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AUTHOR	Wahl, Sharon C.
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ABSTRACT

This descriptive study proposed to use the Myers Briggs Type Indicator (MBTI) to identify the learning styles of registered nurses who have returned to school, and to recommend teaching strategies based on commonalities of their learning styles. The MBTI was administered to 240 registered nurses who were enrolled in either a leadership course in the California State University Statewide Nursing Program or the San Jose State University RN Bridge Nursing Program. The results showed no clear preference in the full Type, but commonalities emerged when examining individual dimensions which could be used to identify matching teaching strategies. Results also showed preferred dimensions of thinking and extraversion, unlike other RN populations that showed preferred dimensions of judging, feeling, and sensation. Specific learning styles and complementary teaching strategies could be identified for this population. The results led to the recommendations that faculty attend workshops acquainting them with their own MBTI profiles to help them identify ways to adapt their teaching to differing student learning styles, and that faculty use diverse learning activities to meet the needs of all students, providing both matching and mismatching of teaching-learning styles. Appendixes contain four charts with additional information on MBTI types. (Contains 43 references.) (Author/JB)

THE LEARNING STYLES OF REGISTERED NURSE BACCALAUREATE STUDENTS BASED ON THE MYERS-BRIGGS TYPE INDICATOR: IMPLICATIONS FOR TEACHING

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by

Sharon C. Wahl, Ed.D, R.N.

Associate Professor

School of Nursing

San Jose State University

San Jose, California

ABSTRACT

LEARNING STYLES OF REGISTERED NURSE BACCALAUREATE STUDENTS BASED ON THE MYERS-BRIGGS TYPE INDICATOR: IMPLICATIONS FOR TEACHING

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Sharon C. Wahl, Ed.D, RN

The concept of identifying student learning styles and incorporating that knowledge into the improvement of instruction is a relatively new idea. A problem exists in that most instructors do not know what learning styles exist within their particular group of students so usually teach from their own strengths which often are quite different from their students. The purpose of this descriptive study was to identify the learning styles of a unique group of students, registered nurses who have returned to school to get a baccalaureate in nursing degree (RNBSN), and to recommend teaching strategies based on commonalties of learning styles.

The Myers Briggs Type Indicator (MBTI), a widely used psychometric psychological test based on Jung's typology, was administered to a convenience sample of 240 registered nurses (RN) who were enrolled in a leadership course in either the California State University Statewide Nursing Program or the San Jose State University RN Bridge Nursing Program in Northern California to identify learning style preferences. Research questions included: Are there commonality of MBTI Types? How do the Types identified in this sample compare

with other populations of registered nurses? What teaching strategies can be recommended to meet the learning preferences of the sample group?

The results showed no clear preference in the full Type, but commonalties emerged when examining individual dimensions which could be used to identify matching teaching strategies. The results also showed similarities with other RN populations which differed more in degree than in kind, eg. the preferred dimensions of judging, feeling, and sensation were common to all the RN studies, but this study had more thinking and extraversion. It was concluded that specific learning styles could be identified for this population of RNBSN students and complementary teaching strategies could used to improve instruction. Recommendations included providing workshops for faculty to acquaint them with their own MBTI profiles and help them identify ways to adapt teaching to differing student learning styles, and utilizing diverse learning activities to meet the needs of all students, providing both matching and mismatching of teaching-learning styles.

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Chapter 1

INTRODUCTION

The concept of identifying student learning styles and incorporating that knowledge into the improvement of instruction is a relatively new idea: most of the research in this area has only existed since 1960 (Jensen, 1987). Ritchie (1975) noted that despite studies showing the usefulness of adapting instruction to diverse student needs, the lecture method continued to be widely used, and students were bored! However, contemporary students are discriminating consumers, especially as tuitions rise and available space in the classroom diminishes. The advent of the discerning consumer has created economic conflicts in the universities as the cost of educating those consumers outstrips the income attained through tuition, alumni gifts, grants, and state funding (which has been greatly depleted by the recession). Universities have increased the number and size of lecture classes to help balance budgets; however, students are now objecting, many wanting more individualized teaching for their dollars. One solution to address student concerns and needs might be to broaden teaching strategies to include activities that would satisfy more individual learning styles. However, this could translate into increased costs to universities where funding is based on head counts, or full time (student) equivalencies (FTE).

Investigators point to the variety of learning-style preferences, indicating that one cannot meet all students' needs. Others suggest that by providing a variety of methods, one can indeed cover all bases. When applied to programs that teach students from many different cultures, difficulty meeting needs of all students is undoubtedly true; if the university has unlimited resources, using a variety of creative approaches is certainly preferred. But, the reality is that public universities have been mandated to provide the best education at the least cost, and, unfortunately, this comes back to primarily the lecture method with some use of audiovisual aids. How lamentable that so much faculty creativity is lost! However, a homogeneous group of adult learners, such as registered nurses, may have commonalties in their learning preferences that could enable instructors to make a significant difference in learning outcomes by using teaching strategies that match the majority of the learning styles of those students.

Background and Significance

At San Jose State University, the nursing program must adhere to California State Nursing Board regulation that require that student-faculty ratios be no greater than 15:1 for practicum (on site clinical experiences). Since almost half of the units offered in the nursing major are of these expensive practicum courses, the lecture method is

predominant for theory courses in an attempt to stay within the budget. Student dissatisfaction with the lecture method has been high, especially among the registered nurses returning to complete the Baccalaureate in Nursing degree (RNBSN). This aversion, by the RNBSN students, to sitting through lectures was seen by them as a violation of adult learning principles (Knowles, 1975). Most of these students mentioned independent study, group discussions, student projects and presentations, and non-specified "creative activities" as more preferred approaches to learning. This information was provided by several years of course evaluations (Parsons, 1990). Since this particular group is the main interface the university and the nursing program have with the professional nursing community, it is imperative that their satisfaction be a priority!

Breneman and Nelson (1981) discuss the economics of higher education in the cost versus benefit ratio. In order to justify a change to more costly teaching methodologies, not only must ample benefit be projected (such as increased student satisfaction), but also the literature must support that the proposed teaching strategies relate to the dominant learning styles of the students. There are a number of different tools which purport to identify student learning styles. Partridge (1983) lists sixteen and insists her list is not exhaustive. The Myers Briggs Type Indicator (MBTI) was selected as the tool of choice for assessing learning styles and as the basis for recommending teaching strategies

because of its broad scope and documented validity and reliability (Myers & McCaulley, 1985).

The problem addressed by this practicum was that there is inadequate data on the learning styles of this special group of adult learners, the registered nurse baccalaureate nursing students, and that many faculty do not have information about teaching strategies that support various learning style preferences. The purpose of this practicum is to identify learning styles of the RNBSN students and recommend teaching strategies. More specifically, the research questions to be answered by this practicum were as follows:

1. Is there a predominant learning style of RNBSN students based on a preference for any one of the 16 Myers-Briggs Types, or any of the MBTI single letter or combination dimensions, in > 60% of the students?

2. If none of the Types include at least 60% of the students, what are the more commonly preferred types?

3. What differences exist between the preferences selected by this RNBSN population and other populations of nurses cited in the literature?

4. What differences exist between the preferences selected by this RNBSN population and the general population?

5. What teaching strategies should be recommended for the commonly preferred MBTI Types, either single letter or combination of dimensions, based on the literature.

Because of the dearth of published studies on the learning-style preferences of RNBSN students, this practicum will be significant in that it will contribute to the knowledge base for teaching this special group of adult learners. The benefit to the university will be additional information about this student population which might enhance retention through increased student satisfaction. This is especially important since current statistics indicate that 50% of all students admitted to SJSU are not graduating (Parsons, 1990). In addition, the data extracted from this practicum will provide a basis for further investigation, especially looking at learning outcomes which result from teaching to student learning styles.

Chapter 2

REVIEW OF THE LITERATURE

The literature reviewed was organized around four content areas: general concepts about learning styles; controversy about matching teaching to learning styles; information about the Myers-Briggs Type Indicator (MBTI); and learning styles and teaching strategies based on the MBTI. Specific literature and research on learning styles utilizing the MBTI is rather sparse. While an attempt was made to include all relevant literature published within the last five years, citations will include studies and articles that are more than five years old in order to more thoroughly cover the topic.

Learning Styles

Delmo-Dora and Blanchard (1979:22) provide a pithy definition of learning style: ". . . the personally preferred way of dealing with information and experience for learning that crosses content areas." Jensen (1987:182) notes, tongue-in-cheek, " 'Learning Styles' can meaning anything from hemisphericity to one's method of sharpening pencils."

Lawrence (1984:2) expands, considerably, on the former definition of learning styles and clarifies the latter:

> It is used here broadly to encompass four aspects of psychological make-up: (a) Cognitive style in the sense of preferred or habitual patterns of mental functioning-information processing, formation of ideas and judgements; (b) Patterns of attitudes and interests that influence what a person will attend to in a potential learning situation; (c) A disposition to seek out learning environments compatible with one's cognitive style, attitudes and interests, and to avoid environments that are not congenial; (d) Similarly, a disposition to use certain learning tools and avoid others.

