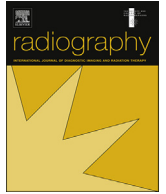




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Student personality and learning styles: A comparison between radiation therapy and medical imaging undergraduate students in New Zealand

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ABSTRACT

This study investigated the learning styles and personality type of undergraduate radiation therapy students at the University of Otago, Wellington (UOW) in New Zealand (NZ) to ascertain whether there is a pattern evidenced for this group and how that might compare with NZ medical imaging students.

All students enrolled in the first year of the Bachelor of Radiation Therapy degree from 2014 to 2016 at the UOW were invited to participate in this research. The test tool was the Paragon Learning Style Inventory (PLSI), which is a standardised questionnaire adapted from the Myers-Briggs Type Indicator (MBTI). All students who participated in the workshops consented for their data to be used for this project. The current study is longitudinal, and will continue for five years in total.

The initial findings indicate that the cohorts of RT students exhibit personality and learning style preferences similar in Introversion/Extraversion and Thinking/Feeling to the proportion expected in the normal population. However, the Sensing/Intuition and Judging/Perceiving dichotomies show some similarities to the medical imaging students studied, who fell considerably outside that expected in the normal population. Overall, the dominant preference combinations identified, although different in degree, were similar to those of medical imaging students. The continuation of the radiation therapy study is important to ascertain more fully whether the results are particular to these cohorts of students or are trending towards showing a pattern of personality and learning style within the profession.

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Introduction

The Bachelor of Radiation Therapy (BRT) is a national three-year full time programme, delivered by the University of Otago in Wellington (UOW), New Zealand. It is the only centre for radiation therapy education in New Zealand. Radiation therapists are employed by six District Health Boards (DHBs) and three private hospitals in Departments of Radiation Therapy across the country. The programme currently accepts around 28 first year students from approximately 150 applications. Student cohorts are generally young adults, aged between 18 and 30 years, with approximately 11% of the students being male. Ethnically, approximately 70% are NZ European, 8% Maori, and 22% Asian and other cultures. Most students are proven high academic achievers who have either just

left the New Zealand secondary school system or have completed or partly completed other university degrees.

The programme entails a combination of academic and clinical components across each of the three years that encompasses the complexities of radiation therapy treatment planning and delivery, for patients with cancer. Despite the high academic admission criteria, anecdotally there are components in the BRT with which some students experience difficulty in both the academic and clinical arenas. These difficulties do not appear to always correspond with academic ability, therefore, it is possible that they could be related to the students' learning style and personality type.

Studies of professional expertise and personality type^{1–5} indicate that personality type may be reflected in career choice. Research conducted using the Myers–Briggs Type Indicator (MBTI) demonstrates, for example, an increased proportion of thinking-predominant types in accounting, banking and law, and an increased proportion of feeling-predominant types in health related professions, counselling and education.^{2,4,5} While it could be argued that the process of professional socialisation influences behaviour, personality preferences,

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as measured by the MBTI, are considered to be relatively stable. A conscious intent to change will create more balance in the dimensions measured in a mature personality, however the relative order of the preferences is likely to remain fairly consistent.¹

Yelder¹ investigated personality types and learning styles within the Bachelor of Health Science (Medical Imaging) in Auckland, New Zealand (one of three medical imaging education providers), finding that the medical imaging students' personality and learning style preferences were located outside the proportion expected in the normal population, but were suited to many aspects of their professional practice. The study outlined implications for medical imaging that may also be relevant to radiation therapy.

Based on the premises that an exploration of personality preference may provide an indication of collective strengths and limitations within the profession of radiation therapy, and that there is an association between personality preferences and learning style (e.g. Ref. 6,7), a longitudinal research project commenced in 2014. This project set out to investigate the personality preferences and learning styles of students enrolled in the BRT at the University of Otago and to explore the implications of these findings for radiation therapy education and for the profession. While this project will continue over five years, this article presents the results of the first three years of the investigation, contrasting them with the longitudinal study of undergraduate medical imaging students conducted in the early 2000s.¹ The focus of this article is on the implications of the findings in the professional/clinical context, while the dissemination of findings after the five years have been completed will also include educational implications.

