

A SURVEY OF THE DECISION-MAKING STYLES OF WORKING PARAMEDICS AND STUDENT PARAMEDICS

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ABSTRACT Experiential (intuitive) and logical (conscious) thinking are two of the primary processes that underpin human decision-making. When it comes to making clinical choices, no one knows exactly how practising paramedics and student paramedics approach it. Methods: Ground ambulance paramedics and primary care paramedic students were asked to complete a survey. As part of the survey, demographic information and the Rational Experiential Inventory-40 were collected. Each thinking type was tested with a total of twenty questions: ten for preference and ten for ability. Higher ratings on a Likert scale indicated a greater affinity for the style in issue, with responses supplied. Descriptive statistics and t tests were used to see whether there were any variations in thinking styles. Results: The response rate was 88.4 percent (1172/1326). Males (69.5%) comprised the majority of paramedics with a median age of 36 (IQR 29–42) and the majority of them were primary or advanced care paramedics (PCP = 55.5%). Paramedic students (n = 268) had a median age of 23 years (IQR 21–26), most were male (63.1 percent), and most had finished high school (31.7 percent) or an under-graduate degree (25.4 percent) previous to paramedic education. Both groups rated their ability to utilise and preference for logical thinking much higher than their preference for experiential thinking. There was a statistically significant difference between paramedics and paramedic students in the mean score for logical thinking ($p = 0.001$). There was a statistically significant difference between paramedics and paramedic students in the mean score for experiential thinking. Working paramedics and student paramedics like and believe that they have the ability to think rationally rather than experientially. Our existing understanding of paramedic decision-making is enriched by this research, which has promise for enhancing paramedic training and clinical support systems.

Keywords: Experiential, ambulance paramedics, Likert scale

I. Introduction

During the course of providing treatment to patients in the hospital, near-misses and adverse occurrences are common. There is a good chance that some of these incidents were caused by mistakes made by the paramedics. It's crucial to know how paramedics make choices so that errors in clinical judgement may be minimised or avoided, just as it is in other health care fields.

The Dual Process Hypothesis is the dominant theory to explain how clinicians make clinical decisions. When making decisions, people use one of two thinking systems, according to the theory of Dual Process Theory. System I is known as intuitive or experience thinking because it is so fast and simple (Bennett, *et al.* 2021). System II is known as logical thinking since it is aware and purposeful. ⁷ In order to determine people's preferred ways of thinking, the Rational Experiential Inventory-40 (REI-40) was created as a psychometric survey instrument. ⁸ Experience-based (Type I) and logical (Type II) decision-making abilities and preferences are assessed using the REI-40 (Type II).

This may be a unique aspect of paramedic clinical decision making since paramedics work in a range of locales, encounter a variety of unknown patient states, and sometimes have only their partner to rely on for assistance. To

make matters worse, the decisions made by paramedics can have a significant impact on the quality and safety of the care they provide. Most of the time, paramedics may favour one way of thinking over another. Using experiential or intuitive thinking, a paramedic treating a middle-aged man with flank discomfort may promptly diagnose renal colic by matching the patient's symptoms to a disease script established from prior observations of comparable patients in the same situation. Assuming the same patient, another paramedic may be more inclined toward rational thinking, carefully considering other possibilities such as an aortic aneurysm before making a provisional diagnosis and beginning the treatment process (Anderson, *et al.* 2020). Understanding how paramedics think and if their thinking patterns evolve as they gain experience might assist shape early and ongoing education and the development of paramedic training modules and clinical aids. Study participants were paramedics and paramedic students, with the hopes of determining whether there were any differences in the preferences and abilities of these two groups with respect to experiential vs rational thinking methods.

II. Methods

Study design

Surveys were conducted in India to examine the decision-making styles of two populations: working paramedics and student paramedics who were just starting their careers in the area of paramedicine. The results of the surveys were published in the journal *Paramedicine* (Hutchison, *et al.* 2019). All of the paramedic colleges that are taking part in this project have gained clearance for their participation from the Capital District Health Authority Research Ethics Board and the Capital District Health Authority Research Ethics Board. The submission of a fully or partially filled questionnaire is implicit consent to participate in the study.

