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Understanding the Relationship Between the Emotional Competence Inventory - University Edition and the Myers-Briggs Type Indicator in the Admission of College Students to an Orthopaedics-Based Honors Program

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ABSTRACT

UNDERSTANDING THE RELATIONSHIP BETWEEN THE EMOTIONAL
COMPETENCE INVENTORY–UNIVERSITY EDITION AND THE
MYERS-BRIGGS TYPE INDICATOR IN THE ADMISSION
OF COLLEGE STUDENTS TO AN ORTHOPAEDICS-
BASED HONORS PROGRAM

by

Carrie A. Yocum

Chair: Hinsdale Bernard

ABSTRACT OF GRADUATE STUDENT RESEARCH

Dissertation

Andrews University

School of Education

Title: UNDERSTANDING THE REALTIONSHIP BETWEEN THE EMOTIONAL
COMPETENCE INVENTORY–UNIVERSITY EDITION AND THE MYERS-
BRIGGS TYPE INDICATOR IN THE ADMISSION OF COLLEGE
STUDENTS TO AN ORTHOPAEDICS-BASED HONORS PROGRAM

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Problem

The Orthopaedic Scholar Institute (OSI) Team realized its need for a more

objective selection and admission process that, as much as possible, quantified the

characteristics desired in OSI students rather than relying solely on referral perception,

intuition, and an interview, but it did not have a clear method or approach to do so.

Administering standardized inventories that highlighted these desired characteristics and

aided in the selection and admission process seemed to be an objective approach to obtain

more quantifiable data. The problem for my study was, therefore, whether the Myers-

Briggs Type Indicator (MBTI) alone could measure a student's emotional maturity and,

subsequently, predict that student's fit in an orthopaedic setting, or whether another

objective measure would be necessary to identify these skills.

Method

This ex-post facto study compared the responses from freshmen in a Midwestern liberal arts college on two standardized instruments (i.e., the MBTI and the Emotional Competence Inventory–University edition [ECI-U]). A one-way ANOVA was performed to determine the relationship between the responses.

Results

The results yielded no relationship between type preference as determined by the MBTI and participants' level of emotional maturity as measured using the ECI-U. Further, there was no relationship between participants' level of emotional maturity and gender.

Conclusions

The ECI-U measures emotional maturity in such a way that any MBTI type could be deemed "emotionally mature" as defined in my dissertation. That is, the ECI-U appears to be measuring students' ability to utilize their opposite MBTI type preferences because of the random distribution of the data. This bodes well for OSI in that the ECI-U may provide an initial indication of emotional maturity for the orthopaedic industry and should be administered to all interested OSI candidates as a tool to better determine emotional maturity.

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A Dissertation

Presented in Partial Fulfillment

of the Requirements for the Degree

Doctor of Philosophy

by

Carrie A. Yocum

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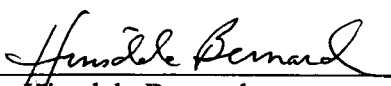
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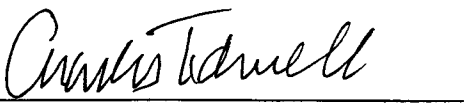
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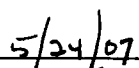
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TABLE OF CONTENTS

LIST OF TABLES

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Many thanks to those people who directly and indirectly helped me complete this study. To my chairperson, Dr. Hinsdale Bernard, whose gentle spirit guided me through this process and whose support and advocacy allowed for the unique experience of a collaborated dissertation. To my committee members, Dr. Erich Baumgartner and Dr. Charles Tidwell, for their critical insights and support for this collaboration. To my many colleagues: Dr. Jim Bowling for his mentoring, Dr. Steve Grill for his optimism and enco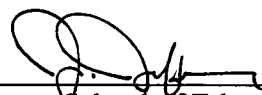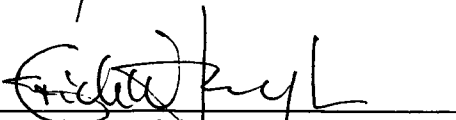uragement, Dr. Jim Lesko and Dr. Tom Edgington for their assistance with the research, Bill Darr and Rhoda Palmer for their patience in locating obscure references, Rebecca Coleman for her commitment to social work education, and the many others who encouraged me through their genuine interest in my work.

To my husband and daughter for the many weekends, nights, and holidays they sacrificed to enable me to complete my work.

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CHAPTER ONE

INTRODUCTION

Grace College received a sizable Lilly Endowment grant to connect Grace College students to the orthopaedic industry through the Orthopaedic Scholar Institute (OSI). Shortly after Michael A. Harstine and I jointly developed the OSI Program, however, it became clear to us that we had not developed an effective method for selecting and admitting students with the characteristics described by representatives of the orthopaedic industry. My study, therefore, is one of two collaborated dissertations and the culmination of both my individual and collective efforts with Michael A. Harstine (2007) to solve two problems related to the selection and admission of students to the OSI Program. There will be a significant degree of overlap in the reporting of these studies.

Chapter 1 of my study gives context for the Lilly Endowment proposal and grant, the Lilly-funded OSI initiative, the implementation of OSI, and the model on which the OSI Program was based. Further, the specific problem on which my study focuses, my research questions, hypotheses, and rationale are described. Finally, the conceptual framework from which my study evolved, the theoretical foundation of Carl Jung's theory of psychological type, the significance of my study, limitations, and delimiters that are unique to the study are defined.

1

Background to the Problem

Lilly Endowment Inc. is an Indianapolis-based, private philanthropic foundation established in 1937 by three members of the Lilly family. The Endowment exists to support the causes of religion, education, and community development, and emphasizes projects that benefit young people and promote leadership education and financial self-sufficiency in the nonprofit, charitable sector (Lilly Endowment, 2005).

Lilly Endowment views education, at all levels, as indispensable to personal, civic, and economic success. Consequently, its grant-making revolves primarily around its interest in improving education in Indiana, with special emphasis on higher education and programs designed to increase the number of Indiana residents with bachelor degrees. Many of its grant programs are aimed at Indiana's colleges' and universities' abilities to increase the state's educational attainment level and Lilly is encouraged to see the efforts of Indiana colleges and universities to retain more of their graduates in the state. To help these institutions of higher education in their efforts, in December 2003 the Endowment approved a round of grants totaling more than $38 million for nearly every Indiana college and university under a new educational initiative to build and promote economic opportunities for college graduates in Indiana (Lilly Endowment, 2005).

With Lilly's emphasis on retaining intellectual capital in Indiana, there was great potential for Grace College to develop an educational initiative designed to promote economic opportunities for its students and graduates. With three of the five leading orthopaedic corporations in the world, Biomet Orthopedics, Inc. (Biomet); DePuy Orthopaedics, Inc. (DePuy); and Zimmer Holdings, Inc. (Zimmer) located within three miles of the Grace College campus, an initiative to simultaneously address Lilly's desire to maintain intellectual capital in the state and respond to the needs of the global

orthopaedic industry on a local level seemed like a clear opportunity for the college (Grace College, 2003).

According to Brad Bishop, Director of Corporate Communications, Zimmer, Inc., the local orthopaedic industry is growing at a rate of about 12% a year, a trend not expected to slow down as baby boomers continue to age. As expected from worldwide industry leaders, Biomet, DePuy, and Zimmer are three of Kosciusko County's four largest employers and, combined, employ almost 4,200 individuals within the county. Additional businesses in the biomedical cluster increase that employment to more than 5,000 workers (Bishop, 2003).

Despite the historical growth in the industry and the location of its corporate headquarters that make Warsaw, Indiana, the orthopaedic capital of the world (Aeppel, 2006), in 2001 the Indiana Health Industry Forum commissioned Battelle Memorial Institute, one of the nation's leading nonprofit research and development organizations, to assist in creating a technology strategy for the health industry in the Kosciusko County region. This formed the first of a series of local industry road maps and built upon the statewide strategy for the health industry completed in 1999 for the Indiana Health Industry Forum (Battelle Memorial Institute, 2001, p. v).

The Battelle study noted that the health sector, which is comprised of various industries including those related to the orthopaedic industry, is one of the fastest growing and most active industry segments across the country, and represents the strongest asset of the Kosciusko region (Battelle Memorial Institute, 2001, p. 3). Additionally, the Battelle study asserted that Kosciusko County lacked a quantity of skilled workers and training programs sufficient to meet the future workforce needs

of the biomedical industries along with the region's other industry and service establishments. This prompted the major biomedical firms to pilfer workers from the other biomedical firms as well as local supplier industries through superior wage and benefit offers; supply companies frequently and repeatedly lost their best employees to the older, larger, and richer biomedical manufacturers (Battelle Memorial Institute, 2001, pp. 13-14).

The Battelle study further noted that the major biomedical firms and their suppliers suffered from the lack of suitable training programs offered through public schools and local institutions of higher education, including Grace College (Battelle Memorial Institute, 2001, p. 14). It was especially notable that links between local industries and educational institutions for the purposes of establishing internship programs and providing input into technical curricula were intermittent at best (Battelle Memorial Institute, 2001, p. 14). While relationships did exist between Grace College and local businesses under the auspices of professional degree programs such as Teacher Education and Social Work, it did not formally exist in academic disciplines such as business, communication, and information technology.

The combination of Lilly's mission and the concerns outlined in the Battelle study caused Grace College to re-evaluate its previously underutilized relationship with the major orthopaedic corporations. Consequently, Grace College sought to address the concern about lack of training programs.

Grace College realized, however, that it did an inadequate job of intentionally connecting students and graduates with the major orthopaedic companies: Biomet, DePuy, and Zimmer. In order for Grace College graduates to compete for the best careers

available in north-central Indiana and throughout the state, Grace College concluded that it had to work more collaboratively to develop and sustain the strength of the orthopaedic industry in the county. While the economic base of the county had historically been strong, there had been concern about the long-term economic well-being of the region, specifically as related to the lack of a qualified orthopaedic industry workforce.

Because of this concern, Grace College investigated its role in providing graduates who would not only be attractive to industry employers, but also desire to live and work in the region upon graduation. It also required that the college re-examine its traditional model for program development and community involvement. Subsequently, a grant from the Lilly Endowment provided the impetus to begin changing the Grace College culture from one of being a traditional academic institution to one driven by workplace concerns. Grace College's effort to respond to the Battelle study's concerns resulted in the Orthopaedic Scholar Institute.

Orthopaedic Scholar Institute

The Orthopaedic Scholar Institute (OSI) is a program at Grace College that emphasizes the outcome of higher education on learning and success in employment. OSI believes that the orthopaedic companies will see OSI as their preferred method to recruit new employees to their respective organizations. After the orthopaedic companies evaluate the impact of this initiative, OSI believes the orthopaedic companies will find increased employee retention, lower training costs, faster promotions, stronger problem-solving skills, and heightened leadership potential because of their contribution to this initiative.

Further, OSI is a system to capitalize on the unique, local, economic opportunities

afforded graduates by the orthopaedic industry. OSI provides students with an opportunity to meld liberal learning with marketplace learning and technology.

The formation, development, and maturation of OSI built on the ever-changing needs that companies identified as necessary to remain the orthopaedic leaders in the industry. Grace College remains flexible and adaptable in its delivery of this initiative as orthopaedic partners obtain new information and recognize the need for additional skills by graduates. Grace College has transitioned from a traditional, faith-based, liberal arts institution to one with a clearer understanding of the skills graduates need to secure permanent employment in their chosen disciplines. OSI's mission, "To establish preferred employment opportunities for Grace College graduates in the orthopaedic industry" (Grace College, 2004), is evidence of this transition.

Implementation of OSI

Immediately upon receiving the Lilly grant, a Grace College OSI Team convened, which included a Director, Coordinator, and Consultant. The Director, who was the Dean of Non-Traditional and Community Education at Grace College, was well-respected in the local community. For more than 20 years, he served as moderator for the area's leadership academy, a role in which he had the opportunity to build a strong network of business contacts and community leaders. He served as the liaison between OSI and Grace's administration as well as OSI and the Kosciusko County community. The OSI Coordinator was a Business Department Professor who had the vision for OSI and functioned as the manager of OSI's daily operations. The OSI Consultant was a Social Work Professor, retained to lead the team in the program development phase.

The team's leadership first identified representatives from each of the three

primary orthopaedic companies to serve on the OSI Development Group to provide advice and an industry perspective. The process used by the OSI Team involved connecting industry to practice. Rather than waiting for feedback from employers regarding the quality and preparedness of the Grace College graduates after those graduates were already hired, the OSI Team consulted with employers first to seek input about the characteristics they expected of interns and new employees. As described by Mulholland and Derdall (2004), schools that provided employers with the opportunity to express their needs and influence the process of curriculum development up front could produce a much more responsive program for those employers. The OSI Team chose to listen to needs of the orthopaedic representatives up front, and concepts such as diligence and emotional maturity emerged and were predominantly discussed as characteristics these companies desired in interns and employees. The OSI Team chose to commit itself to responding to the need for mature, hard-working students voiced by the orthopaedic industry.

Once the OSI Team determined the characteristics desired by the orthopaedic industry, the team selected the Social Work Program at Grace College as its programming framework because the Social Work Program already had an established infrastructure of goals, policies, curriculum, assessment, and experiential learning. Using the Social Work Program as a model, OSI created a series of training modules and experiences designed to strengthen students' existing skills and better prepare them for placement in an orthopaedic context. Much of the proposed process for placing and following students in an orthopaedic internship was also based on the social work model. Additionally, the development of a portfolio, which was intended to showcase students'

skills and provide them opportunities to fill the gap between their real and ideal selves, was also based on the social work model.

After developing a programming framework for OSI, the OSI Team began the process of recruiting, selecting, and admitting students to OSI. Initially, this process occurred through the individual selection of business students by the OSI Coordinator because he had access to numerous students with intrinsic interest in corporate employment. Later, upon the OSI Coordinator's appeal, the Grace College faculty referred additional students for consideration; however, aside from a profile consisting primarily of the emotional maturity, diligence, and goodness of industry fit domains, he provided no other specific admission criteria.

Once the OSI Team identified its first cohort, they designed a series of training modules to further develop the students' skills, which the Development Group previously outlined. Training modules included topics such as group dynamics, negotiation, and image management. A critical training module, however, clearly emerged: the Myers-Briggs Type Indicator (MBTI). Initially intended to help OSI students understand themselves and others better, the MBTI became a recurring theme through most of the modules. Most of the students had some familiarity with it already, so the training focused not only on the MBTI types and preferences, but also on the strengths and pitfalls of these types in organizational and group settings.

Because it emerged as a theme through the training modules, it became apparent to the OSI Team that the MBTI could be one means to assess students' fit with the OSI Program and ultimately within the orthopaedic industry. The MBTI made sense not only to students, but also to faculty and staff because it was widely used on campus. Grace

College introduces the MBTI to freshmen early in their first semester on campus. The intent is to help the students understand both themselves and others better, and prepare them for the strengths and pitfalls of their preferences in an academic setting.

As the MBTI is widely used on campus, faculty have an understanding about its wider applications and relevance. Corporately, there seemed to be a general understanding about the applications and relevance of the MBTI in work and group settings. This understanding, combined with the availability of extensive MBTI research related to "type" in various social systems, led to the realization of its potential value and use in the training modules with students.

Following this realization, the OSI Team educated faculty about the desired characteristics and profile of an OSI candidate and again requested faculty referrals of prospective students, this time for OSI's second cohort. Surprisingly, faculty referrals yielded a cohort that was predominantly introverted, sensing, and judging ("ISJ") in terms of MBTI preference. Based on their MBTI types, this cohort seemed to reflect the diligence desired in OSI students; however, when observed by the OSI Team in the training modules, they did not seem to reflect the other skills to the extent the team expected and wanted.

The OSI Team concluded that, because of their familiarity with MBTI types, when the team described the ideal characteristics of an OSI candidate, the faculty may have equated the OSI profile with particular MBTI types. Specifically, they appeared to have equated the characteristics of the ideal OSI candidate with the "ISJ" (introvert, sensing, and judging) MBTI preference, perhaps without thoroughly understanding the influence of "emotional maturity" regardless of type or perhaps because of their over-

emphasis on the characteristic of "diligence."

It became clear with the second OSI cohort that a more objective means of selection and admission was necessary to determine students' compatibility with and suitability for this innovative experience based on the skills recommended by the OSI Development Group.

Statement of the Problem

While the OSI Team realized its need for a more objective selection and admission process that, as much as possible, quantified the characteristics desired in OSI scholars rather than relying solely on referral perception, intuition, and an interview, it did not have a clear method or approach to do so. In hindsight, while much of its program's organization was based on the Social Work Program's model, it neglected to take advantage of the Social Work Program's highly structured gatekeeping (i.e., selection and admission) process. Thus far, the selection and admission process was initiated by either the OSI Team through an appeal to faculty for referrals, or the OSI Coordinator through observation and selection of students enrolled in his business courses. Students who were thought to possess the desired characteristics then interviewed with the OSI Coordinator who (a) concluded that they would be good fits with the OSI Program and subsequently admitted them to OSI, (b) questioned their goodness-of-fit and referred them for a second interview with the OSI Consultant, or (c) denied their admission because they would not fit well in the program.

Administering standardized inventories that highlighted these desired characteristics and aided in the selection and admission process seemed to be an objective approach to obtain more quantifiable data. Consequently, the OSI Team began

investigating methods to predict the student who possessed the characteristics identified by the OSI Development Group. Inventories measuring the skills and characteristics identified by the Development Groups seemed fitting instruments; however, there was concern about overlap in the characteristics assessed and, subsequently, unnecessary testing of students.

The problem, therefore, for my dissertation study was whether the MBTI alone was a sufficient measure of a student's skills related to emotional maturity and, subsequently, a predictor of that student's fit in an orthopaedic setting, or whether another objective measure would be necessary to identify these skills. Michael Harstine's (2007) study is related to whether the MBTI alone is a sufficient measure of a student's skills related to diligence, and subsequently, a predictor of that student's fit in an orthopaedic setting or whether another objective measure would be necessary to identify these skills.

Purpose of Study

While thus far the referral of students for OSI had been an intuitive process, there was no evidence to demonstrate that this process accurately identified students with the skills and characteristics the orthopaedic companies desired. Further, the informal referral process produced a predominantly "ISJ" (introvert, sensing, and judging) cohort of OSI students, which theoretically meant that faculty perceptions of emotionally mature and diligent students might have been those who were introverted, sensing, judgers ("ISJ") per the MBTI.

The OSI Team defined emotionally mature students as those characterized in part by the ability to use their less preferred MBTI type if the context required. The OSI Team

12

defined diligent students as those who willfully exert effort to strive to complete a goal. It was reasonable to assume, then, that given these definitions a breadth of MBTI preferences would have been referred for consideration. So, this phenomenon (of a predominantly "ISJ" cohort) seemed unaccounted for in that, based on our definitions of emotional maturity and diligence, we had expected representation of a broader range of MBTI preferences in the second OSI cohort, not the disproportionate number of "ISJs" (introvert, sensing, and judging) that we had. The "Ts" (thinkers) and "Fs" (feelers) were more evenly represented. We began to question whether faculty referred students who had the faculty member's own preferred MBTI characteristics (i.e., "ISJ" [introvert, sensing, and judging] faculty referred "ISJ" students) rather than the characteristics of diligence and emotional maturity based on the researchers' definitions.

The purpose of my study, therefore, is to determine an accurate and objective method to identify students who display the characteristics of emotional maturity for application for admission to the Orthopaedic Scholar Institute. The method for identifying the characteristics of diligence is studied by Harstine (2007). My research questions focused on whether the MBTI was a sufficient tool to measure emotional maturity or whether the ECI-U instrument would provide greater accuracy.

