The Effect of Personality Types on the Learning Styles of Agricultural Students (A case study in Iran)

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ABSTRACT

Learning styles play a vital role in education and teaching because it helps teachers with understanding how students learn. This study was directed towards the effect of personality characteristics on the learning styles of students. The statistical population of the study consisted of the students College of Agriculture and Natural Resources Tehran University in the 2009-2010 academic year (N=3859) convened the universe of the study, out of which 260 people determined as sample using Cochran Formula. A quantitative research methodology was used to conduct the study. The specific method chosen to investigate the research questions was a series of three paper form questionnaires. Majority of students had assimilator learning style and dimensions of personality treats including extraversion, agreeableness, conscientiousness, openness to experience and neuroticism, were in medium level. For the big five personality factors expect neuroticism, a consistent positive association with learning styles was found. Consequence of standardized canonical discriminant function coefficients indicates importance of conscientiousness variable for distinction between converger learning style and three other learning styles, the importance of extraversion for distinction between diverger and two other learning styles and openness to experience for distinction between accommodator and converger learning styles.

Keywords: Learning styles, Personality types, Education, Teaching, Agricultural students, Iran.

Introduction

Ancient Greek philosophers had a good advice for us – "Know Yourself". This is a useful advice, especially when we discuss about learning in higher education. With our limited knowledge, it is difficult to make rational choices about learning (Eysenck, 1978**)**. The differences that exist between personality type and learning style are aspects that represent individual differences which further complicate learning, in addition, to allow individual to know their behavioral strengths and weaknesses in a more objective light (Eysenck, 1978; Threeton, and Walter, 2009). Also (Coffield, Moseley, Hall and Ecclestone, 2004) concluded that personality based learning style provides a more useful conceptual basis for understanding individual difference in learning. According to (Heinström, 2000) personality traits are expressed in learning styles, which are in turn reflected in learning strategies, which eventually produce a certain learning outcome. One concept in particular which has provided some valuable insights into learning in both academic and other settings is learning style. There is general acceptance that the manner in which individuals choose to or are inclined to approach a learning situation has an impact on performance and achievement of learning outcomes (Cassidy, 2004). Learning is acquiring new knowledge, behaviors, skills, values, preferences or understanding, and may involve synthesizing different types of information People learn and process new information in different ways. It should be noted that every student has his\her own learning style. These differences (personality, perception, ability, intelligence) affect students' motivation and attitudes towards the lessons. Therefore, these differences affect the effectiveness of the lesson. Beside those, the student's gender, intelligence and personal characteristics influence the learning style as well (Erden and Altun, 2006). As the learning style is related to individual characteristics and

