



## Predicting performance on academic and non-academic tasks: A comparison of adolescents with and without learning disabilities

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### ABSTRACT

Previous research suggests that adolescents with learning disabilities (LD) are less accurate in predicting academic performance than normally achieving (NA) adolescents and display a tendency to overestimate their level of performance (e.g., Klassen, 2007). However, no studies have been conducted investigating whether this overestimation is specific to academic contexts or a phenomenon that extends across domains. Ninety-four adolescents (46 LD, 48 NA) predicted their performance on a spelling task and on a ball-throwing task. Results revealed group differences in performance calibration across domains with adolescents with LD showing an overestimation of ability on the spelling and ball-throwing tasks, and NA adolescents demonstrating more precise self-appraisals. Additionally, the accuracy of non-academic performance predictions remained stable with increasing difficulty in the NA group whereas the adolescents with LD demonstrated a decrease in accurate performance prediction as the difficulty level increased.

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### 1. Introduction

For children with learning disabilities (LD), adolescence brings the same physiological, educational, and psychosocial transitions experienced by their non-disabled peers, but with the added challenge of significant learning deficits in specific domains (Klassen, 2002, 2006, 2007; Klassen & Lynch, 2007). At a time when school demands and social pressures are increasing, adolescents with LD display great difficulty with the academic skills and confidence required to maintain the same pace towards independence as their peers (Fuhler, 1991). In light of these scholastic and social challenges, it is not surprising that previous research has found that these students frequently display poor academic self-concept, avoid academic work, use few self-help strategies, and hold low expectations of future success (Ayres, Cooley, & Dunn, 1990; Chapman, 1988; Fulk, Brigham, & Lohman, 1998). Indeed, it has generally been acknowledged that students with LD view their own academic skills and self-regulatory capacities as weaker than those of their normally achieving (NA) peers (Fulk et al., 1998; Klassen, 2010; Meltzer, Katzir, Miller, Reddy, & Roditi, 2004; Stone & May, 2002). A common interpretation of this pattern is that these lower academic self-perceptions represent a realistic self-appraisal of educational performance (McPhail & Stone, 1995; Stone & May, 2002). However, there is a limited but increasing body of evidence indicating that the academic self-perceptions of adolescents with

LD may not be as straight-forward as originally thought, and a paradoxical finding has emerged that some adolescents with LD hold unexpectedly optimistic beliefs about their capabilities to perform various academic tasks (e.g., Klassen, 2002, 2007). However, it is not known whether this optimistic miscalibration, or performance overestimation, is a function of specific academic tasks or generalizes to non-academic tasks for students with LD. On the one hand, learning disabilities are presumed to be associated with specific areas of academic weakness (specificity presumption). On the other hand, some theorists believe that learning disabilities are associated with more generalized metacognitive weaknesses (metacognitive deficit theory). Research exploring the generality of the motivational processes associated with learning disabilities sheds light on the pervasiveness of deficits associated with learning disabilities. Thus, the current study investigates whether performance overestimation of adolescents with LD extends beyond academic domains into the non-academic realm.

#### 1.1. Self-efficacy beliefs, calibration, and metacognition

According to Bandura's social cognitive theory (1997), how people behave can often be better predicted by the beliefs they hold about their own capabilities than by what they have accomplished in the past. These self-perceptions, known as self-efficacy beliefs, help determine an individual's choices, decision-making, and task persistence. In academic contexts, optimistic efficacy beliefs are thought to be essential when individuals approach challenging and novel tasks (Bandura, 2006) because they serve to increase

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effort, motivation, and perseverance, and consequently, achievement. However, there is a point at which possessing optimistic self-efficacy may be maladaptive. Students who are *too* optimistic about their abilities tend to be less prepared, set inappropriate academic goals, exhibit poorer self-advocacy skills, and develop less effective self-help strategies (Klassen, 2006). This optimistic miscalibration may be maladaptive for effective self-advocacy and appropriate goal setting (Stone & May, 2002). In a 2007 study by Klassen, conventional self-efficacy measures and predictions of performance were used to examine the spelling and writing self-efficacy beliefs of early adolescents with and without LD. Results demonstrated that students with LD overestimated their spelling performance by 52% and their writing performance by 19%, whereas the NA students were generally accurate in their performance estimates.

Predictions of performance and estimates of self-efficacy are related to metacognitive processes, with metacognition defined as the knowledge and experiences we have about our own cognitive processes (Flavell, 1976). Monitoring progress, planning task approaches, and evaluating progress towards the completion of a task are all components of metacognitive processes, and are necessary for successful academic functioning (Flavell, 1976). Academic difficulties in students with LD are often attributed to the students' deficits in the metacognitive strategies necessary to plan, monitor, and evaluate their own behavior (Meltzer et al., 2004; Miranda, Villaescusa, & Vidal-Abarca, 1997). When compared to their NA peers, students with LD often rely on simpler, less efficient strategies, and fail to use the strategies they do use in a smooth and controlled manner (Mason, 2004). Instead of engaging in a thorough analysis of the task at hand, students with LD often focus on the concrete demands of the task, resulting in poorer performance (Klassen, 2002). Assessments of self-efficacy and performance predictions are a function of metacognitive processes because a conscious awareness of one's skills and task demands is necessary to accurately evaluate skills and performance (Butler, 1998; Klassen, 2006).

