THE EFFECT OF PERSONALITY ON ORIENTATION TO SELF-DIRECTED LEARNING

by

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The impetus for this paper came from some previous research by the author (Delahaye, Limerick and Hearn 1994). This research suggested that the relationship between pedagogy and andragogy was orthogonal (or at right angles to each other) rather than being at the poles of a continuum, which had been the contention in the literature until then (see for example, Cross 1981, Rachal 1983, Davenport and Davenport 1985).

The original research paper (Delahaye, Limerick and Hearn 1994), drawing on concepts from leadership theory (e.g., Hersey and Blanchard 1972) and self-directed learning literature (e.g., Grow 1991), suggested that the orthogonal nature could lead to the supposition that there are four learning orientations in adult learning.

While acknowledging that the extrapolation from an orthogonal relationship to four learning orientations is an assumption, the research question that led to this paper was:

How do the learners in each of the four learning orientations differ?

Following the advice of a number of authors (Szabo and Feldhusen 1970; Cross 1981; Wilson 1981; Long 1983; Robertson 1987; Biggs 1988; Johnson, Sample and Jones 1988; Harris 1989; Long 1990), this investigation focused on personality as holding considerable promise in differentiating between the learning orientations.
Therefore, the research question was refined to:

How do the learners in each of the four learning orientations differ on their personality?

While this research project has been based on the positivist paradigm, the reader is urged not to interpret the results as an attempt to categorise learners or place them in boxes. This research has been undertaken with the aim of understanding the strengths and struggles of learners as they face differing orientations to learning.

Orientation

This research project used the Student's Orientation Questionnaire (SOQ) to measure learners' orientation to learning. The SOQ (Christian 1982) was developed out of previous work by Hadley (1975) who gathered, from a review of the literature, a pool of "over 600 statements illustrating pedagogical or andragogical attitudes and beliefs about education, teaching practices, and learning" (p. 72) and designed the Educational Orientation Questionnaire (EOQ) to measure the orientation of teachers. A perusal of the items in the EOQ reflect the concepts of teacher-controlled and learner-controlled strategies, although the preference in the 1970's was to refer to these approaches as pedagogy and andragogy. Indeed, Hadley (1975) states that the purpose of developing the EOQ "was to develop an instrument which can be used to obtain valid data about an adult educator's orientation toward adult education" (p. 1). For this investigation, it was considered that the EOQ, and its product the SOQ, provided an acceptable measure of preference for self-directed learning.

Christian (1982) saw a need to assess the educational orientation of the student and developed the SOQ from the work done by Hadley. Christian (1982, p. 41) reported an internal reliability of 0.77 and found acceptable content validity by the jury method (Christian 1982, p. 39). Delahaye (1991) reported acceptable internal and temporal reliability and good construct validity for the SOQ.

Personality

A perusal of the literature gives little lead in operationally defining personality characteristics that may be involved with self-directed learning. There are few studies that concentrate on personality and adult learning - for example, Allen, Giat and Cherney, 1974; Parent, Forward, Canter and Mohling, 1975; Holmes, 1980; Newsom and Foxworth, 1980; Crooks and Kapel, 1981; and Duchastel, 1983. These studies have selected various specific personality tests with little apparent
academic rationale although Locus of Control appears in several.

For this study, a number of recommended texts (Hall and Lindzey 1985; Pervin 1980; Phares 1984; Scroggs 1985; Sherman 1979; Singer 1984) were perused for common personality theories and five of the theories were identified as being most likely to be a rich source of inquiry for self-directed learning - Jung, Rogers and Maslow, Cattell and Rotter. This identification process was based on a "job analysis" approach (see Gatewood and Feild 1989) and used descriptions of self directed learners from a number of sources (Rush 1976; French and Bell 1978; Revans 1982; Rogers 1983; Knowles 1984a). These five selected personality theories also had the advantage of being representative of one of four major personality schools - Jung (Psychoanalytic), Rogers and Maslow (Phenomenological), Cattell (Trait) and Rotter (Social Learning). Each of these personality theories can be represented and measured by a questionnaire - the Myers-Briggs Type Indicator (for Jung), the Personal Orientation Questionnaire (for Rogers and Maslow), the Sixteen Personality Factor questionnaire (for Cattell) and the Levenson's Locus of Control questionnaire (for Rotter).