Glatthorn (1987:345) notes that " . . . learners differ significantly in their style of learning and those styles can be assessed, and that knowledge of styles can help both teachers and learners". He cites three dimensions of learning styles: cognitive, affective, and physiological. Cognitive includes modes of perceiving, thinking, problem-solving, and remembering, but cognitive can also be further broken down into reception styles and concept-formation/retention styles. He includes field independence (structure own learning/independent study--perception independent of context) and field dependence (need more teacher instruction/learn in groups--not able to keep perceptions separate from context) as a subset of reception styles. Affective styles are seen as relating to attention, emotion, and valuing while physiological styles include disparate concepts such as time rhythms, mobility needs, and environments. Partridge (1983) concurs with the inclusion of most of these attributes, but she perceives the categories

differently. From a review of learning-style research, she identifies these groups: cognitive, student-response, and integrative models. Cognitive models numbered eleven and included such examples as Field dependent-independent; Analytical-nonanalytic conceptualizing; Impulsivity-reflectiveness; Scanning-focusing; and Broad-narrow. Three student-response models were discussed: Mann, et al with eight types; Grasha-Riechmann with three dichotomous groupings; and Stern with three. Partridge's (1983:247) last category looks at integrative models which "differ from the preceding models in that they are derived from an eclectic approach incorporating learning theory, individual development, and personality types." She evaluates two models in this category: Kolb and the Myers-Briggs. Looking at the cognitive and student-response models she presents, it can be noted that a number of them have components which relate to various parts of the Myers-Briggs functions and attitudes. The Kolb is based on the same psychological theory as the Myers-Briggs and was developed considerably later than the MBTI. The Myers-Briggs Type Indicator as an method of delineating learning styles will be presented in more depth in a later section of this chapter.

Matching Learning and Teaching Styles

The recommendation for instructors to attempt to match their teaching styles to student learning styles has

generated a great deal of controversy in the literature. One reason for such conflict may arise from a chosen philosophy about learning styles. Jensen (1987:181) points to three very different camps regarding the importance of learning styles: (1) those who perceive learning styles as "a virtual panacea for the current ills of education"; (2) those who proclaim that learning styles do not exist; and (3) the majority who want to be better teachers but are confused by "conflicting paradigms". He goes on to note, similarly to Partridge (1983), that since 1960, more than 30 instruments have evolved. Jensen believes in matching styles and promotes the MBTI as the best way to accomplish that. Glatthorn (1987) notes that there are many opinions on whether instruction can, or even needs to be, individualized to the learner. He does believe that most who champion learning styles also favor the use of a matching strategy. Ritchie (1975:1) expounds, "Higher education in America must be dedicated to adapting curriculum to varied student needs, purposes, and capabilities", Golay (1982) asserts that many learning problems can be avoided if students are provided with an educational program that more closely matches their learning patterns, and Lawrence (1982:43) suggests planning instruction to honor every type: "Certainly, all students have a right to a learning setting that will offer them their best opportunity to develop." Ostmoe, et al (1984), studying the learning style preferences and selection of learning strategies of 92 baccalaureate nursing students, found that

the majority had more favorable attitudes and less anxiety when taught through their preferred modes. Glasser (1977:324) takes a strongly positive position when he says:

> The traditional formulations of the nature of individual differences in learning and the traditional modes of education fail to provide enough freedom for the exercise of individual talents. We admire individual performance, but we must do more than merely stand in admiration: we must design the effective conditions under which individuals are provided with the opportunities and rewards to perform at their best and in their way.

Partridge (1983:247) looks at both sides of the conflict. She identifies the inherent wisdom of matching learning styles and instruction to promote student comfort and efficient learning; however, she also sees a fallacy in that ". . . if a student habitually utilizes only one learning style, he may be at a serious disadvantage when confronted with the necessity to utilize a different mode." Messick, as cited by Partridge (1983), suggests considering four factors when making a decision about matching: (1) the developmental level of the learners (younger are more adaptable to mismatching); (2) the subject matter; (3) the context; and (4) the desired educational outcomes. While McCarthy (1981) makes use of the learning styles gleaned from the Kolb instrument, she believes in utilizing that information to provide some dissonance and consonance for each learning style, and, in this manner, promotes growth in all students in accessing learning. Good and Stipek (1983:35) conclude ". . . there is only weak support for the

claim that instructional treatment should always be consistent with students' learning styles."

Those speaking out for not matching learning styles look at the developmental needs of students to expand their repertoire of learning behaviors (Partridge,1983); adult learners who are motivated to develop the lesser side of their learning skills (Lynch, 1987; Hazen-Hammond, 1986); and instructors being forced to abandon their preferred style of instruction, that is, ". . . to hold their strengths in reserve and teach from their weaknesses." (Jensen, 1987:188). However, this latter argument could be countered utilizing the former: If students will grow from exposure to different styles, does not the professor have a responsibility to promote his or her own professional and personal growth by learning to teach from a different style? Other investigators point to the difficulty of knowing the styles and adapting the instruction to classes of more than 20 or 30 students (Gagne & Briggs, 1980; Lynch, 1987; Partridge, 1983).

Partridge (1983:248) sums up the controversy by pointing out, ". . . for the educator, the development of greater diversity in behaviors with individuals seems as important an objective as the recognition and the utilization of diversity among individuals."

This body of literature, while certainly not inclusive, does appear to point to utilizing a variety of instructional designs and teaching strategies. As Jensen (1987) concludes,

teachers can support both their preferences and their students' learning styles by being more flexible in how they teach. Knowledge of differences and the conflicts they may create seems imperative to quality teaching. This then leads into the value of understanding the personality types and mental preferences as first put forth by Carl Gustav Jung and later refined by Katherine Briggs and her daughter, Isabel Myers. This knowledge of self and students can indeed promote adaptability in the teaching-learning process.

The Myers-Briggs Type Indicator

Because the terminology used in the literature on the MBTI in describing learning styles may be unfamiliar to the reader, a discussion of the theoretical framework and the meanings of terms is included in this review of the literature. In addition, brief definitions will accompany the description of the tool in the chapter on procedures.

The Myers-Briggs Type Indicator (MBTI) is a widely used psychological test developed by Katharine Briggs and Isabel Myers, explicitly designed to make it possible to test Jung's theory and put it into practical use. Starting in 1923 when the English translation of Jung's theory of psychological type first reached America, until the publication of the first manual with their research and uses for the tool, Briggs and Myers developed and extensively tested their current instrument, the MBTI. Utilizing Jung's theory

regarding the patterns in the way people prefer to perceive information and make judgements about that information, this psychometric tool uses four dichotomous dimensions. The interaction of these, two pair which assess mental function preferences, and two which focus on the life orientation in which the mental functions are carried out, forms the core of the MBTI. These variables allow for sixteen quite different learning styles as well as other combinations of the preferences into temperaments or dominants (Keirsey, 1987; Myers and McCaulley, 1985; Myers and Myers, 1980; Provost and Anchors, 1987). The MBTI profile has been used extensively in psychology, management, and education to assist in the understanding of the differences in individuals' approaches to life activities. Before its publication in 1962, the MBTI had been extensively tested for validity and reliability and normed on close to 100,000 subjects; but research on the instrument itself and using it for research in a variety of setting is ongoing (Myers and McCaulley, 1985; Proceedings APT-VII, 1989) . Because of a request by CAPT (Center for Applications of Psychological Type), the database acquired for this practicum will be submitted to CAPT.

The language used to describe the various components of the MBTI is subtle and duplicative, lending itself to confusion unless one pays close attention to how the particular terms are used. Some authors of current, popular approaches to self-and other-understanding of the types, have

deviated from the original concepts and, in the opinion of some investigators, have lost some of the more powerful connotations of the theory.

Jung's theory in essence maintains that all people possess and use four basic mental **functions**, two perceptive functions: sensing and intuition, and two judging functions: thinking and feeling. While all of these can exist in an individual, only one perceiving and one judging can be used at a time--they are mutually exclusive. People differ in that they appear to have, from earliest childhood, a preference for one of the two perceiving functions and for one of the two judging functions; the preferred functions become developed and therefore stronger with each selected use. It is believed that environment may inhibit or enhance the preferred modes, but will not change them. In addition to selecting one of each pair of functions, the individual also has **dominant** function based on whether the person prefers to approach life from an **attitude** of collecting data (perceptive) or of making decisions (judging); this will then determine if the preferred perceptive function is dominant or if it is the preferred judging function that is the stronger one. The dominant function is considered to be that area in which the person is the most competent in his/her dealings with the world. In addition to the dominant function, the person has a supportive, complimentary **auxiliary** function which makes use of the other choice. For example, if the person has sensation (perceiving) as the dominant function,

then the auxilary would be one of the judging functions, such as thinking. (Myers and Myers, 1980; Myers and McCaulley, 1985; Lawrence, 1982).

Myers and McCaulley (1985:12) emphasize that it is critically important to understand Jung's use of the terms perception and judgement, and why they are used twice, which can be confusing to the casual reader.

> **Perception** includes the many ways of becoming aware of things, people, events, or ideas. It includes information gathering, the seeking of sensation or of inspiration, and the selection of the stimulus to be attended to.
>
> **Judgement** includes all the ways of coming to conclusions about what has been perceived. It includes decision-making, evaluation, choice, and the selection of the response after perceiving the stimulus.