preferences, learning styles reflect the students' preferences on how they perceive the environment, interact with this environment, react and learning experience in this process (Kazu, 2009). (McCarthy, 1987) Described "learning styles" as the individual's perception and use of the knowledge and in the other definition learning style describes the process that learners use to sort and process information. (Gardner, 1999) identified that a strong relationship exists between a teacher's learning style and preferred teaching style. According to (Jonassen, 1981) teachers tend to teach the way they were taught. These critical findings present a problem that requires attention as we do not all comes from the same mold in regard to our specific learning style or personality. Therefore it is suggested that all learning style research and application efforts need to stress the development of the individual and the whole learner. Learning styles, as well as personalities should be accounted for when considering the topic of curriculum development and instruction. With the overload of curricular assessment demands, and a vast amount of learning style models, educators may find themselves in a state of confusion regarding the use of learning style models in the classroom. This phenomenon creates a problem that requires attention learning style is an important factor in different areas including students' academic achievement, how students learn and teachers teach, and student-teacher interaction. People show a preference for a particular style of learning, and the speed and efficiency of their learning is a function of their most and least preferred style considering (Othman, Sumarni and Foong, 2007) the learning style is an inborn characteristic which does not easily change during the lifetime, but can change and be developed during the life of the individual through the experiences. Learning style is a general concept which emphasizes the learning differences such as the quality of an umbrella. Thus it has an essential place in the lives of individuals. Most people are not aware of their learning style preferences. Being aware of our students' learning styles, psychological qualities and motivational differences will help us regulate our lessons appropriately and in terms of the conditions (Entwistle, 1981). In addition s/he will integrate it in the process of learning so s/he will learn more easily and fast and will be successful. It is not so difficult to appreciate the learning styles and identity them. Studying with knowledge of the learning style helps an individual to reach his/her goals quickly. Students can easily become bored and frustrated if the teaching method is only tapping into one types of learning style, as most classes have students with a range of learning style preferences (Boydak, 2001). When the lessons are taught by taking into consideration the individuals' learning styles; their interests and successes increase considerably (Kazu, 2009). Many researchers agree that learning styles play a vital role in education and teaching because it helps teachers with understanding how students learn. For instance, Felder and Spurlin, 2005) point out that learner with a strong preference for a specific learning style may have difficulties in learning if the teaching style does not match with their learning style**.** To improve the learning progress of students and to make learning easier for them, learning styles are considered more and more in technology enhanced learning systems. Confirmed this by a study showing that students attending an online course that matches with their preferred learning style (either sequential or global) achieved significantly better results than those who got delivered a course that did not match their learning style (Eysenck and Eysenck, 1975) noted that personality and learning are closely linked. Several studies have indicated and explained the relationship between learning styles and personality traits (Avery, 1985; Jeskey, 1985; Busato, Prins, Elshout and Hamaker, 2000; Anastasi, 1976; Aragon, Johnson and Shaik 2002; McClanaghan, 2000; Furnham, 1992). For the LSI, (Furnham, 1992) found a positive correlation between extraversion and the learning styles ``converger'' and ``accomodator''. Neuroticism correlated negatively with the learning styles ``assimilator'' and ``accomodator''. (Jackson and Lawty-Jones, 1996), Replicated the correlations reported by (Furnham, 1992), suggesting the same substantial overlap between personality traits and learning style. Learning styles are also described as types of learning like, for example, concrete experience, reactive observation, abstract conceptualization and active experimentation, resulting in four learning styles: divergers, accommodators, convergers and assimilators (Kolb, 1976; Kolb, 1984). (Busato, Prins, Elshout, and Hamaker, 1999; De Raad and Schouwenburg, 1996) investigated the relation between learning style and personality with the Inventory of Learning Styles (ILS) and the Big Five personality factors. Learning styles are one component of a relatively stable personality type. Several studies have examined the relationship between learning style and personality type. Thus, this study determines whether a relationship exists between the personality types and learning styles. This topic was examined for the purpose of providing more information regarding how to better serve the educational needs in preparing this student population for the world-of-work. Therefore, this study answers the following questions:

- What are the predominant personality types of agricultural students?
- What are the predominant learning styles of agricultural students?
- Is there a relationship between students, personality types and their learning styles?

Research Methodology

Sample

The statistical population of the study consisted of the students College of Agriculture and Natural Resources Tehran University in the 2009-2010 academic year (N=3859) convened the universe of the study, out of which 260

people determined as sample using Cochran Formula. The sample size was later increased to 297 people for enhancing precision of the study. Out of them 297 students were selected through Proportional Stratified-randomization method (n=297).

Instrumentation

A quantitative research methodology was used to conduct the study. The specific method chosen to investigate the research questions was a series of three paper form questionnaires. The first questionnaire was a participant background information survey, containing a series of questions relating to: gender, age, and so on. The remaining two questionnaires included personality traits inventory (NEO-FFI) and learning style inventory (LSI).

Learning style

The learning styles were measured by the LSI (Kolb and Kolb, 2005). In Kolb's model, individuals prefer to gather information either through concrete experience (CE) or abstract conceptualization (AC) and process that information either through reflective observation (RO) or active experimentation (AE). CE includes affective learning skills, while RO involves perceptual learning skills. Four learning-style categories are possible based upon how a person combines preferences in gathering and processing information. Accommodators combine CE and AE; Divergers combine CE and RO; Assimilators combine RO and AC; and Convergers combine AC and AE (Evans, Forney, and Guido-Dibrito, 1998) (see figure 1). The identified strengths of Divergers are described as their imaginative abilities and understanding of people, while their weaknesses are found in their inability to make decisions or being paralysed by alternatives. Assimilators are said to be oriented towards building theoretical models and use inductive reasoning. A weakness of this style may occur with the lack of practical applications generated from theory. Convergers use deductive reasoning and prefer the application of ideas; convergers are also relatively unemotional and would rather work with things than with people. Making decisions too quickly and solving the wrong problem have been identified as weaknesses of convergers. The accommodator is quick to involve himself in new situations in a trial-and-error manner. Trivial improvements and being involved in seemingly meaningless activities are noted as weaknesses. There are 12 sentences with a choice of endings in the questionnaire. Rank the ending for each sentence according to how well people think each one fits with how ones would go about learning something. Then, using the spaces provided, ranks a "4" for the senesce ending that describes how people learn best, down to a "1" for the sentence ending that seems least like the way ones learn. Different studies have been confirmed LSI questionnaire (Kolb, 1985; Atkinson, Murrel and Whiters, 1990; Veres, Sims and Locklear, 1991; Loo, 1997; Geller, 1979; Newstead, 1992; Sims, Veres, Watson, and Buckner, 1986; Evans, Forney and Guido-Dibrito, 1998; Ferrell, 1983; Yahya, 1998).