To cross check this selection of the theories and their measuring instruments, a content analysis (see Babbie 1973) was conducted on the descriptions of the major types of adult learning in management education - contract learning (Knowles 1984a), T-Groups, person-centred learning (Rogers 1983) and action learning (Revans 1982). From this analysis, a list of self-directed learner characteristics was identified and compared with the measuring instruments to be used in this study - the Myers-Briggs Type Indicator (MBTI), the Personal Orientation Inventory (POI), the Sixteen Personality Factor questionnaire (16PF) and Levenson's Locus of Control questionnaire (LoC). It was considered that, while each personality questionnaire had limitations, the four questionnaires together did cover the total list of self-directed learner characteristics.

Other Variables

Various writers (for example, Watkins and Hattie, 1981; Kyriacou and Newson, 1982; Long, 1983; Smith and Delahaye, 1987; Biggs, 1989a; Miller, Finley and MacKinley, 1990) discuss other variables that could affect self-directed strategies. The characteristics that could have some affect in this study appeared to be the student's Grade Point Average (GPA) to date, previous experience with andragogical strategies (measured in years), amount of full time work experience (measured in years), amount of part-time work experience (measured in years) and the result achieved in the subject. Another variable that has received some discussion was that of the level of the learner's prior knowledge of the topic area.
Level of Knowledge

The effect that the learner's level of prior knowledge in the topic has on the learner's orientation to andragogy has received some attention in the literature (Knowles 1990; Smith and Delahaye 1987; Biggs 1989; Candy 1991). While all agree that the higher the level of knowledge the more likely the preference for self-directed learning, there has been no systematic investigation confirming this opinion.

In this study, the level of the student's prior knowledge of the topic area was measured in two ways. Firstly, the number of subjects that the student had passed in topic area was considered to be an objective measure. Secondly, for a more subjective measure, each student was asked to assess his or her level of current knowledge on a seven point likert scale.

Method

This research project, then, focused on whether the personality traits of learners located in each of the four learning orientations were, in fact, different. The learner's preference for self-directed learning was measured by an instrument called the Student's Orientation Questionnaire (SOQ). The learner's personality was measured by the Myers-Briggs Type Indicator (MBTI), the Personal Orientation Questionnaire (POI), the Sixteen Personality Factor questionnaire (16PF), and Levenson's Locus of Control (LoC). A number of other variables were included in the study.

The questionnaires were presented to the respondents during class time to enhance the perception that the situation was a learning environment. The same instructions were given to each class and respondent queries were answered in a manner that ensured no bias occurred. It was emphasised to the respondents that the class learning situation should be the basis of their decisions when completing the questionnaires. To maintain privacy, respondents were asked to select and use a personal code on each of the questionnaires. The questionnaires were administered over five sittings at the beginning of the fourteen week semester.

The study reported in this paper was confined to South Eastern Queensland and the tertiary institutions were located in large urban communities. The topics studied by the learners were confined to the human resource management discipline and had a duration of one tertiary semester. Within these parameters, data was drawn from as wide a range as practicable. More than one university, class and teacher were used for each major category of respondents to lessen the chance that one individual or system would have an unacceptable effect on the final
results.

Data was gathered from three groups of respondents. Group 1 (n=408) were third year undergraduate students who experienced a self-directed learning strategy (either contract learning or group dynamics) from the Queensland University of Technology and the University of Queensland. Group 2 (n=273) were first year undergraduate students from the Queensland University of Technology who experienced structured, traditional learning. Group 3 (n=127) were third year undergraduate students who experienced relatively well structured, traditional learning approaches at the Griffith University (Nathan and Gold Coast campuses) and the University of Southern Queensland.