The study was conducted using the Paragon Learning Style Inventory (PLSI), which is a derivative of the MBTI. The medical imaging study by Yelder¹ is the only published study investigating the deeper, personality focused level of learning styles that has been conducted in the profession of medical radiation technology internationally (including both radiation therapy and medical imaging), leading to its choice for comparative purposes. The comparison is strengthened due to the close working proximity of the two sections of the profession in New Zealand, and with both drawing from the same potential student base.

Theoretical framework

The literature on learning styles is categorised by Curry (cited in Ref. 8) into three groups:

- Instructional preferences. The most external, observable category, including distinctions such as visual, aural, read/write and kinaesthetic.^{9,10}

Table 1
Definition of key MBTI terms.^{2,21}

E/I	Attitudes or orientations of energy
Extraversion	Energy and attention flow out, mainly towards the outer world of people and objects in the environment
Introversion	Energy is mainly focused towards the inner world of experiences, ideas and reflection
S/N	Functions or processes by which people 'perceive' the world around them, i.e. take in their information and attune to events
Sensing	The means by which we become aware of things through the experience of our five senses, in the present moment
Intuition	An indirect means of perception of possibilities, meanings, patterns and relationships beyond the senses, possibly including future events
T/F	The processes by which people make judgements or decisions about our perceptions
Thinking	A logical process aimed at coming to a decision through an impersonal attitude of cause and effect, with a focus on objectivity and reason
Feeling	A process of weighing relative values and merits, of appreciation, bestowing on things a personal, subjective or social value with a focus on understanding and harmony
J/P	Attitudes or orientations to the outer world
Judging	Preference for making decisions, seeking closure, planning and organising in the outer world using one of the judging processes (T or F)
Perceiving	Preference for the flexibility and spontaneity that results from staying attuned to incoming information and dealing with the outer world using one of the perceiving processes (S or N)

- Information processing dimension. Most often measured using Kolb's or Honey and Mumford's learning style inventories.^{11,12}
- Personality dimension. The deepest and least changeable category, most often measured using the MBTI or derivatives of this inventory.^{2,7,13–16} The MBTI has been cross-related to other inventories of learning from within the second category by authors such as Bayne,¹⁷ Fowler¹⁸ and Shindler.¹⁵

This research used the PLSI developed around the third of these categories, due to its stability, its consideration of learner perception and decision-making, and its relevance to both the learning environment and the development of the profession.

The MBTI was based primarily on the seminal work of Carl Jung that posited eight psychological types^{2,19} and was expanded to incorporate a further dimension by Briggs Myers^{13,20} resulting in a combination of 16 potential 'personality types'.^{13,20} Jung's original work focuses on our orientation to four distinct cognitive functions: *sensation*, *intuition*, *thinking* and *feeling*. Ideally, in the mature personality, there will be a balanced state whereby all four functions contribute equally. However, in reality it is unlikely that these functions will be uniformly differentiated. We normally have one function more 'mature' than the others, experienced as our preferred way of experiencing and orienting to the world. This theory maintains that the functions are paired: thinking with feeling, and sensation with intuition.^{2,19} This means that whichever function is our preferred mode of orientation, its paired opposite will be our least developed personality function. That is, if sensation (the perception of concrete reality) is the primary way a person prefers to gather information, then while thinking and feeling may have varying degrees of development, intuition (sensation's paired opposite) will be the least developed function and will remain largely in the unconscious.¹ Likewise, for a person who orients by thinking, feeling impressions will be less well developed, and vice versa.

Jung's work also explored our *attitude* to the world, that is, where our energy is primarily directed: to the outer world of people and events (Extraversion); or to the inner world of thoughts and reflections (Introversion). Our dominant (preferred) cognitive function will differ in how it is expressed, depending on whether it is extraverted or introverted.

The work of Briggs Myers^{13,20} adds a dimension that relates to how we orient specifically to the external world, calling the two possibilities Judging or Perceiving. Please note that these terms have specific meaning in the context of the MBTI (as defined in Table 1) and do not equate to 'judging' or being 'perceptive'.

The eight key terms that form the four dichotomous choices presented in the MBTI are summarised briefly in Table 1 below.

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