Study setting and population

Approximately 1,100 licenced ground ambulance paramedics are employed by a single service to cover a population of approximately one million people in the study area's urban, suburban, and rural areas. The service handles approximately 70,000 calls per year and employs approximately 1,100 paramedics. Podiatrists, intermediate care practitioners, and advanced care practitioners (ACPs) constituted a majority of the EMS workforce in the study region. The majority of the EMS personnel in the research area was made up of PCPs, intermediate care practitioners, and advanced care practitioners (ACPs) (ACPs, 39 percent) (Mason, *et al.* 2020). In order to complete the poll, paramedics were needed to attend compulsory classroom professional development courses between May 1st and June 15th, 2012. It was chosen to perform the study during the final week of training for PCP students from 15 different universities in India, New Brunswick, and Ontario, during the last week of training.

At the time of the study, there were around 375 students enrolled in PCP programmes. Participants were given a survey to fill out and an envelope to put their responses in. Scripted instructions were given to trainers or school faculty members who delivered the questionnaires. Surveys were submitted directly to the lead investigator by participants, ensuring that trainers and teachers were not aware of any individual's decision to participate.

III. Data analysis

The principal researcher of the REI-40 supplied a coding manual that was used to score the instrument. Coders had to identify the questions pertaining to each of the four domains of reasoning ability, preference for reason, experiential ability, and preference for experience (10 questions each) (Keene, *et al.* 2022). Reverse scoring was

used for negative-worded questions. Each participant's average score for each category was calculated by taking the sum of the replies to questions in each category and dividing it by ten. In order to identify variations in overall thinking style ratings across and among groups, descriptive statistics and t tests were used. These variations in favourability and utilisation of each style were assessed using t tests for each subgroup.

IV. Results

Participants in the poll included paramedics from the aforementioned single EMS service as well as paramedic students from fifteen other institutions, for a total of 1172 out of 1263 (88.4 percent) of the total number of participants (Figure 1). 1206 questionnaires were received, of which 32 had missing data and were discarded (2.6 percent), and two had respondents who said that they did not wish to take part in the study (Perona, *et al.* 2019). In the data quality examination, ten records out of 117 (or 8.5 percent) included minor data entry errors that were corrected as part of the process.

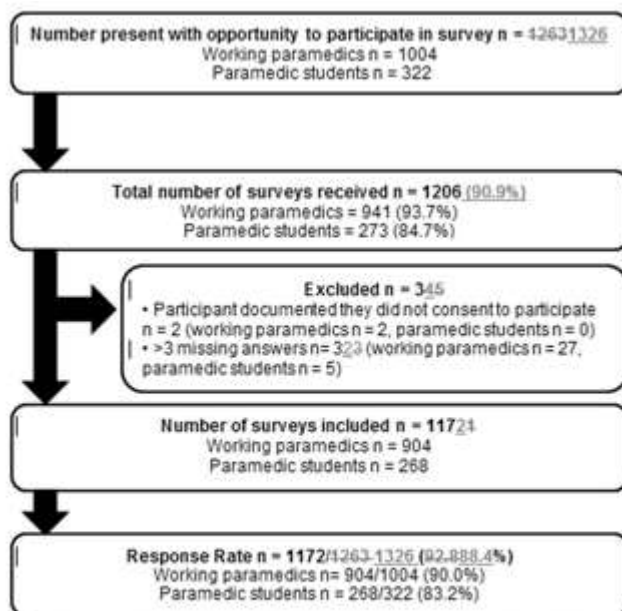


Figure 1. Flow of working paramedic and student paramedic survey responses. N: number.

Students outnumbered paramedics in terms of the proportion of female participants, and students were also younger than paramedics. Males constituted 69.5 percent of the paramedic participants (n = 904), with a median age of 36; 55.5 percent of the participants were PCPs (PCP-ACPs), and 32.5 percent were ACPs; and 55.5 percent of the participants were PCPs (PCP-ACPs) (Pilbery, 2018). The majority of student paramedics (n = 268) were male (63.1 percent), on average 23 years old, and had either completed high school (31.7 percent) or obtained an undergraduate degree (25.4 percent) prior to completing their paramedic training programme.

Students believe they are better equipped to use logical thinking than experiential thinking (4.03/5 versus 3.55/5, p 0.001), prefer rational thinking over experiential thinking (3.90/5 versus 3.16/5, p 0.001), and believe they are better equipped to use logical thinking than experiential thinking (4.03/5 versus 3.55/5, p 0.001) (Pentaris, & Mehmet, 2019). When compared to their colleagues, paramedic students who were younger (p = 0.04) and had more prior education (p 0.01) received higher grades on issues requiring logical thinking style than their peers. In

a similar vein to paramedics, there were no differences in assessments of experiential thinking between any of the populations studied.

