The relationship between personality traits and self directed learning readiness in higher education students

K. de Bruin
Department of Psychology
University of Johannesburg
Johannesburg, South Africa
e-mail: karinadb@uj.ac.za

Abstract

This study investigated the relationship between personality traits and readiness for self directed learning in university students. The participants completed the Self Directed Learning Readiness Scale (SDLRS) and the 16 Personality Factor Questionnaire (16PF). The relationship between the SDLRS and the 16PF second order factors was determined by means of multiple regression analysis. The results indicated that the 16PF Anxiety factor had the strongest unique relationship with the SDLRS total score, followed by Independence, Superego Strength and Sensitivity. It is concluded that certain personality traits act as predictors of readiness for self directed learning. The results of the study imply that higher education institutions should facilitate environments in which these traits can be developed.

The concept of quality learning in higher education institutions has recently received much attention in South Africa (cf. Higher Education Quality Committee 2004; Killen and Hattingh 2004). Quality learning in higher education is characterised by the ability to discover knowledge independently; the ability to grasp relations between existing and new knowledge; the application of knowledge in problem-solving; and the desire for more knowledge (Nightingale and O’Neil 1994). The trait of self-directedness, which is descriptive of a tendency of individuals to take responsibility for their own learning, stands central to quality learning. In the last 30 years, a large body of research on self-directed learning has been published (cf. Brockett 1994; Garrison 1997; Hiemstra 1994; Knowles 1975; Kreber 1998; Patterson, Crooks and Lunyk-Child 2002; Thompson and Wulff 2004). Much of this research has focused on the relations between self-directed learning and variables that relate to the higher education context, for example biographical factors of university students (Adenuga 1991), educational achievement (Long 1991) and learning style (McCauley and McClelland 2004). However, the relations of individual differences in personality with self-directed learning have not been the focus of much research. Authors such as Brockett and Hiemstra (1991) and Long (1991) have acknowledged the importance of personality as a contributor to self-directed learning, but little is known about the relationship between self-directed learning and personality traits in a higher education setting.

Although there seems to be a lack of knowledge about personality traits and
self-directed learning specifically, researchers have extensively investigated the relationship between personality traits and academic behaviour in general (cf. De Fruyt and Mervielde 1996; De Raad and Schouwenburg 1996; Petrides, Chamorro-Premuzic, Frederickson and Furnham 2005; Ridgell and Lounsbury 2004). In the paragraphs that follow, an overview is provided of research investigating the role of personality in learning and academic behaviour in general. Thereafter, the concept of self-directed learning is defined and research in which the relations between self-directed learning and a range of variables were investigated is discussed. Finally, the results of a study, in which the relationship between personality traits and readiness for self-directed learning in university students was explored, are discussed.

THE ROLE OF PERSONALITY IN LEARNING AND ACADEMIC BEHAVIOUR

The relationship between personality and academic performance has been a popular research topic among personality and educational psychologists (cf. Chamorro-Premuzic and Furnham 2002; De Fruyt and Mervielde 1996; Lievens, Coetsier, De Fruyt and De Maeseneer 2002). In this regard, the trait approach to personality has received much attention. Traits are regarded as general dispositions and described as ‘an enduring, relatively stable personality characteristic’ (Liebert and Spiegler 1998, 178). McCrae and Costa (1995) define traits as underlying tendencies that cause and explain patterns of behaviour, emotions and thoughts.

De Raad and Schouwenburg (1996) reviewed studies in which the relationship between personality traits and aspects of teaching and learning was investigated. They showed that each of the so-called Big Five personality traits (cf. De Raad 1996; McCrae and Costa 1995) plays a modest to moderately strong role in understanding and predicting academic behaviour. McCrae and Costa (1995) label the Big Five factors as Neuroticism (Anxiety), Extroversion, Openness to Experience (Independence), Agreeableness (Sensitivity) and Conscientiousness (Superego Strength). These factors overlap substantially with the second-order factors of the 16 Personality Factor Questionnaire (16PF; Cattell, Eber and Tatsuoka 1970), the labels of which are indicated in parentheses.