In the present study, the Cronbach alpha coefficients are 0.75, 0.77, 0.81 and 0.84, respectively for the diverger, coverger, assimilator, and accommodator scales.

Example of completed sentence set:

When I learn:

1. I am happy 2. I am fast 3. I am logical 4. I am careful

4= most like you 3= second most like you 2= third most like you 1= least like you

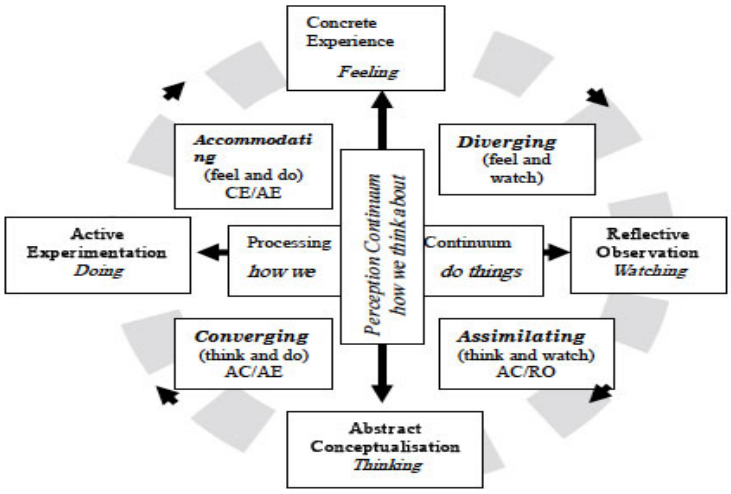

Figure1. Kolb's learning styles (Chapman, 2006)

Personality

The initial NEO Personality Inventory has been made by (Costa and McCrae, 1986). For many researches applications, the NEO-PI-R is rather lengthy because 240 items measure of the Five Factor Model; Extraversion, Agreeableness, Conscientiousness, Neuroticism, and Openness to Experience to provide a shorter measure, (see figure 2), developed the 60-items NEO-FFI, an abbreviated version based on a level factor analysis of the (1985) version of the NEO PI (Costa and McCrae,1992; Costa, McCrae, and Holland, 1984). FFI Composed of 60 statements, the NEO Five-Factor Inventory is considered a brief and comprehensive measure of the five personality dimensions. Each of the five dimensions is assessed by 12 statements. For each of the items, the participants rated themselves on a 5-point Likert scale from 1 to 5 (or from 5 to 1), with verbal anchors of strongly disagree, disagree, neutral, agree, and strongly agree. The statements are scored in both directions. For some items, indicating ''strongly disagree'' results in a score of 1 and indicating ''strongly agree'' earns a score of 5. For other items, indicating ''strongly disagree'' results in a score of 5 and indicating ''strongly agree'' earns a score of 1. The total score for each personality dimension is the summed score from the 12 statements of each scale. People scoring high on the E scale tend to be sociable and assertive, and they prefer to work with other people. Openness to Experience is characterized by such attributes as open mindedness, active imagination, preference for variety, and independence of judgment. In addition, people who score high on the O scale tend to be less conservative and traditional. People high on the A scale tend to be tolerant, trusting, accepting, and easily moved. Furthermore, they value and respect other people's beliefs and conventions. People high on the C scale are characterized as being organized, purposeful, strong-willed, responsible, and trustworthy. Also, they tend to be task-focused and achievement-oriented. Respondents indicated their responses to the items on a 5-point Likert scale ranging from ''Not at all like me'' (coded 1) to ''A lot like me'' (5). Indeed, many scholars (Taylor, and MacDonald, 1999; Costa and McCrae, 1992) have asserted that the big five personality traits model accounts for a large amount of the variability in personality. A short version of the NEO Personality Inventory is the NEO Five-Factor Inventory (Costa, and McCrae, 1992), which also has been proved to reliably assess the five personality dimensions (Courneya and Hellsten, 1998).