To bear out the comments by Phillips (1971) and Locke (1986), the realities of a field study mean that missing data is inevitable. A total of 808 students completed at least one questionnaire. However, only 537 completed the SOQ and at least one personality questionnaire. The basic cause of the missing data was the need, in this study, to gather information via a number of questionnaires. It was not possible to administer the questionnaires at one sitting - in fact five sittings were required. There were a number of specific reasons for the missing data - some students left the course after the first few weeks; absence because of sickness, work commitments and other reasons; incorrect completions of some of the questionnaires (if a certain number of items are not completed in a questionnaire, the result becomes invalid); and some respondents forgetting their personal identification code on various occasions or using different personal codes for different questionnaires. Attrition rates for the three groups were roughly equal. It was therefore reasonable to assume that no systematic error, which could undermine the study, was operating.

The profile for the respondents who completed the SOQ and at least one personality questionnaire is shown in Table 1.
Analysis

This investigation examined the relationship between personality (as measured by the MBTI, 16PF, POI and LoC) as the independent variables and orientation to self-directed learning as measured by the Student's Orientation Questionnaire (SOQ) as the dependent variable. As discussed, a number of other variables were also included.

A Broad Personality Profile

As there were so many variables, a correlation analysis was initially conducted to identify those variables that would have some statistically significant impact on both the andragogy scale and the pedagogical scale of the SOQ. Those that were identified were:

Intuitive, Sensate, Thinking, Feeling, Perceiving, Judging (from the MBTI); Inner Directed, Other Directed, Self Actualizing Value, Existentiality, Feelings Reactivity, Spontaneity, Synergy, Intimate Contact (from the POI); Expedient/ Conscientious (G), Tough/ Tender Minded (I), Forthright/ Shrewd (N), Conservative/ Experimenting (Q1) (from the 16PF); and the other variables of Current Knowledge and Number of Subjects in the Area (that measured the variable Prior Learning), Part Time Work.

Grouping of Respondents

To create four discrete groupings of respondents, two "corridors" were drawn. These "corridors" were centred on the means of the total group's andragogy and pedagogy scores. The width of the "corridors" was taken as 10% of the total group's standard deviation scores from the group means. It was expected that those outside the "corridors" would represent more pure forms of the four learning approaches of low andra/ high peda (n=90), high andra/ high peda (n=84), high andra/ low peda (n=97) and low andra/ low peda (n=58).

Discriminant Analysis

A stepwise discriminant analysis using Wilks' Lambda gave three
functions with a significance of less than 0.05 as shown in Table 2.

While the percentage of variance indicates that Function 1 is relatively the most powerful, the canonical correlations show that there is a moderate relationship between the functions and the groups. However, this relationship is of sufficient strength to draw some conclusions.

The variables entered into the functions, in order of entry, were:

Conservative/ Experimenting (Q1), Thinking, Number of Subjects, Perceiving, Time Incompetent, Self-Regard, Judging, Capacity for Intimate Contact, Self-Acceptance, Feelings, Feelings Reactivity and Acceptance of Aggression.

Klecka (1980, P. 34) suggests that the structure coefficients are a better guide to the meaning of the canonical discriminating functions. The within-groups structure coefficients, with absolute values of 0.30 and above, are shown in Table 3. A structure coefficient tell us how closely a variable and a function are related (Klecka, 1980, P. 31).

The structured coefficients in Table 3 indicate that the discriminating
functions comprise of:

Function 1: Conservative/ Experimenting (Q1), Number of Subjects and Capacity for Intimate Contact.

Function 2: Time Incompetent, Humble/ Assertive (E) and Perceiving.

Function 3: Practical/ Imaginative (M), Thinking, Self-Regard, Group Dependent/ Self Sufficient ((Q2) and Self-Acceptance.