V. Discussion

As a feature of this exploration, we utilized the REI-40 to see whether paramedics' and paramedic understudies' inclinations for and saw capacities to utilize experiential and objective reasoning styles varied with regards to their clinical practice. The two paramedics and paramedic understudies got higher scores for reasonable reasoning than experiential reasoning, showing that the two gatherings felt that they could use levelheaded reasoning more than experiential reasoning and that they inclined toward intelligent reasoning (Pilbery, 2018). Our discoveries are in accordance with those of cardiologists and crisis specialists in different examinations. Experiential reasoning was demonstrated to be more noteworthy among American undergrads than in our review, yet this was not the situation in our review.

It is questionable which thinking style or approach is best for various clinical situations, but paramedic and paramedic understudies might turn out to be more aware of their own reasoning style and find out about the benefits and disservices of each speculation type by means of preparing.

Prehospital treatment can be risked assuming choices are made inaccurately, placing patients' lives in danger (Bennett, *et al.* 2021). As we would like to think, the National Occupational Competency Profile (NOCP) should consolidate preparing on the dynamic cycle and mental sorts in paramedic central preparation.

Moreover, they may be an indication of a change in paramedic instruction that is common. As indicated by our discoveries, male paramedics scored preferred on experiential reasoning over ladies in a past report, which uncovered that ladies scored higher than men on the test, which proposes that men will generally think more instinctively than ladies (Mason, *et al.* 2020). Male paramedics were bound to be in the more established age gatherings and have a greater number of long stretches of EMS experience than female paramedics were. Since they show that paramedics don't all esteem or apply similar reasoning style, our discoveries are pertinent to paramedic proceeding with schooling and mental guide plan (Pentaris, & Mehmet, 2019). This study upholds the possibility that paramedic clinical training should join dynamic mindfulness to help paramedics refine their own mental propensities.

VI. Limitations

The REI-40 assesses self-reported perceptions of the ability to employ and preference for rational and experiential thinking, and as a result, it may not accurately reflect thinking style in actual clinical situations, which is the study's most significant shortcoming, which is also its most significant limitation (Keene, *et al.* 2022). The REI-40, like other instruments like as pain measures, has not been shown to have statistically significant discrepancies in scores; hence, we cannot determine whether the variations we discovered are indicative of a statistically significant variation in thinking. To provide readers with a wider range of perspectives, we included comparative scores from a variety of various demographics. Another potential flaw is response bias, which occurs when paramedics and paramedic students answer questions in a way that they feel is socially desirable, or in a way that they believe investigators want them to answer, or in a way that is ingrained on them by their educational environment (Perona, *et al.* 2019). Given that the participants had had no prior instruction in decision-making theory, we anticipate that response bias will have a small influence on the results. It's possible that our high

response rate is due to the fact that the survey was issued during a professional development session, and that paramedic students completed the survey since it was distributed during class. During the course of evaluating all of the questionnaires that had been received for any statements suggesting that the paramedic or student had not voluntarily consented to participate, we discovered that two participants were excluded from the research. Inconsistencies in the paramedic and paramedic student populations were attributed to differences in gender, age, and educational attainment of participants. Although it is possible that one or more of these traits had a major influence on reported thinking style rather than job experience, our lack of a multivariate analytic technique makes it difficult to determine whether or not this was the case. There were no paramedics from other countries involved in the study, thus it cannot be applied to paramedics who have received training or are employed in other countries (Penney, *et al.* 2022). The current emphasis on clinical practise guidelines and other pertinent issues in the intended research setting may have affected the responses of our paramedic sample, even though we do not believe there are major discrepancies between our sample and other Canadian paramedics. Because the majority of our study's paramedic trainees were from Ontario and had no prior experience of the Indian EMS system, their better results on logical reasoning were all the more astounding. This might suggest that paramedics, regardless of their circumstances, are rational thinkers who choose to work as paramedics for a variety of reasons.

VII. Conclusion

During a cross-sectional study, ground ambulance paramedics in a provincial EMS system and entry-level primary care paramedic trainees revealed that they prefer and believe they have the capacity to employ rational reasoning over experiential reasoning. This new knowledge can assist us in better understanding paramedic decision-making, and it may be valuable in the creation of clinical support tools and continuing education programmes for the paramedic workforce.

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