In the present study, the Cronbach alpha coefficients are 0.83, 0.75, 0.8, 0.79, and 0.79, respectively for the neuroticism, extraversion, openness, agreeableness, and conscientiousness scales.

Neuroticism

Neurotic individuals tend to be anxious, self-conscious, moody, and insecure. They are more susceptible to psychological distress and generally cope more poorly with stress than others (Costa and McCrae, 1986). Thus, neuroticism has been negatively linked to subjective well-being.

Extraversion

Extraverts tend to be talkative, social, gregarious, and assertive. The extraversion is also characterized by a need for activity, excitement, and stimulation (Wallach& Wing, 1969). The extraverts tend to be more physically and verbally active whereas the introverts are independent, reserved, steady and like being alone. The person in the middle of the dimension likes a mix between social situations and solitude. Extraverts are adventurous, assertive, frank, sociable and talkative.

Openness to experience

Individuals who attain score highly on openness to experience tend to be curious, imaginative, broad-minded, and unconventional. Openness to experience implies receptivity to experience, including one's own inner feelings and emotions. Open individuals are attentive to and curious about both their inner and outer worlds (Costa and McCrae, 1992). People with a high openness have broader interests, are liberal and like novelty. This factor relates to intellect, openness to new ideas, cultural interests, educational aptitude and creativity. The openness to experience can be connected to activities like writing, science and art (Wallach& Wing, 1969).

Agreeableness

Agreeable people are generally good-natured, cooperative, supportive, caring and concerned for others. The agreeableness scale is linked to altruism, nurturance, caring and emotional support versus hostility, indifference, self-centeredness and jealousy. Agreeable people are altruistic, gentle, kind, warm and sympathetic (Costa and McCrae, 1992).

Conscientiousness

Conscientious individuals are likely to be dependable, responsible, rule abiding, and achievement-oriented. One hallmark of conscientiousness is self-discipline (Costa, McCrae and Holland, 1984). The conscientious, focused person is concentrating on only a couple of goals and strives hard to perceive them. He is career oriented, while the flexible person is more impulsive and easier to persuade from one task to another. Conscientiousness has been linked

to educational achievement and particularly to the will to achieve. The more conscientious a person is the more competent, dutiful, orderly, responsible and thorough he is.