Discussion

Figure 3 indicates that Group 1 (Low andra/ High Peda) is separated from the other three groups by Function 1. This is the group that would prefer the traditional, structured learning approaches. Those in Group 1 would appear to be more conservative (-Q1), thereby respecting established ideas and being more tolerant of traditional difficulties (Cattell 1989, p. 238). Of interest to educators is the report by Cattell (1989, p. 249) that these conservatives find it harder than most others, not only to initiate change, but to keep pace with life's normal transitions. This difficulty focuses mainly on the interval between letting go of present attachments (decathexis) and embracing new ones (recathexis). The Group 1 individuals also have a lower capacity for intimate contact, indicating difficulty with warm inter-personal relationships (Shostrom 1980, p. 18). They have also studied fewer subjects in the topic area.

The other groups appear to be somewhat more complex. From Function 2, those in Group 2 (high andra/ high peda) are more time incompetent, in that they have a higher tendency to live in the past or future rather than the present. They are more perceiving and would therefore prefer to try to understand a point of view rather than make judgements, sometimes have difficulty in coming to conclusions and are curious and adaptable (Myers 1986, pp. 69-73). Their relatively higher scores on Factor E of the 16PF is quite interesting. The positive pole of Factor E is described as assertive, aggressive, competitive and stubborn (Cattell 1989, p. 69). While the higher score on Factor E is somewhat of a conundrum, it could indicate that, while the high andra/high peda would prefer to leave the traditional modes of learning, they are suspicious and perhaps intolerant of the new (to them) self-directed learning approaches. This suspicion may last until understanding (from the perceiving characteristic) occurs. Of importance, though, is the finding of Cattell (1989, p. 78) that the +E individual is more apt to adjust their behaviour according to the situational context. This adjustment will particularly occur, and to a significant extent
overcome the stubbornness element of +E, where competition is present in the situation. The need for competition is, of course, an element of +E. In support of this suggestion, this researcher has found strong evidence, in previous unpublished investigations, of a need for competition by these individuals in the high andra/ high peda quadrant.

The complexity of this Group 2 profile increases with an examination of Function 3. They score relatively lower on Factor M of the 16PF indicating a preference for the practical, concerned with the immediate and avoiding anything far fetched (Cattell 1989, p. 190). This could very well link with the suspicion coming out of the Factor E discussed earlier. They are also higher on the thinking construct from the MBTI, have lower self-regard and lower self-acceptance. These two traits are interesting, given assertion by Cattell (1989, p.75) that the aggressiveness and stubbornness of the +E characteristic may mask feelings of inferiority, attack being considered the best defence. However, this group scores relatively higher on self sufficiency (+Q2), indicating resourcefulness and preferring their own decisions (Cattell 1989, p. 258).

Group 3 (high andra/ low peda) represents those preferring self-directed learning. Function 1 shows that they score higher on Factor Q1 from the 16PF, described as being experimenting, liberal, analytical and free-thinking (Cattell 1989, p. 238). They are seen to be rebels with a cause seeking purposeful change away from tradition that was interpreted as obstructive, unfair or oppressive. Moreover, they are characteristically well informed in their search for directions, insisting on logic and reason (Cattell 1989, p. 243). They have the ability to develop meaningful, contactful relationships with other human beings (Shostrom, 1980, p. 18). It is therefore not surprising that, as indicated by Function 3, they also rate highly on group dependency (-Q2), preferring to be in the company of others rather than being alone and deciding on the correctness of their performance by comparing themselves to others rather than relying on their own judgements (Cattell 1989, p. 260). Given that so many of the self-directed learning methods (contract learning, action learning, group interventions) use group processes, it is not surprising that group dependency has relevance. They also scored highly on Factor M of the 16PF, being imaginative and unconventional (shades of free-thinking in +Q1), although at times somewhat absentminded (Cattell 1989, p. 90). This group also has high self-regard and high self-acceptance (from the POI), perhaps such characteristics being needed if they are to pursue unconventional and experimental learning processes. Finally, from Function 1, this group had greater experience with the topic being taught, having studied previously more subjects of relevance.

