



ELSEVIER

Psychology of Sport and Exercise 8 (2007) 771–794

Psychology

OF SPORT AND EXERCISE

www.elsevier.com/locate/psychsport

Understanding the impact of intrinsic versus extrinsic goal framing on exercise performance: The conflicting role of task and ego involvement

Maarten Vansteenkiste*, Lennia Matos, Willy Lens, Bart Soenens

University of Leuven, Tiensestraat 102, 3000 Leuven, Belgium

Received 6 January 2006; received in revised form 15 March 2006; accepted 8 April 2006

Available online 7 July 2006

Abstract

Objectives: Based on self-determination theory [SDT; Deci, E.L., & Ryan, R.M. (2000). The “what” and the “why” of goal pursuits: Human needs and the self-determination of behavior. *Psychological Inquiry*, 11, 227–268], the present study examines whether the negative effect of framing an exercise activity in terms of an extrinsic, relative to an intrinsic, goal attainment on performance occurs because extrinsic, relative to intrinsic, goal framing detracts individuals’ attention from the exercise activity, thereby undermining a task involvement, while simultaneously activating the tendency to prove one’s ability by outperforming others, thus promoting ego involvement.

Design: Two experimental studies among 10th, 11th, and 12th grade students during their physical education classes were conducted.

Methods: T-testing, one-way ANOVA analyses and regression analyses were performed to examine main effects and mediational effects, respectively.

Results: Results confirmed the hypotheses and further showed that being ego involved when being taught a new exercise activity is antithetical to the development of a task involvement, indicating that goal involvement (in contrast to goal orientations) is a bipolar construct.

Discussion: Findings are discussed in terms of the processes that link goal framing to exercise performance and in terms of the ongoing controversy among achievement goal theorists whether being ego involved in the activity or adopting an ego-approach orientation is facilitative or maladaptive for optimal performance.

*Corresponding author.

E-mail address: marten.vansteenkiste@psy.kuleuven.be (M. Vansteenkiste).

Regarding the latter issue, a new multiple goal perspective, that is the regulatory goal perspective, is introduced.

© 2006 Elsevier Ltd. All rights reserved.

Keywords: Intrinsic versus extrinsic goals; Task and ego involvement; Achievement goal theory; Self-determination theory

Introduction

When exercisers, adolescents, and obese individuals do not derive inherent satisfaction and enjoyment from exercising, fitness instructors, physical education (PE) teachers, and dieticians can use very different rationales to convince these individuals to maintain or increase their exercise behaviors. Some suggest that exercising contributes to physical fitness and health, so that individuals ultimately feel more physically active and energetic. Following the mass media's claim that physical attractiveness and beauty are valuable life goals (Shaw & Waller, 1995; Stice & Shaw, 1994), other motivating agents suggest that exercising helps to improve one's figure, to hide the signs of age, or to avoid becoming fat. In short, the goals that socializing agents refer to as a mean to increase exercise adherence and performance can differ considerably in content.

Within Self-Determination Theory (SDT) (Deci & Ryan, 2000; Ryan & Deci, 2000), the goal of physical fitness and health has been labelled intrinsic, whereas the goal of physical beauty and attractiveness has been labelled extrinsic (Kasser & Ryan, 1996; Vansteenkiste, Lens, & Deci, 2006). Previous research has found that framing an exercise activity in terms of the attainment of an extrinsic goal impairs performance compared to framing the exercise activity in terms of the attainment of an intrinsic goal (Vansteenkiste, Simons, Lens, Sheldon, & Deci, 2004; Vansteenkiste, Simons, Soenens, & Lens, 2004; see also Simons, Dewitte, & Lens, 2003). The present study sought to explore the mediating mechanisms that underlie these effects.

To do so, we relied on the distinction made within the Achievement Goal Approach (AGA; Elliot, 2005) between a task (mastery) orientation/involvement, which reflects a focus on mastering the activity at hand, and an ego (performance) orientation/involvement, which represents a focus on achieving higher grades or avoiding to achieve low grades compared to others on achievement tasks (Ames, 1992; Duda, 1989, 1996; Dweck & Leggett, 1988; Nicholls, 1984, 1989). In the mid-1990s (Elliot & Harackiewicz, 1996), the overall concept of ego goals was broken down in ego-approach goals (i.e., a focus on outperforming others) and ego-avoidance goals (i.e., focus on avoiding to perform more poorly than others), and later on (Elliot & McGregor, 2001), a full 2 × 2 goal framework was developed by differentiating task-approach goals (i.e., a focus on mastering the activity at hand) from task-avoidance goals (i.e., a focus on avoiding to execute the activity more poorly than one possibly could). The present contribution focuses, however, on the mediational role of approach forms of task and ego goals in the relationship between intrinsic versus extrinsic goal framing and performance. As a further note of clarification, in accordance with Nicholls (1984) and Elliot (2005), in the remainder of the manuscript, we reserve the term orientation to refer to individuals' dispositional preference to approach achievement tasks in a task- or ego-oriented manner, whereas we use the terms task and ego involvement when referring to situation-specific states that are (experimentally) induced by

the social context. When using the terms task and ego involvement, we are referring to the appetitive or approach-oriented types of involvement.