Main Research Questions

The four main research questions for my study are:

1. What is the relationship between MBTI types (as measured by "IS" [introvert and sensor] and "EN" [extrovert and intuitor]) and emotional maturity (as measured by the emotional self-awareness cluster on the ECI-U) among freshmen?

2. Are there significant differences in emotional maturity by MBTI type "I"

(introvert) and "E" (extrovert)?

3. Are there significant differences in emotional maturity by MBTI type "S" (sensor) and "N" (intuitor)?

4. Are there significant differences in emotional maturity by gender?

Main Hypotheses

1. There is a significant difference in the emotional self-awareness of freshmen by MBTI type ("IS" [introvert and sensor] and "EN" [extrovert and intuitor]).

2. There is a significant difference in emotional self-awareness by MBTI type "I" (introvert) and "E" (extrovert).

3. There is a significant difference in emotional self-awareness by MBTI type "S" (sensor) and "N" (intuitor).

4. There is a significant difference in emotional self-awareness by gender.

Rationale for the Study

A challenge emerged for OSI when implementing its program: how to select and admit students who possessed not only the academic skills, but also the transferable skills identified by the Development Group. When the OSI Team began recruiting for OSI, members asked for faculty referrals of students who were diligent and emotionally mature. The result was a group of predominantly "ISJ" (introvert, sensing, and judging) students. Consequently, the OSI Team questioned whether diligent and emotionally mature students, as defined by the OSI Team, were actually just ISJ's on the MBTI or whether diligent and emotionally mature students were reflected in a broader range of MBTI types.

Subsequently, because the OSI Development Group expressed the need for

emotionally mature and diligent students and because OSI had, at best, inconsistent success with the intuitive referral process, our research is focused on whether the MBTI and the Emotional Competence Inventory–University edition (ECI-U), and MBTI and the Diligence Inventory–Higher Education edition (DI-HE) could serve as objective methods, either individually or in combination, to identify student characteristics of emotional maturity and diligence for use in the process of selection and admission to the Orthopaedic Scholar Institute.

Conceptual Framework

Understanding an institution's fundamental beliefs about epistemology (knowing and truth), ontology (being), and axiology (ethics and doing) is foundational to understanding that institution's philosophy of education. For it is through the educational philosophy that institutions of higher education develop a framework for students to understand and experience the world through curricula and campus life activities. Through their educational philosophy, institutions ideally create cohesion, clarification, and distinction in all their initiatives related to learning, vocational preparation, character development, world view development, and scholarship.

The notion of a "corporate" educational philosophy may be unlikely, however, in the context of a liberal arts institution where a professor's autonomy (both pedagogical and philosophical) is supremely valued. The configuration of an institution's curriculum and its underlying educational philosophy often seem a reflection of the individual faculty member rather than the corporate community in which the professor teaches.

One challenge in operationalizing a personal philosophy of education is the vulnerability of a belief system that may not be shared by others in the institution. As in

all belief systems, while there may be tacit, surface agreement about its basic tenets and principles, the actual application of faculty members' educational philosophy may serve to highlight the real and significant differences in their perceived purposes of higher education. Should education be about vocational preparation? Learning for learning's sake? The construction of new knowledge? The needs of the student more than the needs of society? Aristotle (1943) raised these same questions about education in the ideal state when he noted that "the existing practice is perplexing; no one knows on what principle we should proceed—should the useful in life, or should virtue, or should the higher knowledge, be the aim of our training; all three opinions have been entertained" (p. 321).

Two commonly held educational philosophies that address the questions Aristotle proposed are perennialism and essentialism. Perennialists believe in a highly academic, rigorous, and intellectual curriculum. Education is crucial because it develops mental discipline and rationality, both of which are needed in preparation for life. The extent to which students find relevance in their studies is not crucial to a perennialist. A number of scholars have noted that math, science, and literature in particular expose learners to both the rigors of logical thought as well as the great ideas that have endured throughout history (Kauchak & Eggen, 2005; Kienel, Ollie, & Berry, 1995; Ryan & Cooper, 2004). The ideal perennialist curriculum would have students study classic, primary works dominated by those of Western culture, which has resulted in criticism by those suggesting that works by women, minorities, and Eastern, Hispanic, African cultures be included as well (Ryan & Cooper, 2004).

The second commonly held educational philosophy, essentialism, suggests a critical core of information that all people should possess in order to preserve society.

Schools adopting this philosophy emphasize basic skills and expect students to master specific academic subjects. Essentialists want to ensure that the educational system produces a literate and skilled workforce able to compete in a modern, technological society. As such, essentialists find a place in the curriculum for current topics that train students to be productive members of society (Kauchak & Eggen, 2005; Kienel et al., 1995; Ryan & Cooper, 2004). Historically, an essentialist approach has been emphasized in education, which was "perceived as preparation for some future purpose—for college vocation, or to become a contributing member of society" (Kienel et al., 1995, p. 278).

Though Kienel et al. (1995) were referring to elementary or secondary schools when declaring essentialism as the foundational approach to education, this essentialist approach has considerable significance for our studies because it emphasizes the development of fundamental skills necessary for students to evolve into productive, informed members of the workforce. It was these types of students that OSI was most interested in admitting to its program.

This duality of orientations, that of academic versus practical (Shye & Aranya, 1975) and perennial versus essential, leads to a second challenge in operationalizing an educational philosophy: determining whether the value of a liberal arts education is instrumental, meaning it leads to other things of value ("What can you do with it?"), or whether it is intrinsic, inherently valuable, and an end in itself ("What kind of person does it help you become?") (Mannoia, 2000, p. 15). Alaby (2002) addressed similar questions of polarity in his research when he explored "the relationship between means and ends, presuming that the character of the means affects both its users and the character of its ends" (p. 3). These classic questions—whether education is a means to an

end or an end in and of itself—are at the root of determining the fundamental philosophy of institutions of higher education.

Further, professionally based university programs that produce students with technical competencies, such as those needed in the orthopaedic industry, must continually respond to the changing needs of and developments in the profession, industry, and education. In responding to these changes, they are accountable to students by providing them with an educational foundation that leads to marketable skills, and to employers who are demanding certain skills and attributes in new employees (Mulholland & Derdall, 2004). This accountability is also described by Carnevale and associates (1990), who proposed that it is not sufficient for workers to simply have strong technical skills, they must also have "personal management skills to maintain self-esteem, set goals, and be motivated" (p. 11). The challenge for institutions of higher education then becomes how to teach both the technical skills and the transferable skills, such as emotional maturity and diligence, which seem equally important to employers.

There appears to be a disconnect, however, between the skills that employers identify and the ability of higher education to deliver those skill sets to students. Industry has been critical of higher education in noting its over-emphasis on theory versus real-world experiences (Baker & Phillips, 1999; Shivpuri & Kim, 2004), failure to teach oral and written communication skills graduates need (Baker & Phillips, 1999; Willis & Taylor, 1999), and failure to provide adequate leadership and interpersonal skills (Baker & Phillips, 1999).

Although both philosophical strains were observed in our faculty, the OSI Team concluded that OSI is best viewed from an essentialist perspective. Faculty influenced by

an essentialist philosophy would emphasize basic workplace skills in an effort to instill both core knowledge and a core skill set in students, which ideally would increase students' employability. Employability from an essentialist's perspective could be thought of in terms of "transfer of learning," an educational concept dealing with the ability to use learning gained in one situation or in solving one problem to help with another learning situation in either the same or different context (Alkin, 1992; Guthrie, 2003; Husen & Postlethwaite, 1985). An essentialist would theoretically value the productive work and productive relationships that result from this transfer of learning.

Jung's Theory of Psychological Type

Similarly, Carl Jung also believed in meaningful work and meaningful relationships. Jung (1933) believed that there is an "intimate . . . intermingling of bodily and psychic traits" (p. 74) that permits inferences about their relationship to each other, however obscure those inferences might be. His psychological type theory is thus based on his conclusion that because character is the "fixed individual form of a person," then "a general characterology must teach the significance of both physical and psychic features" (Jung, 1933, p. 74).

Psychology has made many attempts to understand what Jung called "characterology." Until early 20th-century discoveries, however, psychology was much like the natural sciences of the Middle Ages, which was arbitrary and dispensed with empirical data to explain the relationship between the body and the mind (Jung, 1933, p. 76). One of the difficulties in psychology has been the subjective experiences of the scholar and the impossibility of separating these experiences from one another into distinctive attributes about themselves (as scholars) or others (Jung, 1933). Additionally,

the ability to measure this vast realm and determine fact or reality from perception or unreality is challenging. For example, early attempts to classify psychic attributes were made by the elements (i.e., air, water, earth, and fire), or by the stars (e.g., Aquarius, Gemini, Libra), and eventually by Greek medicine (i.e., phlegmatic, sanguine, choleric, and melancholic) (Jung, 1933).

Jung (1933), therefore, limited his work to investigating and classifying the psychic data that could be inferred from external characteristics. An early result of this work to classify these psychic attributes was his descriptive study of the psyche from which he developed theories about its structure, applied these theories, and constructed a set of psychological types. According to Jung (1926), "type is a characteristic model of a general attitude (q.v.) occurring in many individual forms. . . . In so far as such an attitude is habitual, thus lending a certain stamp to the character of the individual, I speak of a psychological type" (p. 612).

Jung believed that all people are born with certain mental and emotional possibilities, which he identified as the capacity to observe and organize. He believed that humans need these mental tools to pursue their natural impulses to relate meaningfully to the world and to people through productive work and significant relationships (Fitzgerald & Kirby, 1997). Jung defined preferences as inborn, natural ways of using a particular mental tool that shape a person's perspective and development, much like a preference for right- or left-handedness shapes the ways in which people learn to perform physical tasks (Fitzgerald & Kirby, 1997).

According to Jung (1933), psychic skills are available for use in a habitual, unconscious manner just as psycho-motor skills are available for behavior. If the psychic

skill could be labeled after the "subjective understanding of these results" consistently influenced behavior, then the "circle of an individual's destiny" could be closed (p. 86). The psychic skills were a demonstration of the efficiency and trustworthiness of individuals' preferred functions. His psychological type theory, therefore, "offer[ed] a system of comparison and orientation which makes possible something that has long been lacking, a critical psychology" (Jung, 1933, p. 94).

Further, Jung believed that, although people have access to all of the mental tools he identified and use each of them to some extent to function effectively, they nevertheless have a natural preference for certain ways of approaching these tools (Myers, McCaulley, Quenk, & Hammer, 2003). This, in turn, shapes the ways in which these tools are developed and used, thus creating different patterns of development and of operating in the world (Fitzgerald & Kirby, 1997).

Jung identified two attitudinal orientations related to the direction and flow of an individual's energy:

1. *Extraversion* is when people direct their energy and attention primarily to the external world.

2. *Introversion* is when people direct their energy primarily to their inner world of ideas, values, and experiences (Fitzgerald & Kirby, 1997; Higgs, 2001).

Jung later identified two opposite preferences, which he referred to as psychological functions and which mediate the way an individual handles information:

1. Perception (gathering information), which is exercised through *Sensing* or *Intuition*.

2. Judgment (structuring, prioritizing, making rational judgments), which is

exercised through *Thinking* or *Feeling* (Fitzgerald & Kirby, 1997; Higgs, 2001; Lawrence, 2001; Myers et al., 2003; Ryckman, 1985).

Because individuals develop preferences for one of the perception opposites and one of the judgment opposites early in life, the preferred opposite is "used more often, developed more completely, and remain more comfortable for an individual than the corresponding, non-preferred opposite" (Fitzgerald & Kirby, 1997, p. 5). According to Jung (1926), if "one of these functions habitually prevails, a corresponding type results" (p. 14).

Though research suggests that it is virtually impossible for one person to have developed both of the opposites equally well (Fitzgerald & Kirby, 1997), type development is seen as a lifelong process of striving for excellence in those functions that hold the greatest interest and becoming at least competent in the other less interesting but essential functions (Higgs, 2001; Myers et al., 2003). Further, type theory assumes that an individual's type itself does not change over the life span; however, the expression of type may change based on stage of life and circumstances (Myers et al., 2003).

Jung's theory of psychological types provided the assumptions and set the tasks for the initial construction of the Myers-Briggs Type Inventory (MBTI) and for all of the revisions. These assumptions are that true preferences exist and can be more confidently identified in persons with good type development than in persons with inadequate development; that people can indicate on a self-report inventory their preferences, which combine to form type; and that preferences are dichotomized and the two poles of a preference are equally valuable, each in its own sphere (Myers et al., 2003).

It was through the use of this personality preference inventory, the MBTI, that the

OSI Team combined students' natural and valuable personality preferences with an essentialist educational philosophy to evaluate their suitability for selection and admission to OSI, an orthopaedic industry-driven program in which Grace College students who possess exceptional soft skills and technical skills can demonstrate their diligence and emotional maturity in the context of an orthopaedic manufacturing-based internship.

Significance of Study

The practical contributions of our research relate to the OSI Program specifically. We wanted to determine a more objective identification, selection, and admission process. Relying on the perceptions and intuition of referral sources did not reliably lead us to diligent students as studied by Harstine (2007) and emotionally mature students regardless of MBTI type. A more objective process of identification, selection, and admission will subsequently affect OSI procedures. Further, it should help faculty and other referral sources develop a clearer understanding of the profiles of OSI students most likely to be successful and good fits in the orthopaedic industry.

My study will also contribute to the overall knowledge base related to emotional maturity and MBTI preferences, specifically as they relate to business and industry. More specifically, while there has been considerable research regarding aspects of emotional maturity, this study should contribute to the knowledge base as it relates to college graduates transitioning into the corporate world.

Wider applications may also apply to the admissions processes in higher education, especially those related to discipline-specific, professional degree, and honors programs.

Limitations

Our studies are focused only on determining an objective method to select students who display the characteristics of emotional maturity and diligence (Harstine, 2007) and admit them to the Orthopaedic Scholar Institute.

OSI is housed within a Midwestern, liberal arts, Christian college, itself located in a community commonly described as the orthopaedic capital of the world (Aeppel, 2006). These studies, therefore, may not be generalizable to larger or public institutions nor may they be indicative of student characteristics and transferable skill domains identified by non-orthopaedic businesses and industries.

Delimitations

Representatives from the orthopaedic companies identified specific characteristics needed for the selection and admission of OSI students. Those characteristics were summarized in terms of three domains: (a) emotional maturity, (b) diligence (Harstine, 2007) and (c) goodness of fit within the organization. Our studies, therefore, are limited to those characteristics, specifically the first two domains as these are characteristics of the student applicant as opposed to the corporate environment.

Although there are other traits related to employability, our studies focus on emotional maturity and diligence (Harstine, 2007) because those two competencies were clearly and repeatedly cited as desirable by the orthopaedic industry representatives when meeting with the OSI personnel.

The freshman cohort enrolled at Grace College in the fall semester of the 2004-2005 academic year completed the Myers-Briggs Type Inventory (MBTI) on campus at that time. Our studies, therefore, are limited to the representative sample of students who

took the MBTI in the fall of 2004 and subsequently chose to participate in this dissertation research by taking the Emotional Competence Inventory–University edition (ECI-U) and the Diligence Inventory–Higher Education edition (DI-HE) in the spring of 2005. These students were selected because this same cohort of students was the focus of the OSI recruiting efforts for the following year.

Our studies will not focus on the MBTI traits of thinking ("T") or feeling ("F") because there was no over-representation of these preferences in the first OSI cohort. Further, MBTI research has clearly demonstrated that thinking ("T") or feeling ("F") are the only two preferences that are gender specific (Myers et al., 2003, pp. 157-158) and, therefore, more likely to be correlated to the gender of students referred to OSI rather than the transferable skill set of all students referred to OSI.

Outline for the Remainder of the Dissertation

Chapter 1 reviewed the Orthopaedic Scholar Institute as an initiative funded by the Lilly Endowment, Inc., to retain intellectual capital in Kosciusko County by identifying exceptional Grace College students for selection and admission in orthopaedic company internships. In doing so, selecting emotionally mature and diligent students for admission into OSI emerged as the focus of these dissertation studies. Because the OSI Program is grounded in an essentialist educational philosophy and selecting students is driven by Jung's Theory of Psychological Type, the research studies hypothesized the relationships between (a) MBTI type and emotional maturity and (b) MBTI type and diligence (Harstine, 2007)

Chapter 2 reviews the literature on the Myers-Briggs Type Inventory, specifically as it relates to college students. Additionally, it reviews the literature on transferable

skills, the construct of emotional maturity, and the practice of selecting and admitting students in higher education programs.

Chapter 3 outlines the setting, population, methodology, and instrument used in my study. Chapter 4 describes the findings of my study, while chapter 5 summarizes my study, and provides conclusions and recommendations related to the identification of emotionally mature students. Chapter 6 discusses the experience of collaborated dissertations.

CHAPTER TWO

LITERATURE REVIEW

Introduction

This study focused on whether the Myers-Briggs Type Indicator (MBTI) could

sufficiently determine emotional maturity and diligence for admission to OSI or whether

other methods were needed. While the OSI Team was familiar enough with the MBTI to

know that it had been well researched, was grounded in theory, and was used extensively

in both education and business and industry, it nonetheless questioned whether the MBTI

would sufficiently measure all the characteristics that they desired when selecting and

admitting OSI students to its program, namely the transferable skills of emotional

maturity and diligence.

The literature review, therefore, discusses how the MBTI relates to college

students and enhances our ability to more objectively identify students at Grace College

for selection and admission to the Orthopaedic Scholar Institute (OSI). This chapter

reviews the MBTI instrument and discusses how the MBTI has been used to understand

college students with specific characteristics. The literature review also discusses the

research related to transferable skills. Further, there is a review of emotional maturity and

its complementary constructs. The chapter concludes with a review of the research

related to the selection and admission process to higher education programs.

26

Myers-Briggs Personality Type Inventory

The MBTI, developed in the United States by the mother-and-daughter team of Katharine Briggs and Isabel Myers, was intended to make Jung's theories understandable and useful in people's lives by putting the effects of each preference to practical use (Higgs, 2001; Myers et al., 2003). The MBTI, well documented with thousands of scientific studies conducted during a 50-year period, has ongoing research to support its application (Hirsh & Kummerow, 1998; Myers et al., 2003; Ryckman, 1985) and is the most widely used personality inventory in the world with 2 million administrations given annually (Fitzgerald & Kirby, 1997; Myers et al., 2003).

In making the MBTI useful in people's lives, it is important to note that the intent of the MBTI is not to measure psychological traits that are considered good or bad or of which the person has too much or too little (Myers et al., 2003). Rather, the intent of the MBTI is "to sort people into equally valuable groups to which, in accordance with Jung's theory, they already belong" (Myers et al., 2003, p. 11). Equal justice is given to corresponding opposites, which themselves are equally legitimate alternatives and without intrinsic superiority (Myers et al., 2003).

In general, the MBTI opposites provide insights into how individuals interact with the world, collect data, make decisions, and live their lives based on the assumption that seemingly random behavior is actually orderly and consistent with how people choose to use their perception and judgment (Myers et al., 2003).

The MBTI identifies eight personality preferences that are organized into four dichotomies. Responses to questions on the MBTI determine representation by a letter of one of the dichotomies (i.e., E–I, S–N, T–F, J–P) and the four pairs are then combined

into one's "type" (see Appendix B). MBTI "types" describe, rather than prescribe, personality preferences. The MBTI identifies preferences, not skills, abilities, or competencies. Further, the MBTI assumes that all preferences are equally valuable, important, and necessary and all can be used by every person (Hirsh & Kummerow, 1998; Myers et al., 2003).

