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The relationship among students' and teachers' thinking styles, psychological needs and motivation

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ABSTRACT

This study examines the relationship among students' and teachers' thinking styles, student psychological needs (autonomy, competence and relatedness), and their reports of intrinsic motivation in the Psychology Degree context. The sample comprised 266 Spanish undergraduate students. Spanish adapted version scales were used to assess the constructs considered in this study. The original scales were created based on the mental self-government and the Self-Determination Theories. Structural equation analyses reveal that the teachers' and students' Type I thinking styles have a significant and positive impact on student psychological need satisfaction, whereas students' and the teachers' Type II thinking styles have a significant and negative impact. In turn, psychological need satisfaction has a significant and positive impact on student intrinsic motivation. Implications for instructional practice are discussed.

1. Introduction

This study examines, from a retrospective viewpoint, the relationship among students' and teachers' thinking styles, their interaction, student psychological need satisfaction (autonomy, competence and relatedness) and their reports of intrinsic motivation ("IM to know", "IM to accomplish" and "IM to experience stimulation") in Spanish undergraduate psychology students. Previous research based on the Self-Determination Theory (SDT) has provided considerable evidence of how psychological needs directly impact well-being and motivation (Reis, Sheldon, Gable, Roscoe, & Ryan, 2000; Sheldon, Elliot, Kim, & Kasser, 2001; Sheldon, Ryan, & Reis, 1996). However, studies which focus on examining the relationship among thinking styles, students' psychological needs and intrinsic motivation in a specific university degree are scarce. This study may provide guidelines to explain how student basic needs can be satisfied and how intrinsic motivation can be improved, and can help build bridges between different Educational Psychology domains.

1.1. Thinking styles

Individual differences have always aroused much interest in Educational Psychology. In current cognitive psychology, research mainly focuses on cognitive differences, such as thinking styles. In recent years, increasing attention has been paid to thinking styles. Researchers have found that thinking styles have implications for teaching and learning (see Grigorenko & Sternberg, 1997; Sternberg, 1997; Zhang & Sternberg, 2001). Sternberg (1997) proposed his theory of "mental self-government" to introduce the thinking style concept. Sternberg used the metaphor "mental self-government" to portray the way the human mind works. Just as there are many ways of governing our society, there are also many ways of governing our intelligence. Sternberg (1997) calls the different ways our intelligence is governed by "thinking styles". Sternberg (1993, 1994) proposed 13 thinking styles grouped together in five dimensions: function (legislative, executive and judicial), form (hierarchical, oligarchic, monarchic and anarchic), level (global and local), scope (internal and external) and leaning (liberal and conservative). According to Sternberg (1997), a thinking style is not an aptitude, rather the way one chooses to use one's aptitudes. Thinking style refers to what a person prefers to do, and how they like to do it. Although thinking styles fall into five dimensions, they can be broadly categorized into three groups (Zhang, 2004a,c). The first group, known as Type 1 (legislative, judicial, hierarchical, global, and liberal styles), is composed of thinking styles that are more creativity generating and they denote higher levels of cognitive complexity. The second group, known as Type 2 (executive, local, monarchic and conservative styles), involves ways of doing things that are more norm-favoring and more simplistic. The remaining four thinking styles (i.e., anarchic, oligarchic, internal and external) have been labeled Type 3. Styles belonging to Type 3 "may manifest the characteristics of the styles from both groups, depending on the stylistic demand of the specific task" (Zhang, 2004a, p. 235). According to previous research on thinking styles (reviewed by Zhang, 2002b, 2004a), The Type 1 styles generally correlate positively with human

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attributes that are traditionally perceived as positive (e.g., deep approach to learning, higher cognitive developmental levels, holistic mode of thinking, the openness personality trait). Conversely, the Type 2 thinking styles have, in general, been significantly correlated with human attributes that are traditionally considered negative (e.g., lower self-esteem, lower cognitive developmental levels, analytic mode of thinking, and the neuroticism personality trait). Furthermore, Zhang (2004c) claims that "teachers who reported a conceptual change/student-focused teaching approach tended to use the Type 1 teaching styles, and that teachers who reported a knowledge transmission/teacher-focused teaching approach tended to use Type 2" (p. 1553). Thus, one can infer that the teacher methodology reflects the underlying thinking styles.

The mental self-government theory has been operationalized through several inventories which have been tested in cross-cultural contexts. Apart from obtaining satisfactory reliability and validity data on these measures, some authors have reported interesting findings with implications for teaching and learning (see Grigorenko & Sternberg, 1997; Sternberg, 1997; Zhang, 2008; Zhang & Sternberg, 2001).

To date, the studies done in this field have examined the relationship between thinking styles and achievement (e.g., Cano-García & Hughes, 2000; Grigorenko & Sternberg, 1997; Zhang, 2002b, 2004b; Zhang & Sternberg, 1998), thinking styles and learning approach (Zhang & Sternberg, 2000), thinking styles and students' socio-economic status (Sternberg & Grigorenko, 1995), and thinking styles and personality trait (Zhang, 2002a,b). However, studies that center on the relationship between thinking styles and student motivation are scarce.

