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Temporal relations among multidimensional perceptions of competence and trichotomous achievement goals in physical education

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ABSTRACT

Objectives: The purpose of the present study was two-fold: (1) To empirically establish whether young people differentiate their perceived competence in physical education (PE) in terms of the self, mastery of tasks, and others, and (2) To examine longitudinal relations between these three ways of defining perceived competence and trichotomous achievement goals.
Methods: At the start of the study, students ($n = 227$ males, $n = 205$ females; M age = 13.18, $SD = .87$ years) completed measures of mastery-approach, performance-approach- and performance-avoidance goals, along with other-, self- and mastery-referent forms of perceived competence. The same measures were subsequently recorded three, six and nine months later.
Results: Analyses supported longitudinal factorial invariance for each goal and each type of perceived competence. Partial support was found for the positive influence of other-referent perceived competence on approach- and avoidance-performance goal adoption over time.
Conclusion: Young people can construe their competence in PE in various ways. Relative to one's classmates, increases in other-referenced perceptions of competence can subsequently lead to increased adoption of both performance goals.

Recent theorizing has proposed that competence should serve as the conceptual centerpiece of research into achievement motivation. Assigning competence a core role will, according to Elliot and Dweck (2005), help to bring clarity and parsimony to the achievement motivation literature because competence can be defined and operationalized in precise ways. A number of different theories of achievement motivation have incorporated the competence concept, including achievement motive and attribution frameworks. One perspective that has received a great deal of empirical attention during the past twenty-five years, in both education and physical domains, is achievement goal theory (Dweck, 1986; Elliot, 1997, 1999; Nicholls, 1984, 1989). Recently, Elliot and co-workers have sought to clarify the conceptualization of competence within the achievement goal framework, as well as to propose the nature of the relationships between competence and goals (see Elliot, 1999, 2005; Elliot & Church, 1997; Elliot & Harackiewicz, 1996). However, limited empirical attention has focused on the interrelationships between goals and competence in the physical domain using this contemporary perspective. Moreover, the extant body of literature has largely failed to take into account the more precise ways in which competence may be defined when testing associations with goals. In particular, from a developmental perspective, we know little about the transactional nature of relations and whether bidirectional relationships exist (Sameroff, 2009). The present study tested the direction and magnitude of relations between young people's perceived competence and goal striving in school physical education (PE) over time. In line with contemporary theory (Elliot, 2005), relations were examined between goals and more nuanced definitions of competence.

Perceptions of competence and trichotomous achievement goals

The work of Elliot and associates adopts a motivational analysis of competence and therefore examines how competence energizes and directs individuals' behavior in settings where competence is salient. Competence is viewed as a basic fundamental psychological need that activates behavior (Elliot, McGregor, & Thrash, 2002). However, as a consequence of experience and socialization, individuals develop the need not just to develop or demonstrate competence but to avoid developing or displaying incompetence. Importantly, Elliot and his colleagues (Elliot, 1999, 2005; Elliot & McGregor, 2001; Elliot et al., 2002) distinguish three standards of competence that

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individuals may use in evaluating performance: "absolute (the requirements of the task itself), intrapersonal (one's own past attainment or maximum potential attainment), and normative (the performance of others). That is, competence may be evaluated, and therefore defined, according to whether one has acquired understanding or mastered a task, improved one's performance or fully developed one's knowledge or skills, or performed better than others" (Elliot & McGregor, 2001, p. 501). Achievement goal research in the domain of sport and physical activity has ignored these separate standards by which competence can be defined, although researchers have occasionally incorporated these distinct facets within measures of goal attainment. That is, attainment can be judged in terms of whether individuals perceive task mastery, self-improvement or superiority over others (Amiot, Gaudreau, & Blanchard, 2004; Soucy Chartier, Gaudreau, & Fecteau, 2011). Assessment of individuals' level of perceived competence per se has combined self-referent and norm-referent items within the same measure or has focussed exclusively on normative items. Moreover, commonly used items and response scales have been vague with respect to the definition of competence (e.g., "How good are you at ….?"; "Not at all good – Very good"). Consequently, relationships between specific types of competence perceptions and goals remain poorly understood.