Conscientiousness (Superego Strength) and Openness to Experience (Independence)

Dollinger and Orf (1991) report that Conscientiousness and Openness to Experience are useful predictors of academic performance among university students. This finding has been replicated in several other studies (cf. Chamorro-Premuzic and Furnham 2002; De Fruyt and Mervielde 1996; De Raad and Schouwenburg 1996; Lievens et al. 2002). Conscientiousness also predicts timely and thorough preparation for academic tasks (Dollinger and Orf 1991). Johnson and Bloom (1995) as well as Schouwenburg and Lay (1995) found that Conscientiousness has a negative relationship with procrastination.
Blickle (1996) notes that individuals who measure high on Openness to Experience are generally curious, imaginative, creative and unconventional. One can expect that these characteristics may impact on academic behaviour. Bauer and Liang (2003) recently confirmed that students who show high levels of Openness to Experience and Conscientiousness increase their involvement in academic activities.

**Neuroticism (Anxiety)**

Although the overview of De Raad and Schouwenburg (1996) reveals mixed results, the bulk of studies show that Neuroticism has a negative relationship with academic performance (cf. Chamorro-Premuzic and Furnham 2003; McCown and Johnson 1991; Rindermann and Neubauer 2001; Sanchez-Marín, Rejano-Infante and Rodríguez-Troyano 2001). According to McCown and Johnson (1991), students who measure low on Neuroticism have more confidence regarding their preparation for examinations and spend more time studying, generally resulting in better academic performance. Students who measure high on Neuroticism are less likely to become involved in academic activities, resulting in poor performance (Bauer and Liang 2003; Johnson and Bloom 1995).

**Extroversion**

According to Lievens et al. (2002), students who score low on Conscientiousness and high on elements of Extroversion (excitement-seeking and gregariousness) are significantly less likely to be successful in examinations. Chamorro-Premuzic and Furnham (2002) and Petrides et al. (2005) similarly report a significant negative relationship between Extroversion and examination results. Extroversion, together with Conscientiousness and Neuroticism, accounts for almost 15 per cent of the variance of university students’ examination marks (Chamorro-Premuzic and Furnham 2002). Extroversion also predicts absenteeism and truancy, which in turn shows a negative relationship with academic performance (Petrides et al. 2005).

In contrast to McCown and Johnson (1991), other researchers did not find a significant relationship between Extroversion and procrastination (cf. Johnson and Bloom 1995). De Raad and Schouwenburg (1996) conclude that the literature on the relationship between Extroversion and academic performance is mixed. It seems as if there is a positive relationship between Extroversion and academic performance in young children. However, this relationship becomes negative at university level. This negative relationship may possibly be explained by extroverts' proneness to be distracted by social events.

In summary, it seems as if most studies reviewed in the preceding paragraphs report significant relations between academic behaviour and Conscientiousness, Openness to Experience, Neuroticism and Extroversion respectively. Limited evidence in regard to the relationship between Agreeableness and academic behaviour is available.
DEFINING READINESS FOR SELF-DIRECTED LEARNING

The concept of self-directed learning refers to any form of learning in which the individual is primarily responsible for the planning, implementation and evaluation of learning (cf. Caffarella 1993; Hiemstra 1994; Knowles 1975; Merriam and Caffarella 1991). Based on this, one would expect that self-directed learners would make use of independent learning opportunities, show intrinsic motivation and interest in learning and have positive self-esteem and self-confidence regarding learning.

Brockett and Hiemstra (1991) propose the Personal Responsibility Orientation Model as a conceptual framework for self-directed learning. In this model, self-directedness in learning is used as an umbrella term to describe two clearly distinctive, although related, concepts. The first concept refers to the process in which the student accepts the primary responsibility for the planning, implementation and evaluation of the learning process. This concept is labelled self-directed learning (implying a process perspective). The second dimension, namely learner self-directedness, focuses on the student’s need or preference for accepting responsibility for learning (implying a relatively stable personality disposition perspective).