Sternberg (1997) gives rise to two fundamental principles: first, schools and other institutions value certain forms of thinking more than others; second, individuals whose ways of thinking do not coincide with the style most appreciated or valued by the institution are usually penalized. That is, "thinking styles are, in principle, value-free, for the same thinking style can serve on person beautifully in one situation, but may fail the same person miserably in another situation" (Zhang, 2004c, p. 1552). If we apply this notion to the classroom context, we can infer that students will be more at ease and effective when their predominant thinking styles that they use to learn fit well and are compatible with the way the class is organized and conducted (learning environment); that is, with the thinking style/s used by the teachers to teach.

In operational terms, this means that there must be an interactive relationship between the teachers' thinking styles and students' thinking styles, where the effect and efficacy of the thinking style used by teachers to teach may be moderated by the level of the homologous thinking style used by students to learn. Based on this rationale, and specifically for the current study, it is expected that students will feel more self-determined and, consequently, more motivated, to the extent that the predominant thinking style that they use to learn is similar or compatible with the predominant one used by teachers to teach; vice versa, students will feel less self-determined and, consequently, less motivated, to the extent that the predominant thinking style they use to learn is unsuitable or incompatible with the predominant one used by teachers to teach.

1.2. Psychological needs

Deci and Ryan's (1985, 2000) Self-Determination Theory (SDT) is an organismic theory of optimal human motivation, which has been extensively supported by a number of studies in the field of education, particularly at the primary and secondary school levels, in the last three decades (Ryan & Stiller, 1991; Sheldon & Biddle, 1998). According to the SDT, three basic psychological needs (autonomy, competence, and relatedness) undermine or support peoples' intrinsic motivation to engage in a given behavior.

Autonomy occurs when people feel they are the cause of their behavior (Deci & Ryan, 1985). "Autonomy is not independence or total freedom, rather an internal acceptance of, and engagement with, one's motivated behavior. Supporting autonomy means taking the student's perspective, providing choice, and providing a meaningful rationale when choice is not possible" (Filak & Sheldon, 2003, p. 235). Competence occurs when one feels effective in one's behavior. Competence comes close to self-efficacy and it can be seen when one takes on and masters challenging tasks. "Supporting competence means conveying confidence in students' ability to surmount challenges, and provides sensitive mentoring and feedback" (Filak & Sheldon, 2003, p. 237). Relatedness occurs when one feels connected to, or understood by, others. This construct is similar to the need for belongingness posited by Baumeister and Leary (1995), but is more general and includes both interpersonal and group connections (Filak & Sheldon, 2003). Supporting relatedness means providing acceptance, respect and the feeling of caring.

According to the SDT, when these three needs are satisfied, they encourage psychological well-being and enable students to achieve optimal academic performance. In contrast, when these needs are not satisfied, students fail to thrive. Previous research (Reis et al., 2000; Sheldon et al., 1996, 2001) has not only provided empirical evidence for these assumptions, but has also proved the positive effect of psychological need satisfaction and achievement (Black & Deci, 2000). However, studies which focus on examining the relationship between students' psychological needs and achievement in specific subject matter domains are scarce.

1.3. Intrinsic motivation

Research studies on student motivation have received increased attention in the past decade (Murphy & Alexander, 2000; Pintrich, 2000). Different theories have been applied to studies on motivation, and among them, we wish to highlight the Self-Determination Theory (SDT). Previous research indicates that when people are self-determined, they show greater initiative and persistence (Deci & Ryan, 1987), feel more satisfaction and trust (Deci, Connell, & Ryan, 1989), perceive themselves as exercising more decision-making control, and take more responsibility for the outcomes of one event (Deci & Ryan, 1985). According to the SDT, behavior is either intrinsically or extrinsically motivated or amotivated. These dimensions are placed on a continuum ranging from lack of control to self-determined behavior (Deci & Ryan, 1985, 1991). The SDT emphasizes the assumption that intrinsic need satisfaction is more important to learn than extrinsic need satisfaction. A number of studies have demonstrated the innumerable advantages of intrinsic motivation in the learning context. Thus when students are intrinsically motivated, learning is more significant and successful (Reeve, Deci, & Ryan, 2004; Reeve, Ryan, Deci, & Jang, 2008), and students tend to achieve better academic achievement (e.g., Areepattamannil & Freeman, 2008; Gottfried, Marcoulides, Gottfried, Oliver, & Guerin, 2007). Moreover, Deci and Ryan (1985) stated that when people are intrinsically motivated, they engage in activities that interest them with a full sense of volition without the need for material rewards or constraints.

Ryan and Deci (2000) defined intrinsic motivation (IM) as "the inherent tendency to seek out novelty and challenges, to extend and exercise one's capacities, to explore, and to learn" (p. 70). In order to complete this definition, it is worth citing a paragraph written by Ryan and Deci (2002): "Intrinsically motivated behaviors are those whose motivation is based on the inherent satisfactions of behaviors per se, rather than on contingencies or reinforcements that are operationally separable from those activities." (p. 10).

The IM construct is made up of three components: IM to know, IM to accomplish and IM to experience stimulation (Vallerand et al., 1992). IM to know has been related to concepts such as curiosity and motivation to learn (Gottfried, 1985), and refers to carrying out an activity for the pleasure that someone experiences while learning, exploring, or when someone is trying to understand something new (Vallerand et al.,