Therefore, an individual perceives his world by means of the functions of sensing or intuition, judges these perceptions by means of the functions of thinking or feeling, and relates to, or has an orientation to, the outside world by means of the attitude of judging (decisive or purposeful) or the attitude of perceiving (open to new or more information). The fourth dimension of the theory concerns the **attitude** that determines how the person prefers to use the results of the **functions** and where the person's energy is derived from and interest directed to. This **attitude** is either extraversion, where interest, energy, and use of the functions is focused in the outer world of people, things, activities; or introversion, where interest, energy, and use of the functions is focused inwardly toward ideas and concepts. Jung believed that extraverts learn from

interacting with people and acting on the environment, but introverts learn from the integration of concepts from reading or other means of input, comparing this to internal truths. This last dimension is important since it determines whether the person's dominant function (strengths) is used in the outside world (extraversion) or kept and focused on inner mental activity (introversion).

To clarify the difference between the two dichotomous concepts of the four functions and the four attitudes, the following is an summary of the way each one impacts on self and others, or as Myers (1980:1) so succinctly puts it, ". . . an orderly reason for personality differences":

The four **functions: S, N, T, F**

Two kinds of Perception: Sensing (**S**) and Intuition (**N**)

S perceives by way of the senses; focuses on what is in the present moment and on the immediate experience, reality; has the characteristics of practicality, memory for details, acute powers of observation, linear; trusts only what is acquired through direct sensation.

N perceives possibilities, meanings, and relationships by means beyond that available to the senses; has contact with "collective unconsciousness" received as hunches or creative discovery; has the characteristics of imaginative, theoretical, abstract, future-oriented, global, creative; may overlook the obvious or miss actualities.

Two kinds of Judgement: Thinking (**T**) or Feeling (**F**)

T makes decisions about perceived information by impersonal logic and cause and effect; characterized by being cooly analytical, concerned with technical aspects of problems, objective, just, and fair.

F makes decisions about perceived information by weighing values and effects on people; characterized by personal warmth, being subjective, attuned to values of others, concerned with human aspects of issues, promoting harmony and affiliation.

The four **Attitudes: E, I, J, P**

Two Orientations to Life: Extraversion (**E**) and Introversion (**I**)

E- attention flows out to objects and people in environment; desire to act on environment, use it for stimulation and guidance, action-oriented, frank, sociable, communicable, get energy from people.

I- look inward for consolidation of ideas and for energy; desire to focus on inner world of concepts and ideas, thoughtful, contemplative, slow to offer thoughts externally, need solitude and privacy.

Two Orientations to Outer World: Judgement (**J**) and Perception (**P**)

J is concerned with making decisions, seeking closure, organizing activities; perception is cut off as soon as have enough information; outer behavior is seen as purposeful, decisive, controlling.

P is attuned to incoming information; outer behavior is seen as spontaneous, curious, adaptable, open to new events and change, remain longer in an observing attitude.

From the various ways of combining these 16 letters, there can arise

1. Sixteen types, using one letter from each of the Attitudes and Functions, such as ESFP or INTJ or ENFP or ISFJ. A summary of the 16 types is in Appendix A.

2. Four temperaments which put Sensing with J or P attitudes and Intuition with F or T judgements. These are referred to by Keirsey and Bates (1984) as Dionysian (SP), Epimethean (SJ), Promethean (NT), and Apollonian (NF).

3. Four quadrants which focus on extraverted or introverted perception: IS, ES, IN, EN. These may relate to taking in new information (The Type Reporter, 1985).

4. Four columns which combine the four functions: ST, SF, NF, NT. These point to basic preferences without including extraversion or introversion, called Cognitive Styles by Frisbie (1989). Frisbie believed they provide a model for a ". . . whole-brain approach to life situations" (p169). He gave the functions combinations the following explanatory labels: ST-Practical Stabilizer, SF- Social Cooperater, NT- Theoretical Visionary, and NF- Idealistic Catalyst.

5. Eight individual scales which merely compare each of the individual dimensions. This may be be limiting since it loses the richness of the combinations, much like trying to relate to a whole generation of cohorts without consideration of individual variations such as ethnic background, education, or socioeconomic status Unfortunately, much of the research found in the literature relating learning styles to the MBTI does just that: Students are compared based on only one of the paired letters.

6. The dominants which can be narrowed to four by combining introversion and extraversion with each of the functions in their dominant preference, Thinking (T), Feeling (F), Sensing (S), or Intuition (N) or can be expanded to eight by adding the E or I to each combination. Despite both Myers (1980) and Lawrence (1982) touting the importance of

the dominant function in the learning process, no studies were found that used this approach.

As mentioned previously, the dominant process is very important to understanding the person's orientation to life and will determine, to a great extent, his or her learning style preference. Myers (1980:10) acknowledges the dominant process thusly:

> There is no doubt that a ship needs a captain with undisputed authority to set its course and bring it safe to the desired port. It would never make the harbor if each person at the helm in turn aimed at a different destination and altered course accordingly.

She goes on to point out that all people need a governing force to unify their lives. However, discovering what that process is can be difficult, especially when dealing with an introvert. In extroverts, since the dominant process is readily used in the outer world (extraverted), it is both visible and conspicuous. However, introverts save their best for themselves, to act on their inner world of ideas and concepts, and they are not likely to introduce others to that inner world. So, the process they use in the outer world is their second best, or auxiliary. But that hidden dominant process is still the most preferred way for learning. If one utilizes the MBTI instrument to evaluate students' personality types, the dominant process can be easily determined. If the student is an E, then the dominant process will be the one corresponding to the last letter choice, J or P. For example, if a student is designated as an ESTJ, being extraverted, the dominant process will relate

to the J and so will be the judging function, or the T (Thinking). For the introvert, the process is reversed and the dominant function will be the opposite of the last letter chosen. In this case, an INFJ, being introverted, will have a dominant process which is in the function opposite the J and so will be the perceiving function, or the N (Intuition) (Myers, 1980)

It is hoped that this extensive discussion on the theory and language of the MBTI will clarify these concepts, but it should also serve to support the contention noted at the beginning of this section that the MBTI is complex, subtle, but capable of providing ample information about the person to those who carefully investigate it.

Learning Styles and Teaching Strategies Using the MBTI

Not much was found in the literature that looked at learning styles in nursing or registered nursing students; research using the MBTI learning styles with nurses was even more sparse. Therefore it was necessary to include studies which used a variety of ages of students studying in a variety of disciplines. Health care workers are included whenever possible.

Four studies evaluated learning styles in nursing students using instruments other than the MBTI. Highfield (1988) used the Kolb Learning Styles Inventory to determine the primary learning styles of 65 baccalaureate nursing

students, both generic and registered nurse, looking at variables of both age and year of study. Based on her findings, she made several suggestions to faculty for improving educational strategies: faculty should know own and students' styles and try to match styles with instruction; they should assess styles with each new group; and they should assist students to develop new styles. Brudenell and Carpenter (1990) compared Kolb learning styles and attitudes toward computer-assisted-instruction (using Allen's Attitude Toward CAI Semantic Differential Tool) in 40 registered nurse baccalaureate nursing students. She found that students in all four of Kolb's learning styles had a statistically significant negative attitude toward the computer instruction, but she felt that the negative attitude related more to the quality of the software than to the particular learning style. Ostmoe, et al (1984) developed a learning strategies preference questionnaire which contained 28 different learning strategies which was administered to 92 baccalaureate nursing students divided into two groups, half in their beginning nursing courses, the other half taking their last nursing course. Their findings suggested that students preferred strategies that are traditional, teacher-directed, student-passive, and highly organized, and, surprisingly, students in their last semester had a lower preference for non-traditional or innovative strategies. They did note that "Predicted relationships between learning style preferences and achievement remain unclear" (p. 29),

but believe that exposing students to a variety of learning strategies could promote greater flexibility and problem-solving, which could be more valuable than structuring the learning situation to match student learning styles. Linares (1989) utilized the constructs of locus of control, self-directed learning, and learning style preference to look for differences between 170 registered nurse and 175 generic nursing students. Using three instruments, including Rezler's Learning Preference Inventory, she noted no significant group learning differences, but based on individual variations, recommended teaching strategies that incorporate independent study and self-paced methodologies.

A number of studies have been done using various aspects of their MBTI profiles with students in a variety of disciplines. Buckner (1976) used the MBTI profiles of 194 first year associate degree nursing students to evaluate the relationship between preference for independent study or teacher-directed instruction. She looked at the data across four categories: the Basic Personality Preference scores (individual scales); the Quadrant Index Combinations; the Column Index Combinations; and the MBTI Personality Types. The results showed little, if any, relationship between MBTI factors and preference for one or the other of the instructional modes when the effect of the current method of instruction was taken into account. Johnson (1984) compared 18 beginning nursing students' performance on computer-assisted testing and paper-and-pencil testing of medical

terminology. She looked at the effects of attitudes toward computer-assisted testing and MBTI personality types. There were no differences in student performances between the two testing methods and no correlation of computer testing scores with personality types and attitudes. She did note that thinking types had more favorable attitudes toward the computer than did feeling types. Three other studies relating to nursing students included comparing MBTI type to successful completion of nursing school which showed no significant relationship (Boykin, 1981); identification of factors that affected success in a baccalaureate nursing school: previous college GPA and score on the research paper were significantly predictive of theory GPA and E-I scale on the MBTI was predictive of clinical GPA (Brown, 1981); and the relationship between psychological type and the ability to formulate nursing diagnoses with 51 nursing students: the sensing and feeling students had significantly higher mean diagnostic ability scores (Walton, 1986).