At first glance, Group 4 is something of a puzzle, being low on andragogy and low on pedagogy. The personality profile does shed some light onto this mystery. Function 2 indicates that the group is
relatively time competent, in that they tend to concentrate on the present (Shostrom 1980, p. 17). They are higher on judging (from the MBTI) than the other three groups, having a systematic way of doing things, being decisive, encouraging others to conform to their standards and have settled opinions (Myers 1986, pp. 71-72). Being -E, they have reported traits of submissiveness and dependence, being considerate and conforming and being easily upset by authority (Cattell 1989, p. 68), typically make few demands and are guided by an overriding desire to avoid conflict (p. 79). However, Cattell (1989, p. 78) reports that the -E tends to alter their behaviour less across situations, because they seem to be more responsive to inner demands. With this profile, it is understandable the those in Group 4 score lower on both andragogy and pedagogy - in some ways, a withdrawal response.

The locations of Group 4 on Functions 2 and 3 again make this profile more complex. Group 4 scores higher than Group 3 on Function 2 and therefore shares the characteristics of +Q1 (experimenting), higher capacity for intimate contact and having more experience in the topic area, as measured by the number of subjects. Group 4 also scores nearly as high on Function 3 as Group 2, thereby being more practical (-M), more thinking (from the MBTI) more self-sufficient (+Q2) but lower in self-regard and self-acceptance.

How can this Group 4 be explained? One possible answer may be found in the concept of personal autonomy. Candy (1991, p. 108) defines personal autonomy in an individual as an ability to conceive of goals, policies and plans independently; exercise freedom of choice in thought and action; use the capacity for rational thought; have the will and capacity fearlessly and resolutely to carry into practice plans of action; and exercise self-mastery in the face of reversals, challenges and setbacks. Tremblay (1991: 29) suggests that autodidactic learning is accomplished by an individual without benefit of either an institution or any other formal educational agent. However, Candy (1991) goes on to comment that "any person could vary in the degree of autonomy he or she exhibits from situation to situation" (p. 115). In other words, an individual who has high personal autonomy may acknowledge that the best way to learn a particular area is to be involved in a more group-directed or even teacher-directed strategy.

I am suggesting that the learners in Group 4 (low andra/ low peda) may be personally autonomous. From Function 2, they are systematic, decisive, have settled opinions and alter their behaviour less across situations. So they know what they want from a learning episode and would not allow other issues to deflect them from their purpose. From Function 1 and 3, they appear to have characteristics similar to those in Groups 3 and 2 which may indicate an ability to operate in the high andra/ high peda and high andra/ low peda realms. Thus the group 4
learners would be quite flexible in their choice of strategy.

The puzzle in this proposal that those in Group 4 are personally autonomous is their score on -E in the 16PF. A profile of being considerate, conforming and guided by an overriding desire to avoid conflict does not fit well with the characteristics of personal autonomy, particularly the will and capacity to carry plans of action to completion fearlessly and resolutely. The key, however, may be the tendency of -E's to alter their behaviour less across situations. The inclusions of -E may also have something to do with the respondents chosen. They come from what Candy (1991, p. 23) refers to as learner-controlled learning (self-direction as a mode of organising instruction in formal settings) rather than autodidaxy (self-directed learning as the individual, non-institutional pursuit of learning opportunities). In the formal setting their reaction may be to avoid conflict by appearing to be considerate and conforming, but their inner drive to achieve what they set out to do sees them through to their goal.

Implications

The canonical correlations and Wilks' lambda values indicate that the proportion of the variation in the discriminant functions explained by the groups is only moderate (for an explanation of canonical correlations and Wilks' lambda see Klecka 1980, pp. 36-42).

However, the learner's personality does have some impact on their preference for self-directed vs traditional learning and educators will need to give some regard to this. It should be emphasised when interpreting discriminant functions that the variables must be interpreted, not in isolation, but as all contributing to the function.

