management, and landscape contracting). These managers will ultimately be charged with purchasing, maintaining, and selling machinery that is required for their industry to function. These decisions should be based on proven economic evaluations and machine performance criteria, not emotional buying whims. A well designed machinery management course can embrace all of the basic principles of a traditional agricultural machinery management course, while applying them to a broader audience. The inclusion of non-traditional agriculture majors is healthy for the course (enrollment stability), and is ultimately healthy for the industries that hire graduates from colleges of agriculture.

The restructuring efforts revitalized a languishing and dated machinery management course. It is hoped that these efforts will serve as a model for other colleges of agriculture with similar physical and instructional resources.

Literature Cited

Coblentz, Bonnie. 1997. Mississippi Agricultural News: Green industry has growers cashing in. WWW, http://saturn.msstate.edu/~infonews/news/agnews/970106dt.htm. Jan. 6.

Durkin, Kathleen. 1996. Maintenance costs can be managed, or so I've read. WWW. http://www.sramarketing.com/sra/turfmaintenance/Articles/Costs.html. Oct. 28.

Goatley, James M. 1997. Associate Agronomist, Plant & Soil Sciences, Mississippi State University. Personal communication. June.

Professional Golf Management. 1997. College of Business and Industry, Mississippi State University. Personal communication with administrative staff. June.

Snow, James T. 1996. An overview of USGA environmental research. WWW. http://www.usga.org/green/envres.html. Feb. 21.

Stoner, Parker. 1996. Turf industry job growth increases need for information. WWW, http://www.sramarketing.com/sra/turfmaintenance/Articles/TurfInd.html. April 22.

Personality Types of Golf Course Superintendents and Students Graduating in Turfgrass Management

David Willoughby[1] and Allen Zimmerman[2, 3]
The Ohio State University, Wooster Campus
Agricultural Technical Institute, Wooster, OH 44691-4000

Abstract

The predominant personality types in a population of golf course superintendents were found to differ significantly for some preferences when compared to a general population of college graduates. The personality types of graduates from a turfgrass management program at a technical college were found to be similar to those for the population of students who enroll at the college. However, there was a significant difference for some preferences when the turfgrass management graduates were compared to the golf course superintendents.

The typical golf course superintendent in the population surveyed was found to be a 39-year-old male with an associate or bachelors degree. This individual had been employed in the occupation for 18 years, worked 41 or more hours per week, and rated job satisfaction as high.

Introduction

An understanding of personality types can be very helpful to students attending college in such areas as improving study skills, developing interpersonal skills, setting goals, and learning to appreciate personality differences and diversity. Therefore, the topic of personality types is included in a required orientation course at The Ohio State University Agricultural Technical Institute (Ohio State ATI), an associate degree technical college with an enrollment of about 800 students. The Myers-Briggs Type Indicator® (MBTI)[4] is used as the vehicle for helping students learn about personality types. It has been administered on a voluntary basis to incoming Ohio State ATI students since 1991. Students are given their results during an orientation class period devoted to the topic of personality types.

Understanding the concept of personality types has value beyond the campus. As an example, it has been well documented (Myers et al., 1985) that personality types have an important affect on the occupational preferences of individuals. Individuals differ in the way they like to think and work, and are naturally drawn to occupations that interest, motivate and satisfy them. As a consequence, although individuals with a variety of personality types will

[1] Assistant Professor

[2] Associate Professor

[3]The authors wish to acknowledge Nancy's Brooker's assistance with MBTI material.

[4] ® Myers-Briggs Type Indicator and MBTI are registered trademarks of Consulting Psychologists Press, Palo Alto, CA.

be present in any occupational area, certain types will predominate.

In its role as a technical college, Ohio State ATI offers a number of career-oriented majors. One of the largest of these programs is Turfgrass Management, with an enrollment of about 150 students. This program is oriented primarily to preparing students for a career in golf course management. Most of the graduates find employment at golf courses with the ultimate goal of reaching the position of golf course superintendent.

