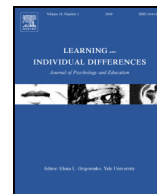




Contents lists available at ScienceDirect

Learning and Individual Differences

journal homepage: www.elsevier.com/locate/lindif

Exploring the impact of cognitive style profiles on different learning approaches: Empirical evidence for adopting a person-centered perspective

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ARTICLE INFO

Article history:

Received 28 August 2015

Received in revised form 10 August 2016

Accepted 27 August 2016

Available online xxxxx

Keywords:

Cognitive styles

Latent transition analysis

Learning approaches

Individual differences

ABSTRACT

This study aims to clarify whether and how various configurations of three cognitive style dimensions (creating, knowing, and planning) emerge among graduate business students, with differential impacts on their learning approaches. With a person-centered, latent transition analysis of cognitive styles, the authors identify several distinct cognitive style profiles: a moderate cognitive style profile, a dominant creating and knowing style profile, a dominant creating and low planning style profile, and a dominant planning and low creating style profile. The analysis also offers evidence of the trait-like character of these cognitive style profiles, by demonstrating their temporal stability. Furthermore, significant differences arise across profiles in terms of how they relate to different learning approaches (strategic, deep, and surface learning).

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1. Introduction

Resurgent studies of the nature and significance of people's cognitive styles seek a better understanding of differences in their behavior (Kozhevnikov, Evans, & Kosslyn, 2014). Cognitive styles reflect individual differences in information processing (Peterson, Rayner, & Armstrong, 2009) that affect both learning and problem solving (Messick, 1996). Yet cognitive styles research that recognizes the multi-dimensional character of cognitive styles is hampered by its failure to account for how different styles might *combine* to influence behavior (Kozhevnikov et al., 2014; Zhang, Sternberg, & Rayner, 2012). With variable-centered analysis approaches (mainly regression-based techniques), most research thus considers independent or additive effects of cognitive styles, thereby overlooking how different styles might combine into unique cognitive profiles or configurations that then inform behaviors.

Although the identification of such combined profiles is a fairly new approach, a growing number of scholars highlight the need to adopt a person-centered focus in psychology research (Bergman & Lundh,

2015; Kam, Morin, Meyer, & Topolnytsky, 2016; Laursen & Hoff, 2006). Unlike the variable-centered approach—anchored in principles of generalizability that allow observed relationships among variables in one sample to be ascribed to a broader population—the person-centered approach aims to discover unobserved subgroups within a specific sample. It treats individuals in a holistic fashion and allows for the possibility that a set of attributes (i.e., cognitive style dimensions) might be experienced differently and have different implications when used in combination, rather than individually (Meyer, Stanley, & Parfyonova, 2012). The person-centered perspective thus might give new impetus to a profile-based approach for cognitive styles, just as previous person-centered studies have increased understanding of individual differences in perceived employability (Mäkikangas, Schaufeli, Tolvanen, & Feldt, 2013), organizational commitment (Allen & Meyer, 1990; Kam et al., 2016), burnout (Mäkikangas & Kinnunen, 2016; Mäkikangas et al., 2014), and emotion regulation (Gabriel, Daniels, Diefendorff, & Greguras, 2015).

Our application of the person-based approach also seeks to address the limitations associated with the prevalence of cross-sectional research on cognitive styles (Cools, Armstrong, & Verbrigghe, 2014b; Kozhevnikov, 2007). Without sufficient longitudinal insights, research has not adequately addressed the important question of whether cognitive styles change over time or remain relatively stable. If profiles were to differ radically in time, it would challenge the view that cognitive style profiles are relatively stable phenomena, as well as all

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recommendations based on cross-sectional research. Accordingly, this study seeks to test the temporal stability of cognitive profiles within a sample of graduate business students.

We also seek to contribute to research into learning approaches in educational settings. Recent evolutions in education—such as student-centered teaching approaches, e-learning, and life-long learning—and renewed attention to how we develop and educate higher-education students (Armstrong & Fukami, 2009) suggests the need for a better understanding of the impact of individual differences on how people learn (Evans & Cools, 2011). Previous research acknowledges that the consideration of individual differences can avoid “one-size-fits-all” errors, but investigating only single individual differences also fails to acknowledge the importance of combinations or configurations of individual differences and how they might influence different types of learning (Gully & Chen, 2010).