Two major studies utilizing the MBTI tool with groups of registered nurses included Cole (1986) who collected information on 449 registered nurses and licensed practical nurses in the Nebraska/Iowa area regarding their MBTI profiles to make recommendations for continuing education; and Ritchie (1975) who related MBTI profiles of student nurses and successful registered nurses to selected preferred learning modalities. Cole's descriptive study provided a large data base which cross-indexed MBTI styles with

occupational choices, such as bedside nurses, educators, administrators and with degrees, such as associate degree, masters degree, etc. She then recommended strategies of teaching which might appeal to the different groups based on data acquired from expert sources on the MBTI cited earlier in this review of the literature, such as Myers (1980). Ritchie tried to establish a relationship between MBTI types and preferred learning styles as measured by the Media Effectiveness Chart and she did succeed in finding differences between the student nurses and the registered nurses in their preferences (SNs preferred lecture-RNs preferred reading and small discussion groups) as well as differences in their MBTI profiles. However, the number of RNs in her group was too small (15) to be useful for the purposes of this practicum. She did provide extensive charts which showed the preferred learning modality for each MBTI profile.

Several other MBTI studies were noted which did not use nurses as their subjects. Evans (1986) investigated whether extraverted-sensing students would benefit from an interactive instructional model over a traditional lecture method. The students receiving the interactive instructional method showed gains over the traditional lecture students, but the extraverted-sensing students did not have significantly greater gains than other MBTI types. Wentura (1984) analyzed the effects of matching and mismatching student learning-styles and instructor teaching-styles based

on MBTI profiles and found no significant differences in student performance. Robyak (1976) examined the differences in study skills scores, satisfaction scores, and GPAs of students based on their classification as J or P on the MBTI scale and whether their class was more or less structured. None of the MANOVA multivariate F-ratios was significant, but the results did show a significant symmetrical interaction of personality type and class structure on the satisfaction measure: Judgers in more structured classes had higher satisfaction than judgers in classes with less structure, and the reverse was true for perceivers. Rutsohn (1978) studied the effects of four types of seminar structures on the eight students in his seminar classes using their full MBTI profile. He concluded there was no one technique preferred by a particular personality type, but because all students had positive comments about the structure in which the instructor was the leader, he felt that would be the best technique for most student personalities. This conclusion should be suspect though, since he was both the leader and the researcher, and his n was very small! Carskadon (1978) used 65 students in psychology of personality classes, having each student rate every other student on the quality of their contributions to classroom discussion. By both his and peer ratings, intuitives got significantly higher ratings. His recommendation when dividing groups is to be sure that each group has an adequate number of intuitives. Haber (1980) compared the evaluations of 175 students based on their MBTI

profiles of two different structured experiences: fantasy and nonverbal communication. His findings included the following: extraverts enjoyed both group experiences more than introverts; those with dominant intuition preferred the fantasy experiences and those with dominant feeling preferred the nonverbal communication exercises. He recommended that group leaders should apply a wide array of structured experiences, noting:

> The findings of this study support the unique idiosyncrasies and adaptation patterns of individuals and oppose traditional learning environments that are based on the notion that everyone perceives and learns similarly. Jung's typology provides a conceptual framework to refute that notion (p. 119).

Finally, Lawrence (1984), in a review article of the research of MBTI in education, presented correlation studies between the MBTI and other learning-style instruments which were not very useful; and reviewed multiple research studies finding a few consistent relationships between MBTI factors and learning preferences; however, it was difficult to relate them to one another because some studies used just single letter preferences while others used different combinations. Some of the studies that he cited as significant include:

(1) intuitives (N) have an advantage in mental tasks that require manipulation of symbols and verbal fluency, but no advantage over sensates (S) in motor or practical skills such as computation;

(2) intuitives (N) have higher scores on speed and comprehension in reading with introverted intuitives (IN)

having an edge over extraverted ones (EN)--extraverted sensates (ES) scored the lowest;

(3) introverts (I) significantly preferred lectures and situations which do not call for much extraverting, while extraverts (E) more often picked dialogue situations;

(4) intuitive (N) students significantly learned more using Bruner's inductive approach, extraverted sensates (ES) did better with Gagne's instructional design, and introverted sensates (IS) scored higher when using Ausubel's advanced organizer model;

(5) sensates (S) had a tough time "creating their own examples or picture models of abstract concepts and principles" (p. 8), while intuitives (I) found taking objective tests the most difficult task because they would read meanings into the questions;

(6) feeling (F) types prefer group discussions and making verbal contributions, but thinking (T) types clearly preferred instructor-directed lecture/discussion;

(7) judging (J) types preferred traditional classroom instruction, teacher goals, immediate closure on test dates, assignments, and feedback on work; perceiving (P) types appeared to do less well in most of the educational studies but were seen as contributing more to facilitating group progress; and

(8) in one study which looked at dominant types and time orientation, these showed intuitive (N) dominant students are very significantly future-oriented, sensing (S) dominant

students are present-oriented, thinking (T) dominant students are oriented to linear cause & effect across all time parameters, and feeling (F) dominant students are past-oriented.

At the end of the review, Lawrence (1984) summarizes the findings in tables of specific learning preferences for each function and attitude, for the four quadrants, the four function combinations, and the four temperaments, but nothing for the dominants nor the full types.

Jensen, 1987; Golay, 1982; and Lawrence, 1982 & 1984 all offer specific learning preferences and teaching strategies for learners of all ages who fall into the different single or double letter dimensions. The following is a compilation of their ideas:

1. The extraverts (E) prefer more than one way of meeting learning objectives since they have a variety of interests and like to try out things with active experimentation. They are usually sociable and like to work with others. Projects where they could interview experts and try out new behaviors, especially in groups will meet their needs. In addition, they like lots of physical activity and prefer to learn facts and theories by relating them to their experience. They often enjoy games that are fun as well as educational. They have trouble concentrating on a lot of reading and seem to do better if they can talk through what is read, such as in group discussions.

2. Introverts (I) need time to process information and consult their inner experience, so they often do not participate in group discussions as talkers but rather as active listeners. If they are expected to share ideas, they do better if they have advance warning so they can prepare and rehearse. They are very grateful for such "tools" as advanced organizers. They prefer a quiet learning environment, both in sound and activity. They like reading and reflecting on what was read, and working alone on assignments. Independent study projects in which they can focus on one main concept in depth, lectures, and discussions when they are not pressured to talk are good teaching strategies for introverts.

3. Sensing (S) students want to be able to apply facts or theories to practical situations, they do well when they need to memorize facts, they like being precise and accurate, and they need to move from concrete facts to abstractions in discrete, well-ordered steps when learning new material. They are at home with programmed instruction, modules, and computer-assisted instruction, especially when these teaching strategies incorporate as many senses as possible. They are also good at activities that call for observation skills.

4. Intuitives (N) work very quickly, grasp concepts and insights readily, and become impatient and bored if classroom instruction moves too slowly. They enjoy designing their own projects where they can use their imagination and find their own way through new material. They love theoretical

material, can imagine the possibilities endlessly, and value flashes of insight "Ah Ha"s. They become restless with long lectures, routine drill and practice, and get frustrated when having to follow specific directions designed by a sensate thinker. They may be careless with details and not follow through. Intuitives also enjoy contributing to group discussions (especially if they are also extraverts) since they have ready access to ideas.

5. Thinking (T) students are most motivated when provided with logical rationale for assignments and have objective material to study, especially topics that help them understand cause and effect. They appreciate instructor led and organized activities and being acknowledged and respected for their competence; they learn best by problem-solving activities where they can apply logical analysis. They can be good at debating, especially if they are also intuitives.

6. Feelers (F) value all the interpersonal, human aspects of learning and do best where they are encouraged by the teacher personally and when they can be useful to their peers. They learn through personal relationships, where they can clarify values, and reading which focuses on how the characters problem-solve or deal with new experiences or facts. They don't do well if they think the teacher doesn't like them or in non-harmonious environments; they often facilitate their own and others learning by getting people to talk to each other or work together. They do not like

debating, but cooperative group projects, especially ones which will further human interests, are their forte.

7. Judgers (J) prefer organized, orderly, structured instructional environments with established goals for them to meet. They like prescribed tasks which they know about well in advance so they can carefully plan their time. They do not do well with "pop" quizzes or activities that are not already listed on the syllabus. They gauge their learning by the completion of tasks. Group activities and discussions are acceptable if teacher lead. They like lectures with detailed outlines and handouts to follow.

8. Perceivers (P) are most happy with the least structure: Discovery learning was made for them, especially if they are also intuitives. They enjoy spontaneous field trips, following their impulses, managing problems as they come up using informal problem solving. They work flexibly, can adapt easily to leaderless group projects, but do not do well in highly structured classrooms or with tight deadlines. They also may not complete tasks.