In the last 5 years, there has been considerable debate among achievement goal theorists regarding the effects of ego-approach goals on performance (Harackiewicz, Barron, Pintrich, Elliot, & Thrash, 2002; Kaplan & Middleton, 2002; Midgley, Kaplan, & Middleton, 2001). Normative goal theory suggests that only a task-approach orientation facilitates optimal performance (Dweck, 1999), whereas multiple-goal models suggest that learners will achieve higher grades when they focus on outperforming others, that is, when they also adopt an ego-approach orientation (Barron & Harackiewicz, 2001). Interestingly, as noted by Brophy (2005), this debate has been primarily based on findings of correlational studies (either longitudinal or cross-sectional in nature). Herein, we present data from two experimental studies in which participants' task and ego involvement were activated in different degrees through the use of intrinsic versus extrinsic goal manipulations. We believe that these experimental data not only illuminate the processes that account for the effects of extrinsic versus intrinsic goal framing but also shed new light on this ongoing controversy within the AGA.

Self-determination theory

Intrinsic versus extrinsic goal framing

SDT has been primarily concerned with examining the antecedents and consequences of individuals' behavioral regulations (Ryan & Deci, 2000). Two types of behavioral regulations have been distinguished, that is, an autonomous or volitional versus a controlled or pressured regulation. In the former case, individuals perform the exercise activity because they want to (i.e., out of choice), whereas in the latter case, they perform the exercises because they have to (i.e., to meet a pressuring external or internal demand). These autonomous and controlled regulations refer to exercisers' *reasons* or *motives* for performing the exercises and fall under the rubric of the "why of behavior" within SDT (Deci & Ryan, 2000; Ntoumanis, 2005; Soenens & Vansteenkiste, 2005).

In addition to conceptualizing individuals' reasons for behaving, SDT also pays attention to the *type of goals* that people pursue through their behavior, that is, the theory also conceptualizes the "what of behavior" (Deci & Ryan, 2000; Vansteenkiste, 2005). In doing so, two types of goals have been studied: intrinsic goals (i.e., self-development, health and physical fitness, community contribution, and affiliation), which reflect people's inherent growth tendencies and which are characterized by an inward-oriented frame, and extrinsic goals (i.e., financial success, power, status, and physical attractiveness), which reflect people's desire to impress others by acquiring external signs of worth and which yield an outward-oriented focus (Kasser & Ryan, 1996; Williams, Cox, Hedberg, & Deci, 2000). Intrinsic goal pursuit is said to be associated with more well-being and lower ill-being, because intrinsic goals tend to be associated with the satisfaction of the basic needs for autonomy, competence, and relatedness (Deci & Ryan, 2000; Ryan, 1995), whereas extrinsic goal pursuit is unrelated or even tends to detract from basic need satisfaction (Niemic, Deci, & Ryan, 2006; Vansteenkiste, Neyrinck et al., in press).

To illustrate, the intrinsic goals of self-development and physical fitness might contribute to the satisfaction of competence by leading individuals to pursue challenging activities. The intrinsic

goal of affiliation and helping the community might contribute to the formation of satisfying relational bonds, because these goals would lead one to be empathically concerned with and genuinely interested in other people (Vansteenkiste, Neyrinck et al., in press). In contrast, the effort that extrinsically oriented individuals put into an activity and the interest they show for other people is likely to be conditional, that is, depending on the extent to which one's task engagement and other individuals help one in attaining one's extrinsic ambitions. The unfortunate consequence of adopting such a narrow-focused approach towards activities (Vansteenkiste, Simons, Lens, Soenens, & Matos, 2005) and an "objectifying" stance towards others (Kasser, 2002) is that one is less likely to get one's basic needs met.

Importantly, the type of goals exercisers and sportsmen focus on when engaging in an activity can be conceptually and empirically distinguished from the reasons (i.e., regulations) for pursuing these goals (Deci & Ryan, 2000; Vansteenkiste et al., 2006). For instance, a person might be going to a fitness course to improve his figure and physical attractiveness (extrinsic goal) because his wife wants him to remain physically appealing as he ages (controlled motivation) or he may do so because he personally values coming across as good-looking (autonomous motivation). Similarly, a woman might exercise to stay in shape and to feel physically energetic (intrinsic goal), either because she would feel bad about herself if she would not do so (controlled motivation) or because she likes feeling fit and healthy (autonomous motivation). Thus, the content of one's goals and the motives behind these goals are relatively orthogonal and are said to yield independent effects on well-being and adjustment (Sheldon, Ryan, Deci, & Kasser, 2004; Vansteenkiste, Simons, Lens, Sheldon et al., 2004).

Factor analyses in previous research that asked individuals to rate the importance of these various intrinsic and extrinsic life goals have shown that the four intrinsic goals load on one factor, whereas the four extrinsic goals load on a different factor (see also Grouzet, Kasser et al., 2006, for a recent extension of this work). Further, past research has shown that the more importance individuals attach to extrinsic, relative to intrinsic, goals, the more they show signs of poor psychological and social well-being, the more they report depressive and physical health complaints, and the more socially aggressive and prejudiced attitudes they adopt (e.g., Duriez, Vansteenkiste, Soenens, & De Witte, 2006; Kasser & Ryan, 1993; for an overview, see Kasser, 2002; Kasser, Vansteenkiste, & Duckop, in press).