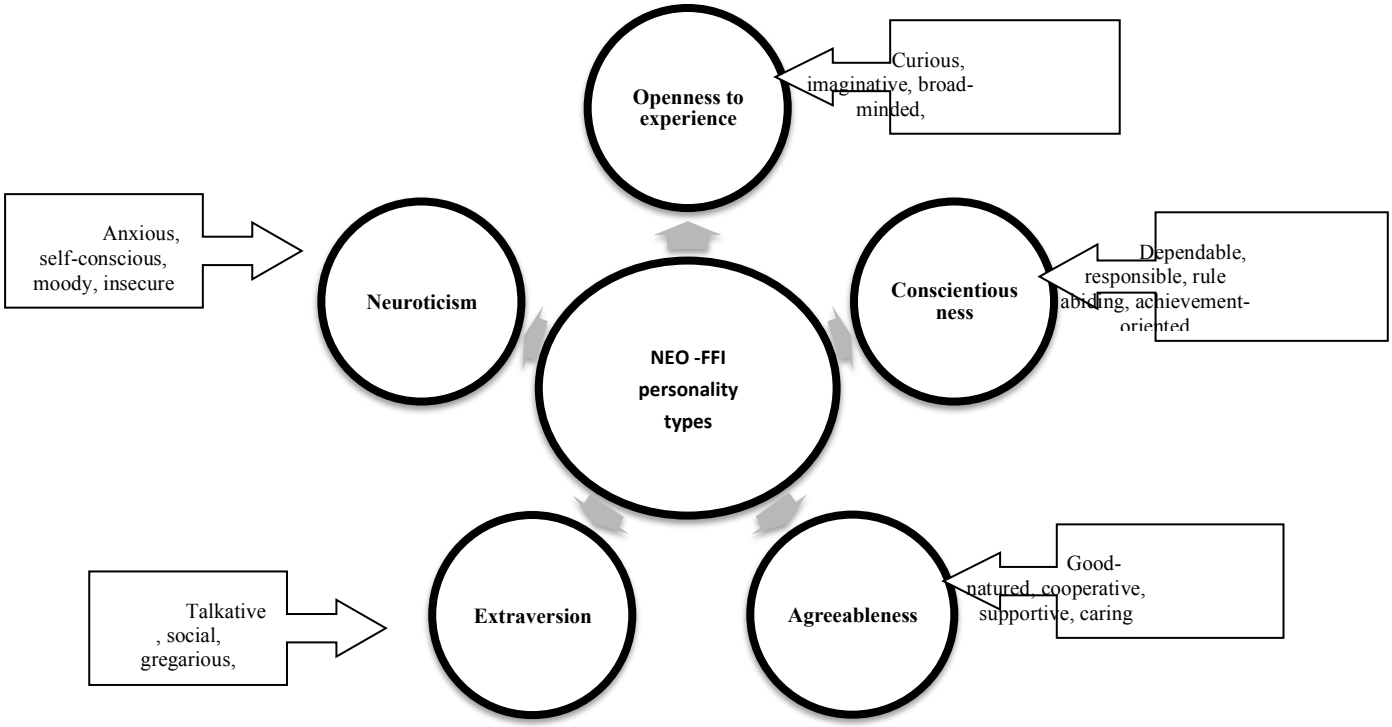

Figure2. NEO- FFI personality classifications (1992)

Results

In Table1, the most learning style was assimilator, with 39 percent, followed by diverger, with 25.3, by Converger, with 20.6 and Accommodator with 15.1.

Table 1- Frequency of learning style among Students College of Agriculture and Natural Resources Tehran University

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	diverger	75	25.3	25.3	25.3
	converger	61	20.6	20.6	45.9
	assimilator	117	39	39	84.9
	accommodator	44	15.1	15.1	100.0
	Total	297	100.0	100.0	

Note. (a) Accommodating people have the ability to learn primarily from hands-on experience, (b) Diverging people are best at viewing concrete situations from diverse points of view, (c) Converging people are best at finding practical uses for ideas and theories, and (d) Assimilating people are best at understanding information and putting it into logical form (Kolb & Kolb, 2005b).

In Table 2, the most of agricultural students were in medium level in personality traits (conscientiousness, extraversion, agreeableness and openness to experience) except for neuroticism that was high level.

		Neuroticism		Conscientiousness		Extraversion		Agreeableness		Openness to experience	
		Frequency	%	Frequency	%	Frequency	%	Frequency	%	Frequency	%
Valid	12-24	70	23.56	45	21.22	72	24.2	93	31.31	90	30.3
	24-48	72	24.24	150	50.5	151	50.8	124	41.75	160	53.88
	48-60	155	52.2	84	28.28	74	24.9	80	26.94	47	15.82

Table 2 - Frequency of personality types among Students College of Agriculture and Natural Resources Tehran University

In Table 3, the correlations between Conscientiousness, Extraversion, Agreeableness, Openness to experience and learning style. There is a very comparable pattern of correlation between learning style and the Big Five personality factors.

Table 3- Correlation coefficient between learning style and personality traits

Variable	Pearson Chi – Square	
	Value	Asymp. Sig. (2-sided)
Neuroticism	58.184	0.324
Conscientiousness	404.722	.000**
Extraversion	373.391	.000**
Agreeableness	333.674	.000**
Openness to experience	412.329	.000**

**. Correlation is significant at the 0.01 level (2-tailed)

In table 4, 5, 6, 7 the multiple stepwise discriminant analysis was used to determine relations between independent variable (personality traits) and dependent variable (learning style). According to results of table 4, 83.5396 percent of variance of variable learning style by the first model, 74.6496 percent of variance by the second model and 46.24 percent of variance by the third model is represented. Consequence of standardized canonical discriminant function coefficients in Table 5 indicates importance of conscientiousness variable for distinction

between converger learning style and three other learning styles, importance of extraversion for distinction between diverger and two other learning styles and openness to experience for distinction between accommodator and converger learning styles.