In addition to the three sets of opposites developed by Jung discussed previously (preferences in perception, judgment, and orientation), Myers and Briggs developed an additional set (approaches to the structure and organization of one's environment), which they termed judging and perception (Bayne, 2004; Fitzgerald & Kirby, 1997; Higgs, 2001; Hirsh & Kummerow, 1998; Myers et al., 2003). This addition resulted in four sets of opposites identified by the MBTI personality inventory as noted in Table 1. The table provides a brief description of each pair of opposites and the similarities and differences of those opposites.

These MBTI descriptors were used by the OSI Team to help the OSI students understand their own type preferences and their propensity to respond in a particular way in a corporate context. Our use of the MBTI with these OSI students led us to consider ways in which MBTI research itself related to college students.

MBTI Application to College Students

College students have attracted considerable attention from MBTI researchers. The type instrument, for example, has been used in multiple ways to study the correlations between MBTI type and variables discussed below, such as psychological development, campus retention, residential development, academic achievement,

Table 1

MBTI Preferences Vocabulary

ENERGIZING (orientation of energy)

Extravert (E)	Introvert (I)
External/exterior	Internal/interior
Outside thrust	Inside pull
Talk thoughts out	Keep thoughts in
Breadth	Depth
Involved with people, things	Work with ideas, thoughts
Interaction	Concentration
Action	Reflection
Do-think-do	Think-do-think

PERCEIVING (processes of perception)

Sensing (S)	Intuition (N)
Present orientation	Future possibilities
What is real	What could be
Practical	Theoretical
Facts	Inspirations
Perfecting established skills	Learning new skills
Utility	Novelty
Step-by-step	Insight-by-insight
The five senses	The sixth sense, a hunch

DECIDING (processes of judgment)

Thinking (T)	Feeling (F)
Logical system	Value system
Head	Heart
Objective	Subjective
Justice	Mercy
Critique	Compliment
Principles	Harmony
Reason	Empathy
Firm but fair	Compassionate

Table 1—*Continued.*

LIVING (orientation to the outside world)	
Judging (J)	**Perceiving (P)**
Decide about information	Attend to/gather information
Regulate	Flow
Control	Adapt
Settled	Tentative
Run one's life	Let life happen
Set goals	Seek options
Closing off	Opening up
Organized	Flexible

Note. From *Introduction to Type in Organizations* (p. 2), by S. K. Hirsch and J. M. Kummerow, 1998, Palo Alto, CA: CPP.

interpersonal and professional skills, and multicultural impact. Additionally, the MBTI has been used for leadership and career development with college students. While there has been broad application of the MBTI with college students, our specific problem was whether the MBTI alone could measure a student's transferable skills related to diligence or emotional maturity or whether another objective measure would be necessary to identify these skills.

Like the honors nature of the OSI Program, Wittig, Schurr, and Ruble (1986) determined that "IN" (introvert and intuitor) type preferences were the distinguishing characteristics of students admitted to an honors college. They noted that the "S–N" dichotomy (sensor and intuitor) was significant when comparing the honors students with non-honors students. This was important for us to note because the S–N dichotomy, which indicates how students gather information from their environment, was a common type variable in both of our studies.

Another study comparing Academic Decathletes and National Merit Finalists found the two groups to be similar from a type perspective. In this group of academically gifted students, "INP" (introvert, intuitor, perceptor) was the preferred MBTI type (Robinson, 1994).

While Williams (1992) found that the "ENP" type (extrovert, intuitor, perceptor) was the most frequent preference among gifted and talented students, a characteristic indicating good potential for inclusion in OSI, the "ENP" type is not without its challenges. Their need for autonomy may appear to be a "misuse of freedom" if they do not find success in some area of their life (Hammer, 1996, p. 153). This conclusion is relevant to OSI because in referring a new cohort of OSI candidates, the faculty seemed to identify the polar opposite typology, "ISJ" (introvert, sensing, judging), a group they may have perceived as more willing or able to follow established rules.

When considering the applicant pool for OSI selection and admission, positions such as resident assistants are strong indicators of leadership skills. Anchors and Hay (1990) reported that resident assistants at a selected university had significantly greater preference for extraversion, thinking, and judging ("ETJ") than the student body as a whole. Likewise, Hardy-Jones and Watson (1990) compared the type profiles of resident assistants over a 10-year period and found consistent preferences for extraversion and judging ("EJ"), and Petty (1985) concluded that the extraverted, thinking, and judging ("ETJ") profile most frequently described college student leaders. Brush (1989) was the only researcher who found a strong "N" (intuitor) type among the resident advisors studied at a liberal arts college.

In researching college students in various student life and academic pursuits based

on their MBTI type, introverts ("I") obtained higher grades (Anchors, Robbins, & Gershman, 1989), and planned to work while in college (Provost & Anchors, 2003). Extroverts ("E") developed a greater sense of autonomy and purpose and developed interpersonal relationships (Anchors & Robinson, 1992), and were helped by active involvement in campus life (Provost, 1985).

Athletes appeared to be another applicant pool from which to draw OSI candidates. Possessing the diligence and emotional maturity to simultaneously meet the rigor of academics, practice, and competition seemed to be a good indicator of the ability to transfer these skills to a work environment. In studies of athletes, sensing types ("S") were more likely to be involved in athletics (Ruble, Mahan, & Schurr, 1987) and represented most frequently among male scholarship athletes (Chesborough, 1994).

MBTI research suggests caution, however, when recruiting "S" type students. Two universities found "S" type (sensing) students more frequently represented in dropout rates (Waymire, 1995). While male intuitive types ("N") developed interpersonal relationships and autonomy (Anchors & Robinson, 1992) and intuitives ("N") anticipated their academic achievement more than other types (Provost & Anchors, 2003), intuitive types were also frequently among those with substance abuse records (Anchors & Dana, 1989).

When considering other indicators of success in higher education, judging types ("J") developed purpose and autonomy and selected majors sooner than other types (Anchors, Gershman, & Robbins, 1987) and received higher grades than other types (Anchors et al., 1989; Chesborough, 1994). Perceiving types ("P") more often considered the possibility of dropping out (Provost & Anchors, 2003) and were more frequently

among judicial offenders (Griffin & Salter, 1993) or substance abuse offenders (Anchors & Dana, 1989; Provost, 1991). Academic self-esteem was found to correlate with "ENJ" (extrovert, intuitor, judging) types (Schaefer, 1994) and goal-orientation and purpose aligned with "ETJ" types (Anchors & Robinson, 1992).

MBTI research has also led to some conclusions about type preferences of students in professional degree versus strictly academic educational environments. Machir (1992) did not find type differences among ROTC students and the general student population; however, O'Connor (1993) found that "INJ" (introvert, intuitor, judging) type was a significant predictor of grades for cadets at the U.S. Coast Guard Academy. Thinking-judging ("TJ") types were the most frequent among students at a Midwestern law school (Gilchrist, 1991), but Berryhill (1991) did not find a predominant type among students at a Southern seminary. In an 8-year study, Power and Lundsten (1994) found a strong judging ("J") preference among MBA students.

With the same typology as the majority of the students referred to the first OSI cohort (i.e., introvert, sensing, judging), "ISJ" types were rated more highly by faculty on skills such as explaining, negotiating, asking, and instructing in another professional degree program: dental school (Dunning, Lange, & Adams, 1990). An overrepresentation of "Js" (judging) was found among another group of dental students (Erskine, Westerman, & Grandy, 1986).

Gable (1988) studied students in 15 allied health professional fields and found that all were characterized by sensing ("S") and all but one (respiratory therapy) were characterized by judging ("J"). Among nursing majors, Schurr, Henriksen, Alcorn, and

Dillard (1992) did not find any differences in classroom achievement among the MBTI types.

Further studies in professional programs, such as the engineering field, also identified some typology tendencies. For example, McCaulley (1990) found judging ("J") to be a predominant type. Sensing types ("S") scored higher on examinations when the test problems were similar to the homework problems; however, they tended to solve practice problems to the neglect of concepts and principles (McCaulley, Godleski, Yokomoto, Harrisberger, & Sloan, 1983). In their study of engineering students, Felder, Forrest, Baker-Ward, Dietz, and Mohr (1993) found a slightly higher passing rate for "J" (judging) types as compared to "P" (perceptor) types; "S" (sensing) types tended not to fare as well as "N" (intuitive) types.

As discussed, there is considerable research about college students, MBTI types, and variables such as honors programs, athletic status, professional degree programs, leadership position, and interpersonal and professional characteristics. The significance of the MBTI instrument to the OSI Program, however, has been its use for college-student career development. Typically, the use of the MBTI in the area of career development has been related to increasing students' self-awareness about college and work, exploring career development strategies with them, and determining their suitability for various college majors and career fields (Provost & Anchors, 2003). The Center for Applications of Psychological Type database regarding occupational membership by each of the 16 MBTI types provides a valuable foundation for the OSI Team to assist students in evaluating the compatibility between their type and the frequency of this type within certain occupations (Provost & Anchors, 2003).

MBTI Criticisms

As discussed previously, the MBTI has been heavily used in research with college students and others. There are criticisms, however, about the definitive conclusions offered by its proponents regarding the MBTI's validity and reliability without sufficient empirical evidence to support these claims (Pittenger, 2005).

For instance, some claim that as much as one-half of the material published on the MBTI has been produced for psychological type organizations such as the Center for Applications Psychological Type. This conflict of interest suggests a lack of critical scrutiny of the research (Coffield, Moseley, Hall, & Ecclestone, 2004).

Another criticism of the MBTI is that there is limited evidence of bimodal distributions, the danger of which is oversimplifying multifaceted personality functions (Coffield et al., 2004, p. 49; McCrae & Costa, 1989). Additionally, certain methods of establishing validity are limited due to its ipsative nature (Higgs, 2001). One disadvantage is the ability to make accurate predictions about an individual's behavior using the four-letter formula since using dichotomous scores reduces the ability of a continuous scale to predict behavior (Coffield et al., 2004; Hunter & Schmidt, 1990) and may greatly increase the rate of Type I errors (Maxwell & Delaney, 1993).

Other criticisms relate to its questionable test–retest reliability. For example, the limited motivation on the part of the participant to provide accurate responses, especially undergraduate students taking the MBTI as part of their classroom experience, affects reliability (Boyle, 1995; Hammer, 1996). Further, in general, most test–retest studies are conducted on relatively small samples and very few studies have had samples large enough to allow for comparison of the 16 types (Hammer, 1996).

MBTI Summary

The MBTI was intended to take Jung's theories about psychological type and put them into practical use. The purpose of this instrument is to describe the personality preferences of individuals according to categories in which they already belong, rather than to measure the amount of a characteristic or trait they may have. The MBTI provides insight into people's behavior by describing them according to eight equally valuable personality preferences organized into four dichotomies. The MBTI has been used extensively with college students, including for career development.

Students at Grace College take the MBTI as part of their freshman experience to increase their self-awareness and to assist them in various areas of campus life, including major selection and interpersonal relationships. While some have expressed criticisms about the MBTI, it remains one of the most highly used instruments, having over 2 million administrations per year (Myers et al., 2003). Despite the criticisms, the purpose for which we chose to include the MBTI in our study was not compromised because we wanted to know whether the MBTI would help us identify emotionally mature and diligent students or whether another instrument might be a better indicator.

Research on Transferable Skills

While the MBTI types of the OSI students provided the OSI Team with insight into each student's personality preferences, the purpose of OSI has been to train these students to apply the skills they learned in academic and other environments to a new context regardless of their MBTI preference. When the OSI Team worked with the Development Group to determine the characteristics they desired in new employees and

interns, many of our discussions focused on this concept of transferring skills, which the Development Group ultimately identified as the skills that facilitated an employee's goodness of fit in the workplace, workplace success, or being good at one's job as perceived by the organization.

The field of career services commonly defines this as "transferable skills," or those abilities acquired based on life and work experience, liberal arts education, extra-curricular activities, and community involvement (McKay, 2005). Also referred to as professional competencies and soft skills, transferable skills are not specific to any one academic discipline; rather, they are the cognitive, academic, interpersonal, and communication skills that are necessary to demonstrate competency in many different work settings (Buckley, 1999). Transferable skills are universal skills that transfer from one type of work to another without much effort on the worker's part and without training from the employer (Bolles, 1994; Buckley, 1999; Government of Canada, n.d.).

Both research and anecdotal reports outline the transferable skills believed to optimize a graduate's employability skills and personal qualities beyond specific degree requirements (Debling & Behman, 1996). For example, in 1988, with funding from the U.S. Department of Labor, the American Society for Training and Development conducted a research study to explore the ramifications of a workforce "ill-equipped in a broad spectrum of basic workplace skills" (Carnevale, Gainer, & Meltzer, 1990, p. xiii). They concluded that employers want the following skills:

1. The Foundation Skill: Learning to Learn

2. Competence: Reading, Writing, and Computation

3. Communication Skills: Oral Communication and Listening

4. Adaptability: Creative Thinking and Problem Solving

5. Personal Management: Self-Esteem, Motivation/Goal Setting,

Employability/Career Development

6. Group Effectiveness: Interpersonal Skills, Negotiation, and Teamwork

7. Influence: Organizational Effectiveness and Leadership (Carnevale et al.,

1990).

Research about employability and transferable skills concluded that "employers

want a new kind of worker with a broad set of workplace skills" (Carnevale et al., 1990,

p. 2). Carnevale's research identified transferable skills consistent with the findings of

others who studied workplace skills including the skills and qualities employers look for

in graduates (National Association of Colleges and Employers, 2004; Smith,

Wolstencroft, & Southern, 1989; Willis & Taylor, 1999), prospective employer and

faculty perceptions of skills and abilities needed by business school graduates (Tanyel,

Mitchell, & McAlum, 1999), workplace competencies and foundational skills (Act Inc.,

2000), and competencies and skills important in career development (Mannoia, 2000;

Zekeri, 2004).

In 1990, the U.S. Department of Labor commissioned a study on essential

workplace skills to improve the preparation of our nation's workers (Sheckley, Lamdin,

& Keeton, 1993), the results of which were outlined in a report by the Secretary's

Commission on Achieving Necessary Skills (SCANS). The findings of the report were

"intended to set the agenda for what students are taught in the nation's schools and how

workers are trained and retrained for the high-skill, high wage jobs of the future" (Act

Inc., 2000, p. 1). The workplace competencies and foundation skills identified through

this report, and outlined in Table 2, reflect many of the transferable skills communicated to the OSI Team by the Development Group.

For example, the Development Group identified transferable skills they desired in new employees and interns. While the Development Group did not use terms such as interpersonal and team membership skills, thinking skills, and personal qualities, two characteristics they did desire that became the focus of our research—emotional maturity and diligence—are reflected in the competencies and skills described in Table 2.

Sheckley, Lamdin, and Keeton (1993) noted that most of the groups studying the competencies that increase one's employability skills relied on the research base provided by Carnevale and colleagues (1990). Regardless, Sheckley and colleagues (1993) noted that, overall, there remained remarkable agreement amongst various researchers on the skills necessary for optimal employability.

In addition to empirical research such as that cited previously, many reports exist in the trade industry about the transferable skills desired by employers. For example, goal setting, motivation, communication, team and group work, interpersonal and human relations, problem solving, and self-awareness skills are frequently cited. From these various reports, the characteristics of emotional maturity and diligence emerged as patterns. These categories, while similar to the preceding studies on transferable skills, have particular relevance to our research in that, while the Development Group recognized that OSI students would have a technical skill set by nature of their college degrees, they were most interested in the transferable skills of emotional maturity and diligence.

Table 2

Essential Workplace Skills

Workplace Competencies	Foundation Skills
Resources	**Basic skills**
Allocates time	Reading
Allocates money	Writing
Allocates materials and facility resources	Arithmetic
Allocates human resources	Mathematics
	Listening
Information	Speaking
Acquires and evaluates information	
Organizes and maintains information	**Thinking skills**
Interprets and communicates information	Creative thinking
Uses computers to process information	Decision making
	Problem solving
Interpersonal	Seeing things in the mind's eye
Participates as a member of a team	Knowing how to learn
Teaches others	Reasoning
Serves clients/customers	
Exercises leadership	**Personal qualities**
Negotiates to arrive at a decision	Responsibility
Works with cultural diversity	Self-esteem
	Social
Systems	Self-management
Understands systems	Integrity/honesty
Monitors and corrects performance	
Improves and designs systems	
Technology	
Selects technology	
Applies technology to task	
Maintains and troubleshoots technology	

Note. From *Workplace Essential Skills: Resources Related to the SCANS Competencies and Foundation Skills* (p. 2), by ACT, Inc., 2000, Iowa City, IA: Author.

The relationship between the skills and characteristics that employers cite as

essential and the percentage of employers that use these skills in selecting new employees

are outlined in Table 3. This is compared to the skills and characteristics that colleges and

universities cite as important.

Table 3

Skills Important to Employers

Skills and Characteristics	Importance to Employers	Importance to Colleges	% Employers Use in Employee Selection
Interpersonal skills	1[a]	4	94[a]
Ethics and integrity	2[a]	2[a]	83
Leadership	3[a]	7	88[a]
Perseverance	4	9	77
Knowledge	5	1[a]	89[a]
Adaptability and life skills	6	T10	77
Continuous learning	7	6	72
Multicultural tolerance	8	5	52
Career orientation	9	T10	65
Social responsibility	10	3[a]	47
Health	11	8	20
Artistic appreciation	12	T10	14

Note. From "Do Employers and Colleges See Eye to Eye? College Student Development
and Assessment," by S. Shivpuri and B. Kim, 2004, *NACE Journal, 65,* p. 6.
[a] Denotes the three highest ranked skills.

Shivpuri and Kim's (2004) research yielded the necessity and importance of both

technical skills, such as those related to writing and computing, and transferable skills,

such as planning and teamwork. It also highlighted a degree of dissonance between the

skills that employers cited as important (interpersonal skills and leadership) and those

that colleges view as important (knowledge and social responsibility). Conversely, there

is relative consistency between the skills that employers view as important and the percentage that use those skills in hiring employees. As expected, the five characteristics ranked highest by employers were the same five that the greatest percentage of employers used in selecting new employees.

Though Mannoia (2000) suggested that "liberal arts institutions can claim all of these transferable skills as outcomes" in their graduates (p. 24), Koffel (1994) asserted that "a disparity exists between educators who emphasize the study of ideas, discussion of concepts and thoughts and the business community and employers who emphasize skills" (p. 2). Further, Koffel (1994) alleges that educators spend too much time "discussing theories . . . and searching for concepts" while employers who hire graduates "want to see results and want their employers to be able to *do* something with their knowledge" (p. 2). Koffel (1994) contends that to offset the problem of workers who lack the requisite transferable skills, educators must change how they teach, though not necessarily what they teach. Employers have suggested increasing experiential learning and providing opportunities for internships and for role-playing organizational situations as means for universities to produce more well-rounded students (Willis & Taylor, 1999).

A review of the literature resulted in the identification of both a variety of transferable skills and a gap between the needs of employers and the emphasis in higher education. It appeared that OSI could fill this gap. By identifying students with the transferable skills that the Development Group thought were necessary for success in an orthopaedic context (i.e., emotional maturity and diligence) OSI could admit and select students who can "do" something with their knowledge.

Constructs Related to Emotional Maturity

One transferable skill the Development Group identified as necessary was emotional maturity. The body of research yielded a range of terminology and interpretations related to the definition of emotional maturity I used in my study. This terminology was broadly related to how individuals learn to recognize and regulate their emotions to achieve successful life, school, and employment outcomes. Though conceptually similar, the terminology only partially reflected the construct of emotional maturity used in my study. These corresponding concepts each emphasized an important distinction from emotional maturity.