Summary of Literature Reviewed

The first section on learning styles noted the large number of available instruments, but established the MBTI as an integrative model which encompassed attributes found in most of the other tools.

The literature on the advantages and disadvantages of matching or mismatching learning/teaching styles seemed to offer balanced opinions and no clear preference. However, the matching advocates seemed to have a small numerical edge over the nonmatching, and the matching advocates seemed more passionate about their choice. Most of the people using the MBTI as a learning style tool appeared to do so to facilitate matching.

Discussion on the theory and practice of the Myers-Briggs Type Indicator provided definitions of the terminology as well as the historical influence on its development. This was considered essential for the understanding of the implications of this practicum.

Finally, the literature was reviewed to discover the extent of use of the MBTI as an indicator of learning style preference with nurses, both generic students and registered nurse students and with students in other disciplines. The results of this review was disappointing since little was found about its use with nursing students; on the other hand, this can pave the way for a contribution from this study to the MBTI and nursing education literature. The literature was also looked to for information about teaching strategies to support the MBTI learning styles. Overall, the literature provided no clear guidance: some of the studies showed a significant relationship between learning styles and teaching preferences, many did not.

Essentially, none of the research literature found specific preferences for the 16 four letter types, only a few studies looked at the dominant function and preference, while most focused on individual function or attitude letters (S or N or J or P) which seems to allow a number of unmanaged variables. A compilation of suggested learning preferences and strategies by several of the major educational researchers skilled in the use of the MBTI was presented. Myers (1980) offers general concepts about preferences of the function dominants, and also looks at the differences between extraverts and introverts of each dominant kind. Since these do not relate to any of the other common combinations, Myers (1980) data, which is very well researched, and those studies that mention dominant types could be used to generate teaching strategies, if any one dominant type is present significantly more than the others. Also to be taken into consideration will be the emphasis by many investigators and educators on using multiple strategies to provide both matching (comfort learning) and mismatching (growth learning) to meet the learning needs in nearly all of the students.

Chapter 3

METHODOLOGY AND PROCEDURES

Problem Solving Methodology

The problem-solving methodology used for this practicum was descriptive research. The purpose of the practicum was to describe the Myers-Briggs Type Indicator profiles of registered nurses (RN) who return to school for a baccalaureate in nursing (BSN) degree and to recommend teaching strategies based on the predominant profiles. Information was also to be provided on the comparison of the profiles of this group with other nurses and with the population in general utilizing the MBTI database available from the Center for Application of Type (CAPT) in Gainsville, Florida.

Procedures

As a part of leadership theory classes from 1986 through 1991, the MBTI had been administered to 240 registered nurses enrolled in one of two BSN programs in Northern California: the California State University Statewide Nursing Program and the Bridge Nursing Program at San Jose State University. The results of those questionnaires had been retained in the anticipation of using the data for a research project at a

later time. Since the subjects remained anonymous, and only a four letter Type designation was used, this study preserved the rights of these subjects. All subjects gave verbal assent to the anonymous use of their types.

Prior to data collection, and again, prior to analysis of the data, the literature regarding learning styles, the MBTI and its use in identifying learning styles, and teaching strategies based on the MBTI profiles was thoroughly reviewed and evaluated. The investigator had been trained in the administration and interpretation of the MBTI by a certified practitioner and updated this information frequently by means of the literature.

When this study was initially conceived, several instruments for identifying learning styles were considered: The Kolb LSI, the MBTI, and the Canfield and Lafferty LSI. Even contacting Howard Gardner (1985) to see if a tool was available for his "seven intelligences" theory was contemplated. Finally, the MBTI was chosen as the tool to assess learning styles for this practicum because of its broad scope and documented validity and reliability (Myers and McCaulley, 1985). Jensen (1987: 181) points out that it " . . . is better normed than most instruments of its kind and is more sophisticated and complex than most learning style assessments". And for the latter reasons, it accounts for most of the attributes identified by other instruments. Provost and Anchors (1987:3) also provide support for this decision when they reported that in a recent informal survey

of private and public colleges and universities, "the respondents agreed . . . that a major strength of the instrument (MBTI) was its conceptualization of the whole person and its theoretical base from which implications for practice can be derived."

The following procedures were followed in evaluating the data and making recommendations.

1. All MBTI forms were sorted into one of the 16 MBTI categories.

2. The numbers of subjects in each full type category were displayed using the Type table (Appendix B).

3. Percentages were calculated and displayed for each type.

4. The data were also sorted into various other combinations and percentages computed; these included the 8 single function and attitude letters, the four temperaments, and the dominants. All were displayed on tables.

5. The most commonly-occurring profiles were identified. Since none of the 4-letter Types met the criteria of 60% set in the proposal, and only the single dimension attitude, judgement (J), included over 60% of the subjects, the procedure to identify the Types selected by more than 60% of the subjects as put forth in the proposal was changed to the most commonly-occurring for this report.

6. The profiles from this population were compared with other registered nurse populations (Cole, 1986; Richie, 1975)

and with the U.S. population in general (Lawrence, 1982). The data were displayed in tables.

7. Selecting the most commonly occurring profiles, the suggested learning preferences/teaching strategies for each were identified and displayed using multiple literature sources.

8. Recommendations for teaching strategies and further studies were discussed.

Definition of Terms

All definitions are from the Glossary in Myers and McCaulley (1985:224-6)

Attitudes: Extraversion and introversion in Jung's theory. . . also can refer to judgement and perception in MBTI usage.

Auxiliary process: The process that is second in importance and that provides balance for dominant.

Dominant process: The process that is assumed to be first developed, most conscious and differentiated, and which becomes the governing force unifying one's life.

Extraversion: The attitude that orients attention and energy to the outer world.

Feeling: One of the two judging functions that makes decisions by ordering choices in terms of personal values.

Functions: The four basic mental processes or powers of sensing, intuition, thinking, and feeling.

Introversion: The attitude that orients attention and energy to the inner world.

Intuition: One of the two perceptive functions that attends to meanings, relationships, symbols, and possibilities.

Judgement: A term that refers to the two judging functions, thinking and feeling. *Judgement* also describes how thinking and feeling appear in observable behavior.

MBTI: The Myers-Briggs Type Indicator, a forced-choice psychometric personality preference instrument based on Jung's mental typology.

Perception: A term that refers to the two perceptive functions, sensing and intuition. *Perception* also describes how sensing and intuition appear in observable behavior.

Preference: One of the four basic dichotomies that, in type theory, structure the individual's personality. The four preferences are extraversion or introversion, sensing or intuition, thinking or feeling, and judgement or perception.

Sensing: One of the two perceptive functions that attends to experiences available to the senses. (Used as a noun and an adjective.)

Thinking: One of the two judging functions that makes decisions by ordering choices in terms of cause-effect or impersonal logical analysis.

Type: One of sixteen combinations of four preferences, each with specific characteristics postulated from the dynamics of the theory. Type is not used to denote a single preference.

Type table: A display of the sixteen Types in the format developed by Isabel Myers. The type table may have only the

sixteen types or may be supplemented with a column at the side showing the type groupings.

Assumptions and Limitations

It is assumed that all subjects responded to the MBTI questionnaire honestly and to the best of their knowledge of their own preferences. It is further assumed that the MBTI instrument is valid and reliable as it has been represented in the literature.

The study is limited by the use of a convenience sample of registered nurses taking the leadership course in one of two baccalaureate of nursing programs designed specifically for registered nurse students. While the sample size allows generalization of the results to other populations of registered nurse baccalaureate students, it cannot be generalized to registered nurses in general or to other students.

Chapter 4

RESULTS

The MBTI was administered in nursing leadership classes to registered nurses who had returned to school to get a baccalaureate in nursing degree from 1986 through October 1991 at either the California State University Statewide Nursing Program or the San Jose State University Nursing Bridge Program in Northern California. The raw data were collected and sorted into one of sixteen types and the data displayed on the standard MBTI Type Table using both numbers and percentages for each type (Table 1).

Table 1

Results of MBTI Types as Displayed on Type Table n = 240

ISTJ 26 10.8%	ISFJ 24 10.0%	INFJ 14 5.8%	INTJ 11 4.6%
ISTP 7 2.9%	ISFP 8 3.0%	INFP 17 7.0%	INTP 8 3.0%
ESTP 4 1.7%	ESFP 13 5.4%	ENFP 17 7.0%	ENTP 11 4.6%
ESTJ 22 9.2%	ESFJ 30 12.5%	ENFJ 14 5.8%	ENTJ 14 5.8%

The results showed no type with 60% as had been set in the proposal. The highest percentages occurred in three types: ESFJ with 12.5 %, ISTJ with 10.8%, and ISFJ with 10%.

The lowest percentages were found in three types: ISTP with 2.9%, ISFP with 3%, and INTP with 3%.

The data were then resorted into each of the four different combinations with numbers and percentages tabulated. Individual letter preferences (Table 2) showed a four percentage difference in the EI dimension, a differentiation of 11.6% in the SN preference and 14% in the TF dimension, and the largest difference of 29.2% on the JP scale with the J receiving 64.6% of the responses while the P received 35.4%.