The MBTI results could be useful in providing career guidance to students and helping them prepare for career success in the industry. The MBTI information provided to Turfgrass Management students would be even more relevant if the personality type profile of a population of golf course superintendents could be obtained.

A literature search showed no previous MBTI studies of golf course superintendents were found. Therefore, a survey of members of a regional golf course superintendents association was conducted to determine the MBTI type profile and certain demographic information.

Based on survey results and information obtained from the MBTI data bank for Ohio State ATI students, the following comparisons were made: 1) compares the golf course superintendents' results with those for a general population of college graduates, 2) compares turfgrass management graduates' results with those for the Ohio State ATI student population, and 3) compares the turfgrass management graduates' results with those for golf course superintendents.

Brief Overview of the MBTI

The MBTI is an instrument based on the work of Swiss psychiatrist Carl Jung and was developed over a 20-year period by Isabel Myers and Katherine Briggs (Myers and McCaulley, 1985). Personality types are characterized by four pairs of letters, with a total of 16 possible combinations (types). The four pairs are designated by the following letter combinations: E or I (Extraversion versus Introversion), an indication of the manner in which a person is energized; S or N (Sensing versus Intuitive), an indication of the way a person prefers to receive information; T or F (Thinking versus Feeling), an indication of the manner in which a person prefers to make decisions; and J or P (Judging versus Perceiving), an indication of how individuals prefer to live their lives. Readers interested in a more detailed explanation of the MBTI are referred to Lawrence (1982), Myers and McCaulley (1985), and Provost and Anchors (1987).

Sources of MBTI Data for Comparisons

Given the problems of reaching and testing representative samples with any written questionnaire, true type distribution for any population may never be known (Myers and McCaulley, 1985). In addition, given that the MBTI is descriptive rather than prescriptive in nature, the type which represents the best fit for some of the individuals who complete the instrument will not be the same as the reported type. It is important that these factors be kept in mind when using MBTI in comparative studies such as the one reported in this article.

MBTI data for various populations is available from the Center for Applications of Psychological Type™ (CAPT)[5]. This organization has a very detailed data bank (Macdaid, et al., 1986), which the authors used as a source for the population of college graduates to which the golf course superintendents and turfgrass management graduates were compared.

As stated earlier, a data base of MBTI results for Ohio State ATI students exists and has been compiled for 1405 of the students who entered Ohio State ATI from 1991 through 1995. Using this information, the authors were able to find MBTI results for 97 of the 150 turfgrass management students who graduated between Spring Quarter 1993 and Spring Quarter 1997.

Materials and Methods

Survey Background

The Golf Course Superintendents Association of America (GCSAA) is composed of over 17,000 turfgrass professionals from around the world. For individuals to be eligible for class "A" membership in the GCSAA, they must be currently employed as a golf course superintendent and have a minimum of three years experience as a superintendent.

The national organization is subdivided into regional chapters which conduct business and represent members at the local level. Superintendents from the Northern Ohio Golf Course Superintendents Association, the founding body of the national association, were selected for participation in the survey.

Survey Method and Procedure

Survey materials were sent to all 188 class "A" members of the regional association and included the following: a cover letter and instructions, the MBTI Form G question booklet, the MBTI Form G answer sheet, and a stamped return envelop for the return of all materials. In addition to completing the MBTI instrument, participants were asked to complete six sections on the answer sheet dealing with demographic information. Participants who were interested in obtaining their MBTI results at a later date were asked to identify themselves, others were asked to respond anonymously. Individuals who did not wish to

complete the survey were asked to return all blank materials. Follow-up telephone calls were made to those who did not return either the completed or blank materials about three weeks after the initial mailing of the survey.

Statistical Analysis

MBTI data was analyzed using the Selection Ratio Type Table (SRTT), a PC software program available from CAPT (Granade et al., 1987). SRTT determines the probability of differences in the distribution of 16 types and 28 type groupings for a given population compared to a base population. This program uses Chi square (or Fisher's exact probability if cell frequencies are 5 or less) to determine if differences between variables in the two type tables are significant at the .05, .01, or .001 levels of confidence.