Most recently, this line of research was extended in a number of ways (see Vansteenkiste et al., 2006 for an overview). First, instead of studying the implications of individual intrinsic versus extrinsic goal pursuit, it was examined whether socializing agents that hold and reinforce these goal contents to different degrees will have a different impact on participants' optimal functioning. Thus, the effect of contextual intrinsic versus extrinsic *goal promotion* was studied. Second, instead of considering the impact of these goal contents for individuals' social adjustment and well-being, it was examined whether intrinsic versus extrinsic goal contexts would affect participants' *learning* and *performance*. Third, whereas previous research has focused on individuals' intrinsic versus extrinsic *life goals* (Kasser, 2002), recent research has applied these conceptualizations to new contexts, such as education (Vansteenkiste, Simons, Lens, Sheldon et al., 2004; Vansteenkiste, Simons, Lens, Soenens et al., 2004), work (Vansteenkiste, Neyrinck et al., in press), unemployment (Van den Broeck, Vansteenkiste, Lens, & De Witte, 2006), weight loss (Vansteenkiste, Simons, Braet, Bachman, & Deci, 2006), parenting (Vansteenkiste, Duriez, Soenens, & De Witte, 2005), and also exercising (Vansteenkiste, Soenens, & Lens, in press).

The present paper aims to provide a brief overview of this line of research (see also Vansteenkiste et al., in press) and to add new evidence regarding the impact of intrinsic versus extrinsic goal framing in the exercise domain. Recent experimental field research in the exercise domain examined the impact of intrinsic versus extrinsic goal framing on participants' performance and persistence (Vansteenkiste, Simons, Soenens et al., 2004). In these studies, prior to being taught a set of new physical exercises (i.e., tae bo) during a PE class, participants were randomly assigned to an intrinsic, an extrinsic, or a no-goal control condition and read a set of instructions that corresponded to their condition assignment. After being taught a few physical exercises, they filled out a battery of questionnaires at the end of the PE class. During the second PE class of the week, students were asked to demonstrate the acquired physical exercises and were graded by their regular PE teacher, who was unfamiliar with the purpose of the study and blind to participants' condition assignment.

It was found that framing participants' exercise activities during a PE class in terms of an intrinsic goal resulted in increased performance and persistence over the short term (i.e., 1 week) and long term (i.e., 4 months) compared to an extrinsic goal condition (Vansteenkiste, Simons, Lens, Sheldon et al., 2004) and compared to a no-goal control group (Vansteenkiste, Simons, Soenens et al., 2004). Such results were found among 17–18-year-old adolescents and 11–12-year-old obese children (Vansteenkiste, Simons, Braet et al., 2006). It should be noted, however, that other experimental studies in the educational context (Vansteenkiste, Simons, Lens et al., 2005) have shown that the negative impact of extrinsic versus intrinsic goal framing is limited to conceptual or deep-level learning. Such negative effects were not observed for rote learning, that is, learning that only requires participants to superficially process the learning material.

Mediating mechanisms

To account for the observed effects of extrinsic versus intrinsic goal framing on deep and superficial learning, three interrelated micro-mediational mechanisms have been proposed, these are, an attention shift, an interpersonal comparison process, and a rigid approach of the activity (Vansteenkiste, 2005; Vansteenkiste et al., 2006; Vansteenkiste et al., in press). When individuals have an extrinsic goal in mind when performing an exercise activity, their attention is likely to shift away from the activity at hand, because individuals become concerned with attaining the external indicators of worth, such as being attractive and good-looking. Thus, individuals are less fully absorbed in the activity at hand under extrinsic goal circumstances, which is likely to hamper their opportunities to fully master the activity. Using the terminology of the AGA, individuals are likely to be less task involved, which would be one indication of the *attentional shift* that takes place under extrinsic, relative to intrinsic, goal circumstances. Consistent with this hypothesis, Vansteenkiste, Simons, Lens et al. (2005) found, in a study among college students in the educational domain, that extrinsic goal framing undermined participants' task involvement compared to an intrinsic goal-framing condition and an intrinsic plus extrinsic goal-framing condition. Identical results were found by Vansteenkiste, Simons, Lens et al. (2005) among 11–12-year-old children.

Further, when individuals' attention is drawn to external indicators of worth, their involvement in the activity is more likely to become ego-focused. Specifically, when facing a motivational agent that promotes the goal of physical attractiveness, individuals might become concerned with their

figure and physical appeal and wonder whether their attractiveness either differs from the attractiveness of other participating exercisers or has increased compared to their attractiveness before doing the exercises. Because individuals would come to experience their self-worth as being contingent upon achieving the presented extrinsic goals, they may increasingly strive to outperform others and thus they become ego involved. Specifically, individuals might formulate the goal of outperforming others, because they believe that doing well on the exercise (activity at hand) would validate and protect their ego that has been placed at stake due to the extrinsic goal induction. Thus, doing well at the exercises would be important, because it would signal that they are making progress towards the extrinsic goal that is presented by the socializing agent. Because an ego involvement implies, by definition, that individuals are comparing their performance with the performance of others, becoming ego involved during the activity would be one indication of the *social comparison processes* that take place under extrinsic goal circumstances. In line with this hypothesis, Vansteenkiste, Simons, Lens, Soenens et al. (2004) found in a study in the educational domain that promoting an extrinsic goal resulted in increased ego involvement compared to intrinsic and intrinsic plus extrinsic goal promotion.