For example, one similar concept is that of multiple intelligences, which proposes that it makes sense to view human beings as having several mental faculties or intelligences. Though others have proposed theories in which intelligence may be understood in terms of classes of intellectual factors (Guilford, 1956) or distinct mental abilities and traits (Thurstone, 1940) apart from thinking and learning, perhaps the most well known is Gardner, whose theory of multiple intelligences is eminent in the educational context (Gardner, 1993, 2002). Though many of Gardner's dimensions of intelligence seem related to personality preferences each person possesses (e.g., logical-mathematical, musical, spatial), multiple intelligences are limited in their application to emotional maturity as used in my research because the focus of multiple intelligences is on the full range of human intelligence.

Another example is alexithymia, a rather unusual term in the literature and by definition a psychological disorder. Those with alexithymia have difficulty describing or verbalizing feelings to others or define them in terms of bodily sensations (Dulewicz,

Higgs, & Slaski, 2003; Taylor & Bagby, 2000). While alexithymia is considered a

maladaption, it includes the level of one's awareness of feelings, but does not

acknowledge personality preferences as might be indicated by the MBTI.

A third example of the range of terminology, emotional quotient, is a "marketing

concept, not a scientific term" that can be measured and scored like an intelligence

quotient (Dulewicz et al., 2003, p. 406). By definition it reflects neither a personality

preference nor an ability to adjust one's interactions based on context.

The Sixteen Personality Factor Questionnaire (16PF) uses Factor C, "emotional

stability," to describe "feelings about coping with day-to-day life and its challenges"

(Russell & Karol, 1997; Saarni, 2000; Steiner, 1984). Atwater (1992) notes that

"emotional stability is a trait described by Cattell, Eber and Tatsuoka (1970) as being

mature, facing reality, and not prone to constant worrying" (p. 31). While seemingly

quite similar to emotional maturity, its focus nevertheless is more on personal coping

than on recognizing and understanding one's (and others') personality preferences,

accurately assessing oneself and confidently adjusting one's behavior accordingly.

Further, the term "stability" implies that if one is not emotionally stable, then one must be

"unstable," a term not accurately reflecting the intent of my definition, which is less

polarity of opposites and more developmental in nature.

Despite the range of terminology, the literature does reveal several concepts more

closely related to emotional maturity (social intelligence, emotional literacy, emotional

competence, and emotional intelligence), which are discussed briefly below.

Social Intelligence

The concept of social intelligence was first defined by Thorndike (1920) as "the ability to understand and manage men and women, boys and girls—to act wisely in human relations" (p. 228). Social intelligence is a complementary term to emotional maturity in that it relates to the management of oneself in interpersonal relationships. It involves understanding and managing people by convincing others to do things, managing power relationships, and building group cohesiveness (Mayer, Salovey, & Caruso, 2000). This self-awareness and confidence to influence is consistent with my definition of emotional maturity. More recently, however, Cantor and Kihlstrom redefined "social intelligence as a construct referring to a central personality process that underpins social behavior" (De Raad, 2005, p. 674) or, more specifically, to refer to the individual's fund of knowledge about the social world (Kihlstrom & Cantor, 2000). This term has limited application to my definition of emotional maturity because, while it includes understanding of the social world, it does not include an individual's ability to engage behavior that is not their preference.

Emotional Literacy

Emotional literacy (Cooper, 1997; Steiner, 1984), a term found somewhat less frequently, is also closely related to the definition of emotional maturity used in my study. Emotional literacy is the ability to know what one is feeling, the causes of those feelings, as well as having an awareness of others' feeling the effect of the combination of those feelings (Steiner, 1984). Park (1999) notes that there is no obvious distinction in the way the terms "emotional literacy" and other similar terms, such as "emotional

intelligence," are defined. Again, though similar to the definition of emotional maturity, emotional literacy lacks the element of development, maturity, and adjustment; instead, as Park notes, it describes a lack of "basic" emotional understanding (1999, p. 20).

Emotional Competence

Emotional competence is defined as a learned capability based on emotional intelligence that results in outstanding performance at work. This competence requires having the underlying capabilities, the possession of which does not necessarily guarantee that they are yet mastered, but does indicate that the potential to become skilled is there (Goleman, 2001a). Emotional competence is not easily accomplished, but improvable and sustainable over time (Emmerling & Goleman, 2003).

Emotional competence initially proves to be a much closer definition to that used in my study, especially if the definition of "competencies" approaches that of personality preferences. If competencies are "capabilities," however, this distinguishes the term from categories (or typology) of preferences such as how one relates to the world, takes in information, makes decisions, and organizes one's life. The former appears to be a skill and performance-related, and the latter a descriptor. This recognition of preferences, and subsequent performance, is integral to the definition of emotional maturity.

Emotional Intelligence

The research, at times, seems to use the terms "emotional competence" and "emotional intelligence" interchangeably and synonymously. Consequently, it is clear that researchers have used slightly different definitions of emotional intelligence, which has led to some variations in the domain of the construct, especially the addition of

motivation, dispositions and traits, and personal and social functioning (Law, Wong, & Song, 2004). It has been framed in terms of an intelligence, personality theory, model of well-being and theory of performance (Goleman, 2001b), providing a basis for researchers to study whether it is a true intelligence or best viewed as a cluster of personality traits (Davies, Stankov, & Roberts, 1998). Some researchers assert that emotional intelligence is properly defined when it is conceptually distinct from social skills and personality dimensions (Grewal & Salovey, 2005), empirically distinct from personality dimensions, and has predictive validity in social and organizational settings (Law et al., 2004).

For example, in his 1988 doctoral dissertation, Bar-On (2005) developed the first attempt to examine emotional intelligence in terms of a measure of well-being. He now defines emotional intelligence as an array of emotional and social knowledge, skills, and facilitators that influence one's overall ability to effectively relate with others, adapt to change and solve problems, and efficiently cope with environmental demands, challenges, and pressures.

Salovey and Mayer (1990) defined emotional intelligence as the "ability to monitor one's own and other's feelings and emotions, to discriminate among them, and to use this information to guide one's thinking and action" (p. 189). They later separated emotional intelligence from traits and talents by developing a cognitive emphasis (Goleman, 2001b), asserting that "emotional intelligence reflects not a single trait or ability but, rather a composite of distinct emotional reasoning abilities: perceiving, understanding, and regulating emotions" (Lam & Kirby, 2002, p. 134). Emotional intelligence from their theoretical perspective "refers specifically to the cooperative

combination of intelligence and emotion" (Mayer, Salovey, & Caruso, 2004, p. 197).

Other suggested elements of "emotional intelligence" included emotional literacy, emotional fitness, emotional depth, and emotional alchemy (Cooper, 1997); emotional resilience, motivation, interpersonal sensitivity, influence, decisiveness, intuitiveness, conscientiousness/integrity (Dulewicz & Higgs, 1999); and self-regulation (Goleman, 1998).

Despite the variations in language and definitions used, the most frequently used terminology, however, seemed to be "emotional intelligence." While the definitions of emotional intelligence were often varied, they tended to be complementary rather than contradictory and differed in terms of detailed descriptions rather than general domains (Ciarrochi, Chan, & Caputi, 2000; Law et al., 2004). For example, Mayer (2001) defines emotional intelligence as individuals' ability to perceive, understand, and manage emotions as well as allowing emotions to facilitate their thought. Similarly, Bar-On (2005) also includes both cognitive and non-cognitive components in his definition of emotional intelligence, which is "a cross-section of interrelated emotional and social competencies, skills and facilitators that determine how effectively we understand and express ourselves, understand others and relate with them, a cope with daily demands" (p. 3).

Regardless, the various definitions of emotional intelligence still had a degree of consistency and included such general components as the ability to recognize and monitor emotions in oneself and others (Bar-On, 2005; Goleman, 2001b). The definition provided by The Hay Group, publishers of Emotional Intelligence Inventories, provides an example of the different definitions found in the literature. The Hay Group defines

emotional intelligence as the "capacity for recognizing our own feelings and those of others, for motivating ourselves, and for managing emotions effectively in ourselves and others. An emotional competence is a learned capability that contributes to effective performance in all aspects of life" (Hay Group, 2002).

Typically, the various definitions also included a cognitive component in which individuals discriminate among emotions, engage in emotional reasoning, and use this emotional and social knowledge to guide their thinking and action (Bar-On, 2005; Goleman, 2001b; Kihlstrom & Cantor, 2000; Lam & Kirby, 2002; Mayer et al., 2004), and a behavioral component: coping with, persistence, and resilience when confronting obstacles and demands in the environment (Bar-On, 2005; Pearman, 2002).

At the most general level, emotional intelligence refers to the "ability to recognize and regulate emotions in oneself and in others" (Goleman, 2001b, p. 2). Like definitions of emotional competence discussed previously, some definitions of emotional intelligence link it to a theory of action and job performance: an ability to recognize, understand, and use emotional information about oneself or others that leads to or causes effective or superior performance (Boyatzis & Sala, 2004).

Mayer (2004) has criticized the popularization of emotional intelligence terms and concepts, asserting that self-awareness, optimism, and tolerance are accompanied by exaggerated claims about the importance of emotional intelligence. He noted that recent research makes it clear that these characteristics are distinct from emotional intelligence as a scientifically defined term, and cautioned of the danger in assuming that because a person is optimistic or confident, he or she is also emotionally intelligent. He asserted

that the presence of these traits communicate nothing about emotional intelligence (Mayer, 2004).

Another criticism related to the study of emotional intelligence is its weak theory development, research, and measure of emotional intelligence; however, there was recognition of its potential importance for leadership effectiveness, human resource performance improvement, and other applications (Luthans & Church, 2002).

Pearman (2002) organized a variety of emotional intelligence competencies into two broad categories (internal/intrapersonal and external/interpersonal), whereas Goleman (2001b) organized them using three general domains: technical skills, purely cognitive skills, and abilities in the emotional intelligence range. Like other researchers, Goleman asserted that emotional intelligence elements combined both cognitive and emotional domains, and thus are distinguished from purely cognitive abilities and technical skills, which have no emotional component (Goleman, 2001b, pp. 8-9).

Although the focus of emotional intelligence is clearly on the use of emotions to guide thinking and actions, this not the case with emotional maturity as used in this dissertation study. Here, the focus of emotional maturity is grounded in the cognitive understanding of one's preferences (as well as those of others) in terms of relating to the world, taking in information, making decisions, and organizing one's life. Because both cognitive and emotional elements are consistent with my definition of emotional maturity, the construct of emotional intelligence provided the foundation for the selection of the Emotional Competence Inventory–University edition (ECI-U) for evaluation of students' emotional maturity.

The Emotional Competence Inventory has been used in educational settings and

in business degree programs. For example, Boyatzis, Stubbs, and Taylor (2002) studied the ability of an MBA program to develop its students' use of management knowledge upon completion of a program designed to develop cognitive and emotional competencies. In the course, students participated in assessments and activities related to their goals, current behaviors, strengths, and gaps as leaders and managers. The outcome of this longitudinal study suggested that MBAs could develop the emotional intelligence and cognitive competencies that were necessary for effective management and leadership (Boyatzis et al., 2002).

In contrast to our studies, Boyatzis et al. (2002) used a "multimethod, multitrait, multicohort" methodology. A variety of instruments were used that reflected both the transferable skills and characteristics of emotional maturity requested by OSI representatives in our studies (e.g., interpersonal, self-management, self-confidence, and self-assessment competencies). Further, Boyatzis et al. (2002) studied students at the graduate rather than undergraduate level, a distinction that could bear considerable relevance in light of the developmental nature of emotional maturity. Although there is similarity between the two (e.g., students in business curriculum demonstrating emotional intelligence), my study focuses on undergraduate students and the identification of emotional maturity by a means other than the MBTI.

Intelligence, Emotions, and Emotional Intelligence

It is beyond the scope of either of our studies to formally review intelligence theory as independent from theory linking intelligence to emotional maturity. My study will, however, provide a brief overview of the various definitions to provide context for

subsequent discussion about the evolution of the term "emotional intelligence" and the definition of "emotional maturity" used in my study.

Lam and Kirby (2002) suggested that "general intelligence is the ability to acquire basic knowledge and use it in novel situations" (p. 134). These functions may be thought of as the cognitive aspects of intelligence, which "as measured by IQ tests is the single most effective predictor known of individual performance at school and on the job" (Gottfredson, 1998, p. 24). While Wechsler similarly defined intelligence as "the aggregate or global capacity of the individual to act purposefully, to think rationally, and to deal effectively with his environment" (Cherniss, 2000, p. 2), he also speculated that "non-intellective" aspects of a person contribute to his or her overall intelligence (Grewal & Salovey, 2005). Just as the OSI Development Group identified non-cognitive characteristics they desired in interns and new employees, researchers have also recognized the importance of non-cognitive aspects of intelligence (e.g., see Cherniss, 2000).

The view of emotions (non-cognitive aspects) being somehow intelligent would indicate that they can be measured and are predictive of meaningful outcomes (Emmerling & Cherniss, 2003). Thus, to qualify as intelligent, emotion must reflect actual mental performance rather than preferred behavior patterns, self-esteem, or other constructs better labeled as traits. Second, to be intelligent there must be a set of abilities than can be shown to be conceptually distinct from other, established intelligent constructs. Finally, an intelligence should develop with age (Emmerling & Cherniss, 2003).

Interestingly, Bar-On suggested that emotional and social intelligence, combined

with cognitive intelligence, form important components of general intelligence. One of the major differences between the two is that the emotional and social intelligence focus on perceiving, processing, and applying emotional and social content, information, and knowledge, and cognitive intelligence is thought to relate primarily to higher order mental processes such as reasoning (Bar-On, Tranel, Denburg, & Bechara, 2003).

Further support for the distinctions between emotional intelligence and general intelligence was a study concluding that emotional intelligence was not related to IQ but, as expected, to specific personality measures (e.g., empathy) and to other criterion measures (e.g., life satisfaction) even after controlling for IQ and personality traits (Ciarrochi et al., 2000). Emotional intelligence was also related to people's ability to manage their moods, but not to their ability to prevent moods from biasing their judgments. IQ was surprisingly related to both these mood processes. The results suggest that the emotional intelligence construct is distinctive and useful, but that traditional IQ may also be important in understanding emotional processes (Ciarrochi et al., 2000). Ultimately, Cobb and Mayer (2000) suggested that Goleman's claim that emotional intelligence was as powerful or more powerful when compared to IQ would give hope to those who might be better equipped with emotional intelligence than with general intelligence.

Emotional Maturity in This Study

The construct "emotional maturity" used in my study is defined as the ability to accurately recognize one's own personality preferences and emotions and, depending on the requirements of the environment, adjust those preferences or employ the opposite

preferences for effective performance in all areas of one's life. For example, an individual's preference (based on MBTI terminology) may be to process information internally (introversion), focus on details and facts (sensing), make decisions fairly and logically (thinking), and create a structured and organized life (judging). The demands of the organizational environment, however, may require that she or he processes thoughts externally (extroversion), explores possibilities and the patterns and relationships between ideas (intuition), makes decisions based on their impact on people (feeling), and be more adaptable and flexible in daily life (perceiving). Emotionally mature people, according my definition, are capable of accurately assessing the context and, having a strong understanding of self, make the necessary adjustments to function effectively with people and to solve problems. The definition of emotional maturity was derived from the literature review that follows.

The distinction between emotional maturity and related constructs lies in that emotional intelligence theory relies heavily on understanding "emotional information" about oneself and others (Boyatzis & Sala, 2004), whereas "emotional maturity" requires both an understanding of emotional information as well as an understanding of the perceptions, judgments, and relationship to the internal and external worlds of both oneself and others.

Further, the general term "maturity" implies growth, development, and experience that occur through the life span. Consequently, those who are emotionally mature are expected to be cognitively more capable of understanding emotional information as well as to have developed social cognition or social knowledge. This maturity would be

evident in individuals who are capable of accurately assessing various social contexts and social cues and responding effectively.

The term "emotional maturity," developed for my study, was based on the descriptors provided by the Development Group who worked with the researchers on the Orthopaedic Scholar Institute at Grace College. Though primarily an industry-driven concept rather than an educational concept, emotional maturity remains consistent with the existing complementary definitions of emotional intelligence previously described in the literature review. While it contains an element of emotional understanding, it also suggests a developmental state beyond that normally attributed to a traditional college-aged student (i.e., 18-22-year-olds).

While conceptually similar to the definitions of "emotional intelligence" and its related constructs, "emotional maturity" is nonetheless specific to OSI. My definition is intended to reflect the transferable skills requested by the orthopaedic companies, especially as related to the interpersonal skills that may not be an individual's preferred method of interaction and problem solving. Further, my definition is consistent with the MBTI construct, which asserts that all preferences are valuable and everyone uses all eight personality preferences at different times regardless of their own "type" (Hirsh & Kummerow, 1998; Myers et al., 2003).

Relationship Between Emotional Maturity and MBTI

Though it has been suggested that the work by Goleman, Mayer and Salovey, and others does not take psychological type into account (Lawrence, 2001), the dimensions of the MBTI have apparent linkages to emotional intelligence (Dulewicz & Higgs, 1999;

Higgs, 2001). For example, in studying middle and senior managers, there was a positive relationship between the MBTI preferences of feeling ("F") and thinking ("T") with the emotional intelligence element of self-awareness, and negative relationships between the MBTI dimension of introversion ("I") and the emotional intelligence elements of both motivation and influence and between MBTI feeling ("F") and emotional intelligence decisiveness (Higgs, 2001). Higgs noted that, due to the nature of the MBTI instrument, it is controversial to correlate MBTI types with EI because it requires correlating ipsative with normative data (p. 524). Specifically, while MBTI type data is usually expressed in nominal format because of the ipsative nature of the instrument, in a number of studies the MBTI scales have been used for correlational analysis (Higgs, 2001).

Higgs (2001), however, analyzed point-biserial correlations between MBTI scales and EI elements. While he concluded that his research did show a relationship between the MBTI and EI, albeit not a strong or comprehensive one, he suggested this may be in part due to the psychometric limitations of the MBTI to predict behavior, and in part due to his methodological limitations in comparing ipsative and normative instruments as well as the nature of his sample and its potential biases (Higgs, 2001).

Further, the researchers suggested that both emotional intelligence and the expression of the non-preferred MBTI type can, at least in part, be developed (Higgs, 2001; Myers et al., 2003; Sala, 2002), and that MBTI profiles might indicate levels of emotional intelligence and provide a basis for developing aspects of an individual's behavior (Higgs, 2001). Similarly, there is evidence that, with sustained effort and attention, emotional intelligence may be learned and sustained through life experience (Emmerling & Goleman, 2003).

That individuals can develop greater comfort and skill in the expression of their preferred and non-preferred type is significant as it relates to the selection and involvement of students in OSI. The OSI Program assumption that OSI students can continue to increase their already high levels of emotional maturity and diligence with the education and feedback provided through the OSI Programming is supported by Emmerling and Goleman's (2003) research as well as Jung's (1926) theory of psychological type discussed previously.

Additionally, the MBTI assumes that all preferences are equally valuable, important, and necessary and all can be used by every person (Hirsh & Kummerow, 1998; Myers et al., 2003), an important assumption that has relevance to my definition of "emotional maturity" used in this research.

Further relevance to the concept of emotional maturity is that the MBTI does not measure "traits," or the amount of a characteristic a person has, but rather sorts people into equally valuable groups—types—to which, in accordance with Jung's theory, they already belong (Dulewicz & Higgs, 1999; Myers et al., 2003).

Measuring Emotional Maturity

The Emotional Competence Framework is comprised of both personal competence and social competence, which indicate how one manages oneself and how one manages relationships, respectively (Hay Group, 2002). Within this framework, the ECI-U model measures 21 competencies organized into four clusters: self-awareness, social awareness, self-management, and relationship management.