The variable used to indicate differences is the selection ratio (index). If the index is more than 1.00, there is a greater observed frequency in that cell of the table than expected when compared to the base population. Likewise, if the index is less than 1.00, there is a less observed frequency than expected.

Results and Discussion

A total of 64 completed MBTI answer sheets were received from the population of 188 golf course superintendents surveyed for a response rate of 34%. Most of respondees also completed the demographic section of the survey. Results of the demographic information obtained from the survey are listed in Table 1.

As shown in Table 1, golf course superintendents are predominantly male, females made up only 6% of the survey respondees. The ages of most (93%) of the superintendents were in the 30 to 59 year range and fairly evenly distributed in each of these three decades. Average and median ages were 39 and 41 years respectively. The respondees were well-educated, with 92% having attended college. Most (80%) of the superintendents held college degrees, with Associate (39%) and Bachelors (38%) degrees predominating. The time that the respondees had spent in the golf course industry ranged from one to five decades, with 65% having worked in this occupation between 10 and 29 years. Both the average and median time employed in the industry were 18 years. Golf course superintendents have long work weeks, with 95% of the respondees indicating that they put in 41 or more hours per week on the job. These same individuals rate job satisfaction as high, 54% of the respondees were very satisfied and 32% were somewhat satisfied with their employment position.

MBTI Results

Overall MBTI results for the golf course superintendents, as determined based on survey responses, are listed in Table 2. This table also contains the results for turfgrass management graduates and the Ohio State ATI student population which were obtained from the campus data bank.

Golf Course Superintendents Compared to a General Population of College Graduates

Almost 80% of survey respondees held college degrees and an additional 12% had some college experience. It has been well documented that the educational level of sampled populations has an affect on the Sensing (S) versus Intuitive (N) preferences. Therefore, the authors used the CAPT data for college graduates as the general population to which the golf course superintendents were compared. The results of this comparison are shown in Table 3 and indicate that the superintendent population has high indexes (significant at the .001 level) of 1.66 for Sensing and 1.45 for Thinking.

A very high percentage (94%) of survey respondees are male. The CAPT data base for college graduates consists of only 46% males. It has been well documented that gender differences exist in the Thinking (T) versus Feeling (F) preferences. Therefore, the results for the 60 male golf course superintendents in the sample group were compared to CAPT data for male college graduates. The results of this comparison are shown in Table 4 and indicate that the Sensing index remains high at 1.61 (significant at the .001 level), but that the Thinking index drops somewhat to 1.18 (although this is still significant at the .05 level).

The high index for Sensing in not surprising given that the work performed by golf course superintendents requires attention to details and careful observation. People who prefer the Sensing perception like to use the five senses to become aware of things, people, occurrences, and ideas. These individuals tend to focus on the immediate experience and often develop characteristics associated with this awareness such as realism, acute powers of observation, memory for details, practicality, and an application orientation.

The high index for Thinking is also predictable given the requirements of the superintendent position. People who prefer the Thinking judgment prefer to organize and structure information in a logical and often impersonal manner when drawing conclusions or making decisions. Those with a preference for Thinking tend to rely heavily on the principles of cause and effect, linking ideas, numbers, and physical objects together and making logical choices.

As indicated in Table 4, the high indexes for S and T also result in significantly higher indexes for one of the MBTI types which include the ST combination, the ST type

Table 1. Demographics of members of the Northern Ohio Golf Course Superintendents Association Who Completed the Survey