Based on the Hersey and Blanchard (1972) Leadership Styles' logic, the four orientations could be viewed as a developmental path starting with Group 1 and finishing with Group 4.

For those learners in Group 1 (low andra/ high peda), the -ve Q1 score (showing a difficulty in letting go of present attachments and embracing new ones) combined with a lower capacity for intimate contact (and, therefore, perhaps a preference not to be involved in group work) and having less experience in the topic content does present some unique challenges to educators who wish to use self-directed learning. The educator will need to invest considerable effort in building and supporting their confidence. It could be expected that this effort would have to be consistent over a long time and there may be concerns about continuing dependence on the teacher or facilitator. Strategies of gradually alleviating this dependence would have to be built into
the learning processes. With traditional learning in tertiary institutions, the learners are often provided with a subject guide showing the planned structure for the whole semester. This subject guide normally provides a sense of security - a prop that is usually not present in self-directed learning. Other support mechanisms need to be substituted. In self-directed learning these support mechanisms are represented by a strengthening of the relationship with the lecturer/facilitator and also peer support. Both of these support mechanisms, of course, run counter to Group 1’s preference for less intimate contact. Thus, Group 1 will need some considerable time, and patience on the part of the educator, to develop as self-directed learners.

With the learners in the high andra high peda approach (Group 2), educators do have the advantage that they may prefer to leave the traditional teaching strategies, are curious and are apt to adjust their behaviour. Their suspicious nature may be overcome by their willingness to understand a point of view. The educator could appeal to this willingness by explaining the objectives and processes of the learning strategy to be used. Overcoming the traits of aggression and stubbornness may tax the patience of the educator but of more concern is their need for competition. Strategies to change this to a more intrinsic need (i.e. competition with self), rather than competition with others, may herald success. The practical aspects of the study program, and the opportunities of making their own decisions, will need to be emphasised. In addition, because of their lower self-regard and self-acceptance, the educator will have to avoid challenges to their self-esteem and appeal to their resourcefulness.

While the educator needs to make a special effort to introduce self-directed learning, the conundrum with the learners in Group 2 is that they spurn traditional modes. What of the situation where educators need to use traditional learning? Well, at least in tertiary institutions, this is the norm and traditional learning with its dependence on quantitative marks provides the feedback necessary to give learners a means of competition. Also, there is the advantage of their ability to adjust their behaviour to the situation. However, the limited opportunities available to appeal to their curiosity and the constraints on their need to make decisions could well create frustration.

The learners in Group 3 appear to be the quintessential self-directed learners. Their personality profile appears ideal for such learner-controlled learning strategies as contract learning and action learning. With regard to traditional learning, being ‘rebels without a cause’ may pose problems. However, this group (like Group 2) would most probably have had extensive experience with traditional learning approaches in tertiary institutions. There would be familiarity with
these approaches - with concomitant coping strategies - if not complete acceptance.

If the suggestion of this paper - that those in Group 4 are personally autonomous - is correct, then those learners will select which ever learning approach that is best suited to their needs. However, further investigation of this group is needed.

The implications for educators suggested in this paper have come directly from the findings of the research project. There are wider implications. Delahaye (1992) has suggested a link between specific teaching/learning methods and the topic to be learned. Extending this rationale, those in Group 1 would be suited to the didactic lecture; those in Group 2 to the case study or even problem based learning; those in Group 3 to strategies such as contract learning, classroom democracy or democratic group processes; and those in Group 4 to action learning.

There is also the suggestion that self-directed learners could be developed by a progression from Group 1, to Group 2, to Group 3 and, finally, as personally autonomous learners in Group 4. Candy (1991) makes a number of insightful and realistic comments on developing self-directed learners. It is always healthy to question the assumption that all need to be developed as self-directed learners.

CONCLUSION

Candy (1990, p. 20) suggests that the research in the field of self-directed learning has been dominated by the positivist/empiricist paradigm. This research project has certainly been quantitative. The research has also concentrated on learner-controlled learning in self-directed learning rather than autodidaxy (see Candy 1991).

