The relation between learning styles, the Big Five personality traits and achievement motivation in higher education

Vittorio V. Busato[a,*], Frans J. Prins[b], Jan J. Elshout[a], Christiaan Hamaker[a]

[a]University of Amsterdam, Faculty of Psychology, Department of Psychonomics, Amsterdam, The Netherlands
[b]University of Leiden, Developmental and Educational Psychology, Leiden, The Netherlands

Abstract

In his dissertation, Vermunt [Vermunt, J. D. H. M. (1992). *Leerstijlen en sturen van leerprocessen in het hoger onderwijs. (Learning styles and guidance of learning processes in higher education)*. Amsterdam/Lisse: Swets and Zeitlinger] postulated four different learning styles: a meaning directed, a reproduction directed, an application directed and an undirected style. Aim of this project is to investigate the relation between these learning styles, the big five personality traits and achievement motivation. Subjects were about 900 university students. Extraversion correlated positively with the meaning directed, reproduction directed and application directed learning style. Conscientiousness was associated positively with the meaning, reproduction and application directed learning style, and negatively with the undirected learning style. Openness to experience correlated positively with the meaning and application directed learning style, and negatively with the undirected learning style. Besides, it was found that neuroticism correlated positively with the undirected learning style and negatively with the meaning and reproduction directed learning style. Agreeableness was associated positively with the reproduction and application directed learning style. Positive correlations were found for achievement motivation with the meaning, reproduction and the application directed learning style, and a negative one with the undirected learning style. Regression analyses confirmed these patterns. Although there was some systematic overlap for the four learning styles with personality variables and achievement motivation, the conclusion is that it certainly makes sense to measure these three groups of variables separately in educational settings. © 1998 Elsevier Science Ltd. All rights reserved.

* Corresponding author. Tel.: +31-20-525-6724; Fax: +31-20-639-1656; e-mail: pn_busato@macmail.psy.uva.nl

1. Introduction

In 1992 the Dutch psychologist Jan Vermunt published a dissertation study about the ways university students learn, that received a lot of attention in the Dutch educational community (e.g. Schouwenburg and Groenewoud, 1995; Kaldeway et al., 1996; Prins et al., 1996, 1998; Kallenberg and van den Brink, 1997; Busato et al., 1998).

Vermunt considers the way a student learns as a *learning style*. In literature, learning styles are very often considered as a kind of general strategy, for example characterized as surface-level or deep-level processing (Marton and Saljö, 1976), a holistic vs a serialistic style (Pask, 1976), deep processing, elaborative processing, fact retention and methodical study (Schmeck, 1983). But learning styles are also described as types of learning like, for example, concrete experience, reflective observation, abstract conceptualization and active experimentation, resulting in four learning styles: divergers, accommodators, convergers and assimilators (Kolb, 1984), as orientations like achieving, meaning, reproducing and nonacademic (Entwistle, 1988), or as approaches to learning like surface, deep and achieving (Biggs, 1993). (See Riding and Cheema (1991), Rayner and Riding (1997) and Sadler-Smith (1997) for more thorough reviews.)

Elaborating on these theories, Vermunt (1992, 1996, 1998) describes the concept of a learning style as consisting of four aspects: processing strategies, regulation strategies, mental models of learning and learning orientations. *Processing strategies* are thinking activities students use to process information in order to obtain certain learning results like, for example, knowing the most important points in the study material. (Metacognitive) *regulation strategies* are activities students use to monitor, to plan and to control the processing strategies and their own learning processes. *Mental models of learning* are conceptions and misconceptions students have about learning processes. *Learning orientations* are personal aims, intentions, expectations, doubts, etcetera, students may experience during their educational career.

Vermunt (1992) distinguishes four different learning styles: an undirected, a reproduction directed, an application directed and a meaning directed learning style. Students characterized by an *undirected* learning style have, for example, problems to process the material for study, experience difficulties with the amount of study material and with discriminating what is important and what is not. Students with a *reproduction directed* learning style are characterized by study behaviour directed mainly at reproducing what is learnt at examinations, in order to pass these successfully. Students with an *application directed* learning style try to employ what they learn to actual, real-world settings. Finally, students with a *meaning directed* learning style wish to find out what is meant exactly in their study material, interrelate what they have learned and try in a critical sense to develop their own view.

To measure these learning styles, Vermunt (1992) developed the inventory of learning styles (ILS), a diagnostic instrument intended to measure aspects of study method, study motives and mental models about studying in higher education (see for the English version Vermunt (1994)). With this questionnaire, it is possible to express each of the four styles in a single score. Students, therefore, show characteristics of each style but, as Vermunt assumes, one style dominates. With a different sample of university students, Busato et al. (1995) and Schouwenburg (1996) replicated the findings of Vermunt (1992) with remarkable exactness.