Considering the results shown in the Table 6, discriminant Analysis equation in standard situation will be as follow:

Y_1= -20.311 + 0.022 X_1 + 0.051 X_2 + 0.035 X_3 + 0.318 X_4 + 0.016 X_5 (1)

Y_2= -3.562 + 0.056 X_1 + 0.177 X_2 – 0.011 X_3 – 0.072 X_4 – 0.012 X_5 (2)

Y_3= -8.590 + 0.034 X_1 – 0.007 X_2 + 0.132 X_3 – 0.053 X_4 + 0.125 X_5 (3)

Where Y_1 is converger learning style separate of (diverger, accommodator, assimilator) learning style; Y_2 is diverger learning style separate of (accommodator, assimilator) learning style;Y_3 is Accommodator learning style separate of Assimilator learning style; X_1 is Neuroticism;X_2 is extraversion; X_3 is openness to experience;X_4 is conscientiousness; X_5 is agreeableness.

Table 4 - Wilks' Lambda

Test of Function(s)	Wilks' Lambda	Chi-square	df	Sig.
1 through 3	.022	1106.397	15	.000
2 through 3	.137	580.045	8	.000
3	.538	180.600	3	.000

Table 5 – Eigen values

Function	Eigen value	% of Variance	Cumulative %	Canonical Correlation
1	5.084(a)	57.3	57.3	.914
2	2.937(a)	33.1	90.3	.864
3	.858(a)	9.7	100.0	.680

Table 6 - Standardized Canonical Discriminant Function Coefficients

Variable	Function		
Neuroticism	**1**	**2**	**3**
Extraversion	.086	.217	.131
Openness to experience	.279	.975	-.040
Conscientiousness	.201	-.064	.750
Agreeableness	.967	-.219	-.160

Table 7 - Canonical Discriminant Function Coefficients

Variable	Function		
Neuroticism	**1**	**2**	**3**
Extraversion	.022	.056	.034
Openness to experience	.051	.177	-.007
Conscientiousness	.035	-.011	.132
Agreeableness	.318	-.072	-.053
(Constant)	.016	-.012	.125

Discussion

According to results of our research, most agricultural students were in medium level in personality traits (conscientiousness, extraversion, agreeableness and openness to experience) except for neuroticism that was high level because of lack of motivation, interest between students and job opportunities, using the teaching method of theory by teachers. Neuroticism is linked to lack of concentration, fear of failure and experiencing studying as stressful. Moreover neuroticism is linked with a lack of critical ability and problems in understanding how things relate to each other (Schouwenburg, 1995). This can be linked to the surface learning style. The student with a surface approach concentrates on memorizing without any concern of finding a deeper meaning or understanding of the material. They are most concerned about getting through the exams and are not really interested in the material itself. Their motivation is extrinsic and they take on a strategic, syllabus-bound approach to studying (Eysenck, 1978).

Assimilator was the most learning style with 39 percent among agricultural students, based on Kolb and Kolb (2005), best learning style for agricultural student is accomodiator.

The multiple stepwise Discriminant analysis determined relations between learning styles and personality traits; the consequence of indicated importance of conscientiousness variable for distinction between converger learning style and three other learning styles, importance of Extraversion for distinction between diverger and two other learning styles and Openness to experience for distinction between accommodator and converger learning styles. They are relevant except for neuroticism. The magnitudes of these correlations correspond to those between learning style and the big five personality traits reported by (Busato, Prins, Elshout, and Hamaker, 1999, 2000; De Raad and Schouwenburg, 1996; De Fruyt and Mervielde, 1996). (Furnham, 1992; Jackson and Lawty-Jones, 1996), Reported there are considerable higher correlations between personality and learning style. According to (Furnham, 1992) researches have indicated personality variables related closely and coherently to learning style. (Blickle, 1996) Found that particularly conscientiousness and openness were related to learning style. Personality traits are expressed in learning styles, which are in turn reflected in learning strategies, which eventually produce a certain learning outcome (De Raad and Schouwenburg, 1996). Personality traits serve as directors or blocks for motivation and learning strategies (Cano, Garton and Raven, 1992; Schouwenburg, 1995). Conscientiousness is related to work discipline, interest in subject matter, concentration and considering studying as quite easy (Schouwenburg, 1995). Students using the strategic approach are good at organizing their work, managing their time and work hard in their studies. They care about their working conditions and have clear goals for their studies. They have an intrinsic motivation and a positive study attitude (Entwistle, 1981). Openness is linked with questioning and analyzing arguments (Schouwenburg, 1995). It is further related to critical evaluation, searching literature and making relationships (deep approach) (Blickle, 1996). The students with a deep approach want to find out the deeper meaning in the text. They are critical, logical and relate what they learn to their previous knowledge. Their motivation is intrinsic and they look for a personal comprehension independent of the syllabus (Entwistle, 1981).

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