You, J. J. (2016). Factors influencing communication and decision-making about life-sustaining technology during serious illness: a qualitative study. *BMJ Open*, *6*(5), e010451. https://doi.org/10.1136/bmjopen-2015-010451

Mann, L. (1982). *Flinders Decision Making Questionnaires I and II*. The Flinders University of South Australia, School of Social Sciences.

Mann, L., Burnett, P., Radford, M., & Ford, S. (1997). The Melbourne Decision Making Questionnaire: An instrument for measuring patterns for coping with decisional conflict. *Journal of Behavioral Decision Making*, *10*(1), 1–19. https://doi.org/10.1002/(SICI)1099-0771(199703)10:1<1::AID-BDM242>3.0.CO;2-X

Mauriz, E., Caloca-Amber, S., Córdoba-Murga, L., & Vázquez-Casares, A. M. (2021). Effect of Psychophysiological Stress and Socio-Emotional Competencies on the Clinical Performance of Nursing Students during a Simulation Practice. *International Journal of Environmental Research and Public Health*, *18*(10), 5448. https://doi.org/10.3390/IJERPH18105448

Molleman, E., Broekhuis, M., Stoffels, R., & Jaspers, F. (2008). How health care complexity leads to cooperation and affects the autonomy of health care professionals. *Health Care Analysis : HCA : Journal of Health Philosophy and Policy*, *16*(4), 329–341. https://doi.org/10.1007/s10728-007-0080-6

Moore, P. M., Rivera, S., Bravo-Soto, G. A., Olivares, C., & Lawrie, T. A. (2018). Communication skills training for healthcare professionals working with people who have cancer. *The Cochrane Database of Systematic Reviews*, *7*(7), CD003751. https://doi.org/10.1002/14651858.CD003751.pub4

Morley, L., & Cashell, A. (2017). Collaboration in Health Care. *Journal of Medical Imaging and Radiation Sciences*, *48*(2), 207–216. https://doi.org/10.1016/j.jmir.2017.02.071

Moudatsou, M., Stavropoulou, A., Philalithis, A., & Koukouli, S. (2020). The Role of Empathy in Health and Social Care Professionals. *Healthcare (Basel, Switzerland)*, *8*(1). https://doi.org/10.3390/healthcare8010026

Noohi, E., Karimi-Noghondar, M., & Haghdoost, A. (2012). Survey of critical thinking and clinical decision making in nursing student of Kerman University. *Iranian Journal of Nursing and Midwifery Research*, *17*(6), 440–444.

O'Daniel, M., & Rosenstein, A. H. (2008). Professional Communication and Team Collaboration. In *Patient Safety and Quality: An Evidence-Based Handbook for Nurses*. Retrieved from http://www.ncbi.nlm.nih.gov/pubmed/21328739

Pakarinen, A., Parisod, H., Smed, J., & Salanterä, S. (2017). Health game interventions to enhance physical activity self-efficacy of children: a quantitative systematic review. *Journal of Advanced Nursing*, *73*(4), 794–811. https://doi.org/10.1111/jan.13160

Palmeira, M., Spassova, G., & Keh, H. T. (2015). Other-serving bias in advice-taking: When advisors receive more credit than blame. *Organizational Behavior and Human Decision Processes*, *130*, 13–25. https://doi.org/10.1016/j.obhdp.2015.06.001

Pitel, L., & Mentel, A. (2017). Decision-making styles and subjective performance evaluation of decision-making quality among hospital nurses. *Studia Psychologica*, *59*(3), 217. https://doi.org/10.21909/sp.2017.03.742

Rahaman, H. M. S. (2014). Personality and decision making styles of university students. *Journal of the Indian Academy of Applied Psychology*, *40*(1), 138.

Ribeiro, L., Severo, M., & Ferreira, M. A. (2016). Performance of a core of transversal skills: self-perceptions of undergraduate medical students. *BMC Medical Education*, *16*, 18. https://doi.org/10.1186/s12909-016-0527-2

Rodríguez-Nogueira, Ó., Moreno-Poyato, A. R., Álvarez-Álvarez, M. J., & Pinto-Carral, A. (2020). Significant socio-emotional learning and improvement of empathy in physiotherapy students through service learning methodology: A mixed methods research. *Nurse Education Today*, *90*, 104437. https://doi.org/10.1016/j.nedt.2020.104437

Rodríguez, G., Díez, J., Pérez, N., Baños, J. E., & Carrió, M. (2019). Flipped classroom: Fostering creative skills in undergraduate students of health sciences. *Thinking Skills and Creativity*, *33*, 100575. https://doi.org/10.1016/J.TSC.2019.100575

Royce, C. S., Hayes, M. M., & Schwartzstein, R. M. (2019). Teaching Critical Thinking: A Case for Instruction in Cognitive Biases to Reduce Diagnostic Errors and Improve Patient Safety. *Academic Medicine*, *94*(2), 187–194. https://doi.org/10.1097/ACM.0000000000002518

Scott, G., Leritz, L. E., & Mumford, M. D. (2004). The effectiveness of creativity training: A quantitative review. *Creativity Research Journal*, *16*(4), 361–388. https://doi.org/10.1080/10400410409534549

Singh, J., & Salisbury, H. (2019). Attitudes and Perceptions of Non- Clinical Health Care Students Towards Interprofessional Learning. *Health, Interprofessional Practice and Education*, *3*(4), eP1179. https://doi.org/10.7710/2159-1253.1179

Soukup, T., Lamb, B. W., Arora, S., Darzi, A., Sevdalis, N., & Green, J. S. (2018). Successful strategies in implementing a multidisciplinary team working in the care of patients with cancer: an overview and synthesis of the available literature. *Journal of Multidisciplinary Healthcare*, *11*, 49–61. https://doi.org/10.2147/JMDH.S117945

Steel, P. (2007). The nature of procrastination: a meta-analytic and theoretical review of quintessential self-regulatory failure. *Psychological Bulletin*, *133*(1), 65–94. https://doi.org/10.1037/0033-2909.133.1.65

Uitdewilligen, S., & Waller, M. J. (2018). Information sharing and decision-making in multidisciplinary crisis management teams. *Journal of Organizational Behavior*, *39*(6), 731–748. https://doi.org/10.1002/JOB.2301

Wang, R., Shi, N., Bai, J., Zheng, Y., & Zhao, Y. (2015). Implementation and evaluation of an interprofessional simulation-based education program for undergraduate nursing students in operating room nursing education: a randomized controlled trial. *BMC Medical Education*, *15*. https://doi.org/10.1186/S12909-015-0400-8

Zavala, A. M., Day, G. E., Plummer, D., & Bamford-Wade, A. (2018). Decision-making under pressure: medical errors in uncertain and dynamic environments. *Australian Health Review : A Publication of the Australian Hospital Association*, *42*(4), 395–402. https://doi.org/10.1071/AH16088

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