As can be observed in various daily life contexts, extrinsic goals can be highly motivating. For instance, many people are exercising to improve their attractiveness and figure. Because individuals' self-worth is linked to attaining the extrinsic goals, they are likely to put effort in the activity at hand. However, when focused on the external indicators of worth rather than on the activity they are involved in, individuals are likely to approach the activity in a more rigid fashion and with a more narrow focus, that is, the activity is undertaken as a means to making progress towards the external indicators of worth. Such a rigid approach might lead individuals to become superficially engaged in the activity at hand, because individuals would only be doing what is needed to attain a particular external indicator of worth (e.g., attaining an attractive figure). Although direct empirical evidence for this third micro-mediational process (i.e., a rigid approach of the task) is still lacking today, Vansteenkiste, Simons et al. (2005) found, consistent with this hypothesis, that extrinsic goal framing promotes superficial learning to a similar and even slightly higher extent compared to intrinsic goal framing. Presumably, the *rigid approach* that is activated in the extrinsic goal condition is sufficient to promote straightforward memorization of the learning material, but fails to result in deep-level learning that requires individuals to connect different parts of the learning material in a meaningful manner.

In short, the concepts of task and ego involvement, as used within the AGA (Ames, 1992; Duda, 1996; Nicholls, 1989), can help to shed light on the micro-mediational processes (i.e., attentional shift and interpersonal comparison) that have been proposed to account for the effect of intrinsic versus extrinsic goal framing (Vansteenkiste, 2005; Vansteenkiste et al., in press). These concepts are presented in greater detail in the next section.

Achievement goal approach

Task and ego orientation/involvement

Achievement goal theorists have suggested that participants' achievement goals can differ considerably (Butler, 1987; Duda, 1989; Nicholls, 1984, 1989; Ryan, 1982). Achievement goals

reflect people's different purposes for engaging in achievement tasks and involve different conceptions of success and competence. Initially, two different types of achievement goals were distinguished, that is task goals and ego goals. A task goal refers to the desire to gain understanding, insight, or skill. Learning is valued as an end in itself and competence is defined with regard to a self-referential or absolute standard. In contrast, an ego goal refers to the desire to obtain better or to avoid obtaining lower grades and test scores in an achievement situation compared to others; hence, success versus failure is defined on the basis of a normative standard of competence. Thus, both goals differ in terms of the standard or referent that is used in evaluating one's competence (Elliot, 1999, 2005).¹

It should be noted that the herein mentioned definition of ego-approach or performance-approach goals, which is most commonly used by Elliot, Harackiewicz, and colleagues (e.g., Elliot, 1999; Senko & Harackiewicz, 2005b), is slightly different from the one that was initially introduced by Nicholls (1984, 1989), Ames (1992), Elliott and Dweck (1988), and Ryan (1982) (see Elliot, 1999, 2005; Rawsthorne & Elliot, 1999). Specifically, according to the latter theorists, an ego-approach goal not only involves outperforming others, but it also involves *impressing* others (e.g., peers, parents, and teachers) by proving one's higher ability or intelligence. Ego-approach-oriented individuals are thus focused on demonstrating their skills and obtaining favorable evaluations of their competencies compared to others in order to bolster their own sense of worthiness. Self-worth concerns are implied and outperforming others is considered as a means to validate and protect one's ego and self-esteem; thus, people's ego is placed at stake when pursuing an ego-approach goal (Deci & Ryan, 1985; Ryan, 1982). This conceptualization is also held by various achievement goal theorists in the exercise domain (e.g., Duda, 2005; Duda & Hall, 2001; Nicholls, 1984). In contrast to these viewpoints, Harackiewicz, Elliot, and colleagues (Elliot, 1999, 2005; Elliot & Moller, 2003; Harackiewicz et al., 2002) argue that these self-presentational concerns should be left out from the definition of ego-approach goals, because they are unrelated to the issue of competence, which represents the core of any achievement goal construct. They maintain that a normative (in opposition to a self-referenced) definition of competence represents the conceptual key element of performance-approach goals. In short, these theoretical developments indicate that it is important to be cautious when speaking about the concept of performance-approach goals, because not all achievement goal theorists are defining the concept in the same way, although various achievement goal theorists (e.g., Meece, Anderman, & Anderman, 2006; Pintrich & Schunk, 2002) have suggested that there exists substantial agreement regarding the concept of performance-approach goals.²

¹Notably, Harwood, Hardy, and Swain (2000) suggested that trying to attain an intra-personal standard does not reflect task involvement, as suggested by Elliot (1999, 2005), but reflects a specific type of ego-involvement, that is, self-referenced ego involvement. This type of ego involvement was differentiated from norm-referenced ego-involvement in which people try to demonstrate ability compared to others.

²Grant and Dweck (2003) recently examined in more detail the effects of three different types of performance goals, that is, *normative goals* or the aim of outperforming others (that were either complemented with self-worth and ability concerns or not), *ability goals* that refer to seeking to validate one's ability (but that lack the normative comparison element), and *outcome goals* that refer to wanting to do well on the activity. Grant and Dweck (2003) generally found that ability goals were associated with a more maladaptive pattern of learning outcomes compared to normative goals and outcome goals.

In the present contribution, we choose to use Nicholls' (1989) achievement goal terminology (i.e., task and ego orientation/involvement) and to rely primarily on his conceptualization of an ego orientation, because most of the work on the application of the AGA in the PE context has been grounded in his theorizing. Duda (1989) developed the Task and Ego Orientation in Sport Questionnaire (TEOSQ; Duda, 1989) to assess exercisers' task and ego goals, and the majority of studies within the sport and exercise domain have used this instrument in empirical studies. We also relied on Duda's TEOSQ in the present research. In light of the foregoing discussion of the conceptualization of ego goals, it should be noted that the performance-approach goal items of the TEOSQ assess desire to outperform others; thus, self-validation concerns are not implied within the ego goal items, although Duda (2005) seems to consider these self-worth concerns as an integral part of the definition of ego goals. Further, all ego goals in the TEOSQ are approach-oriented, that is, they tap participants' focus on outperforming others (i.e., on obtaining higher normative competence) instead of avoiding to perform worse than others (i.e., avoiding normative incompetence; Elliot & Harackiewicz, 1996).