The competencies in self-awareness cluster of the ECI-U include emotional self-

awareness, accurate self-assessment, and self-confidence. As noted in Table 4, the cluster

most consistent with my definition of "emotional maturity" is that of self-awareness.

While the three remaining clusters, social awareness, self management, and relationship

management, indicate other areas of emotional intelligence as defined by Boyatzis (see

Boyatzis & Sala, 2004), my study focused specifically on emotional maturity, defined as

the ability to accurately recognize one's own personality preferences and emotions and,

depending on the requirements of the environment, adjust those preferences or employ

the opposite preferences for effective performance in all areas of one's life. In describing

essential workplace skills, Carnevale and associates (1990) proposed that "autonomous

workers must have personal management skills to maintain self-esteem, set goals, and be

motivated" (p. 11). Thus, my methodology relied on the self-awareness cluster.

The self-awareness cluster concerns knowing one's internal states, preferences,

resources, and intuitions, and is comprised of three competencies: emotional self-

awareness, accurate self-assessment, and self-confidence, which are detailed in Table 5.

The self-awareness cluster alone was selected as the measure of emotional

maturity because all three of the competencies in this cluster aligned with my definition

of emotional maturity, whereas competencies in the remaining three clusters were linked

only marginally, at best, to my definition.

These three competencies, which comprise the self-awareness cluster, reflect the

intent of the definition of "emotional maturity" used in my study. Clearly, individuals

who recognize their own impact on others, recognize and react to cues in the

Table 4

ECI-U Framework and Clusters

PERSONAL COMPETENCE	SOCIAL COMPETENCE
Self Awareness Cluster	**Social Awareness Cluster**
Emotional self-awareness	Empathy
Accurate self-assessment	Organizational awareness
Self-confidence	Service orientation
Self Management Cluster	**Relationship Management Cluster**
Emotional self-control	Developing others
Trustworthiness	Inspirational leadership
Conscientiousness	Influence
Adaptability	Communication
Optimism	Change catalyst
Achievement orientation	Conflict management
Initiative	Building bonds
	Teamwork and collaboration

Note. From "Emotional Intelligence Products and Services," by Hay Group, 2002, Retrieved July 4, 2006 from http://ei.haygroup.com/about_ei/

Table 5

ECI-U Self-Awareness Cluster and Competencies

Self-Awareness Cluster	Competencies In This Cluster:
Emotional self-awareness: Recognizing one's own emotions and their effects, how one reacts to cues in the environment, and how one's emotions affect performance.	1. Is aware of own feelings 2. Knows why feelings occur 3. Understands implications of own emotions
Accurate self-assessment: Knowing one's inner resources, abilities, and limits; being aware of strengths and limitations.	1. Has a sense of humor about self 2. Is aware of own strengths and limits 3. Is open to feedback
Self-confidence: Strong sense of one's self-worth and capabilities. Acknowledging that one is the best for the job. Conveying one's ideas and opinions in an assured manner and having a positive impact on others.	1. Presents self in an assured and unhesitating manner 2. Has presence (stands out in a group) 3. Believes he/she is among the most capable for a job

Note. From *Measuring Emotional Intelligence: Common Ground and Controversy* (p. 154), R. E. Boyatzis and F. Sala, 2004, Hauppauge, NY: Nova Science Publishers.

environment, accurately understand their own strengths and limitations, receive and respond to feedback by making adjustments in their behavior, and possess assuredness to positively impact others are those who can be described as "emotionally mature." For it is these individuals who, understanding themselves, their environment, and their impact on others, are able to appropriately adjust to the social system in which they function. It is this willingness to adjust despite a preference to utilize a more comfortable strategy that separates an emotionally mature person from one who is not.

Literature Related to Selection and Admission

Thus far, reviewing the literature informed us regarding prior research about the MBTI, emotional maturity, and diligence (see Harstine, 2007). Additionally, it helped us understand how the constructs of emotional maturity and diligence are consistent with transferable skills in workplace settings. Our problem statement did not become clear, however, until we focused on the selection and admission of students in higher education programs.

Our studies focused on establishing an objective selection and admissions process for OSI, which required that we determine how other professional degree programs selected and admitted students. The research did not describe any academic programs in which a formal admissions process was necessary for selection or continuation in the program. The research did, however, support the premise that various professional degree programs have an admission or selection process and that academic programs or disciplines do not.

One might define "profession" as those occupations that have in common the

credentials (i.e., learned skills and formal knowledge) that require some degree of higher education and are prerequisites for holding a job (Freidson, 1986). To obtain these professional skills and knowledge, one would attend a professional school that "offers an intensive educational program composed of training both in the theory and practice of a distinct, specialized body of knowledge" (Brockmeyer & Fowler, 1982, p. 117). Professional degree programs, therefore, lead to occupations that are designed to (a) achieve specific objectives or core sets of technical competencies (often connected to specialized accreditation standards); (b) select and admit qualified students; (c) require supervised praxis or internships; (d) provide systematic evaluation before, during, and after training; and (e) often produce graduates who obtain licensure or professional credentials necessary to practice (another form of "selection" and accountability) (Brockmeyer & Fowler, 1982; Moore & Urwin, 1991; Uno, Blackwell, & Leonardson, 1981).

The process of selection and admission to OSI evolved with the realization that the OSI Team was trying to transform a traditional academic program into a professional degree program in that it wanted to identify students with a set of technical skills they had acquired in their major and transferable skills they had acquired through life experiences. Specifically, the OSI Team sought to create a more objective set of selection and admission criteria to produce more valid, even more equitable, selection decisions (Riggs, Riggs, & Sandlin, 1992) while recognizing that the fairness of a selection method rests on the fairness of the criterion used (Dobson, Krapljan-Barr, & Vielba, 1999).

In both undergraduate and graduate-level professional degree programs such as law, MBA programs, social work, medical school, priesthood, teacher education,

graduate level psychology, physical therapy, nursing and dental hygiene, and public accountancy (Dawson, 1984; Dobson et al., 1999; Korman, Stubblefield, & Martin, 1968; Plante, Manuel, & Tandez, 1996; Ruscio, 1998; Seymour & Gramet, 1995; Shye & Aranya, 1975; Tatham, 1976; Uno et al., 1981; Younes, 1998), there was some level of formality or objectivity in the selection and admission of students.

The significance of the "gatekeeping" and selection process is to "guard the gate of the profession" by screening candidates to assure that only the best qualified and most suited enter the program, receive a responsible education, and subsequently exit the program into the profession (Moore & Urwin, 1991; Riggs et al., 1992). Likewise, the selection process for OSI will not be valid if it does not result in the selection of those students who will be the best fits within an orthopaedic internship.

Researchers have criticized the admission and selection process and note that, while criterion validation is desirable, many programs use selection criteria that have not been subjected to the necessary validation assessment (Riggs et al., 1992). While one aspect of the OSI screening and selection process has validated psychometric properties (Myers-Briggs Type Indicator), the remaining components of the process (i.e., referral, interview, class observation) do not. The Emotional Competence Inventory–University edition and the Diligence Inventory–Higher Education, for which psychometric properties exist, were thus introduced into the OSI selection process via our studies.

The selection and admission processes in professional degree programs yielded definitions, purposes, and concerns about admission processes that were helpful to us as we evaluated other professional degree programs' admission criteria against our own OSI programming needs. Additionally, various admission criteria emerged, many of which

64

had relevance to the selection and admission of the OSI students discussed in our research.

Though discussing law and professional school admissions, Brockmeyer and Fowler (1982) defined admission as "the first-time selection of students from an applicant pool for enrollment, class membership and matriculation in an educational program of a professional school" (p. 117). This definition was similar to that used by the OSI Team: to select individuals from the current pool of Grace College students to participate in OSI activities and eventually obtain an orthopaedic internship.

There appeared to be a common purpose for the existence of admission standards regardless of the various criteria that professional degree programs use. For example, Younes (1998) noted that "similar admission standards may exist among professions with common underlying principles geared to safeguard the right of applicants to due process while attempting to balance the needs of educational institutions" (p. 147). To this end, professional degree programs have a selection and admission process regardless of the level of education (i.e., undergraduate or graduate). Ultimately, a distinction of professional degree programs is the "gatekeeping" process into, through, and exiting a program while considering the needs of both the student and the institution.

Without a careful gatekeeping process to determine a student's suitability for admission to a professional degree program, educators in these programs then have the responsibility of producing the desired characteristics in students they admitted to the program that were absent upon entry (Roose, Mitchell, & Rudman, 1985). In the case of the OSI Program, this underscores our responsibility to accurately identify and select students who already possess the characteristics preferred by the Development Group

rather than to produce those characteristics in students through their participation in the OSI Program. Consequently, the literature review supported our need to develop an admission or gatekeeping process to identify students who already possessed these characteristics.

Concerns emerged, however, about the selection and admission of students in professional degree programs. For example, Roose, Mitchell, and Rudman (1985) expressed concern that most teacher education programs do not regularly attract academically capable students and, without a strong selection process, risk preparing individuals who do not possess the qualities necessary to meet the demands of rigorous professional degree programs or the profession itself. Likewise, if the OSI Team failed to accurately identify students for selection and admission into OSI, we would risk placing students in orthopaedic internships for which students were unprepared and with whom the orthopaedic companies were dissatisfied.

In addition to definitions, purposes, and concerns about the admission process in professional degree programs, the research included discussion about the tools used in the admission process. Though the explicit distinction between screening tools (e.g., reference letters and interviews) and admission criteria (Miller & Koerin, 1998) is beyond the scope of our research, examination of the research related to the student selection and admission criteria for professional degree or training programs indicated that both quantitative and qualitative tools are used. These tools are generally categorized as academic (e.g., the GRE, GPA, SAT, GMAT, CPA exams; grades in specific courses; speaking and writing samples) and non-academic (e.g., applications, personal essays, references, supervisor evaluations, faculty interviews, faculty observation in the

classroom, community service, admission committee decisions) in nature. The level of contact between the student-applicant and faculty (or the interview requirement) may be a function of program or enrollment size whereby smaller institutions have greater use of the personal evaluation and are more capable of selectively admitting students based on established selection criteria (Uno et al., 1981).

One caveat surfaced regarding the use of established selection criteria, particularly that which is standardized or quantitative in nature. Boyatzis (2002) suggested that "the overemphasis or reliance on measures of selected competencies for screening applicants," and the convenience of doing so, might result in our students becoming what we measure (p. 161).

While non-academic traits such as personality, maturity, disposition, and professional values were used as criteria for selection and admission, there appeared to be neither a standardized measure of these characteristics nor agreement on the predictive validity of these non-academic traits. For example, Miller and Koerin (1998) noted that few studies examining the relationship between admissions criteria and student performance have emphasized non-academic variables. It is understandable, however, why selection may be heavily biased toward academic criteria since this criteria may have greater face validity and may correspond more closely with a graduate's job description (Ruscio, 1998; Uno et al., 1981). Whereas the literature noted the difficulty in understanding the relationship between work performance and personality characteristics, the predictive validity of non-academic characteristics such as emotional maturity and diligence was not the focus of our research. Instead, we focused on the presence or

absence of these characteristics, not the relationship between those characteristics and students' actual performance.

Objective criteria in the admission process were often used; however, there was not agreement among researchers regarding the level of effectiveness of qualitative and non-standardized measures when admitting students to professional degree programs. For example, some researchers suggested that quantitative measures alone may be insufficient selection mechanisms (Shye & Aranya, 1975). In fact, some researchers suggested that in many programs, intuitive, convenient, or common sense criteria and predictors were used in selection and admission criteria (Riggs et al., 1992), or even *should* be used (Paolillo, 1982; Shye & Aranya, 1975), to make individualized admissions decisions, but warned that professional judgments must be accompanied by clear, nondiscriminatory, and non-arbitrary interpretations (Cole, 1991; Moore & Urwin, 1991; Younes, 1998). While intuition and common sense criterion seemingly have their place in the selection and admission process, these over-emphasized aspects of the OSI selection and admission process subsequently resulted in our studies.

Whether or not to use standard, quantitative, or academic measures versus non-standard, qualitative, or non-academic measures was unclear. For example, researchers noted that while non-standard admission criteria such as reference letters had little value, faculty interviews were the best predictors of student performance (Miller & Koerin, 1998). In contrast, other research suggested that even using an intensive admission process, including an interview, may not identify students with characteristics that make them suitable for admission (Vigilante, 1983). Likewise, trusting the ability of the educator to evaluate students' ability to perform in the classroom setting may produce

data that can be used as selection criterion (Riggs et al., 1992). Additionally, even with the identification of a variety of selection criteria, the ability of these criteria to objectively select candidates (Riggs et al., 1992), their merit in screening applicants for admission (Paolillo, 1982), or their usefulness in predicting candidates' success in a specific program (Dobson et al., 1999) or after graduation (Uno et al., 1981) has been questioned. Ultimately, the use of multiple tools in the decision-making process may prove most useful, particularly when factors such as maturity and emotional stability contribute to achievement (Miller & Koerin, 1998, p. 3).

The OSI Team, therefore, questioned whether the MBTI alone could profile the desired qualities for students' selection into OSI. Ruscio's (1998) criticism of the predictive validity of a standardized test, the GRE, related to the fallible nature of the criteria used, specifically the unreliability of faculty ratings because of subjective and retrospective biases. Ruscio (1998) asserts that the "large intercorrelations among all of the ratings provide strong evidence for a halo effect" (p. 569), so it was not surprising that grades correlated with faculty's global impression of each student given that the same faculty members assigned both the grades and the ratings. This criticism is particularly salient to the OSI selection and admission process because it is plausible that, despite OSI Team concerns about the specific characteristics of a student, he or she may be particularly well-liked by the OSI Team (i.e., have enough compensating factors) and thus accepted into OSI despite these concerns.

Ruscio (1998) questioned whether "alternative assessments of ability, such as tests of creative or practical skills" (p. 569), could predict meaningful outcomes better than the GRE, though, as Uno, Blackwell, and Leonardson (1981) asserted, "it will only

be possible to identify relevant student selection criteria after the determination and quantification of the criterion variable of . . . performance is made" (p. 321). It became clear to us that, while on the one hand the tool that we intended to use in the admission and selection of OSI students—the MBTI—was an objective descriptor of type preferences and a standardized instrument, on the other hand it was merely descriptive of students' characteristics rather than a measurement of those characteristics. Further, we were not certain that the MBTI even measured the characteristics that concerned us— emotional maturity and diligence—let alone the amount of the characteristic.

Selection and admission decisions pose difficulties for specialized programs such as OSI that require both technical skills and transferable skills. Both skill sets are desirable, but while academic ability may be more objective, personal characteristics and professional potential may be difficult to evaluate yet critical to the admission process (Macy, Turner, & Wilson, 2000). To the OSI Development Group, the personal characteristics of emotional maturity and diligence were critical in the admission of students.

Summary of Chapter 2

The MBTI has been used on the Grace College campus for several years and has been routinely administered to our college freshmen. Additionally, several faculty and staff are certified in its administration, including two members of the OSI Team. Because we were familiar with the MBTI and because it was already administered to our college freshmen, we looked first to this instrument as a tool to determine emotional maturity and diligence in our OSI students.

The MBTI consistently describes equally valuable categories of personality preferences to which individuals already belong. These categories are related to individuals' sources of energy, perception, judgment, and orientation to the outside world. We wanted to determine whether the MBTI categories and descriptors would enable us to identify those students who possessed the characteristics desired by the Development Group: emotional maturity and diligence. We were not attempting to identify the degree to which students possessed these characteristics, merely whether or not the characteristic described the students.

The MBTI vocabulary (see Table 1) used to describe type preferences proved useful to understanding the characteristic of diligence. The concept of diligence is comprised of specific behaviors, many of which were reflected in the MBTI descriptors such as "organized" and "setting goals." While the MBTI literature described behaviors that seemed consistent with diligence, it did not clearly suggest that the MBTI instrument would determine the presence or absence of diligence in students admitted to OSI.

In contrast, the concept of emotional maturity is concerned with the level to which an individual has already developed the opposite preference and can use that opposite depending upon the context. While the MBTI literature provided a theoretical understanding of type, type preference, and the development of opposites, it did not indicate the way in which an individual's actual development or use of the opposite preference could be determined.

It was also necessary to research transferable skills, a concept that the Development Group used in describing the characteristics they desired in new employees and interns. We identified that business and industry commonly used the concept of

transferable skills. Further, while the specific terms of "emotional maturity" and "diligence" were not used specifically, they were consistently described in terms that reflected the intent of our two constructs.

There was similarity between the language used about transferable skills and our two constructs of emotional maturity and diligence. This similarity was helpful as we considered how our constructs might be described in a workplace context versus an educational context. As discussed in our conceptual framework, the emphasis in higher education has been on theory, but the emphasis in the workplace has been on practice: Employers want employees who can "do" something with the knowledge they have. Regardless of whether higher education is essentialist or perennialist in nature, however, educators must assist students in understanding what employers want in terms of technical skills and transferable skills.

There were multiple constructs related to emotional maturity that also provided a foundation for the definition of emotional maturity used in this study. Concepts such as social intelligence, multiple intelligences, and emotional intelligence illustrate the range of terminology that was broadly related to how individuals identify and regulate their emotions to function effectively in a variety of contexts including the workplace. These concepts included elements such as self-regulation and self-awareness that, while useful in developing the term "emotional maturity" for this study, did not fully describe the adjustments that individuals may need to make to work effectively with others.

The research addressed this gap by providing a link between emotional maturity and MBTI preferences, specifically that emotional maturity and MBTI preferences can be developed. This linkage was significant as it related to the definition of emotional

maturity used in this study, which included individuals' ability to express their non-preferred or opposite MBTI type. Emotionally mature students who can accurately recognize their own personality preferences and emotions and, depending on the requirements of the environment, adjust those preferences or employ the opposite preferences for effective performance in all areas of their lives are the types of students desired for selection and admission to OSI.

While there are various instruments used to measure constructs associated with emotional maturity, the Emotional Competence Inventory–University edition appeared to be the most relevant instrument to measure the college population used in this study. Its Self-Awareness cluster most closely reflected components of emotional maturity as defined in this study. For a discussion of diligence, see Harstine (2007).

A problem arose in trying to determine how to select emotionally mature and diligent students for the OSI Program. The general method of referring students to OSI was subjective and intuitive and produced a cohort of students who were predominantly "ISJs," which did not represent the various MBTI types as we expected. Subsequently, we questioned whether the MBTI alone could identify emotionally mature and diligent students or whether there were other established protocols for admission to a program that we could use. Because the OSI Consultant was familiar with professional education admission requirements, we focused on admission and gatekeeping processes related to professional education programs.

We discovered that while some type of admission process existed in professional degree programs, there was no common procedure among these programs. The only commonality appeared to be their use of multiple tools in their admissions processes

including those that were academic and non-academic and those that were standardized and non-standardized. We already used multiple tools in the selection and admission process to OSI (i.e., the MBTI, an interview, faculty referral). The research related to selection and admission of students supported our use of multiple tools in the admission of students to OSI, including multiple standardized measures.

The literature review informed our methodology because we decided that multiple standardized measures would more likely help us determine the presence of emotional maturity and diligence in OSI students than the MBTI alone. We evaluated whether the ECI-U and the DI-HE provided information that was the same or different from that provided by the MBTI.