In its defence, the investigation has followed another of Candy's recommendations (1990, p. 22) in that this research has used self-report questionnaires thus taking data from the perspective of the learner. Some of the concerns identified by Brookfield (1984) have also been addressed in this project. In Australia, university education is heavily subsidised by the Federal and State governments (students typically only paying approximately 20% of the cost). This means that university education is available to a wider spectrum of society and to some extent overcomes the concern about only investigating the educationally advantaged. In addition, a very high proportion of management education is conducted in universities via degree programs and, therefore, the respondents were representative of a large population of adult learners in this field of learning. Further, over 50% of both groups had at least one year of full time work experience and over 30% had 2 years or more of full time work experience. Therefore, a high proportion of the respondents had experiences away
from the formal educational system.

Finally, the generalisation of the results of this study to other populations require careful consideration. The topics studied by the students were in the area of human resource management and psychology. Parallel studies in other professions and disciplines need to be conducted. The respondents in this study were all students at a university. Care needs to be taken in extending the interpretations to the business world. However, this concern is tempered by two factors. As shown in Table 1, some of the respondents (22%) were part time students and were simultaneously full time in the real business world. So the results do have some generalisability. In addition, a high number of managers receive their management education and development opportunities in the tertiary sector. For this group, the results do have significant meaning. For those managers who receive their development opportunities via "in house" training courses, the extrapolation of the results of the study would need to be viewed more cautiously until parallel studies are made.

This research project has found some evidence that learner's personality may affect preference for self-directed learning - at least as the concept is measured by the Student's Orientation Questionnaire. In addition, as predicted by a number of writers, the study confirmed that the level of the learner's previous knowledge of the topic also has some effect.

However, as can be expected in this complex process called learning, other forces are present. Other measures of personality could be investigated. Motivation of the learner would also be a very worthwhile line of inquiry. The work of Biggs (1989 a & b) is highly relevant and the study by Mathieu, Tannenbaum and Salas (1992) provides some further insights. The relationship between the type of knowledge to be learned and the learning strategy (see Stuart and Holmes, 1982; Smith and Delahaye, 1987; Biggs, 1989a) are worthy of future research. Grading the content on a hierarchy of competencies (see Delahaye 1992) may provide one approach to understanding the effect that content has on the learning process.

References


Table 1: Profile of Respondents of the SOQ and at least one Personality
Questionnaire.

<table>
<thead>
<tr>
<th></th>
<th>GROUP 1</th>
<th>GROUP 2</th>
<th>GROUP 3</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>AGE</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>under 20</td>
<td>30(12%)</td>
<td>91(43%)</td>
<td>24(36%)</td>
<td>145(27%)</td>
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<tr>
<td>20 to 24</td>
<td>2115(45%)</td>
<td>40(20%)</td>
<td>33(48%)</td>
<td>188(35%)</td>
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<tr>
<td>25 to 29</td>
<td>36(14%)</td>
<td>29(14%)</td>
<td>3(4%)</td>
<td>68(12%)</td>
</tr>
<tr>
<td>30 to 34</td>
<td>21(8%)</td>
<td>17(8%)</td>
<td>3(4%)</td>
<td>41(8%)</td>
</tr>
<tr>
<td>35 to 39</td>
<td>27(11%)</td>
<td>18(8%)</td>
<td>4(6%)</td>
<td>49(9%)</td>
</tr>
<tr>
<td>over 40</td>
<td>20(7%)</td>
<td>6(2%)</td>
<td>1(1%)</td>
<td>27(5%)</td>
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<tr>
<td>unknown</td>
<td>7(3%)</td>
<td>11(5%)</td>
<td>1(1%)</td>
<td>19(4%)</td>
</tr>
<tr>
<td><strong>Sub-total</strong></td>
<td>256</td>
<td>212</td>
<td>695</td>
<td>37</td>
</tr>
</tbody>
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|                      |         |         |         |       |
| **SEX**              |         |         |         |       |
| male                 | 102(40%) | 92(43%) | 24(35%) | 218(41%) |
| female               | 147(57%) | 108(51%) | 44(64%) | 299(55%) |
| unknown              | 7(3%)   | 12(6%)  | 1(1%)   | 20(4%)  |
| **Sub-total**        | 256     | 212     | 695     | 37    |