Using this questionnaire, dozens of studies in the exercise domain have examined the correlates of task and ego goals (see Duda & Ntoumanis, 2003, Duda, Cumming, & Balaguer, 2005 for an overview). These studies have generally found that task goals are associated with adaptive outcomes, including positive affect (Ntoumanis & Biddle, 1999), being self-disciplined in PE classes (Papaioannou, 1999; Spray & Wang, 2001), self-reported use of skill development and learning strategies (Lochbaum & Roberts, 1993; Solmon & Boone, 1993), self-determined exercise motivation (e.g., Standage, Duda, & Ntoumanis, 2003; Standage & Treasure, 2002), flow experiences (Papaioannou & Kouli, 1999), and actual physical activity engagement (e.g., Dempsey, Kimieck, & Horn, 1993). Ego goals, in contrast, have been found to be associated with less-adaptive outcomes, including somatic anxiety (Papaioannou & Kouli, 1999), less intrinsic motivation (e.g., Ferrer-Caja & Weiss, 2000), less free choice behavior (Cury, Famose, & Sarrazin, 1997), and social loafing (Swain, 1996), although some studies found an ego orientation to positively predict physical activity engagement outside school (Wang, Chatzisarantis, Spray, & Biddle, 2002).

Overlooking the existing evidence on task and ego orientation in the exercise context, two points are striking. First, the pattern of results for ego orientation is far less positive than the findings reported in the educational domain, in which both adaptive (e.g., self-efficacy, performance; Barron & Harackiewicz, 2003) and less-adaptive outcomes (e.g., self-handicapping, lack of help seeking; Midgley, Arunkumar, & Urdan, 1996) of an ego orientation have been reported. One reason for the apparent discrepancy between these two domains might be that the research on ego goals in the exercise context needs to be broken down in ego- or performance-*approach* and ego- or performance-*avoidance* goals (Elliot & Harackiewicz, 1996). Using this trichotomous framework, educational researchers have found that many of the initial negative correlates of ego goals apply more strongly to ego avoidance instead of ego-approach goals (Elliot, 1999). For instance, in educational studies, ego-approach goals are related positively to effort, challenge construal, self-efficacy, and superficial processing (Elliot, McGregor, & Gable, 1999; Harackiewicz & Barron, 2003; see Elliot & Moller, 2003 for an overview). Initial validity for this trichotomous framework in the sport and exercise context has been provided by Cury and colleagues (e.g., Cury, 2000; Cury, Da Fonseca, Rufo, Peres, & Sarrazin, 2003; Cury, Da Fonseca, Rufo, & Sarrazin, 2002).

In addition to the observation that ego goals are related to less-positive outcomes in the exercise domain, a second striking element is that few studies in the exercise context, if any, have examined the impact of task and ego-approach orientation on achievement (Duda & Ntoumanis, 2003). The research described in this paper aimed to fill this gap. However, to derive predictions regarding the impact of task and ego-approach orientations on performance, we need to draw from research conducted in the educational domain. These educational studies have revealed a rather inconsistent pattern of findings, with some studies showing that task orientation positively predicts performance (e.g., Matos, 2005; Botsas & Padelia, 2003; Pintrich & De Groot, 1990), others showing that an ego-approach orientation is positively related to performance (e.g., Barron & Harackiewicz, 2003; Elliot & Church, 1997; Elliot & McGregor, 1999) and still others showing a null relationship (e.g., Wolters, Yu, & Pintrich, 1996).

(Multiple) goal perspectives and performance

Facing these inconsistencies, researchers have developed various explanations in an attempt to resolve them. For instance, it has been suggested that the assessment mode of performance (deep level versus superficial) needs to be taken into account, because ego-approach goals would only facilitate rote learning and memorization of the learning material, whereas they would hinder integrated processing of learning material (e.g., Matos, 2005; Midgley et al., 2001; Thill & Brunel, 1995). Further, as noted above, the different ways of defining and operationalizing ego-approach goals might also explain these inconsistencies, so that ego-approach goals that are characterized by self-validated concerns yield less-positive performance outcomes compared to ego-approach goals that are only featured by a focus on normative competence (Elliot, 2005; Senko & Harackiewicz, 2005b).

In addition to proposing these explanations, various achievement goal researchers have also taken different positions regarding the role of task and ego-approach goals in the prediction of performance. It should be noted that this debate has especially been heated among achievement goal theorists in the educational domain (e.g., Elliot & Moller, 2003; Harackiewicz et al., 2002; Kaplan & Middleton, 2002; Midgley et al., 2001), but these arguments evidently also apply to the domain of exercising. Specifically, while some researchers claim that problems will arise when “proving ability becomes so important to students that it drives out mastery goals” (i.e., the mastery goal perspective; Dweck, 1999, p. 152, but see also Duda, 1996 for a similar position in the exercise and sport domain), other researchers (e.g., Barron & Harackiewicz, 2001) hold that being focused on both task and ego-approach goals yields positive outcomes, representing the multiple-goal perspective. Within the latter perspective, four different views have been developed (Barron & Harackiewicz, 2001; Pintrich, Conley, & Kempler, 2003). We indicate how these different multiple-goal perspectives can be applied to the issue of achievement within an exercising context, which constitutes the crucial dependent variable in the current research.