Table 2

Comparisons of Each Individual Letter in the Four Dimensions

ATTITUDES			FUNCTIONS		
	N	%		N	%
E	125	52	J	155	64.6
I	115	48	P	85	35.4
S	134	55.8	T	103	43
N	106	44.2	F	137	57

The temperament combinations (Table 3), which have been used by Golay (1980) to recommend teaching strategies, shows the most preferred as SJ with 42.5% and the least preferred as SP with 13.3%.

Table 3

Percentages of Each Temperament Combination

SJ		SP		NF		NT	
n	%	n	%	n	%	n	%
102	42.5	32	13.3	62	25.8	44	18.3

Dominant combinations (Table 4) identify those strongly preferred functions and are shown with the numbers and percentages of each. When extraversion and introversion are combined, the differences range from 21% for those with thinking dominant to 29% with feeling dominant. When taken without introversion and extraversion combined, the most preferred is introverted sensing with 21% and least preferred as introverted thinking with 6%.

Table 4

Percentages in Each Dominant Combination

Dominant	Extraverted	Introverted	n	Percent
Thinking	ET (36)	IT (15)	51	21%
Feeling	EF (44)	IF (25)	69	29%
Sensing	ES (17)	IS (50)	67	28%
Intuition	EN (28)	IN (25)	53	22%

Next, the data from this study was compared with data from the CAPT data base using the individual preference dimensions of a population of registered nurses (Table 5).

Table 5

Comparison of MBTI Dimensions with CAPT (1982) Data Bank

MBTI Dimension	RNBSNs (n=240)	CAPT(n=1880)	Difference
E	52 %	46 %	+ 6.0 %
I	48	53	
S	55.8	57	- 1.2
N	44.2	43	
T	43	35	+ 8.0
F	57	65	
J	64.6	63	+ 1.6
P	35.4	37	

The two main differences between the nurses in this study and the CAPT data in Table 5 are in the thinking dimension (eight percent more in this study) and in extraversion: six percent more nurses in this study preferred extraversion.

In addition, the Types preferred by the RNBSN population of this study are compared with a rough estimate of the general population from the CAPT data base as cited by Lawrence (1982). Table 6 displays these data, looking at the percentage of difference in relation to this study data.

Table 6

Comparison of MBTI Types with General Population (CAPT)

MBTI Type	RNBSNs (n=240)	(CAPT) (n=?)	Difference
	%	%	%
ISTJ	10.8	6	+ 4.8
ISTP	2.9	7	- 4.1
ISFJ	10.0	6	+ 4.0
ISFP	3.0	5	- 2.0
INFJ	5.8	1	+ 4.8
INFP	7.0	1	+ 6.0
INTJ	4.6	1	+ 3.6
INTP	3.0	1	+ 3.0
ESTP	1.7	13	- 11.3
ESTJ	9.2	13	- 3.8
ESFP	5.4	15	- 9.6
ESFJ	12.5	13	- 0.5
ENFP	7.0	5	+ 2.0
ENFJ	5.8	5	+ 3.8
ENTP	4.6	5	- 0.6
ENTJ	5.8	5	+ 0.8

Finally, the MBTI types from this study are compared with the population of registered nurses with the technical degree as highest level of education (ADN or Diploma) as identified by Cole's 1986 study. The two populations are compared by Type, by individual dimension, and by temperaments. The greatest difference in these populations appears to be the increased number of those with the functional preference for thinking. In Cole's group, 28% were thinkers, while 43% preferred thinking in this study. This difference is also reflected in the data about temperaments: there are 18.5 % intuitive thinkers (NT) as compared with 5.4% found in Cole's study. Tables 7, 8, and 9 display this comparative data.

Table 7

Comparison of MBTI Types with Cole's (1984) Study

MBTI Type	RNBSNs (n=240)		Cole (n=198)		Difference	
	N	%	N	%		%
ISTJ	26	10.8	26	13.1	-	2.3
ISTP	7	2.9	3	1.5	+	1.4
ISFJ	24	10.0	42	21.2	-	11.2
ISFP	8	3.0	11	5.6	-	2.0
INFJ	14	5.8	11	5.6	+	0.2
INFP	17	7.0	15	7.6	-	0.6
INTJ	11	4.6	4	2.0	+	2.6
INTP	8	3.0	1	0.5	+	2.5
ESTP	4	1.7	3	1.5	+	0.2
ESTJ	22	9.2	13	6.6	+	2.6
ESFJ	30	12.5	27	13.6	-	1.6
ESFP	13	5.4	3	1.5	+	3.9
ENFP	17	7.0	17	8.6	-	1.6
ENFJ	14	5.8	16	8.1	-	2.3
ENTP	11	4.6	2	1.0	+	3.6
ENTJ	14	5.8	4	2.0	+	3.8

Table 8

Comparison of MBTI Dimensions with Cole's (1984) Study

MBTI Dimension	RNBSNs (n=240)		Cole (n=198)		Difference	
	N	%	N	%		%
E	125	52	85	42.9	+	9.1
I	115	48	113	57.1	-	9.1
S	134	55.8	128	64.6	-	8.8
N	106	44.2	70	35.4	+	8.8
T	103	43	56	28.3	+	14.7
F	137	57	142	71.7	-	14.7
J	155	64.6	143	72.2	-	7.6
P	85	35.4	55	27.8	+	7.6

Table 9

Comparison of MBTI Temperament with Cole's (1984) Study

Temperment	RNBSNs (n=240)		Cole (n=198)		Difference
	N	%	N	%	%
SJ	102	42.5	108	54.5	- 12
SP	32	13.3	20	10.1	+ 3.2
NF	62	25.8	59	29.8	- 4
NT	44	18.3	11	5.6	+ 12.7

Ritchie's (1975) study of 15 RNBSN students showed similarities in three types: ISFJ with 13% to 10% in this study; ISFP with both having 7%; and ESFJ with 13.3% in hers to 12.6% in this one.

Even though some of the data show an increase in several dimensions or types in the MBTI preferences of the RNBSNs in

this study over RNs in the other cited studies, the learning style preferences will only be listed for the identified predominant dimensions which are judging at 64.6%, feeling at 57%, sensation at 55.8%, and extraversion at 52%. This also corresponds with the type-ESFJ which garnered the largest percentage of all types:12.5%. A brief list of preferences is noted in Table 10.

Table 10

Learning Preferences for the Four Predominant MBTI Dimensions

Extravert (E)	Sensate (S)	Feeling (F)	Judging (J)
Activity	Practical	Personal	Organized
Discussion	Memorize Facts	Harmony	Structure
Talking	Observation	Values	Goals & Tasks
Groups	Ordered steps	Help others	Lectures
Experiential	Precision	Groups	Outlines
Games	Application	Human interests	Deadlines

Chapter 5

DISCUSSION, CONCLUSIONS, IMPLICATIONS, AND RECOMMENDATIONS

Discussion

Despite some opinions to the contrary, most authorities agree that learning styles do exist (Glatthorn, 1987; Jensen, 1987; Partridge, 1983). While there are numerous instruments designed to test various aspects of learning styles, the Myers Briggs Type Indicator (MBTI) has been identified as an integrative tool to assess learning styles (Partridge, 1983) and numerous investigators have utilized it in their research (Frisbie, 1989; Jensen, 1987; Buckner, 1976; Boykin, 1981; Wentura, 1986; Walton, 1986; Brown, 1981; Cole, 1986; Evans, 1986; Ritchie, 1976). Given these two premises, this study had the goal of identifying learning styles of registered nurse baccalaureate in nursing students (RNBSN) in an effort to recommend teaching strategies to assist in the retention and satisfaction of these adult learners.

The results of this study provided answers to the five research questions posed at its inception:

1. There was no predominant preference for any one of the 16 Myers Briggs Types in > 60% of the students; there

was, however, a preference for the attitude dimension, judging (J), in 64.6% of the subjects. No combination of dimensions showed a > 60% preference.

2. There were three Types that were clearly preferred by the study population: ESFJ with 12.5%, ISTJ with 10.8%, and ISFJ with 10%. One combination temperament, Sensate Judging (SJ) was a strong preference by 42.5% and, in addition to the judging (P) preference, the attitude dimension, extraversion (E) was preferred by 52%, the function dimension, sensation (S) by 55.8%, and the function dimension, feeling (F) by 57% of the RNBSNs.

3. There was a difference between this RNBSN population and the other populations of registered nurses that will be discussed further on.

4. There was a difference between the preferences of the general population and this study group. The discussion of this will also follow.

5. Finally, learning preferences were identified for the predominant dimensions of E, S, F, & J, but not for the Type, ESFJ.

As was expected, based on the literature, this RN population differed from the general population in that there are more introverts, more intuitives, and more judgers in the nursing population; in specific Types, the RNBSN population had 11.3% less of ESTPs, 9.6% less ESFPs, and 6% more INFPs than the population in general. The comparisons of this group with all RNs using the data supplied by CAPT, showed

strcng similarities in most areas but was notable in that this study population had 8% more thinkers as well as 6% more extraverts. The CAPT population is not separated as to level of education; however, it should be noted that nurses with diplomas (non-degree, three year hospital training) and two year associate degrees comprise about three-fourths of the nurses in this database.