Hence, according to the Personal Responsibility Orientation Model, self-directedness in learning refers to both the external characteristics of the teaching-learning process, and the internal attributes or disposition of the student. This study examines the dispositional aspect of the model suggested by Brockett and Hiemstra (1991). The crucial role of external factors that contribute to learning is acknowledged. However, the focus is placed on learner self-directedness, and more specifically the personality traits of students.

The relations between self-directed learning readiness and aspects of higher education, for example level of education, academic performance and psychosocial factors, have been the focus of various studies. In many of these studies, the Self-Directed Learning Readiness Scale (SDLRS; Guglielmino 1977) was used to measure students’ readiness for self-directed learning. According to Guglielmino and Guglielmino (1991, 7), readiness for self-directed learning refers to a ‘... current willingness and ability to engage in self-directed learning when the opportunity presents itself’.

Researchers (cf. Jones 1993; Long 1991) have found that age has a positive relationship with readiness for self-directed learning. In support of these early findings, McCauley and McClelland (2004) report that postgraduate students score significantly higher on the SDLRS than undergraduate students. In a related study in which the relationship between readiness for self-directed learning and educational level was investigated, Shokar, Shokar, Romero and Bulik (2002) found that third-year medical degree students show higher levels of self-directed learning readiness than the general population.

Since the early 1980s, the SDLRS (Guglielmino 1977) has been used
increasingly to investigate the relationship between self-directed learning readiness and psycho-social factors, especially outside the field of higher education. In this regard, Brockett (1985) and East (1987) found a statistically significant relationship between self-directedness and quality of life in people older than 60 years of age. Skaggs (1981) reports a positive relationship between internal locus of control and readiness for self-directed learning among nursing staff. Young (1986) conducted a similar study among students, but did not find a meaningful relationship.

Kreber (1998) explored the role of psychological type as predictor for self-directed learning readiness. She reports a meaningful positive relationship between the extroversion-intuitive psychological type (as defined by Jung) and the SDLRS. She also found a weaker, although still meaningful, relationship between the extroversion-thinking type and SDLRS scores.


In summary, there seems to be extensive evidence of the positive relations between some personality traits and academic performance. Self-directedness in learning also seems to be positively related to academic success. In this study the researcher investigated the possible link between personality traits and self-directed learning.

**METHOD**

**Participants**

The study involved 703 Afrikaans-speaking (328 men and 375 women) and 882 English-speaking (367 men and 515 women) first-year university students. The first-year population of the university was equally well represented by Afrikaans-speaking and English-speaking students, therefore it was decided to treat the two groups separately. The mean age for both the Afrikaans-speaking and the English-speaking groups was 18 years.

**Instruments**

The participants completed the SDLRS (Guglielmino 1977) and the 16PF (Cattell, Eber and Tatsuoka 1970). The SDLRS consists of 58 items and was developed to measure individuals’ readiness for self-directed learning. Individuals respond to the items on a five-point Likert-type scale. Total scores are obtained by adding the scores of all the items, 17 of which are reverse scored. The maximum score that can be obtained is 290 and the minimum score is 58. According to Guglielmino
(1977), high scores reflect higher levels of readiness for self-directed learning than low scores. The researcher obtained permission from the author of the SDLRS to translate the instrument into Afrikaans according to a prescribed process of translation and back translation.

Cronbach’s alpha coefficient for the total scores of the Afrikaans-speaking group was 0.90 and for the English-speaking group it was 0.91. These coefficients indicate that reliable total scores on the SDLRS were obtained for both groups.

The 16PF was constructed to measure the most fundamental dimensions of the normal personality (Karson and O’Dell 1976). The questionnaire consists of 187 items, forming 16 primary (first-order) personality factors. Factor analyses identified five second-order factors that offer a useful summary of the relation between the 16PF primary factors (Cattell and Krug 1986; Kline and Barrett 1983; Krug and Johns 1986). The second-order factors are labelled Anxiety, Extroversion, Independence, Sensitivity and Superego Strength.