The *additive* goal effects pattern suggests that mastery and ego-approach goals will yield an independent positive main effect on the same outcomes (e.g., Wolters et al., 1996), so that both orientations would positively predict achievement. In contrast to this additive model, the *specialized* goal pattern suggests that a task and ego-approach orientation will yield a different or specialized effect, with a task orientation predicting some outcomes and an ego-approach orientation predicting others. In this regard, Harackiewicz and colleagues (e.g., Harackiewicz

et al., 2002; Harackiewicz, Barron, & Elliot, 1998) have repeatedly claimed and shown that task goals are positively related to interest and intrinsic motivation, whereas ego-approach goals are positive predictors of actual achievement in the domain of education (see also Elliot & Church, 1997). The *interactive* goal effect suggests that the highest level of achievement will be obtained when individuals endorse both task and ego-approach goals (e.g., Bouffard, Boisvert, Vezeau, & Larouche, 1995; but see Meece and Holt (1993) for counterevidence). Such a multiple-goal perspective clearly conflicts with the task or mastery goal perspective, which suggests that any concern with proving one's ability to others hinders optimal learning and achievement, because it undermines a high quality of involvement in the learning activity. The final multiple-goal perspective is the *selective* goal effect, which suggests that it is most adaptive for learners to change their goals in accordance with the affordances and the necessities of the social context. Thus, in a small group-learning situation with an emphasis on mastering the learning material, it would be most adaptive to adopt a task goal. In contrast, in a large lecture course with a competitive focus, it would be most adaptive to pursue ego-approach goals. The social context of several studies by Harackiewicz and colleagues that reported a positive effect of ego-approach goals on achievement (e.g., Harackiewicz, Barron, Carter, Letho, & Elliot, 1997; Harackiewicz, Barron, Tauer, Carter, & Elliot, 2000) was characterized by a competitive, grade-focused climate (like a college environment). Therefore, it remains to be explored whether ego-approach goals yield a positive achievement effect by their very nature (see Barron & Harackiewicz, 2003), as suggested by the *specialized* goal perspective, or whether their effect depends on the match or fit with the goals that are prevalent in the learning environment, as suggested by the selective goal perspective (Sansone & Harackiewicz, 1991; Spera & Wentzel, 2003; see also Standage et al. (2003) for a similar view in the domain of exercise).

Present research

It is interesting to note that the various achievement goal perspectives mentioned above have been developed primarily on the basis of cross-sectional or longitudinal questionnaire-based studies. In our opinion, the causal impact of achievement goals on performance has been understudied, because well-designed (i.e., cross-lagged) longitudinal studies on achievement goals and performance are largely lacking. Apart from this, only a few studies within the AGA have examined the consequences of experimentally promoting a task and ego involvement for individuals' performance (Elliot, Shell, Henry, & Maier, 2005; Senko & Harackiewicz, 2005a). A number of other experimental studies have been conducted, but all of these studies focused on outcomes such as intrinsic motivation and interest instead of performance (Elliot & Harackiewicz, 1996; Van Yperen, 2003). Such experimental data are clearly needed because, as recently noted by Brophy (2005), students' high level of performance might not (only) be a consequence of adopting an ego-approach goal, but adopting an ego-approach goal might also be a reflection of individuals' prior performance. The studies by Senko and Harackiewicz (2005a) and Elliot et al. (2005) shed preliminary light on the direction of the effects. Senko and Harackiewicz (2005a) found that inducing an ego-approach goal resulted in superior performance on a Boggle puzzle-solving activity compared to promoting a mastery-approach goal (but not compared to providing a challenging task goal that was perceived as equally difficult to attain as an ego-approach goal).

Different from Senko and Harackiewicz (2005a), Elliot et al. (2005) found in two experimental studies, in which participants either completed a subtest of the intelligence structure test (Study 1) or engaged in a lexical-based activity similar to the word game Scrabble (Study 2), that an ego-approach goal induction did not result in superior performance compared to a mastery-approach goal induction. A couple of remarks might help to put these findings in perspective. First, in both sets of studies, the authors induced an ego-approach orientation that focused on attaining normative competence and that did not yield the self-validated concerns that have been used by others to define ego goals (e.g., Nicholls, 1989). Second, in the Senko and Harackiewicz (2005a) study, participants' performance was graded by counting the number of words they had found irrespective of their length. In the second study by Elliot et al. (2005), achievement was based on the number of points participants collected by creating words; they were allowed as many dice rolls as possible. So, participants might have achieved high grades by creating short words and rolling the dices several times or by making more creative and longer words and using less dice rolls. If word length, the number of rolls, or the creativity of the words had been taken into account, the performance would probably reflect more the quality instead of merely the quantity of performance. Third, participants were relatively familiar with this task, because creating words is something every person learns during his or her schooling; so, the task was not really a novel one.

The experimental work presented herein differs from this experimental study because the study took place in the exercise context (i.e., during participants' PE classes), because participants were taught a new set of exercises they had never executed before (i.e., tae bo), because the teacher provided an assessment of the quality of participants' performance, and because the experimental manipulation involved promoting a task and ego involvement by inducing an intrinsic or extrinsic goal frame. For these reasons, we believe the present study will help to shed further light on the role of task and ego involvement in the prediction of performance.