In the trichotomous achievement goal framework, three achievement goals are posited to channel the general need to develop competence/avoid incompetence into striving for desirable outcomes or striving to avoid aversive events and possibilities (Elliot, 1999). Hence, goals represent the aims of individuals' behavior and these approach- and avoidance-oriented aims emerge, in part, from perceptions of competence (Elliot & Church, 1997; Elliot & Thrash, 2001). A mastery-approach (MAp) goal focuses on developing self- and mastery-referent competence, a performance-approach (PAp) goal focuses on demonstrating norm-referent competence, and a performance-avoidance (PAv) goal focuses on avoiding demonstrating normative incompetence. Examples in the physical domain include: trying to improve one's 100 m freestyle time (MAp); trying to beat an opponent in badminton (PAp); and striving to avoid finishing last in a football tournament (PAv).

Relations between perceived competence and achievement goals

Competence perceptions are conceptualized by Elliot and colleagues to directly determine adoption of goals. Approach goals are theorized to emerge from higher perceptions of competence, whereas lower perceptions of one's competence are posited to bring about the adoption of avoidance goals (Elliot, 1999; Elliot & Church, 1997). In PE, individuals with high perceived competence are likely to have received positive feedback and praise for their efforts and achievements from their teachers and peers, and thus may be more likely to seek further improvement and normative success. On the other hand, those individuals for whom criticism and embarrassment have led to low perceptions of competence are more likely to seek to avoid further negative outcomes and comparisons in PE classes. Although support for proposed relationships has been found in the educational domain (e.g., Elliot & Church, 1997), research in the physical domain has yielded mixed findings (e.g., Morris & Kavussanu, 2008; Stevenson & Lochbaum, 2008; Warburton & Spray, 2008). Perceived competence has been positively associated with PAv goals as well as PAp goals, suggesting that individuals who report confidence in their abilities nevertheless strive to avoid normative failure because, in so doing, they are more likely to increase their chance of success (see Covington, 1992).

In terms of the physical domain, achievement goal researchers have also posited paths from performance goals to perceived competence (e.g., Goudas, Biddle, & Fox, 1994), suggesting a direction of influence from goals to perceived competence. This direction of influence stands in contrast to the framework proposed by Elliot and co-workers which clearly views perceived competence to determine goals. Nevertheless, it is plausible that the aim of individuals' behavior affects how they feel about their competence. For example, pursuing MAp goals, with their emphasis on absorption in the task and high effort, may result in enhanced self-referent competence. Consequently, researchers should seek to clarify whether competence underpins goals, whether goals underpin competence, or whether bidirectional effects occur. In order to achieve this aim, studies need to incorporate at least two measurement waves.

To date, however, studies of competence perceptions and goals in the physical domain have overwhelmingly adopted a cross-sectional design (for a review, see Biddle, Wang, Kavussanu, & Spray, 2003). We know little, for example, about the stability or continuity of competence perceptions and goals over time in different physical contexts and whether change in one construct impacts on change in another construct. That is, the transactional nature of the relationships between goals and competence has not received attention. For example, does change in one's perceived normative competence predict change in the adoption of PAp goals at a subsequent time point or vice-versa? Is full cross-prediction in evidence, whereby residual change in perceived competence and goals predicts subsequent residual change in goals and perceived competence respectively? Depending on the time interval of interest, PE students can encounter several compulsory activities with different classmates and teachers across occasions of measurement. The PE context, therefore, represents a unique physical setting in which to examine motivational phenomena among young people over time.

The present study

The present investigation sought to examine temporal relations between perceived competence and trichotomous achievement goals within the context of school PE. In line with Elliot's (1999, 2005) multidimensional conceptualization of competence, our first aim, utilizing confirmatory factor analytic procedures, was to determine students' competence perceptions from three standards: self-referent (intrapersonal), mastery-referent (absolute), and other-referent (normative). Given acceptable factorial invariance of the different types of perceived competence over time, our second aim was to assess the relationships between the three types of perceived competence and the three goals across four waves of measurement.

We anticipated that temporal patterns of stability and change would differ across types of perceived competence and goals. When students change curriculum activity, the new activity represents an opportunity to develop self- and mastery-referent competence to a lesser or greater extent. In addition, it is possible that the perceived normative ability of class members changes due to factors such as previous experience and rate of learning, leading to variability in normative competence scores across activities. Similarly, different activities may promote the adoption of particular goals (e.g., overtly competitive team games vs. typically more individualistic activities such as gymnastics and health and fitness). Given that, within Elliot's framework, competence perceptions represent one antecedent among an array of potential antecedents that differentially relate to achievement goal adoption, we expected relations between perceived competence and goals to be moderate in magnitude (Elliot, 1999, 2005). In accordance with theory and research, we also hypothesized that perceptions of competence would be positively associated with approach goals (Elliot, 1999, 2005; Elliot & Church, 1997).