CHAPTER THREE

METHODOLOGY

Introduction

Our two studies intend to identify (a) the relationship between student diligence (Harstine, 2007) and MBTI type preferences and (b) the relationship between emotional maturity and MBTI type preferences. The methodology for our research was exactly the same; therefore, chapter 3 presents the setting for our studies, a description of our population and sample, rationale for the use of this group, a description of our research design and data collection procedures, and a summary of the analysis used in these studies. The instruments unique to each study, the ECI-U and the DI-HE, are discussed only in the study in which the data from that instrument were used.

The Setting

The setting for these studies was Grace College, the only undergraduate institution of arts and sciences affiliated with the Fellowship of Grace Brethren Churches. Founded in 1948, the college has experienced a consistent and healthy growth since that time. In 1999, Grace College was re-accredited for 10 years by the North Central Association of Colleges and Schools and will have its next comprehensive visit during the 2008-2009 academic year. Grace College is also accredited by the Association of Christian Schools International.

74

The Fellowship of Grace Brethren Churches with which Grace College is affiliated was organized in 1939 with 75 churches and currently represents over 300 congregations. The Fellowship's evangelistic and missionary outreach can be seen worldwide by the work of the Grace Brethren North American Missions and the Grace Brethren International Missions, both located in Winona Lake, Indiana.

Grace College is located in north-central Indiana in the small, rural town of Winona Lake in Kosciusko County. There are no metropolitan areas in Kosciusko County. Winona Lake is located about 40 miles west of Ft. Wayne, 50 miles southeast of South Bend, and 120 miles north of Indianapolis and east of Chicago. Winona Lake has a population of almost 4,000 and is adjacent to Warsaw, the county seat, which has a population of approximately 12,000.

The College serves primarily the needs of students in the Midwest states of Indiana, Michigan, Ohio, Illinois, and Pennsylvania. Those from Grace Brethren churches comprise only 35% of the student population. The College does not limit its recruitment or admissions to students from specific religions, geographical areas, or ethnic, social, and cultural backgrounds.

All campus activities at Grace College are aimed at developing character, competence, and service in students. The goal in Christian living and in Christian teaching is to make Christ preeminent in all things. Students learn to do this by living, studying, working, and worshiping with other young people who share similar Christian ideals. The provisions and programs of the college, as well as its community lifestyle, are designed to encourage serious academic stimulation, wholesome recreation and relaxation, spiritual growth, and development in the social graces. Grace College seeks to

aid individuals to become competent in intellect, expression, physical development, spiritual understanding, Christian conduct, and social conscience (Grace College, 2003-2005).

Population and Sample

The population for these dissertation studies was the 65 freshman men and 108 freshman women (173 total) at Grace College, a Midwestern, private, Christian liberal arts college, who took the MBTI in the fall of 2004. The sample was the 44 men and 83 women (127 total) who participated in the dissertation research. This sample represents 73% of the total population.

Participants' MBTI types were provided to us by the Student Development Office, which administered and scored the inventory prior to our research. The MBTI types of the participants were labeled as a demographic and are discussed in the description of the sample in chapter 4. Gender was determined by observation and labeled as "male" or "female."

The freshman class entering Grace in the fall of 2004 was chosen for the population because they were the actual group from which OSI would draw its 2007-2008 cohort (juniors). While it was conceivable that a transfer student could enter the population at a later date, the overwhelming majority of the cohort was already on campus. Consequently, identifying the industry-driven criteria of diligence and emotional maturity in this cohort was the first step in a multi-year, invitation-to-apply process for the Orthopaedic Scholar Institute.

The MBTI was used as opposed to other personality indicators because it was the institutional standard at Grace College and, because of its frequent use in organizational training, it supports the industry-driven nature of OSI.

When the OSI Team began recruiting for OSI, they asked for faculty referrals of students who were diligent and emotionally mature, a reflection of the transferable skills discussed in the literature review and communicated by the orthopaedic representatives in the planning stages of OSI. The result was a group of predominantly "ISJ" (introvert, sensing, judging) students. Consequently, the OSI Team began to question whether diligent and emotionally mature students, as they defined them, were primarily ISJs on the MBTI. My research questions focused on whether the MBTI was a sufficient tool to measure emotional maturity or whether the ECI-U instrument would provide greater accuracy.

Main Research Questions

The four main research questions for my study are:

1. What is the relationship between MBTI types (as measured by "IS" [introvert and sensor] and "EN" [extrovert and intuitor]) and emotional maturity (as measured by the emotional self-awareness cluster on the ECI-U) among freshmen?

2. Are there significant differences in emotional maturity by MBTI type "I" (introvert) and "E" (extrovert)?

3. Are there significant differences in emotional maturity by MBTI type "S" (sensor) and "N" (intuitor)?

4. Are there significant differences in emotional maturity by gender?

Main Null Hypotheses

1. There is no significant difference in the emotional self-awareness of freshmen by MBTI type "IS" (introvert and sensor) and "EN" (extrovert and intuitor).

2. There is no significant difference in emotional self-awareness by MBTI type "I" (introvert) and "E" (extrovert).

3. There is no significant difference in emotional self-awareness by MBTI type "S" (sensor) and "N" (intuitor).

4. There is no significant difference in emotional self-awareness by gender.

Instrumentation

There are an array of validated instruments for assessing aspects of emotional intelligence (see Bar-On, 2005; Boyatzis & Goleman, 2001; Mayer, Salovey, Caruso, & Sitarenios, 2003; Russell & Karol, 1997). Among the problems of measuring emotional intelligence, however, is the particular difficulty of measuring self-awareness, the cluster of competencies most closely aligned with the definition of "emotional maturity" used in my study. The difficulty lies in individuals' ability to accurately assess themselves regarding how they appear to other people (Dulewicz & Higgs, 1999).

Some suggest, however, that there is difficulty in scoring EI tests: Whereas IQ is fairly straightforward, EI resorts to "fuzzy sets" of general tendencies (Cobb & Mayer, 2000, p. 16).

Cherniss's literature proved useful in summarizing the various instruments used to measure emotional intelligence. Bar-On's EQ-I, having been around for over a decade, was developed in a clinical context. "It was designed to assess those personal qualities

that enabled some people to possess better 'emotional well-being' than others" (Cherniss, 2000, p. 8). Much is known about its reliability and convergent and discriminant validity; however, less is known about its predictive validity in work situations (Gowing, in press; Salovey et al., 1999, as cited in Cherniss, 2000).

A second instrument, the Multifactor Emotional Intelligence Scale (MEIS) (see Mayer et al., 2003), is a test of ability rather than a self-report, as are other instruments. "The test-taker performs a series of tasks that are designed to assess the person's ability to perceive, identify, understand, and work with emotion. There is some evidence of construct validity, convergent validity, and discriminant validity, but not for predictive validity" (Gowing, as cited in Cherniss, 2000, p. 9).

A third measure is the Emotional Competence Inventory (ECI), which is a "360 degree instrument" (Cherniss, 2000, p. 9). People rate the individual rate on 20 competencies that are linked to emotional intelligence (Cherniss, 2000, p. 9). About 40% of the items come from an older instrument, the Self-Assessment Questionnaire, developed by Boyatzis. "These earlier items had been 'validated against performance in hundreds of competency studies of managers, executives, and leaders in North America, Italy, and Brazil'" (Boyatzis, Goleman, & Rhee, in press, as cited in Cherniss, 2000, p. 9). Cherniss (2000) notes, however, that there currently is no research supporting the predictive validity of the ECI.

Another commercially promoted measure of emotional intelligence is the EQ Map (Orioli, Jones, & Trocki, 1999, as cited in Cherniss, 2000). "Although there is some evidence for convergent and divergent validity, the data have been reported in a rather ambiguous fashion" (Cherniss, 2000, p. 9).

One other, less well-known measure is a 33-item self-report based on earlier work by Salovey and Mayer (Schutte et al., 1998; Salovey & Mayer, 1990, as cited in Cherniss, 2000). There is evidence that convergent and divergent validity and emotional intelligence scores on this measure were positively associated with first-year college grades and supervisor ratings of student counselors working at mental health agencies (Malouff & Schutte, 1998; Salovey, Woolery & Mayer, in press, as cited in Cherniss, 2000).

Though not specifically intended to measure emotional intelligence, the Sixteen Personality Factor Questionnaire (16PF) represents Cattell's attempt "to identify the primary components of personality by factor analyzing all English-language adjectives describing human behavior" (Russell & Karol, 1997, p. 3). The 16PF Fifth Edition contains 185 items that comprise the 16 primary personality factor scales. In terms of reliability, "test–retest coefficients offer evidence of the stability over time of the different traits measured by the 16PF" (Russell & Karol, 1997, p. 69). The Cronbach alpha coefficients for the 16PF Fifth Edition had values that ranged from .64 (Openness to Change, Factor Q1) to .85 (Social Boldness, Factor H), with an average of .74. The construct validity of the 16PF Fifth Edition demonstrates that the test measures 16 distinct personality traits. Criterion validity of the 16PF is demonstrated by its ability to predict various criterion scores (Russell & Karol, 1997, p. 70).

Emotional Competence Inventory–University Edition

The Emotional Competence Inventory (ECI) was developed in 1999 as a leadership assessment/development tool. The Emotional Competence Inventory–

University Edition (ECI-U), developed in 2001 by Goleman and Boyatzis, was designed as a simplified, affordable alternative for use with students in academic settings. This self-scored, 63-item assessment is available for self-assessment only or as a multi-rater tool, as well as online and paper/pencil versions (Hay Resources Direct, 2005).

In trying to determine the psychometric properties of the ECI-U, I needed to reference the ECI *Technical Manual*. In clarifying the application of the ECI to the ECI-U, I contacted Dr. Richard Boyatzis, co-author of the ECI-U. According to Boyatzis (personal email communication, March 10, 2006), because the ECI-U, the instrument used in my study, is "a parallel version of the ECI-2 . . . most of the items are the same. Therefore, on the whole, the psychometric properties of one are similar to the other." The ECI 2.0 was developed because there were a number of undesirable psychometric properties in the ECI 1.0 (Sala, 2002; Wolff, 2005).

The psychometric properties of the ECI 2.0 were outlined in its updated *Technical Manual*. Overall, the ECI was supported by very good reliability and validity evidence from research within a variety of worldwide organizational contexts (Wolff, 2005). Reliability analysis with large samples showed very high internal consistency; however, evidence for test–retest reliability was limited based on the convenience data that were obtained from an intervention study (Wolff, 2005). The ECI also demonstrated very good construct validity. ECI scores were associated with various measures of similar constructs (e.g., Type A and B personality, Myers-Briggs Type Indicator, Big Five personality factors, 16PF) (Dulewicz & Higgs, 1999; Wolff, 2005), while they also demonstrated less association with more cognitive/analytical abilities. The ECI was also found to be predictive of performance in a wide variety of organizational contexts and roles (e.g.,

college leadership, sales, finance, call center agents, and firefighters) (Wolff, 2005).

For the purposes of my research, the online self-assessment version was used because its intended audience is students in higher education, the population I studied. College students generally have proficient computer skills, thus allowing for easy access to and completion of the inventory. The online version also permitted efficient data collection and analysis. While other inventories measuring emotional intelligence exist (see Mayer et al., 2003), the ECI-U was used because it is specific to university students and alternative versions by the same authors are used in business and industry, an important driving force in OSI. Further, it provided the means by which to evaluate the presence of emotional maturity as a transferable skill. Most importantly, it allowed an overall cluster score to represent emotional maturity as defined in this dissertation study.

The ECI-U model measures 21 competencies organized into four clusters: self-awareness, social awareness, self-management, and relationship management. The cluster most consistent with my working definition of "emotional maturity" was that of self-awareness as noted in Table 4.

While the three remaining clusters, social awareness, self management, and relationship management, indicate other areas of emotional intelligence as defined by Boyatzis, this dissertation study focused specifically on emotional maturity, defined as individuals' ability to accurately recognize their own personality preferences and emotions (and those of others) and, depending on the requirements of the environment, adjust those preferences to use their less preferred opposite. Carnevale (1990) proposed that "autonomous workers must have personal management skills to maintain self-esteem, set goals, and be motivated" (p. 11). Thus, the methodology of this study relied

on the self-awareness cluster.

The self-awareness cluster is comprised of three competencies: emotional self-awareness, accurate self-assessment, and self-confidence as detailed in Table 5.

These three competencies, which comprise the self-awareness cluster, reflect the intent of my definition of "emotional maturity." Clearly, individuals who recognize their own impact on others, recognize and react to cues in the environment, accurately understand their own strengths and limitations, receive and respond to feedback by making adjustments in their behavior, and possess assuredness to positively impact others are those who can be described as "emotionally mature." For it is these individuals who, understanding themselves, their environment, and their impact on others, are able to appropriately adjust to the social system in which they function. It is this willingness to adjust despite a preference to utilize a more comfortable strategy that separates an emotionally mature person from those who are not.

According to Boyatzis, a cluster score of the self-awareness competencies can be used to avoid a truncated range and produce a cluster score (R. Boyatzis, personal email communication, March 11, 2005). Thus, while individual competencies were scored on a scale of 1 to 5, for the purposes of this dissertation research the scores of the three self-awareness competencies (i.e., emotional self-awareness, accurate self-assessment, and self-confidence) were combined. Consequently, a scale of 1 to 15 rather than 1 to 5 will denote scores that represent an overall emotional maturity score consistent with the definition of emotional maturity used in my study.

Research Design

Both of our studies employed an ex post facto design, also referred to as a causal-comparative study (Patten, 2004). This non-experimental research design occurs after the conditions to be studied have occurred (Vogt, 1993) and involves observing and describing a current condition and trying to identify possible causes of conditions (Patten, 2004).

A causal hypothesis is a bold claim, but difficult to confirm definitively since an apparent cause may be coincidental to the true cause or may even be a result (Patten, 2005; Schloss & Smith, 1999). Although the causal-comparative method has more potential pitfalls than the experimental method, it is often the best researchers can do when attempting to explore causality (Patten, 2004). Additionally, according to Royse (2004), it is possible to put too much importance on statistical significance thereby forgetting about the practical significance, which, in the case of these research studies, is equally important when evaluating the findings.

Procedure

Collection of the data for both dissertations was completed simultaneously; therefore, the discussion about the data collection procedure includes reference to both the DI-HE and the ECI-U.

Human Subjects Review

Permission was obtained from the administration at Grace College (Appendix A) and from the human subjects review board at Andrews University (Appendix A) to administer the DI-HE and the ECI-U to freshman students. Consent to participate in this

dissertation research was also obtained from the subjects (Appendix A). When the MBTI was administered by the institution in the fall of 2004, students provided written consent to permit access to their names and Myers-Briggs Type Indicator types from the Student Development office, which administered the inventory.

Data Collection and Recording

The data collection event was publicized on campus through a chapel announcement, personal invitations through campus mail (Appendix A), email notices, and in a liberal arts course required of all freshmen. The invitations gave students instructions as to the place, time, process, purpose, and use of the dissertation research data. After arriving at the testing site and signing the release statements, students first took the paper-pencil DI-HE (see Harstine, 2007) followed by the online ECI-U.

The participants were tracked in order to send follow-up invitations to students who had not yet taken the inventories. An alternate day using the same location was secured for these students.

All participants arrived at a reserved campus computer lab comprised of two rooms: one with tables and chairs and one equipped with computers. They were first given a brief overview of the Informed Consent and asked to read and sign it. Students were assigned a participant number, which was recorded on their DI-HE score sheet and also used as their online ECI-U password. The researchers transcribed the MBTI scores obtained from the Student Development office onto the datasheet along with the gender of the student and the participant number.

Participants were then verbally instructed on the nature and purpose of the DI-HE and how to take the inventory. While the participants completed the DI-HE, they were added as participants to the online ECI-U inventory using the instructions provided by Hay Resources Direct. When students completed the DI-HE, they submitted their score sheets and received verbal instructions on how to complete the online ECI-U.

Students accessed the ECI-U online through their email accounts. The researchers had added participants to the ECI-U system by entering their logins and passwords, which subsequently generated an email invitation to participate via their Grace College campus email account.

Students then immediately completed the ECI-U inventory onsite in the computer lab. They received their scores immediately and, because the ECI-U is online and password protected, were instructed on how to access their scores indefinitely and at their convenience. It took most students approximately 20 total minutes to complete both the DI-HE and ECI-U inventories.

We requested permission from the students at the time they took the MBTI (fall 2004) to obtain those scores from the Student Development Office (Appendix A). The release statements communicated that, while the researchers may know some of the students' names, identifying information was not significant to either of the studies and any connection between specific names and data would be destroyed.

Students were provided incentives to participate. They received a coupon of minimal value for use at the campus coffee bar or café cart as well as extra credit in a liberal arts course that stressed scholarship and service upon providing verification of participation.

Responses on the ECI-U were recorded on a Likert scale of 1 to 5. Each of the

competencies, therefore, was scored on a scale of one to five. The scores describe results

as strengths (scores of 4 and higher), areas for growth and development (scores of 3 or

less), and competencies that are demonstrated at times (scores of 3-4). If a participant

scored 3 or higher, he or she has demonstrated the competency at least some of the time

and would find it easier to increase his or her use of it. Strengths are those competencies

in which individuals scored 4 or above, and areas for growth and development are those

competencies in which they scored below level 3 (Hay Group, 2002).

The online ECI-U scores were available in several reporting formats. The Survey

Status Report, used primarily for administrative purposes, indicated the participant's

name, login and password, email address, date the email invitation was sent, and when

the survey was completed.

The Participant Score Report noted the names of all the participants and their

average scores for each of the competencies within each of the four clusters. These scores

were highlighted as strengths or areas for development.

The online ECI-U allowed for extraction of participant item scores to a

spreadsheet. Because emotional maturity, as defined in this study, included just the

competencies in the first cluster, not all the items were extracted for data entry in

statistical software.

Though the ECI-U provides the opportunity for external raters to score the

participants, the Group Participant Score (a roll-up aggregate of these external raters'

scores) was not used. The researchers determined that the participants' self-report was

sufficient and more reflective of the current OSI selection and admission process, so did

not include this secondary evaluation.

The DI-HE scores were scanned and the resulting data tabulated in statistical software in preparation for analysis.

Statistical Analysis

A one-way ANOVA was performed to determine statistical significance. An eta^2 was performed to determine practical significance.

Summary of Chapter 3

Our research was conducted at Grace College because the OSI Program, a new initiative funded by the Lilly Endowment Corporation, required an admissions process. The incoming freshman class of 2004-2005 constituted our population, and 127 of those students chose to participate in our research. Our rationale for the use of this population was because they are the very students who are eligible for selection and admission to OSI.

We chose an ex-post facto design for our method because the OSI Program had already been implemented and two cohorts of students had already been selected to participate in OSI. We collected the data for both of our studies simultaneously because it seemed most efficient to have freshmen take both the DI-HE and ECI-U consecutively since the completion of both inventories required less than 30 minutes of participants' time.

CHAPTER FOUR

FINDINGS

Introduction

The primary purpose of my research was to determine the relationship between participants' MBTI preferences, gender, and emotional maturity. This was accomplished by administering the ECI-U and analyzing the relationship between these variables.

This chapter presents the results of my research. The first section highlights the demographics of the sample. This is followed by the analysis of findings in the relationship between MBTI preferences and gender to emotional maturity. For a review of the findings to determine the relationship between participants' MBTI preferences, gender, and diligence, please see Harstine (2007).

Demographics of Sample

Of 173 freshmen eligible to participate in my study, 127 freshmen (73%) participated. The sample included 83 women and 44 men, which was representative of the actual ratio of women to men on the Grace College campus at that time.

The sample included 53 introverts ("I") and 74 extroverts ("E"), 42 intuitors ("N") and 85 sensors ("S"), 64 judgers ("J") and 63 perceptors ("P"), 42 intuitor–sensors ("IS"), 31 extrovert–intuitors ("EN"), 53 sensor–judgers ("SJ"), and 31 intuitor–perceptors ("NP").