We hypothesized that individuals placed in an intrinsic, relative to an extrinsic, goal condition will become more task and less ego involved. Participants in the extrinsic goal condition would become ego involved, because they would perceive outperforming others as a step towards achieving the temporarily activated extrinsic goal. Participants in the intrinsic goal condition would become task involved, because this would help them to best attain the activated intrinsic goal. In contrast, under the influence of the induced extrinsic goal, participants' attention would shift away from the activity at hand, so that participants in the extrinsic goal condition would be less immersed in the activity at hand and display a lowered task involvement. Thus, we suggest that achievement goals are lower-order goals, which are adopted in the service of attaining higher-order goals, such as intrinsic and extrinsic goals. Such a reasoning fits with Elliot's (1999, 2005) suggestion that achievement goals, which reflect people's purposes for engaging in achievement tasks, can be hierarchically linked to higher-order goals that do not involve a particular definition of competence (i.e., are not achievement-related). Because of their more general nature, intrinsic versus extrinsic goals are likely to explain various phenomena outside achievement situations, including externalizing problem behavior, well-being, and ethnic prejudice (e.g., Vansteenkiste, Duriez, Simons, & Soenens, in press; Vansteenkiste, Duriez et al., 2005; see Kasser, 2002). Both goal conceptualizations share a number of features as well though because they are both largely cognitive in nature and they reflect individuals' quality of motivation (Vansteenkiste et al., 2006).

We further hypothesize that this heightened ego involvement and lowered task involvement in the extrinsic compared to the intrinsic goal condition would account for the negative effect of

extrinsic versus intrinsic goal induction on participants' exercise performance. This is because, when engaging in a specific exercise activity, as is the case in experimental research, exercisers can better be primarily focused on mastering the task during the active learning process itself, because being focused on demonstrating superior ability interferes with the attempt to fully process and master new exercise behaviors, and, hence, will impair optimal performance. Thus, we suggest that both goals are likely to be conflictual (i.e., negatively correlated) during the learning process itself (see also Duda, 2001; Harwood, Hardy, & Swain; Nicholls, 1989), a hypothesis that clearly deviates from the zero or positive correlations that have been reported between a task and ego-approach orientation in correlational research (Duda & Ntoumanis, 2003; Midgley et al., 2001). As noted above, initial evidence for these hypotheses has been provided by Vansteenkiste, Simons, Lens et al. (2004) in the educational domain. They found that task and ego involvement were highly negatively correlated and that the positive effect of intrinsic, relative to extrinsic, goal framing on performance could be fully accounted for by learners' task involvement (see also Simons, Dewitte, & Lens, 2003).

The aim of the present study was to present more evidence for these hypotheses by further analyzing data of two studies in the exercise domain that have been partially reported elsewhere. Specifically, Vansteenkiste, Simons, Lens, Sheldon et al. (2004) (Study 3) found that framing an exercise activity in terms of an intrinsic goal attainment (i.e., "doing a little tae bo helps you to remain physically fit and prevents you from becoming sick at a later age") increased performance compared to extrinsic goal framing (i.e., "doing a little tae bo helps you to remain physically appealing to others and prevents you from gaining weight at a later age"). Tae bo is an increasing popular Asian sport that basically involves punching and boxing the air. Although participants ($N = 224$) filled out a questionnaire assessing their task and ego involvement at the end of the first PE class, these results were not reported. Participants' task and ego involvement during the PE class were assessed with a validated Dutch translation (Simons & Lens, 2001) of Duda's TEOSQ (Duda, 1989). The items were adjusted to the exercise context and the stem of the questionnaire was slightly changed to make it amenable to the current experimental situation, so that a state (i.e., involvement) instead of a trait (i.e., orientation) assessment of task and ego goals was obtained (e.g., "I feel most successful when doing tae bo exercises... when I'm better than my friends"). As mentioned above, to convey the idea that individuals' state goals were assessed, we will use the terms task and ego involvement instead of task and ego orientation. As suggested by Duda (2001), individuals' task and ego involvement was assessed after the PE class, because a dynamic assessment during the class itself is likely "to increase the likelihood that individuals would get out of a state of task involvement" (p. 136).

Although previous questionnaire-based research that assesses individuals' task and ego orientations (Duda, 1989, 1992; Simons & Lens, 2001) has shown that both factors could be easily extracted in factor analysis and that both factors are largely orthogonal, factor analysis indicated that one single factor needed to be retained (eigenvalue = 9.44), explaining 73% of the variance in respondents' answers. Whereas all task involvement items positively loaded on this factor, all ego involvement items negatively loaded on the same factor. Therefore, we created a single task versus ego involvement scale by summing the task involvement and reversed ego involvement items. Independent *t*-testing indicated that participants in the intrinsic goal condition scored higher on this task versus ego involvement measure ($M = 1.77$, $SD = 1.29$) compared to individuals in the

extrinsic goal condition ($M = -1.02$, $SD = 1.77$), $t(222) = 16.34$, $p < .001$. As already reported by Vansteenkiste, Simons, Lens, Sheldon et al. (2004), intrinsic goal framing increased performance compared to extrinsic goal framing, $t(222) = 5.72$, $p < .001$. Mediatonal analyses indicated that the direct effect of intrinsic versus extrinsic goal framing on performance ($\beta = .36$, $p < .001$) became non-significant ($\beta = -.07$, ns) after entering task versus ego involvement in the regression equation, while the task versus ego involvement composite score positively predicted ($\beta = .59$, $p < .001$) performance. Sobel testing indicated that the mediation by task versus ego involvement was highly significant ($z = 6.43$, $p < .001$).

