

# Profiles of ability, effort, and difficulty: Relationships with worldviews, motivation and adjustment<sup>☆</sup>

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## Abstract

Adopting a person-centered approach, we profiled 5th and 6th grade children's (152 boys and 161 girls) school-related beliefs about perceived task difficulty and agency beliefs in ability and effort. Five clusters were compared across key learning-related dimensions encompassing underlying worldviews (means–ends beliefs, normative difficulty, nature of ability), motivation (intrinsic, identified, introjected, and extrinsic), and adjustment (achievement and well-being): *Agentic* (high ability, high effort, low difficulty), *Strivers* (above average ability, high effort, high difficulty), *Normative* (average ability, effort and difficulty), *Disengaged* (low ability, low effort, average difficulty) and *Challenged* (low ability, low effort, high difficulty). The findings suggest that difficulty, perceived either as challenge or obstacle, plays an important role for the belief profiles, and that relationships with worldviews and motivation are indicative of adaptation and maladaptation.

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## 1. Introduction

Across childhood and adolescence, individuals form concepts of their ability, their effort, and how difficult tasks are. Nicholls (1984) suggested that children learn to estimate their own ability by gauging how difficult a task is for them, how much effort they put forth, and how difficult tasks seem for others. Although the complex relations between ability, effort, and difficulty have been studied by a number of scholars using a variable-centered approach (e.g., Heckhausen, 1991; Nicholls, 1984; Nicholls & Miller, 1984), the inter-relations among these three constituents of competence have not been investigated fully in a holistic way.

As a first step in this direction, the primary goal of this study is to identify possible profiles in students' agency beliefs in ability, effort, and perceived task difficulty by applying a person-centered approach (Bergman, 1998; Bergman & Magnusson, 1997; Bergman, Magnusson, & El-Khoury, 2003; Niemivirta, 2002). For two reasons, we

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expected qualitatively different and meaningful profiles to emerge, in which the synergistic nature of ability, effort, and personal difficulty would be non-linearly manifested. First, as has been pointed out by Bergman (1998) a key tenet of the person-centered approach is that configurations of variables can be meaningfully linked with one another in ways that are not revealed by linear examination. Specifically, cluster analysis can reveal unique subgroups of individuals with different sets of coherent, meaningful, and predictive profiles. Because traditional linear modeling approaches assume sample homogeneity, the presence of subgroups is often obscured. Cluster analysis, on the other hand, is specifically geared toward identifying heterogeneity among individuals.

Second, previous studies of competence and motivation have (a) been conducted in the laboratory using level of difficulty as an independent variable (for a review, see Heckhausen, 1991), (b) relied on researcher-defined splits in the variables of interest (Henderson & Dweck, 1990), or (c) conducted cluster analysis on motivational variables underlying achievement-related beliefs and behavior (Meece & Holt, 1993; Niemivirta, 1998, 2002; Valle et al., 2003). For the present study, we chose task difficulty and agency beliefs about ability and effort as our clustering variables because of their pivotal role in educational attainment and their central position in the work of Nicholls (1984; Nicholls & Miller, 1984), as well as in the action-control theoretical model (Heckhausen, 1991; Heider, 1958; Little, 1998; Malmberg, Wanner, & Little, 2007; Skinner, Zimmer-Gembeck, & Connell, 1998). To understand the nature of the emergent subgroups, we examined profile differences on three sets of interlinked variables: (a) *worldviews*, including means—ends beliefs (Little & Lopez, 1997), beliefs about the malleability of ability (Dweck, 1986; Henderson & Dweck, 1990; Stipek & Gralinski, 1996), and perceived normative difficulty (how difficult it is for others), (b) *motivation* (Reeve, Deci, & Ryan, 2004; Ryan, 1995; Ryan & Deci, 2000; Walls & Little, 2005), and (c) *school adjustment* (achievement and well-being; Walls & Little, 2005). In the following, we focus our literature review on theoretical assumptions and empirical findings that warrant the clustering of competence (agency) beliefs in ability, effort, and perceived difficulty.

### 1.1. Action-theory framework

The literature on action-control beliefs defines conscious personal actions as volitional, self-regulated, and intentional (Brandtstädter, 1998; Heckhausen, 1991; Heider, 1958; Little, 1998; Little, Hawley, Henrich, & Marsland, 2002; Little, Snyder, & Wehmeyer, 2006; Malmberg, 2002; Malmberg et al., 2007; Skinner, 1995). Actions can be broken down into an *agent* (i.e., the person who carries out an act), a *means* (i.e., the resources such as effort and ability needed to attain an ends), an *end* (i.e., the goal one wishes to achieve; here, school achievement), and an appraisal of the *difficulty* of the action (i.e., the perceived degree of personal challenge; here, how difficult school work is). The agent—means relationship is defined as an *agency* belief; the self-related belief of having access to certain means (i.e., ability and effort) for reaching a desired outcome (i.e., school achievement). The means—ends relationship is defined as the beliefs the agent holds about the causal potential of the set of possible means, which reflects a person's worldview about what it takes to accomplish the goal. Generally speaking, educational contexts where individuals perceive their actions as autonomous and self-regulated (i.e., intrinsic, integrated, and identified regulation) facilitate learning, well-being, and the development of adaptive worldviews. Educational contexts where individuals perceive their actions as other-regulated, enforced, and externally caused (i.e., introjected and extrinsic regulation) foster ill-being, apathy, and maladaptive worldviews (Ryan, 1995; Ryan & Deci, 2000).

#### 1.1.1. Agency and difficulty

School-aged children's and youths' agency beliefs in ability and effort have been systematically related with school achievement across a range of educational systems (Little, 1998; Little, Oettingen, Stetsenko, & Baltes, 1995; Skinner, 1995). However, when task difficulty has been included as a construct, it correlates weakly to moderately with competence beliefs (Malmberg et al., 2007; Schmitz & Skinner, 1993) and achievement (Ames & Archer, 1988; Nicholls & Miller, 1984). In fact, the relationship between ability and difficulty has been described as rather complex. For example, Heider (1958) defined competence ("can") as ability minus difficulty. In experimental studies, interaction effects between competence and success-feedback conditions on the selection of subsequent task difficulty have been observed (Heckhausen, 1991; Mueller & Dweck, 1998). For example, low achievers who were given failure feedback after an easy or moderate task could either choose an easier subsequent task (to be sure to make it) or a very difficult one (to have an excuse for not passing it; for a review, see Heckhausen, 1991). The generally low correlations between

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