



Age-related changes in children's understanding of effort and ability: Implications for attribution theory and motivation

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Received 30 May 2007; revised 5 September 2007

Available online 11 December 2007

Abstract

Building on Nicholls's earlier work, we examined developmental changes in children's understanding of effort and ability when faced with a negative outcome. In a sample of 166 children and adolescents (ages 5–15 years), younger children conflated the meaning of effort and ability, explaining that smart students work hard, whereas older children understood effort and ability to be reciprocally related constructs, explaining that smart students do not need to work as hard. Understanding the reciprocal relation between effort and ability was correlated with age. Age-related changes in the meaning and correlates of effort and ability were also examined. Developmental implications for attribution theory and achievement motivation are discussed.

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Keywords: Effort; Ability; Motivation; Attribution; Cognitive development

Introduction

Children's understanding of effort and ability changes dramatically with age (Nicholls, 1978; Nicholls & Miller, 1984). For young children, ability and effort are positively related

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concepts; they believe that smart students are hard workers and that not-so-smart students do poorly because they do not work hard enough. For older children, ability and effort are reciprocally related concepts; they believe that smart students do not need to work hard and, conversely, that students who do need to work hard must not be so smart (Fincham & Cain, 1986; Nicholls, 1979; Rholes, Blackwell, Jordan, & Walters, 1980). Nicholls suggested that these age-related changes in the conception of effort and ability result from shifts in cognitive level of development. Examining the development of children's understanding of effort and ability is important not only in its own right but also because effort/ability attributions are related to motivation and affect. The overarching goal of the current study is to extend Nicholls's work on the conceptualization of effort/ability and its relation to age and performance motivation.

More than 25 years ago, Nicholls launched a series of studies examining the development of children's understanding of, and differentiation between, ability and effort (Nicholls, 1978, 1979; Nicholls & Miller, 1983, 1984; Nicholls, Patashnick, & Mettetal, 1986). In one study, younger participants (ages 5–9 years) rated an actor exerting high effort as smarter than a low-effort actor who obtained the same score on a task. In contrast, older participants (ages 10–13 years) rated the low-effort actor as smarter (Nicholls, 1978). Younger participants failed to realize that needing to work harder to achieve the same score implies lower ability. Later, Nicholls and Miller (1984) included a *self* condition in which participants themselves exerted high and low effort on a puzzle task. The results largely replicated Nicholls's earlier findings. Participants in the self condition showed the expected developmental shift. Younger participants (most second graders and some fifth graders) tended to rate the high-effort actor as smarter than themselves, whereas older participants (some fifth graders and most eighth graders) recognized that the actor who did not work as hard for the same outcome must have more ability. Personal involvement in the task did not systematically affect the developmental progression of children's understanding of effort and ability.

Based on these findings, Nicholls and Miller described four levels of development regarding children's differentiation of ability and effort (Nicholls, 1978; Nicholls & Miller, 1984). At Level 1 (ages 5–6 years), effort and ability are not differentiated and their relation to outcome is unclear. At Level 2 (ages 7–9 years), children attribute outcome purely to effort. At Level 3 (ages 10–11 years), children begin to distinguish between ability and effort and inconsistently attribute outcome to one or the other. At Level 4 (age 12 years or older), the difference between effort and ability is clearly understood; ability is recognized as a factor that limits the effect of effort. The age ranges, although approximate and somewhat overlapping, suggest a clear developmental progression of effort/ability conceptualizations.

Understanding the relation of children's conceptualization of effort and ability to age is important, in part because of its relevance to children's causal attributions, motivation, and affect. Weiner (1985) described ability as the prototypic example of an internal, stable, and uncontrollable causal attribution, whereas effort exemplifies an internal, unstable, and controllable attribution. When so conceived, effort and ability attributions have very different implications for motivation and affect. Attributing negative events to internal, stable, and uncontrollable causes (i.e., low ability) has been associated with increased personal threat and anxiety (Dweck & Leggett, 1988; Heyman & Dweck, 1998; Smiley & Dweck, 1994). When such attributions become chronic or style-like, motivation diminishes, negative affect increases, and problems associated with learned helplessness and

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