Procedure
The participants completed the SDLRS and the 16PF in a group as part of a comprehensive psychological assessment. First-year students at the university were required to complete a battery of psychometric instruments at the beginning of the academic year. The participants could choose to complete the English or Afrikaans versions of the instruments. Participation was voluntary. The results of the assessment were treated confidentially and used for research and individual counselling purposes.

RESULTS
Guglielmino (1977) identified and described eight underlying factors of self-directed learning readiness among the SDLRS items. Various researchers challenged the validity of these factors (Bonham 1991; Field 1989, 1990). De Bruin, Jacobs, Schoeman and De Bruin (2001) investigated the factor structure of the instrument for first-year university students. They report that a higher-order factor analysis indicated the presence of one higher-order factor within the SDLRS items. This finding was supported by a factor extension analysis, which showed that most of the individual items related satisfactorily to the higher-order construct measured by the SDLRS. Based on these results, it was decided to focus on the relationship between individuals’ total scores on the SDLRS and the second-order factors of the 16PF for the purposes of the current study.

Confirmatory factor analysis of the 16PF
Prior to investigating the relationship between the two scales of measurement, a confirmatory factor analysis was conducted on the 16PF scales for the Afrikaans-speaking and the English-speaking groups respectively. Following previous studies
in which the factor structure of this instrument was investigated by means of exploratory factor analysis (Cattell and Cattell 1995; Karson and O’Dell 1976; Krug and Johns 1986), a model of five underlying second-order factors was postulated. These factors were labelled Extroversion (A, E, F, H, Q2), Anxiety (C, L, O, Q3, Q4), Sensitivity (A, I, M), Superego Strength (G, Q3) and Independence (E, L, Q1). Scale N and scale B were not included in the factor analysis. In previous studies, scale N did not show stable loadings on the five factors and scale B relates more to intelligence than to personality.

The confirmatory factor analysis of the 16PF for both groups was conducted by means of the multiple groups technique (Gorsuch 1983; Nunnaly and Bernstein 1994). The factor structure matrices are represented in Table 1. Inspection of this table shows that corresponding high loadings were obtained for both groups on Extroversion (A, E, F, H, Q2), Anxiety (C, L, O, Q4), Sensitivity (A, I, M), Superego Strength (G, Q3) and Independence (E, L, Q1). Although scale Q3 loaded meaningfully on the Anxiety factor for the Afrikaans-speaking group, it did not show a high loading on this factor for the English-speaking group. For the English-speaking group, scale H loaded high on the Anxiety factor, which was not the case for the Afrikaans-speaking group. For both groups, scale Q4 showed an unexpected loading of higher than 0.40 on the Superego Strength factor. Overall, the factors manifested clearly and in correspondence with the postulated five factor model.

**Multiple regression analysis**

To determine which of the abovementioned 16PF second-order factors act as possible predictors of readiness for self-directed learning, a multiple regression analysis was performed for both groups with the SDLRS total score as dependent variable and the 16PF second-order factors as independent variables.

For the Afrikaans-speaking group, the multiple correlation between the SDLRS total score and the 16PF second-order factors was 0.40. This multiple correlation was statistically significant [F(5, 697) = 25.83, p < 0.0001]. The 16PF second-order factors explained almost 16 per cent of the variance of the SDLRS scores. The 16PF Anxiety factor showed the strongest unique relationship with the SDLRS total score [\(\beta = -0.30\), F(1, 697) = 50.58, \(p < 0.0001\)], followed by Independence [\(\beta = 0.21\), F(1, 697) = 25.30, \(p < 0.0001\)], Superego Strength [\(\beta = 0.18\), F(1, 697) = 19.28, \(p < 0.0001\)] and Sensitivity [\(\beta = 0.11\), F(1, 697) = 8.09, \(p < 0.0001\)]. Extroversion did not show a statistically significant unique relationship with the SDLRS total score for this group.
Table 1: Factor structure matrices of the 16PF scales for Afrikaans-speaking and English-speaking students respectively