89

Table 6 illustrates the MBTI preferences and the gender of the participants. Some

participants had combinations of dichotomies that were not analyzed. These included 54

extroverted–sensors ("ES") or introverted–intuitors ("IN") and 43 sensor–perceptors

("SP") or intuitor–judgers ("NJ").

Research Questions and Related Null Hypotheses

The purpose of my study was to determine an accurate and objective method to

identify students who display the characteristics of emotional maturity for application for

admission to the Orthopaedic Scholar Institute.

Main Research Questions

Emotional maturity was determined by the score received on the self-awareness

portion of the ECI-U. These dependent variables were tested in relationship to MBTI

types and gender.

Null Hypothesis 1: There is no difference in the emotional self-awareness of

freshmen by MBTI type "IS" (introvert and sensor) and "EN" (extrovert and intuitor).

See Table 7.

The difference in the mean scores between MBTI type "IS" (introvert and sensor)

($M = 11.921$, $SD = 1.478$) and "EN" (extrovert and intuitor) ($M = 11.817$, $SD = .788$) and

emotional self-awareness is not significant at the .05 level. The null hypothesis is

supported.

Table 6

Description of Study Sample

Gender	N	Percentage
Male	44	35
Female	83	65
Orientation of Energy		
(I)ntrovert	53	42
(E)xtrovert	74	58
Processes of Perception		
I(N)tuitor	42	33
(S)ensor	85	67
Orientation to the Outside World		
(J)udger	64	50
(P)erceptor	63	50
Orientation of Energy and Processes of Perception		
IS	42	33
EN	31	24
Other (ES, IN)	54	43
Processes of Perception/Orientation to Outside World		
SJ	53	42
NP	31	24
Other (SP, NJ)	43	34

Table 7

One-way ANOVA Table of Emotional Maturity by MBTI Types "IS" and "EN"

Source	df	SS	MS	F	p
Between Groups	1	0.19	0.19	0.13	0.724
Within Groups (error)	71	108.14	1.52		
TOTAL	72	108.33			

Null Hypothesis 2: There is no difference in emotional self-awareness by MBTI

type "I" (introvert) and "E" (extrovert). See Table 8.

The difference in mean scores between MBTI type "I" (introvert) ($M = 11.862$,

$SD = 1.433$) and "E" (extrovert) ($M = 12.032$,, $SD = 1.037$) and emotional self-awareness

is not significant at the .05 level. The null hypothesis is supported.

Table 8

One-way ANOVA Table of Emotional Maturity and MBTI Types "I" and "E"

Source	df	SS	MS	F	p
Between Groups	1	0.89	0.89	0.60	0.439
Within Groups (error)	125	185.25	1.48		
TOTAL	126	186.14			

Null Hypothesis 3: There is no difference in emotional self-awareness by MBTI

type "S" (sensor) and "N" (intuitor). See Table 9.

The difference in mean scores between MBTI type "S" (sensor) ($M = 12.055$, SD

$= 1.329$) and "N" (intuitor) ($M = 11.770$, $SD = .930$) and emotional self-awareness is not

significant at the .05 level. The null hypothesis is supported.

Null Hypothesis 4: There is no difference in emotional self-awareness by gender.

See Table 10.

The male ($M = 11.8789$, $SD = 1.349$) and female ($M = 12.004$, $SD = 1.145$)

gender difference in mean emotional self-awareness scores is not significant at the .05

level. The null hypothesis is supported.

Table 9

One-way ANOVA Table of Emotional Maturity and MBTI Types "S" and "N"

Source	df	SS	MS	F	p
Between Groups	1	2.28	2.28	1.55	0.215
Within Groups (error)	125	183.85	1.47		
TOTAL	126	186.14			

Table 10

One-way ANOVA Table of Emotional Maturity and Gender

Source	df	SS	MS	F	p
Between Groups	1	0.45	0.45	0.30	0.583
Within Groups (error)	125	185.69	1.49		
TOTAL	126	186.14			

Summary of Chapter 4

Chapter 4 discussed the results of the data analysis for my study. The hypotheses

outlined for this study were also evaluated and no statistically significant findings related

to MBTI preferences and the emotional maturity construct were found.

The findings of my research indicate that there is no relationship between the variables of emotional maturity, gender, and MBTI type preferences. This clearly suggests that the ECI-U and the MBTI measure different characteristics; therefore, the use of more than just the MBTI in the admission of OSI students is warranted if determination of emotional maturity is a factor in the selection process.

CHAPTER FIVE

SUMMARY, DISCUSSION, CONCLUSIONS, AND

RECOMMENDATIONS

This chapter is organized into four major segments. The summary first provides a

framework to discuss the results of my research related to the admission process for the

Orthopaedic Scholar Institute (OSI). It gives background information; communicates the

purpose, rationale, and problem we studied; and reviews the research hypotheses. The

discussion communicates the results of my research about the MBTI, gender, and the

ECI-U. The third segment, conclusions, articulates the significant findings of my research

in regard to their implications for OSI and leads to a number of recommendations.

Summary of the Study

My research evolved from a program initiated at Grace College that was funded

by a Lilly Endowment grant. The grant proposal addressed Lilly's concern about the

brain drain in the state of Indiana and had as its foundation a 2001 study conducted by

Battelle Memorial Institute.

The Indiana Health Industry Forum had commissioned Battelle, one of the

nation's leading nonprofit research and development organizations, to assist in creating a

technology strategy for the health industry in the Kosciusko County, Indiana, region. The

Battelle study noted that the health sector, which is comprised of various industries

95

including those related to the orthopaedic industry, is one of the fastest growing and most

active industry segments across the country, and represents the strongest asset of the

Kosciusko County region of Indiana (Battelle Memorial Institute, 2001, p. 3).

The major orthopaedic firms in this region, as well as their suppliers, however,

suffered from the lack of suitable training programs offered through public schools and

local institutions of higher education, including Grace College, which is also located in

this region (Battelle Memorial Institute, 2001, p. 14). Links between the local industries

and educational institutions for the purposes of establishing internship programs and

providing input into technical curricula were intermittent at best.

This awareness caused Grace College to re-evaluate its role in providing

graduates who would not only be attractive to industry employers, but also desire to live

and work in the region upon graduation. It also required that the college re-examine its

traditional model for program development and community involvement. The result of

this re-examination was the Orthopaedic Scholar Institute (OSI), a program at Grace

College that emphasizes the outcome of higher education on learning and success in

employment. Students in OSI experience a pathway of learning that was strategically and

collaboratively designed by educators and industry leaders. This initiative represented a

program for selected students that has expectations beyond those for a traditional

baccalaureate degree by having students participate in training modules outside the

classroom.

The Myers-Briggs Type Indicator (MBTI) became a recurring theme through

most of the OSI training modules. Its usefulness to OSI students in understanding

themselves and others better, combined with the availability of extensive MBTI research

related to "type" in various social systems, led the OSI Team to realize its potential value and use in OSI. Most of the students in OSI were already familiar with the MBTI, so the training modules focused not only on MBTI types and preferences, but also on the strengths and pitfalls of these types in organizational and group settings. Because it emerged as a theme through the training modules, it became apparent to the OSI Team that the MBTI could be one means to assess students' fit with the OSI Program and ultimately within the orthopaedic industry.

The initial recruiting, selection, and admission to OSI occurred through the hand selection of business students by the OSI Coordinator because he had access to numerous students with intrinsic interest in corporate employment. Upon the OSI Coordinator's appeal, the Grace College faculty referred additional students for consideration; however, aside from a profile consisting primarily of the emotional maturity, diligence, and goodness of industry fit domains, the Coordinator provided no other specific admission criteria.

Following the realization that the referred candidates did not sufficiently meet the industry-driven criteria, however, the OSI Team again educated faculty about the desired characteristics and profile of an OSI candidate. They again requested faculty referrals of prospective students, this time for OSI's second cohort. This time, the referring faculty seemed to equate the OSI profile with particular MBTI types. Specifically, the faculty appeared to have equated the characteristics of the ideal OSI candidate with the "ISJ" (introvert, sensing, and judging) MBTI preference, perhaps without thoroughly understanding the influence of "emotional maturity" regardless of type or perhaps because of the faculty's over-emphasis on the characteristic of "diligence."

It became clear with the second OSI cohort that a more objective means of selection was necessary to determine students' compatibility with and suitability for this innovative experience based on transferable skills such as emotional maturity and diligence.

Statement of the Problem

While the OSI Team realized its need for a more objective selection and admission process that, as much as possible, quantified the characteristics desired in OSI students rather than relying solely on referral perception, intuition, and an interview, it did not have a clear method or approach to do so. Administering standardized inventories that highlighted these desired characteristics and aided in the selection and admission process seemed to be an objective approach to obtain more quantifiable data. The problem for my study, therefore, was whether the MBTI alone could measure a student's emotional maturity and, subsequently, predict that student's fit in an orthopaedic setting, or whether another objective measure would be necessary to identify this skill.

Purpose of Study

The referral of students for OSI had initially been an intuitive process, but there was no evidence to demonstrate that this accurately identified students with the transferable skills and characteristics the orthopaedic companies desired. The purpose of my study, therefore, was to determine an accurate and objective method to identify students who displayed the characteristics of emotional maturity for application for admission to the Orthopaedic Scholar Institute.

Conceptual Framework

During faculty discussions about ideal OSI candidates, the overriding purpose of education was questioned. Should education be the needs of the student more than the needs of society? Aristotle (1943) wrestled with similar concerns about the nature of education when he noted that "the existing practice is perplexing; no one knows on what principle we should proceed—should the useful in life, or should virtue, or should the higher knowledge, be the aim of our training; all three opinions have been entertained" (p. 321).

Two commonly held educational philosophies that address the questions Aristotle proposes are perennialism and essentialism. Perennialists believe in a highly academic, rigorous, and intellectual curriculum. Education is crucial because it develops mental discipline and rationality, both needed in preparation for life.

The second commonly held educational philosophy, essentialism, suggests a critical core of information that all people should possess in order to preserve society. Schools adopting this philosophy emphasize basic skills and expect students to master specific academic subjects.

This essentialist approach has considerable significance for our studies because it emphasizes the development of fundamental skills necessary for students to evolve into productive, informed members of the workforce. It was these types of students that OSI was most interested in admitting to its program.

One tool that OSI used with students who were already admitted to OSI was the MBTI. Upon re-evaluating its admission criteria, the OSI Team questioned whether the MBTI would be a valuable tool in the admission and selection process with students. The

MBTI was based on the theories of Carl Jung, who believed that all people are born with certain mental and emotional possibilities, which he identified as the capacity to observe and organize. Jung believed that humans need these mental tools to pursue their natural impulses to relate meaningfully to the world and to people through productive work and significant relationships (Fitzgerald & Kirby, 1997).

Further, Jung believed that, although people have access to all of the mental tools he identified and use each of them to some extent to function effectively, they nevertheless have a natural preference for certain ways of approaching these tools (Myers et al., 2003). Though research suggests that it is virtually impossible for one person to have developed both of the opposites equally well (Fitzgerald & Kirby, 1997, p. 5), type development is seen as a lifelong process of striving for excellence.

Literature Review

Jung's (1926) theory of psychological types provided the assumptions and set the tasks for the initial construction of the Myers-Briggs Type Inventory (MBTI) and for all of the revisions. These assumptions are that true preferences exist and can be more confidently identified in persons with good type development than in persons with inadequate development (Myers et al., 2003). The MBTI, developed in the United States by the mother-and-daughter team Katharine Briggs and Isabel Myers, was intended to make Jung's theories understandable and useful in people's lives by putting the effects of each preference to practical use (Higgs, 2001; Myers et al., 2003).

In general, the MBTI provides insights into how others interact with the world, collect data, make decisions, and live their lives based on the assumption that seemingly random behavior is actually orderly and consistent with how people choose to use their

perception and judgment (Myers et al., 2003). It was through the use of this personality preference inventory, the MBTI, that the OSI Team combined Grace College students' natural and valuable personality preferences with an essentialist educational philosophy to evaluate their suitability for selection and admission to OSI.

College students have attracted considerable attention from MBTI researchers. It has been used for leadership and career development with college students. In addition to research related to type and honors programs, athletic status, professional degree programs, leadership position, and other characteristics of students in higher education, the MBTI instrument has also been used for college student career development. "In today's educational settings, this process most often takes the form of administering interest and personality assessments, and 'matching' students' results to suitable career fields and college majors" (Provost & Anchors, 2003, p. 322).

My study focused on MBTI type in college students and its relationship to emotional maturity, a characteristic desired by the orthopaedic industry representatives. The literature review revealed a range of terminology and interpretations related to the definition of emotional maturity used in my study. The literature was broadly related to how one learns to recognize and regulate emotions to achieve successful life, school, and employment outcomes. Though conceptually similar, the terminology that occurred most frequently in the literature often reflected only peripherally on the construct of emotional maturity used in my study. The construct "emotional maturity" is defined in my study as the ability to accurately recognize one's own personality preferences and emotions and, depending on the requirements of the environment, adjust those preferences or employ the opposite preferences for effective performance in all areas of one's life.

The distinction between emotional maturity and related constructs lies in that emotional intelligence theory relies heavily on understanding "emotional information" about oneself and others (Boyatzis & Sala, 2004), whereas "emotional maturity" requires both an understanding of emotional information as well as an understanding of the perceptions, judgments, and relationship to the internal and external worlds of both oneself and others. Further, the general term "maturity" implies growth, development, and experience that occur with age and through the life span.

One measure of emotional intelligence, a common non-cognitive aspect of intelligence, the ECI-U, measures 21 competencies organized into four clusters: self-awareness, social awareness, self-management, and relationship management. The cluster most consistent with the definition of "emotional maturity" used in this study was that of self-awareness.

The competencies in the self-awareness cluster of the ECI-U include emotional self-awareness, accurate self-assessment, and self-confidence. Clearly, those individuals who recognize their own impact on others, recognize and react to cues in the environment, accurately understand their own strengths and limitations, receive and respond to feedback by making adjustments in their behavior, and possess assuredness to positively impact others that can be described as "emotionally mature." For it is these individuals who, understanding themselves, their environment, and their impact on others, are able to appropriately adjust to the social system in which they function. It is this willingness to adjust despite a preference to utilize a more comfortable strategy that separates an emotionally mature person from one who is not.

Because the purpose of my study was to establish an objective selection and

admissions process for OSI, the OSI Consultant led us to review the selection and admission criteria from professional degree programs. The literature did not describe any purely academic programs in which a formal admissions process was necessary for selection or continuation in the program. The literature review did support the premise, however, that various professional degree programs have an admission or selection process and that academic programs or disciplines do not.

<p style="text-align:center">Methodology</p>

In studying the relationship between MBTI preferences and emotional maturity, the population used was the 65 freshman men and 108 freshman women (173 total) at a Midwestern, private, Christian liberal arts college who took the MBTI in the fall of 2004. The sample was the 44 men and 83 women (127 total) who participated in the dissertation studies. This sample represented 73% of the total population.

My study focused on several research questions that would help identify whether the MBTI was a sufficient tool to measure emotional maturity or whether the ECI-U instrument would provide greater accuracy.

<p style="text-align:center">Main Research Questions</p>

1. What is the relationship between MBTI types (as measured by "IS" [introvert and sensor] and "EN" [extrovert and intuitor]) and emotional maturity (as measured by the emotional self-awareness cluster on the ECI-U) among freshmen?

2. Are there significant differences in emotional maturity by MBTI type "I" (introvert) and "E" (extrovert)?

3. Are there significant differences in emotional maturity by MBTI type "S" (sensor) and "N" (intuitor)?

4. Are there significant differences in emotional maturity by gender?

Findings

The following findings relate to the testing of the hypotheses about emotional maturity and other variables.

1. There was no difference in the emotional self-awareness of freshmen by MBTI type "IS" (introvert and sensor) and "EN" (extrovert and intuitor).

2. There was no difference in emotional self-awareness by MBTI type "I" (introvert) and "E" (extrovert).

3. There was no difference in emotional self-awareness by MBTI type "S" (sensor) and "N" (intuitor).

4. There was no difference in emotional self-awareness by gender.

The implications of the above findings are that the ECI-U (Hay Resources Direct, 2005) appears to be measuring something other than the MBTI.

Discussion

The construct "emotional maturity" used in my study is defined as the ability to accurately recognize one's own personality preferences and emotions and, depending on the requirements of the environment, adjust those preferences or employ the opposite preferences for effective performance in all areas of one's life. The focus of emotional maturity, therefore, is grounded in the understanding of one's preferences in terms of relating to the world, taking in information, making decisions, and organizing one's life. Emotional maturity requires an understanding of both the non-cognitive elements (i.e., emotional information) and cognitive elements (e.g., perceptions, judgments) of both oneself and others.

The results of my research yielded no relationship between type preference as determined by the MBTI and participants' level of emotional maturity as measured using the ECI-U. Consequently, the lack of relationship between type and emotional maturity suggests that these instruments measure different variables: preferences via the MBTI measure and emotional awareness via the ECI-U measures.

The MBTI literature asserts that all preferences are equally valuable, important, and necessary and all can be used by every person regardless of their own "type" (Hirsh & Kummerow, 1998; Myers et al., 2003). This assertion appears to be supported in the findings of my study as type preference was unrelated to the participants' level of emotional maturity. Emotional maturity was evenly distributed across various MBTI preferences.

Additionally, the literature on personality preferences notes that the MBTI does not measure "traits" that are considered good or bad or of which the person has too much or too little, but rather sorts people into equally valuable groups (i.e., types) to which they already belong (i.e., it identifies preferences, not skills, abilities, or competencies) (Dulewicz & Higgs, 1999; Myers et al., 2003). The findings of my research are consistent with this claim in that there were no relationships found between the MBTI types of "IS," "EN," "I," or "E" and the emotional awareness cluster as measured by the ECI-U. Thus, the presence of emotional maturity as defined in my study was unrelated to type preferences and the level of a participant's emotional maturity was unrelated to that participant's specific MBTI type.

The findings of my study indicate that the ECI-U would be a useful instrument in determining an OSI candidate's level of emotional maturity as part of the program's

admission and selection process. Because the ECI-U measures a continuous variable (unlike the MBTI that measures a binary variable), the OSI Team would have some indication as to whether the candidate's level of emotional maturity was an area of strength or for growth and development. Additionally, because the ECI-U provides competency scores within each cluster (e.g., in this study, the self-awareness cluster had three competencies: emotional self-awareness, accurate self-assessment, and self-confidence), the OSI Team could determine the specific competencies in which the candidate was strong or needed growth.

Conclusions

The ECI-U is measuring emotional maturity in such a way that any MBTI type could be deemed emotionally mature as defined in my study. That is, the ECI-U appears to be measuring students' ability to utilize their MBTI type-opposite because of the random distribution of the data. This bodes well for OSI in that the ECI-U may provide an initial indication of emotional maturity for the orthopaedic industry and should be administered to all interested OSI candidates as a tool to better determine emotional maturity.

Recommendations

Based on the results and conclusions of this study, this section offers the following recommendations for future research and practical application.

1. Further research is recommended that would use the ECI-U on college students other than just freshmen, such as students at all stages of the college career. For example, in my study students took the ECI-U as freshmen and may not have had sufficient opportunity to develop or apply these skills in a college context. Administering this

instrument again as a junior might produce different levels of emotional maturity. Knowing their level of emotional maturity at the time of their admission and selection to OSI may result in a better fit between the student and the OSI Program.

2. Further research related to the ECI-U and students in other contexts, such as the difference between those in small, private colleges and those in public universities, may highlight differences in students who select these types of higher education institutions.