GENDER				
Female	Male			
6%	94%			
AGE				
20-29	30-39	40-49	50-59	
7%	35%	31%	27%	
Average: 39 Years		Median: 41 Years		
EDUCATION LEVEL/DEGREE				
High School	Some College	Associate	Bachelors	Masters/ Professional
8%	12%	39%	38%	3%
NUMBER OF YEARS EMPLOYED IN CURRENT OCCUPATION				
1-9	10-19	20-29	30-39	40-49
19%	34%	31%	13%	3%
Average: 18 Years		Median: 18 Years		
WORK HOURS PER WEEK				
1-29	30-40	41 Plus		
0	5%	95%		
JOB SATISFACTION				
Very Satisfied	Somewhat Satisfied	Somewhat Dissatisfied	Very Dissatisfied	
54%	32%	9%	5%	

E or I - Extraversion versus Introversion
S or N - Sensing versus Intuitive
T or F - Thinking versus Feeling
J or P - Judging versus Perceiving

Table 2. MBTI Results for Golf Course Superintendents, Ohio State ATI Turfgrass Management Graduates, and the Ohio State ATI Student Population

Type	Golf Course Superintendents		Ohio State ATI Turfgrass Graduates		Ohio State ATI Student Population	
MBTI	N = 64		N = 97		N = 1405	
ISTJ	22	34%	13	14%	227	16.2%
ISFJ	6	9%	6	6%	101	7.2%
INFJ	0	0%	1	1%	20	1.4%
INTJ	4	6%	3	3%	25	1.8%
ISTP	3	5%	7	7%	154	11.0%
ISFP	1	2%	3	3%	63	4.5%
INFP	1	2%	3	3%	46	3.3%
INTP	2	3%	2	2%	46	3.3%
ESTP	5	8%	19	20%	174	12.4%
ESFP	1	2%	5	5%	66	4.7%
ENFP	1	2%	5	5%	67	4.8%
ENTP	1	2%	4	4%	80	5.7%
ESTJ	11	17%	13	14%	195	13.9%
ESFJ	2	3%	6	6%	75	5.3%
ENFJ	0	0%	2	2%	34	2.4%
ENTJ	4	6%	5	5%	32	2.3%
Female	4	6%	2	2%	347	24.7%
Male	60	94%	95	98%	1058	75.3%

E or I - Extraversion versus Introversion
S or N - Sensing versus Intuitive
T or F - Thinking versus Feeling
J or P - Judging versus Perceiving

Table 3. Comparison of Golf Course Superintendents (N=64) to a General Population of College Graduates (N=14766)#

TYPE	INDEX	TYPE GROUPING	INDEX	TYPE GROUPING	INDEX[z]
ISTJ	2.46 ***	E	ns	NF	0.12 ***
ISFJ	ns	I	ns	NT	ns
INFJ	ns	S	1.66 ***	SJ	1.62 ***
INTJ	ns	N	0.39 ***	SP	1.85 *
ISTP	ns	T	1.45 ***	NP	0.33 **
ISFP	ns	F	0.42 ***	NJ	0.44 **
INFP	ns	J	ns	TJ	1.51 ***
INTP	ns	P	ns	TP	ns
ESTP	4.32 **	IJ	1.42*	FP	0.34 *
ESFP	ns	IP	ns	FJ	0.48 *
ENFP	ns	EP	ns	IN	0.45 *
ENTP	ns	EJ	ns	EN	0.34 **
ESTJ	ns	ST	2.16 ***	IS	1.89 ***
ESFJ	ns	SF	ns	ES	ns
ENFJ	ns				
ENTJ	ns				

* implies significance at the .05 level
** implies significance at the .01 level
*** implies significance at the .001 level
\# Source: Macdaid et al., 1986 pp. 56 and 63

ns = not significant at >.05 level
[z]Index = the ratio of the cell value to the base value

E or I - Extraversion versus Introversion
S or N - Sensing versus Intuitive
T or F - Thinking versus Feeling
J or P - Judging versus Perceiving

Table 4. Comparison of Male Golf Course Superintendents (N = 60) to a General Population of Male College Graduates (N = 6814)#