|                      |         |         |         |       |
| **MARITAL STATUS**   |         |         |         |       |
| single               | 167(65%) | 147(69%) | 60(87%) | 374(70%) |
| perm. relationship   |         |         |         |       |
| no children          | 35(14%) | 25(12%) | 5(8%)   | 65(12%) |
| perm. relationship   |         |         |         |       |
| and children         | 39(15%) | 26(12%) | 3(4%)   | 68(13%) |
| single parent        | 3(1%)   | 1(1%)   | 4(1%)   |       |
| other                | 5(2%)   | 2(1%)   | 7(1%)   |       |
| unknown              | 7(3%)   | 11(5%)  | 1(1%)   | 19(3%)  |
| **Sub-total**        | 256     | 212     | 695     | 37    |

|                      |         |         |         |       |
| **STUDY**            |         |         |         |       |
| full time            | 97(38%) | 64(30%) | 33(48%) | 194(36%) |
| part time            | 71(28%) | 43(20%) | 2(3%)   | 116(22%) |
| unknown              | 88(34%) | 105(50%) | 34(49%) | 227(42%) |
| **Sub-total**        | 256     | 212     | 695     | 37    |
### Table 2: Canonical Discriminant Functions

<table>
<thead>
<tr>
<th>Function</th>
<th>Variance</th>
<th>Canonical Correlation</th>
<th>Wilks' Lambda</th>
<th>Significance</th>
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<td>1</td>
<td>56.65</td>
<td>0.462</td>
<td>0.646</td>
<td>0.000</td>
</tr>
<tr>
<td>2</td>
<td>26.75</td>
<td>0.337</td>
<td>0.821</td>
<td>0.000</td>
</tr>
<tr>
<td>3</td>
<td>16.60</td>
<td>0.271</td>
<td>0.926</td>
<td>0.042</td>
</tr>
</tbody>
</table>

### Table 3: Within-groups Structure Correlation Coefficients

<table>
<thead>
<tr>
<th>Variable</th>
<th>Function 1</th>
<th>Function 2</th>
<th>Function 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conservative/Experimenting</td>
<td>0.613*</td>
<td>0.150-0.094</td>
<td></td>
</tr>
<tr>
<td>Number of Subjects</td>
<td>0.386*</td>
<td>0.259-0.121</td>
<td></td>
</tr>
<tr>
<td>Capacity for Intimate Contact</td>
<td>0.350*-0.176</td>
<td>-0.121</td>
<td>0.197</td>
</tr>
<tr>
<td>Time Incompetent</td>
<td>-0.197</td>
<td>0.416*</td>
<td>0.098</td>
</tr>
<tr>
<td>Humble/Assertive</td>
<td>-0.070</td>
<td>0.327*</td>
<td>0.229</td>
</tr>
<tr>
<td>Perceiving</td>
<td>0.269</td>
<td>0.304*-0.020</td>
<td></td>
</tr>
<tr>
<td>Practical/Imaginative (M)</td>
<td>0.117-0.155</td>
<td>-0.431*</td>
<td></td>
</tr>
<tr>
<td>Thinking</td>
<td>-0.198</td>
<td>0.312</td>
<td>0.403*</td>
</tr>
<tr>
<td>Self-Regard</td>
<td>0.133</td>
<td>0.157-0.367*</td>
<td></td>
</tr>
<tr>
<td>Group Dependent/</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Self Sufficient (Q2) -0.052-0.026 0.364*
Self-Acceptance 0.049 0.032-0.301*

Figure 1. Four Stages of Learning.

P E D A G O G Y