<table>
<thead>
<tr>
<th>Scale</th>
<th>Extroversion</th>
<th>Anxiety</th>
<th>Sensitivity</th>
<th>Superego Strength</th>
<th>Independence</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>A</td>
<td>E</td>
<td>A</td>
<td>E</td>
<td>A</td>
</tr>
<tr>
<td>A</td>
<td>0.62</td>
<td>0.65</td>
<td>0.02</td>
<td>0.14</td>
<td>0.69</td>
</tr>
<tr>
<td>C</td>
<td>0.17</td>
<td>0.26</td>
<td>0.78</td>
<td>0.76</td>
<td>0.18</td>
</tr>
<tr>
<td>E</td>
<td>0.60</td>
<td>0.54</td>
<td>0.06</td>
<td>0.06</td>
<td>0.14</td>
</tr>
<tr>
<td>F</td>
<td>0.76</td>
<td>0.75</td>
<td>0.05</td>
<td>0.15</td>
<td>0.00</td>
</tr>
<tr>
<td>G</td>
<td>0.10</td>
<td>0.02</td>
<td>0.33</td>
<td>0.35</td>
<td>0.01</td>
</tr>
<tr>
<td>H</td>
<td>0.83</td>
<td>0.78</td>
<td>0.34</td>
<td>0.41</td>
<td>0.13</td>
</tr>
<tr>
<td>I</td>
<td>0.00</td>
<td>0.03</td>
<td>0.13</td>
<td>0.05</td>
<td>0.78</td>
</tr>
<tr>
<td>L</td>
<td>0.00</td>
<td>0.05</td>
<td>0.63</td>
<td>0.63</td>
<td>0.02</td>
</tr>
<tr>
<td>M</td>
<td>0.15</td>
<td>0.05</td>
<td>0.17</td>
<td>0.12</td>
<td>0.68</td>
</tr>
<tr>
<td>O</td>
<td>0.16</td>
<td>0.21</td>
<td>0.77</td>
<td>0.77</td>
<td>0.16</td>
</tr>
<tr>
<td>Q1</td>
<td>0.07</td>
<td>0.00</td>
<td>0.01</td>
<td>0.01</td>
<td>0.17</td>
</tr>
<tr>
<td>Q2</td>
<td>0.72</td>
<td>0.65</td>
<td>0.07</td>
<td>0.11</td>
<td>0.07</td>
</tr>
<tr>
<td>Q3</td>
<td>0.09</td>
<td>0.13</td>
<td>0.43</td>
<td>0.38</td>
<td>0.03</td>
</tr>
<tr>
<td>Q4</td>
<td>0.13</td>
<td>0.14</td>
<td>0.83</td>
<td>0.80</td>
<td>0.08</td>
</tr>
</tbody>
</table>

Note: A = Afrikaans speaking students. E = English speaking students. All loadings ≥ 0.40 are underlined.