The results of this investigation also showed that this population of registered nurses had some similarities to studies done by both Ritchie (1975) and Cole (1986), yet some noticeable differences were present. These might be accounted for by the fact that Ritchie only had a population of 15 RNBSN students, as compared to 240 in the present study, and, while Cole looked at a large number of licensed nurses, her population encompassed licensed vocational nurses all the way up the educational ladder to nurses with doctorates. It was felt that for more accurate comparison, the technical nurses that include both diploma and associate degree would be more like the population studied in this practicum, so only that portion of her data was used. Another difference that could be noted with Cole's study was that her population were working nurses only, not nurses who had already made a commitment to resume their education, as was the case with this study. While both the subjects in this study and those in Cole's shared the predominant dimension preferences of sensing (S), feeling (F), and judging (J), there were substantial differences in the degree

of preference. To compare: Cole found 64.6% preferred sensing while this study had 55.8%, feeling captured 71.7% of her population but 57% here, and judging was 72.2% in Cole with 64.6% with this group. Another difference was the reversal of introversion and extraversion: Cole's population selected introversion at 57.1% while this study selected extraversion at 52%. When looking at temperament combinations, this study had 18.3% Intuitive Thinkers (NT) while she only found 5.6%. Cole's recommendations for her predominant learning styles of sensing, feeling, and judging included schedules available well ahead of time, classes conducted in a consistent and orderly manner, handouts without too much reading, and friendly, enthusiastic speakers. These teaching styles would work for the students in this study as well, but because of the larger number of intuitives and thinkers in this population, provision would have to be made for more independent study, reading and library research, and discussion of the information, as recommended by Lawrence (1984).

Ritchie's population of RNs were balanced between intuition (N=7) and sensation (S=8), and between introversion (I=7) and extraversion (E=8). Her findings showed that her population preferred discussion, reading, and small group work which reflects the balance found in her population. This compares to the results of this study in that extraversion and introversion are also close in percentages

(only 4% difference), but the spread for sensation and intuition is greater at 11.6%.

Initially, the intent of this study was to relate teaching strategies to the four letter Type, but almost none of the research literature relates to the full type; most suggestions are based on the single or two letter dimensions. Hirsh and Kummerow (1989) do discuss learning preferences of each Type, but there is no evidence that this data is based on research; it appears to be their own ideas arrived at by combining the different dimensions. Since there is not very much literature that is conclusive about the significance of one Type preferring specific teaching strategies, Hirsh and Kummerow's suggestions should be viewed with caution. When discussing the teaching strategies to be used for RNBSNs, the single, and some double, letter dimensions were used.

The last consideration for teaching styles based on Type, brings up the controversy of matching and mismatching of teaching-learning styles. Since the literature shows mixed feelings about that with Partridge (1983), McCarthy (1981), and Lynch (1987), among others, recommending covering all bases or even purposefully mismatching to promote growth, and most of the Myers Briggs supporters strongly advocating increasing comfort and enhancing learning by teaching to Type (Lawrence, 1987, 1984, 1982; Jensen, 1987; Golay, 1982; Frisbie, 1989), there does not seem to be a really clear path for educators to follow.

Conclusions

Based on the results of this study and the foregoing discussion, it was concluded that:

1. The MBTI preferences chosen by this RNBSN population covered all Types and no strong preference was found in any one Type.

2. The concentrations of preferences in certain types were similar to other registered nurse populations, except that this group had more extraverted types.

3. The predominant preferences of this population occurred across the four dimensions of E, S, F, J with J being the strongest at 64.6%.

4. The preferred dimensions of this group were similar to other registered nurse populations, with differences only in a matter of degree.

5. The teaching strategies recommended for these dimensions in the literature can be utilized for this population as well.

6. The lecture method is an acceptable method for the majority preference of judgers (J), but additional methods should be used to promote enjoyment of the other preferred dimensions of the major groups, such as group projects, discussions, and opportunities for practical application of learning.

7. Based on the literature recommendations for adult learners who not only seek comfort learning by matched

styles, but also growth learning, a variety of teaching strategies and learning modalities should be utilized.

Implications

While it would have been desirable for a strongly-held preference to have emerged from this study, what occurred instead provides a sense of direction, if not a clear mandate, for educational improvement. At least what we have always suspected (but not had adequate proof) does appear to be true: If we are to combine the two types that really like lectures, those with strong introversion and judging preferences, we would find that they do not constitute a majority. Unfortunately, as pointed out by Lawrence (1987), students are trained to accept lectures, so often "prefer" this method only because it is familiar. Thus, incorporating into the repertoire of teaching strategies, the kinds of learning activities that would motivate and increase the enjoyment of the other major dimension preferences of extraversion, sensing, and feeling could have a substantial effect on educational improvement.

Lawrence (1984) also pointed out that while the majority of students prefer extraverted sensing, many instructors at the university level teach from the prospective of introverted intuitive thinking. While this could help to promote new learning skills in the students, unless it is consciously utilized along with other extraverted and

sensation comfort strategies, many of the students merely miss out on a lot of excellent learning that goes over their heads. Meeting the learning preferences of the majority at least part of the time would seem destined to improve teaching.

When considering types of learning activities to provide for the RNBSN students, the ideal would be to get a MBTI profile on each class and modify teaching accordingly. This also suggests that instructors should learn about their own style as well and analyze how they implement teaching based on their own preferences. It is possible that a teacher might not be teaching from her own strength if she is merely following the pattern set by her predecessors. How much more rewarding for the teacher, and the class, if she looked at other teaching strategies comparable to her identified MBTI preferences. But, even without knowledge of all the classroom preferences, investigating new activities that provide variety and giving students a choice of ways of meeting designated objectives could have a positive impact on learning outcomes. Incidentally, since the literature has little information on the effect of teaching to learning preferences on learning outcomes, this is a rich area for further research.

Based on what has been learned about this population of RNBSN students, what would be the best teaching strategies and learning activities? Because of the predominance of judging, students should receive, at the first class meeting,

a course outline with all assignments and due dates, as well as the dates of quizzes and examinations, identified. Since the perceptives and intuitives will tend to forget about or lose these, it is expedient to have extra copies available and to remind them prior to the due dates. This also provides a sense of personal caring for the majority of feelers who want to please the instructor by having work completed on time, and a bit of security for the sensates who already have memorized the dates but want reassurance that they have them correct. When designing tests and quizzes, it would be helpful to offer a choice of an objective multiple choice test for the sensates who usually do better with them or an essay test for intuitives who often fail a multiple choice test because they read too much into the question and have trouble finding any answer they like (Jensen, 1987). Even better, if another option for evaluation could be a demonstration of learning through the application of knowledge on a project designed by the teacher for extraverted sensates or one designed by the student for the extraverted intuitives. When conducting the class, a combination of lecture-discussions for the predominant judgers and extraverts and group discussions and group projects for the extraverts and feelers. If the group activities are structured and preferably led or at least overseen by the instructor, the judgers will find this satisfying as well. Reading assignments should not comprise a large portion of the learning activities, but a challenging

optional reading list should be available for the minority of thinkers and introverted intuitives. Visual media such as movies and videos should be interspersed with other activities for the sensate majority, and computer-assisted instruction should be encouraged for introverted sensates. And suggest to the 18% of intuitive thinkers that they might like to design their own educational software.

By focusing on the needs of the predicted majority, but keeping in mind alternative strategies for those with less common preferences, instruction can be improved without significantly adding to the cost of education.

Recommendations

1. All instructors who teach RSBSN students should complete the MBTI to establish their own preferences and learn where their teaching strengths lie.

2. Workshops should be offered to instructors to educate them about the kinds of teaching strategies and learning activities that appeal to the different MBTI learning style preferences. They should be taught how to adapt their teaching to differing student styles.

3. If possible, the MBTI should be administered to all students in the class early in the semester to learn the composition of that particular group so teaching strategies could be adjusted to fit the predominant styles.

4. If it is not feasible to get MBTI information on students directly, the dimension preferences identified as most commonly occurring- E, S, F, & J- should be used design instructional activities.

5. A broad scope of activities should be available to meet course objectives. Instructors should remain flexible enough to utilize a variety and to allow students to choose those that best meet their own goals, in true adult learning fashion.

6. For students who are disinclined to choose for themselves, instructors should attempt to provide activities and experiences that will both motivate them (comfort measures) and challenge them (growth measures).

7. Teachers should conduct research on the learning outcomes that occur when different strategies are paired with MBTI learning styles.

8. The results of this research should be shared with other faculty who teach RN students by presenting the research to professional groups and by submitting the paper for publication to a professional journal.

Partridge (1983:248) sums the holistic approach to teaching-learning very effectively as she says:

> It should be remembered that learning styles and cognitive preferences are value free but curricula and policy should be designated to foster, if not exploit, a diverse repertoire of styles for each student. But. . . we have much to learn through further research.