Therefore, in our application of a person-oriented approach, we investigate the impact of cognitive style profiles on different learning approaches. Cognitive styles reflect people's preferences for gaining, storing, processing, and using information (Messick, 1996), which strongly influence how people learn (Riding & Sadler-Smith, 1997). The person-centered perspective can provide unique insights in this regard; for example, teachers tend to view students' attitudes and behaviors as combinations of characteristics rather than exhibited differences due to a series of variables. The insights that emerge from a person-centered perspective thus should be particularly useful to the practice of teaching, because it grants instructors the ability to assess students' cognitive styles with more accuracy. If teachers can gain a better understanding of how students with different cognitive style profiles prefer to solve problems, they also can develop significant insight into how to create personalized environments that enhance the learning effectiveness of individual students (Vermunt, 2011).

1.1. Cognitive style profiles

Among the various cognitive style frameworks, recent findings suggest the usefulness of multidimensional models (e.g., Cools & Van den Broeck, 2007; Epstein, Pacini, Denes-Raj, & Heier, 1996). Proponents of the multidimensional perspective (Cools & Van den Broeck, 2007; Sadler-Smith, 2009) note that people rarely have a single, dominant cognitive style and instead combine different styles. In contrast, unidimensional models assume that people only score high on one cognitive

style. Challenging this view and the associated bipolar measure (analytic versus intuitive style), Cools and Van den Broeck (2007) introduce a cognitive style model that refines the analytic–intuitive style continuum. The empirical evidence they offer shows that it is worthwhile to split the analytical side into two separate dimensions (knowing style and planning style) and treat them, together with a creating or intuitive style, as separate dimensions instead of a bipolar continuum. People with a *knowing* style prefer logical, impersonal information processing. They have strong analytical skills, are proficient in logical reasoning, search for accuracy, and like to make informed decisions on the basis of a thorough analysis of facts and logical and rational arguments. People with a *planning* style are attracted by structure; they search for certainty, seek feedback from others who hold more powerful positions, and prefer a well-organized environment. Planners like to make decisions in a structured way and are mostly concerned with process efficiency. People with a *creating* style tend to make decisions primarily based on intuition, using objective information and data only in a second phase. They also seek feedback from a broad range of sources. Table 1 summarizes the main characteristics of these styles in relation to task-oriented behavior (e.g., decision making) and relationship-oriented behavior (e.g., conflict handling), as revealed in previous studies (Cools, De Stobbeleir, Bellens, & Buyens, 2012; Cools & Van den Broeck, 2007; Cools, Van den Broeck, & Bouckennooghe, 2009; Vanderheyden & De Baets, 2015).

People can simultaneously score high and low on several styles, as indicated in profile-based cognitive styles research (Cools et al., 2014b; Kozhevnikov et al., 2014). Initial support for a profile-based approach comes from a study exploring whether entrepreneurs exhibit specific cognitive style patterns, compared with non-entrepreneurs (Bouckennooghe, Cools, Vanderheyden, & Van den Broeck, 2005). These authors find that entrepreneurs combine high analytic and intuitive styles. Despite such evidence in support of a multidimensional perspective, most studies still rely on variable-centered, between-subject analysis methods, such that they cannot reveal how within-subject configurations of cognitive styles might explain different individual behaviors. By adopting variable-centered methods in a multidimensional model context, such research has failed to recognize that person-centered combinations of cognitive styles entail more than sums of the scores on separate cognitive style dimensions.

In response, we apply a person-centered analysis to the three-dimensional framework of knowing, planning, and creating styles. In

Table 1
Summary of knowing, planning, and creating styles.

	Knowing style	Planning style	Creating style
Motto	Think before you act	Plan before you act	Cre-act
Attracted by	Facts, logic, rationality	Structure, plans, control	Ideas, possibilities
Searches for	Accuracy	Certainty	Renewal
Task-oriented behavior			
Focus	Factual content	Process	Creative content
Decision making	Detailed analysis Take their time Doubtful	Structured analysis Quick decision makers Doubtful	Intuitive analysis Quick decision makers No doubts
Strengths	Analytical skills Logical reasoning	Organizing, planning Sticking to agreements	Strong imagination Out-of-the-box thinking
Weaknesses	Creativity	Unforeseen changes	Implementation of ideas
Preferred tasks	Think-tasks Intellectually challenging tasks Clear purpose	Plan-tasks Tasks involving organized work Structured, concrete, well-defined	Cre-action tasks Creatively challenging tasks Allowing own input, flexibility, action, fun
People-oriented behavior			
Conflict handling	Rational, direct approach Based on rational and logical arguments	Rational, diplomatic approach Quick solutions	Combining emotional and rational approach Assertive, sometimes even provocative
Feedback	Rational, straightforward way Emphasize negative over positive feedback	Direct, diplomatic approach Both positive and negative feedback	Direct, constructive approach Emphasize positive over negative feedback
Main quality	Reliable	Dutiful	Flexible
Weaknesses	Too straightforward Lack of empathy 'Selling' ideas	Demanding to oneself and others Too controlling	Difficulty compromising Impulsive

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