TYPE	INDEX	TYPE GROUPING	INDEX	TYPE GROUPING	INDEX[z]
ISTJ	2.06 ***	E	ns	NF	0.18 **
ISFJ	ns	I	ns	NT	0.52 *
INFJ	ns	S	1.61 ***	SJ	1.64 ***
INTJ	ns	N	0.40 ***	SP	ns
ISTP	ns	T	1.18 *	NP	0.30 **
ISFP	ns	F	0.57 *	NJ	0.47 **
INFP	ns	J	ns	TJ	1.27 *
INTP	ns	P	ns	TP	ns
ESTP	ns	IJ	1.46 **	FP	ns
ESFP	ns	IP	ns	FJ	ns
ENFP	ns	EP	ns	IN	0.41 **
ENTP	ns	EJ	ns	EN	0.39 **
ESTJ	ns	ST	1.72 ***	IS	1.86 ***
ESFJ	ns	SF	ns	ES	ns
ENFJ	ns				
ENTJ	ns				

* implies significance at the .05 level
** implies significance at the .01 level
*** implies significance at the .001 level
ns = not significant at >.05 level
[z]Index = the ratio of the cell value to the base value
# Source: Macdaid, McCaulley, and Kainz (1986, pp. 63)

E or I - Extraversion versus Introversion
S or N - Sensing versus Intuitive
T or F - Thinking versus Feeling
J or P - Judging versus Perceiving

grouping itself, and several of the other type groupings which include either S or T. Sensing-Thinking people tend to perceive the world in terms of the tangible rather than the abstract; they are often detail-oriented and seldom make generalizations. People with the combination of the S and T preferences have a tendency to be practical and matter-of-fact, focusing on facts that can be collected and verified directly by seeing, hearing, touching, counting, weighing, and measuring. The ST's typical approach to a problem is to regard facts with impersonal analysis, using a step-by-step logical process of reasoning from cause to effect, from premise to conclusion. These people usually have a high energy level for doing things which are pragmatic, logical, and useful.

The respondees are clearly different from typical college graduates in their preference for Sensing and Thinking. These preferences serve the golf course superintendents well, allowing them to capitalize on their natural strengths towards the practical and applied nature of their work. However, it is important that these individuals learn to understand the concepts of personality types and develop and use their Feeling judgment and Intuitive perception to enhance their work performance.

Turfgrass Management Graduates Compared to Ohio State ATI Student Population

When the MBTI results for the turfgrass graduates were compared to those for the Ohio State ATI student population using the data presented in Table 2, no significant differences were found for any of the types or type groupings. This indicates that the MBTI profile for the turfgrass management graduates is similar to that of Ohio State ATI student body. It is important to note that both groups had very high percentages of males; therefore, the gender effect of the T-F pair grouping was not expressed. Johnson, et al. (1994) compared Ohio State ATI student results to CAPT data for college graduates and found high indexes for Sensing, Thinking, and Perceiving. These findings also apply to the turfgrass graduates and readers are referred to the Johnson, et al. (1994) study for more detailed information.

Turfgrass Management Graduates Compared to Golf Course Superintendents

When the MBTI results for turfgrass management graduates were compared to those for golf course superintendents using the data presented in Table 2, the results as shown in Table 5 indicate a high index of 2.11 (significant at the .001 level) for the Perceiving and 1.56 (significant at the .01 level) for Extraversion. One of the EP types, the EP grouping itself, and several of the other type groupings which involve Perceiving, also had significantly high indexes. The results also confirm that the preference of turfgrass management graduates for Sensing and Thinking is similar to that of the golf course superintendents.

The high index for Perception is an interesting result. The J-P pair grouping represents the preferences of individuals in terms of how they prefer to live their lives. Perceiving people tend to be flexible and adaptive, and enjoy change and spontaneity. Judging individuals prefer structure and organization, predictability, and to have things settled and then move on.

The high index for extraversion is also of interest. The E-I pair grouping indicates whether individuals tend to draw their energy from the external world of objects and people and are socially inclined, or from the inner world of concepts and ideas and enjoy quiet time and privacy.