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APPENDICES

APPENDIX A

SUMMARY OF SIXTEEN MBTI TYPES

Characteristics frequently associated with each type

	Sensing Types		Intuitive Types	
Introverts	**ISTJ** Serious, quiet, earn success by concentration and thoroughness. Practical, orderly, matter-of-fact, logical, realistic, and dependable. See to it that everything is well organized. Take responsibility. Make up their own minds as to what should be accomplished and work toward it steadily, regardless of protests or distractions.	**ISFJ** Quiet, friendly, responsible, and conscientious. Work devotedly to meet their obligations. Lend stability to any project or group. Thorough, painstaking, and accurate. Their interests are usually not technical. Can be patient with necessary details. Loyal, considerate, perceptive, concerned with how other people feel.	**INFJ** Succeed by perseverance, originality, and desire to do whatever is needed or wanted. Put their best efforts into their work. Quietly forceful, conscientious, concerned for others. Respected for their firm principles. Likely to be honored and followed for their clear visions as to how best serve the common good.	**INTJ** Have original minds and great drive for their own ideas and purposes. Have long-range vision and quickly find meaningful patterns in external events. In fields that appeal to them, they have a fine power to organize a job and carry it through. Skeptical, critical, independent, determined, have high standards of competence and performance.
	ISTP Cool onlookers—quiet, reserved, observing and analyzing life with detached curiosity and unexpected flashes of original humor. Usually interested in cause and effect, how and why mechanical things work, and in organizing facts using logical principles. Excel at getting to the core of a practical problem and finding the solution.	**ISFP** Retiring, quietly friendly, sensitive, kind, modest about their abilities. Shun disagreements, do not force their opinions or values on others. Usually do not care to lead but are often loyal followers. Often relaxed about getting things done because they enjoy the present moment and do not want to spoil it by undue haste or exertion.	**INFP** Quiet observers, idealistic, loyal. Important that outer life be congruent with inner values. Curious, quick to see possibilities, often serve as catalysts to implement ideas. Adaptable, flexible, and accepting unless a value is threatened. Want to understand people and ways of fulfilling human potential. Little concern with possessions or surroundings.	**INTP** Quiet and reserved. Especially enjoy theoretical or scientific pursuits. Like solving problems with logic and analysis. Interested mainly in ideas, with little liking for parties or small talk. Tend to have sharply defined interests. Need careers where some strong interest can be used and useful.
Extraverts	**ESTP** Good at on-the-spot problem solving. Like action, enjoy whatever comes along. Tend to like mechanical things and sports, with friends on the side. Adaptable, tolerant, pragmatic; focused on getting results. Dislike long explanations. Are best with real things that can be worked, handled, taken apart, or put together.	**ESFP** Outgoing, accepting, friendly, enjoy everything and make things more fun for others by their enjoyment. Like action and making things happen. Know what's going on and join in eagerly. Find remembering facts easier than mastering theories. Are best in situations that need sound common sense and practical ability with people.	**ENFP** Warmly enthusiastic, high-spirited, ingenious, imaginative. Able to do almost anything that interests them. Quick with a solution for any difficulty and ready to help anybody with a problem. Often rely on their ability to improvise instead of preparing in advance. Can usually find compelling reasons for whatever they want.	**ENTP** Quick, ingenious, good at many things. Stimulating company, alert and outspoken. May argue for fun on either side of a question. Resourceful in solving new and challenging problems, but may neglect routine assignments. Apt to turn to one new interest after another. Skillful in finding logical reasons for what they want.
	ESTJ Practical, realistic, matter-of-fact, with a natural head for business or mechanics. Not interested in abstract theories; want learning to have direct and immediate application. Like to organize and run activities. Often make good administrators; are decisive, quickly move to implement decisions; take care of routine details.	**ESFJ** Warm-hearted, talkative, popular, conscientious, born cooperators, active committee members. Need harmony and may be good at creating it. Always doing something nice for someone. Work best with encouragement and praise. Main interest is in things that directly and visibly affect people's lives.	**ENFJ** Responsive and responsible. Feel real concern for what others think or want, and try to handle things with due regard for other's feelings. Can present a proposal or lead a group discussion with ease and tact. Sociable, popular, sympathetic. Responsive to praise and criticism. Like to facilitate others and enable people to achieve their potential.	**ENTJ** Frank, decisive, leaders in activities. Develop and implement comprehensive systems to solve organizational problems. Good at anything that requires reasoning and intelligent talk, such as public speaking. Are usually well-informed and enjoy adding to their fund of knowledge.

APPENDIX B

MBTI TYPE TABLE

MYERS-BRIGGS TYPE TABLE WITH TEMPERMENTS

E=Extrovert I=Introvert S=Sensate N=Intuitive F=Feeling T=Thinking J=Judging P=Perceiving

SJ	SP	NF	NT
ESTJ	ESTP	ENFP	ENTP
ISTJ	ISTP	INFP	INTP
ISFJ	ISFP	INFJ	INTJ
ESFJ	ESFP	ENFJ	ENTJ

THE THEORY: DOMINANT AND AUXILIARY FUNCTIONS FOR EACH TYPE

According to Jung's theory of psychological types, everyone uses all four *functions* (S, N, T, F), and adopts all four *attitudes* (E, I, J, P). The types are called *preference types* because people in each type *prefer* one of the two *perceptive functions* (S or N), and one of the two *judgment functions* (T or F). These preferences appear in the 2 middle letters of the type formula. Types also differ in the functions they prefer to use when in the introverted or extraverted attitudes.

The most preferred, or favorite, or *dominant function*, is extraverted in E types and introverted in I types. The second favorite or *auxiliary function* is introverted in E types and extraverted in I types. The type table below shows these relationships for each of the 16 MBTI types.

ISTJ INTROVERTED SENSING with Thinking Sensing is dominant and introverted Thinking is auxiliary and extraverted	**ISFJ** INTROVERTED SENSING with Feeling Sensing is dominant and introverted Feeling is auxiliary and extraverted	**INFJ** INTROVERTED INTUITION with Feeling Intuition is dominant and introverted Feeling is auxiliary and extraverted	**INTJ** INTROVERTED INTUITION with Thinking Intuition is dominant and introverted Thinking is auxiliary and extraverted
ISTP INTROVERTED THINKING with Sensing Thinking is dominant and introverted Sensing is auxiliary and extraverted	**ISFP** INTROVERTED FEELING with Sensing Feeling is dominant and introverted Sensing is auxiliary and extraverted	**INFP** INTROVERTED FEELING with Intuition Feeling is dominant and introverted Intuition is auxiliary and extraverted	**INTP** INTROVERTED THINKING with Intuition Thinking is dominant and introverted Intuition is auxiliary and extraverted
ESTP EXTRAVERTED SENSING with Thinking Sensing is dominant and extraverted Thinking is auxiliary and introverted	**ESFP** EXTRAVERTED SENSING with Feeling Sensing is dominant and extraverted Feeling is auxiliary and introverted	**ENFP** EXTRAVERTED INTUITION with Feeling Intuition is dominant and extraverted Feeling is auxiliary and introverted	**ENTP** EXTRAVERTED INTUITION with Thinking Intuition is dominant and extraverted Thinking is auxiliary and introverted
ESTJ EXTRAVERTED THINKING with Sensing Thinking is dominant and extraverted Sensing is auxiliary and introverted	**ESFJ** EXTRAVERTED FEELING with Sensing Feeling is dominant and extraverted Sensing is auxiliary and introverted	**ENFJ** EXTRAVERTED FEELING with Intuition Feeling is dominant and extraverted Intuition is auxiliary and introverted	**ENTJ** EXTRAVERTED THINKING with Intuition Thinking is dominant and extraverted Intuition is auxiliary and introverted

THE 4 COLUMNS: COMBINATIONS OF PERCEPTION AND JUDGMENT

SENSING PLUS THINKING	SENSING PLUS FEELING	INTUITION PLUS FEELING	INTUITION PLUS THINKING
ST	**SF**	**NF**	**NT**
PRACTICAL AND MATTER-OF-FACT	SYMPATHETIC AND FRIENDLY	ENTHUSIASTIC AND INSIGHTFUL	LOGICAL AND INGENIOUS
Like using abilities in	Like using abilities in	Like using abilities in	Like using abilities in
TECHNICAL SKILLS WITH FACTS AND OBJECTS	PRACTICAL HELP AND SERVICES FOR PEOPLE	UNDERSTANDING & COMMUNICATING WITH PEOPLE	THEORETICAL AND TECHNICAL DEVELOPMENTS
for example in	for example in	for example in	for example in
Applied science Business Production Construction and many more	Patient care Community service Sales Teaching and many more	Behavioral science Research Literature & art Teaching and many more	Physical Science Research Management Forecasts & Analysis and many more

THE 4 QUADRANTS: COMBINATIONS OF ATTITUDE AND PERCEPTION

INTROVERSION AND SENSING **IS** KNOWLEDGE IS IMPORTANT TO ESTABLISH TRUTH "THOUGHTFUL REALISTS"	INTROVERSION AND INTUITION **IN** KNOWLEDGE IS IMPORTANT FOR ITS OWN SAKE "THOUGHTFUL INNOVATORS"
EXTRAVERSION AND SENSING **ES** KNOWLEDGE IS IMPORTANT FOR PRACTICAL USE "ACTION-ORIENTED REALISTS"	EXTRAVERSION AND INTUITION **EN** KNOWLEDGE IS IMPORTANT FOR CREATING CHANGE "ACTION-ORIENTED INNOVATORS"

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