For the English-speaking group, the multiple correlation between the SDLRS total score and the 16PF second-order factors was 0.43, which compares well to that of the Afrikaans-speaking group (R = 0.40). This multiple correlation was also statistically significant [F(5, 876) = 39.97, p < 0.0001]. The 16PF second-order factors explained almost 18% of the variance of the SDLRS scores. As for the Afrikaans-speaking group, the 16PF Anxiety factor showed the strongest unique relationship with the SDLRS total score [β = -0.26, F(1, 876) = 47.97, p < 0.0001], followed by Independence [β = 0.25, F(1, 876) = 46.21, p < 0.0001], Superego Strength [β = 0.24, F(1, 876) = 47.19, p < 0.0001] and Sensitivity [β = 0.17, F(1, 876) = 24.61, p < 0.0001]. Extroversion also did not show any statistically significant unique relationship with the SDLRS total score for the English-speaking group.
The finding that Extroversion did not directly contribute to the explanation of the SDLRS scores seems to be somewhat contrary to the results regarding the correlations between Extroversion and academic achievement shown in previous studies. A path analysis of the results of the regression analysis offers a possible explanation for this apparent contradiction. It was shown that in the presence of Anxiety, Independence, Superego Strength and Sensitivity, Extroversion does not contribute uniquely to the explanation of self-directedness in learning. However, Extroversion does have an indirect effect on readiness for self-directed learning via its correlations with Anxiety ($r = -0.15$ for the Afrikaans-speaking group; $r = -0.22$ for the English-speaking group), Independence ($r = 0.33$ for the Afrikaans-speaking group; $r = 0.25$ for the English-speaking group), Superego Strength ($r = 0.10$ for both the Afrikaans-speaking and English-speaking groups) and Sensitivity ($r = 0.22$ for the Afrikaans-speaking group; $r = 0.30$ for the English-speaking group). Hence, although it seems as if Extroversion as personality factor does not have a direct influence on readiness for self-directed learning, the indirect influences cannot be ignored.

**DISCUSSION**

In this study, the relationship between self-directed learning readiness and personality traits of university students was explored. Overall, the results showed that personality traits are related to first-year university students’ readiness for self-directed learning.

The high reliability coefficients indicated that the SDLRS is a reliable instrument to measure readiness for self-directed learning in Afrikaans-speaking and English-speaking university students. The confirmatory factor analysis of the 16PF showed that each of the five second-order factors manifested clearly and in correspondence with the postulated five factor model. These results support the validity of the postulated higher-order factor structure of the instrument.

The results of the standard multiple regression analysis lead to the conclusion that certain personality traits (directly and indirectly) appear to be good general predictors of self-directed learning readiness in first-year university students. The 16PF Anxiety factor had the strongest unique relationship with the SDLRS total score. This finding indicates that students who are emotionally stable, trusting, well controlled and relatively relaxed have good potential to be self-directed learners. Independence, Superego Strength and Sensitivity also seem to act as co-determinants of self-directedness. A path analysis of the results indicated that Extroversion does not influence readiness for self-directed learning directly, but rather indirectly via its correlations with the other second-order factors of the 16PF.

The relations found between Anxiety and self-directed learning readiness as well as Superego Strength and self-directed learning readiness assume that self-directedness in learning is generally linked to healthy psychological adjustment. The involvement of the Independence factor as a predictor of self-directed learning
readiness emphasises the responsibility that individual students accept for their own learning. It also supposes that self-directed learners are critical and creative, and that they prefer to do things according to their own will.

The results of the present investigation confirm previous findings on the relationship between personality variables and variables that relate to education and learning (Chamorro-Premuzic and Furnham 2002, 2003; De Raad and Schouwenburg 1996; Lievens et al. 2002). This study therefore adds to a growing body of knowledge regarding the influence of personality traits on learning. Additional work in continuing to compare the relationship between self-directed learning readiness and personality traits could strengthen the findings of this study. In this regard, an investigation into the role of self-directed learning and, more specifically, contextualised personality constructs, such as work drive (Lounsbury and Gibson 2002), may aid the expansion of knowledge on more narrow-band personality constructs than the Big Five as predictors of academic success (Paunonen and Nicol 2001).

It is further recommended that an investigation into other possible co-determinants of self-directedness be performed to obtain a more comprehensive picture of aspects that influence self-directed learning. In addition to this, the specific contribution of co-determinants, for example locus of control, learning style and learning strategy, could be investigated empirically by means of applicable instruments.

From this discussion, it is concluded that students who are emotionally stable, conscientious and independent generally display higher levels of readiness for self-directed learning. Although personality traits are relatively stable predispositions, attempts could be made to adjust or develop traits that bear relevance to self-directedness. Higher education institutions therefore need to strive to create learning environments in which the development and establishment of these characteristics could be facilitated.

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