Individuals with EP combinations tend to be active, energetic, and open to new experiences. Turfgrass management graduates with these combinations need to understand and be prepared to work with IJ golf course superintendents who are more introspective and less amenable to change.

Summary

The MBTI has been used in the orientation course at Ohio State ATI as an important device to help students understand and appreciate personality differences and diversity with emphasis on the learning process and classmates. The results of this study indicate that the MBTI profile of turfgrass management graduates differs significantly from that of a sample of golf course superintendents for some preferences. This supports the idea of including advanced study of personality types as applied to the work environment and career success in one of the capstone turfgrass management courses.

When compared to a population of college graduates, a sample of golf course superintendents was found to have significant differences in the MBTI profile. Workshops presented to this occupational group could be very effective in helping these individuals understand the concepts of personality types and use this knowledge personally and to improve work performance.

The small number of females employed as golf course superintendents and in the turfgrass management graduate population, 6% and 2% respectively, are a major concern. Golf course superintendent associations and college personnel involved in turfgrass management programs need to investigate, fund, and implement proactive and effective efforts to increase the number of women who prepare for and are employed as golf course superintendents.

This study was limited to turfgrass management graduates from only one technical college and golf course superintendents who were members of only one regional

association. Further studies are needed which include MBTI profiles of turfgrass management graduates from several colleges and golf course superintendent memberships of national organizations.

Literature Cited

Granade, J. G., H. L. Hatfield, S. S. Smith, and J. E. Beasley. 1987. Selection ratio type table PC program. Gainesville, FL: Center for Applications of Psychological Type.

Johnson, C., A. Zimmerman, and N. Brooker. 1994. Implications and applications of type theory on a two-year technical college campus. In: Proc. Orchestrating Educational Change in the 90's - The Role of Psychological Type. 221-234. Gainesville, FL: Center for Applications Of Psychological Type.

Lawrence, G. 1982. People types and tiger stripes: A practical guide to learning styles (2nd ed.). Gainesville, FL: Center for Applications of Psychological Type.

Macdaid, G. P., M. H. McCaulley, and R. I. Kainz. 1986. Myers-Briggs Type Indicator atlas of type tables. Gainesville, FL: Center for Applications of Psychological Type.

Myers, I. B. and M. H. McCaulley. 1985. Manual: A guide to the development and use of the Myers-Briggs Type Indicator. Palo Alto, CA: Consulting Psychologists Press.

Provost, J. A. and S. Anchors (Eds.). 1987. Applications of the Myers-Briggs Type Indicator in higher education. Palo Alto, CA: Consulting Psychologists Press.

Table 5. Comparison of Turfgrass Management Graduates (N = 97) to Golf Course Superintendents (N = 64)

TYPE	INDEX	TYPE GROUPING	INDEX	TYPE GROUPING	INDEX[z]
ISTJ	0.39 **	E	1.56 **	NF	ns
ISFJ	ns	I	0.64 **	NT	ns
INFJ	ns	S	ns	SJ	0.61 **
INTJ	ns	N	ns	SP	2.24 **
ISTP	ns	T	ns	NP	ns
ISFP	ns	F	ns	NJ	ns
INFP	ns	J	0.66 ***	TJ	0.55 ***
INTP	ns	P	2.11 ***	TP	1.92 *
ESTP	2.51 *	IJ	0.47 ***	FP	ns
ESFP	ns	IP	ns	FJ	ns
ENFP	ns	EP	2.72 **	IN	ns
ENTP	ns	EJ	ns	EN	ns
ESTJ	ns	ST	ns	IS	0.60 **
ESFJ	ns	SF	ns	ES	ns
ENFJ	ns				
ENTJ	ns				

* implies significance at the .05 level
** implies significance at the .01 level
*** implies significance at the .001 level

ns = not significant at >.05 level
[z]Index = the ratio of the cell value to the base value

E or I - Extraversion versus Introversion
S or N - Sensing versus Intuitive
T or F - Thinking versus Feeling
J or P - Judging versus Perceiving