Kruger and Dunning (1999) demonstrated over a variety of tasks that poor performers often overestimate their own performance, whereas high performers slightly underestimate theirs. The authors suggest that the reason for this discrepancy in estimation accuracy lies in the fact that high performers develop metacognitive skills that enable them to understand their own abilities. In contrast, poor performers overestimate their performance because their weaker skills deprive them of the knowledge needed to recognize their skills deficits. In contrast, Burson, Larrick, and Klayman (2006) argued that if individuals produce similar appraisals (i.e., ones that are high for tasks perceived to be easy but low for tasks perceived to be difficult), what determines accuracy in performance prediction is not so much greater insight on the part of some individuals but rather differential perceptions of task difficulty. Despite conflicting views, both Kruger and Dunning (1999) and Burson and colleagues (2006) put forth convincing arguments regarding the overestimation phenomenon among lower achieving students. It seems plausible that task difficulty plays a role in performance miscalibration because it is frequently more difficult to evaluate how one will do on a complex or difficult task compared to a simple or easy task.

A number of investigators (beginning with Lichtenstein & Fischhoff, 1977) have found that on tasks of declarative knowledge, participants show lower confidence for harder questions than easier ones but greater levels of relative overconfidence. Thus, some participants overestimate their performance for harder questions than for easier ones, and demonstrate poorer *calibration* (i.e., congruence of confidence levels with actual performance). Although estimates of confidence may decrease as difficulty increases, actual performance may decrease at an even greater rate, creating an

overconfidence effect. Gasser and Tan (2005) hypothesized that NA undergraduate students engaging in a dart-throwing task would show poorer calibration of throwing performance as distance to the target (i.e., difficulty) increased, thereby exhibiting relative overconfidence. Results demonstrated that the actual performance of the participants was much more variable than their estimates, with high correlations between the distance estimates at each of the three throwing positions and low correlations between the distance estimates and actual performance. Results from the study suggested that participants estimated their performance using a general schema that was only partially influenced by environmental factors, such as visual and kinesthetic feedback and task difficulty based on distance from the target. In short, Gasser and Tan's findings suggest that an individual's performance is a greater predictor of performance than actual skill or performance feedback.

The extent to which this pattern of miscalibration extends to activities outside the academic domain for students with LD remains to be seen, but the apparent generalizability of the overconfidence effect in NA samples across various domains and tasks (including general knowledge tasks Kleitman and Stanov (2001), categorical judgment tasks Schneider (1995), and motor task performance Gasser and Tan (2005) and West and Stanovich (1997)) suggests that this phenomenon may be less domain specific and more reflective of pervasive metacognitive difficulties for adolescents with LD.

To our knowledge, no research has explored the non-academic performance estimates of adolescents with LD. Investigating the calibration of predictions and performance in an LD sample would shed some light on the specificity of the metacognitive deficits shown in academic areas for students with LD. Findings that showed the optimistic calibration effect to be restricted to academic areas would provide argument for the specificity of metacognitive deficits in individuals with LD; findings that showed a pronounced optimistic calibration effect in non-academic domains would argue for more pervasive metacognitive deficits that might influence functioning more broadly than previously demonstrated.

## 1.2. Current study

The goal of the present article is to address the following questions: (a) As shown in previous studies (e.g., Klassen, 2007), do adolescents with LD display optimistic miscalibration (i.e., overestimation) in an academic domain?; (b) Do adolescents with LD display the same optimistic miscalibration in a non-academic domain (i.e., on a ball-throwing task)?; (c) Do adolescents with LD overestimate their performance to a greater degree than NA adolescents?; and (d) Does degree of task difficulty influence performance overestimation for LD and NA adolescents?

To answer these questions, we (a) replicated a spelling task from Klassen's 2007 study of early adolescents in order to provide confirmation of the optimistic miscalibration effect in a different sample of early adolescents with LD, and (b) examined prediction-performance congruence (calibration) of adolescents with and without LD in a non-academic domain, by examining predictions and performance on a ball-throwing task with three difficulty levels.

Based on findings from past research and from theory, it was predicted that adolescents with LD would overestimate their performance on both academic and non-academic tasks. Second, based on previous studies (e.g., Klassen, 2007), it was hypothesized that adolescents with LD would display greater miscalibration than NA adolescents. Third, it was expected that increases in task difficulty would result in increased performance overestimation for adolescents with LD. In contrast, it was hypothesized

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