3. Additional research might determine whether the ECI-U Self-Awareness cluster measures emotional maturity in the way I defined it in my study. Because this is the first attempt at measuring emotional maturity in this way, others replicating this research might validate its use.

4. A study based on the results of the selection criteria into OSI versus the success of students in the completion of the OSI Program should be developed to further determine the predictive validity of these measures. This study could be further strengthened by comparing a group admitted to OSI with a control group of those not admitted to and not referred to OSI.

5. A longitudinal study that measures the success of OSI graduates at various stages of their work lives in the orthopaedic industry would be beneficial to determine if indeed the assumptions made about the ideal future employee are actually occurring because of the Orthopaedic Scholar Institute. For example, OSI believes that the orthopaedic companies will find increased retention, lower training costs, faster promotions, stronger problem-solving skills, and heightened leadership potential in students it selects and places in orthopaedic internships.

6. In order to apply the ECI-U to OSI students, further research is recommended

that would use the ECI-U as a predictor of orthopaedic job performance. For example, I assume that students with higher scores on the ECI-U will be more successful in an orthopaedic internship where work tasks are often negotiated with others and require skills that may not be a student's preference. Determining a student's overall emotional maturity could aid in predicting a student's successful performance in an internship.

7. The literature review did not yield any measures of transferable skills. Research is recommended to determine a valid measure or indicator of overall transferable skills and their relationship to the ECI-U and MBTI.

8. Research is recommended to determine whether the definition of emotional maturity used in this dissertation study is consistent with the ECI-U self-awareness cluster and whether such definition has face validity and/or construct validity.

9. The OSI Team should administer the ECI-U to students as a part of the criteria for admission into the program.

10. The OSI Team needs to develop more behavioral criteria for admission into the OSI Program beyond administering the ECI-U. Emotional maturity should be determined through multiple observations to ensure that students have the skills to "use their opposite MBTI preference" in various contexts.

11. The OSI Team should create a two-stage entrance process by differentiating between selection and actual admission to OSI. Rather than selection and admission occurring simultaneously (i.e., the beginning of the junior year), selection should occur during the second semester of the freshman year. The OSI Team should provide opportunities for the development and demonstration of emotional maturity during the sophomore year, with final admission occurring during the junior year.

CHAPTER SIX

INTEGRATIVE DISCUSSION

The mission of the Leadership and Educational Administration Department at

Andrews University is to develop a community of scholar-practitioners who transform

the power of knowledge into global service. Its core values include community, service,

integrity, and commitment. The Program describes leadership as:

> A community of learners dedicated to the principles of Christian service. . . .
> Leadership works through a collaborative structure . . . [because] the synergy that
> occurs when participants work together to reach common goals is one of the
> program's most important tools for success. (Andrews University Leadership
> Program, 2002, p. 217)

Further, when formalizing the philosophical foundation of the Leadership

Program, James Tucker described the interdependence of the program's multiple

competencies by emphasizing that they "cannot be segmented in leadership . . . and . . .

they lose their impact as well as leadership relevance if there isn't a constant attempt to

integrate them" (Alaby, 2002, p. 70). One of those integrated competencies is that leaders

are always "collaborating with others in group processes" (Alaby, 2002, p. 70).

Consequently, a defining characteristic of the Leadership Program is the

important bond built among participants in that they "become partners in learning, both

with faculty members and with other participants" (Alaby, 2002, p. 72). Alaby (2002)

uses the term "community-pole" to stress the importance of the collaborative

learning/teaching community that the Leadership Program has been developing (p. 134).

109

The community-pole is founded in the assumptions that there are "no isolated scholars [because] . . . knowledge is socially constructed . . . [and] diverse perspectives increase the depth of knowledge gained" (Alaby, 2002, p. 134). As one participant noted, the Leadership Program "'is unique in that it is constructivist education at its best'" (Alaby, 2002, p. 135).

The community-pole and constructivist education are evident in the principles of cooperative learning. According to Johnson, Johnson, and Smith (1991), teaching should promote the discovery of knowledge, active construction of knowledge, development of competencies, interaction between students and with faculty, and learning that maximizes student achievement.

Michaelsen, Knight, and Fink (2002) did extensive research on team-based learning, which demonstrates an increase in the capability to learn and achieve when people work together. They also identified characteristics of an effective team including an individual commitment to the welfare of the group, a high level of trust among the members, time interacting together, resources (especially intellectual), a common goal, and frequent feedback on individual and group performance (Michaelsen et al., 2002, p. 11). They assert the following:

> Team-based learning can be especially helpful to anyone who wants to emphasize the development of . . . thinking skills. . . . In contrast to memorization, thinking is an intellectual activity in which the interaction between people—if properly structured— can be particularly valuable. Whether the skill is critical thinking (judging the value of something), practical thinking (problem solving and decision making), or creative thinking (imagining and creating new ideas or objects), learning how to incorporate the ideas and perspectives of several people and learning how to work through differences can greatly enhance [the] ability to think effectively. The extended application phase of team-based learning supports this kind of learning very well. [Team members] have multiple opportunities to enhance ideas with others, practice thinking, and get feedback on the quality of their thinking. (Michaelsen et al., 2002, pp. 22-23)

As doctoral candidates and educators, we, Michael Harstine and Carrie Yocum, desire to not only carry out the mission and goals of the Leadership Program, but also model effective collaboration for our students.

We comprise a community of scholar-practitioners and exemplify Alaby's (2002) "individuality-community" paradox through our complementary personalities, interpersonal styles, and effective, synergistic, collaborative professional relationship. We value and seek out collaboration, achieve job-embedded competencies in the same organizational context, and believe that our individual efforts have been enhanced by our cooperative efforts, resulting in an outcome far superior to that which we would have produced individually. Our interdependence was solidified by our own unique competencies that were continuously integrated in this collaborative process. Accordingly, then, our studies are the synergistic culmination of our efforts both collectively and individually. While paralleling each other, however, our studies remained distinct.

One study, by Michael Harstine, focuses on the relationship between diligence and personality preferences. The other study, by Carrie Yocum, focuses on the relationship between emotional maturity and personality preferences. Several chapters are either similar or identical because the background to the problem was the same, the populations we studied were the same, our institutional context was the same, and the use of the Myers-Briggs Type Indicator (MBTI) was the same. The research questions, however, are unique to each study.

We did not learn in isolation; rather, we became partners in the learning process associated with writing a dissertation. Our diverse perspectives challenged us each to

gain a greater depth of knowledge as we forged through each of our dissertations, and together we constructed an understanding of not only how to complete the task of research, but perhaps more importantly, how to work together through the process.

For example, in every phase of the dissertation process we spent considerable time interacting with each other through multiple mediums: the phone, email, face-to-face, and with others who served as mentors and mediators. In addition to our frequent interaction, we provided regular feedback to each other about our individual and "group" performance since the work that one did impacted the other. It was at these times, because of the level of our trust in each other and the level of our commitment to the process, that we experienced growth, understanding, greater perspective of the other, and clarity in our mutual goals. This is not to imply that we always agreed with one another and that the feedback was not without conflict. On the contrary, there was typically more disagreement than agreement as we engaged in critical thinking and attempted to understand and integrate our differences.

Our research collaboration was not easy and our differences produced enormous challenges at times—challenges through which other "communities of scholar-practitioners" may not be successful in persevering. Aside from work-style preferences, conflicts abounded in both conceptual and technical areas such as interpretational difference, scope and sequence of the dissertation, and writing style. Because of our individual commitment to the process and trust that the other was equally as committed, however, we were able to negotiate the conflict and value the contributions of the other despite very different work styles, interpersonal styles, decision making, problem solving,

and creative thinking. Because of these challenges, we would not necessarily recommend this same process to others.

Our efforts were successful, however, because of several key and unprecedented contextual factors that other communities of scholar-practitioners may not have. First, our distinct MBTI types (Harstine—ENTP, and Yocum—ISTJ) were significant factors that permitted us both to contribute in unique yet valuable ways to the collaborative dissertation process. Beyond understanding our own type, we also had a very strong understanding of, and appreciation for, the other's type. Because we understood our own strengths and pitfalls, as well as those of the other, we could collaborate effectively. Without understanding each other and that our "style" differences were not personal affronts, it would have been impossible to manage the process effectively. Ultimately, we needed to achieve an outcome to which we were both committed, supportive, and equally invested in helping the other succeed.

For example, Michael Harstine is a clear Intuitor ("N") and Carrie Yocum is a clear Sensor ("S"). These processes of perception, as described using MBTI vocabulary (Hirsh & Kummerow, 1998), meant that Michael pays attention to possibilities, inspirations, theories, and relationships, and Carrie pays attention to the present, facts, and what is real and practical. These differences became apparent as we struggled through the literature review portion of the dissertations. Michael's approach was to review the literature, identify the relationships, and draw a conclusion. Carrie, on the other hand, was more likely to begin with a conclusion and determine whether the research could support it.

A second contextual factor in our successful collaboration was that we began the

Leadership Program at the same time. We completed the program's orientation at the same time and subsequently completed the program's initial projects at the same time. While these were parallel rather than collaborative experiences at the time, they paved the way to greater interdependence as we began to assess and appreciate each other's strengths. A collaborated dissertation became a logical progression following our many, previous collaborated projects.

A third contextual factor in our collaboration was that we were (and remain) employed by the same institution during the time in which we completed the doctoral program. This proximity of employment permitted continuous accessibility to each other, which, while initially of a practical nature, became increasingly supportive and reciprocal as we discovered shared interests in pedagogy and resource development at our institution. Eventually, our collaboration extended beyond the doctoral program to other projects on campus as we experienced considerable administrative support and encouragement for our efforts in the doctoral program, in our respective jobs, and in our collaborative projects on campus. Ultimately, our dissertation topics grew out of shared projects through our employment.

Finally, because of our shared academic and employment interests we enrolled in the same doctoral course work. In developing our educational and employment competencies, our collaboration became increasingly integrated and synthesized as we became more invested in the collaborative process. In many respects, we became a sub-group of our regional group as we processed our experiences, shared resources, questioned decisions, and planned our programs. Shared learning experiences permitted "real time" feedback from each other, and the challenge of providing a clear rationale for

our decisions resulted in a stronger product, especially in the dissertation process.

In many respects, collaborative research such as ours may be a more desirable, even a more realistic, approach to research in organizational settings wherein often the work is conducted in teams rather than individually. Quality assurance, grant writing, articulating outcomes, assessment activities, and other research activities such as these are rarely done in isolation. Our collaborative model exemplifies this process.

APPENDIX A

CONSENT FORMS

Grace College
Institutional Research Review

This committee has reviewed the protocol for the administration of the Myers-Briggs Type Inventory to the Freshman Seminar class on September 6, 2004; the instruction of those students upon receiving their MBTI scores; and the attached informed consent.

We understand there is no risk to the students and that the study is being used for institutional research and doctoral research related to student retention and goodness of fit in academic programs.

We endorse the study and the informed consent.

_____
E. Michael Grill, EdD
Department Chair, Behavioral Sciences
Certified MBTI Trainer

_____
Tom Edgington, PhD
Professor, MA Counseling

_____
James E. Swanson, MA
Dean of Students
Certified MBTI Trainer

_____
Brooke Carey, MA
Instructor, Research Methods
Certified MBTI Trainer

_____
David R. Plaster, ThD.
VP for Academic Affairs

_____
Date

Grace College, Student Development
Informed Consent

I agree to participate in this research study conducted by Grace College faculty member James E. Swanson, MA, Dean of Students.

I understand that my participation will include two, one-hour class sessions at Grace College during which I will complete the Myers-Briggs Personality Type Inventory and participate in instruction regarding my personality preferences.

I understand that all information obtained through these questionnaires is confidential and that no personally identifying information will be released without my consent. If the study design or the use of the data is to be changed, I will be so informed and my consent re-obtained.

I understand there is no penalty for my refusing to participate, that I am free to withdraw my consent and discontinue participation at any time, and that the investigators may stop the study at any time. I understand that researchers anticipate no physical or emotional risks associated with my participation. This study is to assist the college in identifying methods to determine student diligence and emotional maturity for retention and goodness of fit in academic programs.

Should I choose to participate in additional testing by Michael Harstine, MA, Associate Professor of Business and Carrie A. Yocum, Associate Professor of Social Work, the results of both the MBTI and this additional testing will also be used for dissertation research related to diligence and emotional intelligence.

If you have any questions concerning your rights as a research subject, please contact Dr. David Plaster, Vice President for Academic Affairs, is available to answer any questions about this research. He can be reached at:

> Grace College
> 200 Seminary Drive
> Winona Lake, IN 46590
> 574-372-5100, ext. 6132

I acknowledge that I have received a copy of this form, read the above statement, and understand my rights as they have been outlined. Furthermore, my signature below indicates that I voluntarily agree to participate in this study, and that I am at least 18 years old.

Participant's Printed Name	Phone Number
Participant's Signature	Email Address
Today's Date	James E. Swanson, Principal Investigator

Grace College
Institutional Research Review

This committee has reviewed the protocol for the administration of the Emotional Intelligence Inventory–University Edition and the Diligence Inventory–Higher Education to the freshmen who voluntarily choose to participate in the dissertation research conducted by Michael A. Harstine and Carrie A. Yocum. The testing will occur between 4/5/05 and 12/31/05. We have also reviewed the instructions to those students and the attached informed consent.

We understand there is no risk to the students and that the study is being used for educational and doctoral research related to goodness of fit in academic programs.

We endorse the study and the informed consent.

_____   _____
Tom Edgington, PhD   Date
Professor, MA Counseling

_____   _____
James E. Swanson, MA   Date
Dean of Students

_____   _____
David R. Plaster, ThD.   Date
VP for Academic Affairs

April 20, 2005

Dear Student,

We are currently enrolled in a doctoral program at Andrews University and are requesting your help to complete the research for our dissertations. Our research is related the relationship between MBTI types, diligence, and emotional maturity.

You have been selected to participate in our research because you completed the Myers-Briggs Type Indicator (MBTI) during Freshmen Seminar in the fall of 2004.

Your participation will involve taking two brief inventories: the Emotional Competence Inventory–University edition (ECI-U) and the Diligence Inventory–Higher Education edition (DI-HE). The ECI-U is completed online and the DI-HE is completed using paper and pencil. For most it will take less than 25 minutes total to complete both inventories.

Please help us complete our research by coming to **Philathea 107** on one of the following days:

1. Friday, April 22, 2005 from 9:00 am to 5:00 pm
2. Wednesday, April 27, 2005 from 9:00 am to 5:00 pm
3. Friday, April 29, 2005 from 9:00 am to 5:00 pm

Once you arrive, you will be asked to sign a form consenting to your participation and verifying that you are at least 18 years old.

We know that you are busy at the end of the year, so to show our thanks for giving up your time we would like to offer you a small campus gift certificate for your participation.

Thank you for helping us complete our research. Please contact one of us or the Social Work Office (x6492) if you have any questions.

Michael A. Harstine   Carrie A. Yocum
Assoc. Prof of Business   Social Work Dept. Chair
Grace College   Grace College
372-5100 x6093   372-5100 x6491

Andrews University, Department of Education
Informed Consent

I agree to participate in this research study conducted by Grace College faculty members Michael A. Harstine, MA, Associate Professor of Business and Carrie A. Yocum, MSW, ACSW, LSW, Associate Professor of Social Work.

I understand that my participation will take approximately 30 minutes during which I will complete two standardized questionnaires at Grace College: the Emotional Competence Inventory–University Edition and the Diligence Inventory–Higher Education.

I understand that all information obtained through these questionnaires is confidential and that no personally identifying information will be released without my consent. If the study design or the use of the data is to be changed, I will be so informed and my consent re-obtained.

I understand there is no penalty for my refusing to participate, that I am free to withdraw my consent and discontinue participation at any time, and that the investigators may stop the study at any time. I understand that researchers anticipate no physical or emotional risks associated with my participation. The major benefit of this study is to assist the college in identifying methods to determine student diligence and emotional maturity for retention and goodness of fit in academic programs.

I understand that the co-investigators, Michael A. Harstine and Carrie A. Yocum, are doctoral students at Andrews University, Berrien Springs, MI. They are available to answer questions at any time and can be reached at:

> Grace College
> 200 Seminary Drive
> Winona Lake, IN 46590
> Michael Harstine, 574-372-5100 x6093
> Carrie Yocum, 574-372-5100 x6491

Their Andrews University dissertation chair, Dr. Hinsdale Bernard, is also available to answer questions at (888) 717-6247. If you have any questions concerning your rights as a research subject, please contact Andrews University Institutional Review Board at (269) 471-6361 or irb@andrews.edu

I acknowledge that I have received a copy of this form, read the above statement, and understand my rights as they have been outlined. Furthermore, my signature below indicates that I voluntarily agree to participate in this study, and that I am at least 18 years old.

	Michael A. Harstine
Participant's Printed Name & Phone Number	Co-Investigator's Printed Name
Participant's Signature and Email Address	Co-Investigator's Signature
	Carrie A. Yocum
Today's Date	Co-Investigator's Printed Name
Hinsdale Bernard	
Faculty Sponsor's Printed Name	Co-Investigator's Signature
Faculty Sponsor's Signature	Witness Signature

APPENDIX B

MBTI TYPE TABLE

MBTI TYPE TABLE

An individual type is the combination of one preference from each of the four

preference pairs, or dichotomies. When the four dichotomies are combined in all possible

ways, sixteen types result. These sixteen types are displayed on a type table. The type

table is arranged as follows:

1. **Introversion** in the top two rows and **Extroversion** in the bottom two rows

2. **Sensing** in the two left columns and **Intuition** in the two right columns

3. **Thinking** in the two outer columns and **Feeling** in the two inner columns

4. **Judging** in the top and bottom rows and **Perceiving** in the inside rows

	Type Table				
	S	**S**	**N**	**N**	
I	ISTJ	ISFJ	INFJ	INTJ	**J**
I	ISTP	ISFP	INFP	INTP	**P**
E	ESTP	ESFP	ENFP	ENTP	**P**
E	ESTJ	ESFJ	ENFJ	ENTJ	**J**
	T	**F**	**F**	**T**	

Note. From *Introduction to Type in Organizations* (p. 5), by S. J. Hirsch
and J. M. Kummerow, 1998, Palo Alto, CA: CPP.

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REFERENCE LIST

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EDUCATION

2007	Andrews University, Berrien Springs, MI Doctor of Philosophy, *Leadership Program,* School of Education
1997	Andrews University, Berrien Springs, MI Master of Social Work, *Administration and Development*
1987	Manchester College, North Manchester, IN Bachelor of Science, *Social Work*

SOCIAL WORK EMPLOYMENT

August 1997-present   Grace College   Winona Lake, Indiana

Associate Professor of Social Work, Department Chair and Program Director

- Courses taught: Introduction to the Social Work Profession, Social Welfare Institutions, Human Behavior in the Social Environment I and II, Social Change Policy, Portfolio Defense Preparation, Social Work Practicum, Ethical Decision Making for Helping Professionals, Topics in Risk Management, Practice Evaluation Skills
- Responsible for leading the department related to student and faculty development, curriculum, budgeting, marketing, and accreditation activities.

March 1987 to May 1997   Bowen Center   Warsaw, Indiana

Positions held:

- Inpatient Unit Social Worker
- Continuous Quality Improvement Coordinator
- Mental Health Therapist in the Partial Hospital Program
- Sexual Offenders Group Facilitator

LICENSING, CREDENTIALING AND PROFESSIONAL MEMBERSHIPS

- Member of Academy of Certified Social Workers (ACSW)
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- National Association of Social Workers
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- North American Association of Christian Social Workers

PUBLICATIONS

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