The research by Vansteenkiste, Simons, Soenens et al. (2004) built on the previous study by including a no-goal control group in the experimental design, in addition to an intrinsic and extrinsic goal group. This allowed us to explore whether task and ego involvement would mediate the positive effect of intrinsic relative to no-goal framing and the negative effect of extrinsic relative to no-goal framing on performance. Again, an adapted state version of the TEOSQ was used to assess individuals' task and ego involvement ($N = 367$). As in the previous study, factor analysis pointed out that one single factor needed to be extracted (eigenvalue = 9.7), with all task involvement items positively loading on the factor and all ego involvement items negatively loading on it. As in the previous study, we created a single task versus ego involvement score by summing the task and reversed ego goal items ($\alpha = .96$).

A one-way ANOVA analysis indicated that the three conditions differed in terms of task versus ego involvement, $F(2, 364) = 100.29$, $p < .001$, and performance, $F(2, 364) = 15.78$, $p < .001$. The latter finding was also reported in Vansteenkiste, Simons, Soenens et al. (2004). Follow-up contrast analyses indicated that intrinsic goal framing promoted task versus ego involvement ($M = 14.89$, $SD = 8.25$) and performance ($M = 6.31$, $SD = 1.19$) compared to the no-goal control group ($M = 5.87$, $SD = 13.03$; $M = 5.91$, $SD = 1.14$; $t(364) = 7.00$, $p < .001$; $t(364) = 2.67$, $p < .001$) and the extrinsic goal group ($M = -3.34$, $SD = 8.17$; $M = 5.51$, $SD = 1.04$; $t(364) = 14.16$, $p < .001$; $t(364) = 5.61$, $p < .001$). Finally, the extrinsic goal group displayed a lower task versus ego involvement, $t(364) = -7.14$, $p < .001$ and obtained lower grades, $t(364) = -2.84$, $p < .001$, compared to individuals in the no-goal control group.

We began by replicating the mediational role of task and ego involvement in the effect of intrinsic relative to extrinsic goal framing on performance. As in the previous study, the direct effect of goal framing on performance ($\beta = .34$, $p < .001$) became non-significant ($\beta = -.06$, ns) after entering task versus ego involvement in the regression equation, while task versus ego involvement positively predicted performance ($\beta = .54$, $p < .001$). Sobel testing indicated that the mediation by task versus ego involvement was highly significant ($z = 5.09$, $p < .001$).³

Next, we examined whether the positive impact of intrinsic relative to no-goal framing could be accounted for by task versus ego involvement. The direct positive effect of intrinsic relative to no-goal framing on performance ($\beta = .17$, $p < .01$) became non-significant ($\beta = .01$, ns) after entering task versus ego involvement ($\beta = .41$, $p < .001$) in the regression equation. Sobel testing indicated that task versus ego involvement served as significant mediator in the intrinsic goal versus no-goal effect on performance ($z = 4.69$, $p < .001$). Finally, the direct effect of extrinsic relative to no-goal framing ($\beta = -.19$, $p < .01$) became non-significant ($\beta = -.05$, ns) after entering task

³We reran the mediational analyses in both studies using task and ego involvement as separate mediators. Task and ego involvement mediated all goal-framing effects on performance to the same extent.

versus ego involvement ($\beta = .34, p < .001$) in the regression equation. Also in this case, Sobel testing indicated that the mediation by task versus ego involvement was highly significant ($z = 4.54, p < .001$).

Discussion

The present results reveal two important findings. First, they provide evidence for SDT's claim that extrinsic, relative to both intrinsic and no-goal framing, undermines performance by thwarting a task-focused approach of the exercise activity and by activating an ego involvement. In a similar vein, intrinsic goal framing increases performance compared to a no-goal control group, because such goal framing promotes task involvement and hinders an ego involvement. Second, regarding the ongoing debate on the (mal)adaptive role of performance-approach or ego-approach goals within the AGA (Brophy, 2005; Elliot & Moller, 2003; Grant & Dweck, 2003; Harackiewicz et al., 2002a; Kaplan & Middleton, 2002; Midgley et al., 2001), it appears that experimentally activating an ego involvement (through the induction of an extrinsic goal) hinders a task-focused approach, suggesting that both types of (exercise) involvement can be antithetical under specific experimental circumstances. Further, it is only when learners became task involved (and not ego involved) that they obtained high grades. These results are discussed in greater detail in the following paragraphs.

Intrinsic versus extrinsic goal framing

Previous research within SDT has convincingly shown that being focused on extrinsic instead of intrinsic goals yields negative implications for people's well-being and the quality of their social relationships (Kasser, 2002). The present research builds on that work by examining the impact of contextually promoted intrinsic versus extrinsic goals for performance in the exercise domain. Moreover, the mediating mechanism underlying these goal-framing effects was studied.

Although SDT generally holds that intrinsic goals will yield more optimal outcomes compared to extrinsic goals because of their closer link to basic need satisfaction, Vansteenkiste, Soenens, and Lens (in press) have suggested that more attention needs to be paid to the micro-mediational processes that can account for the intrinsic versus extrinsic goal-framing effect. Insight in these micro-mediational processes seems important to better understand how individuals with an extrinsic, relative to an intrinsic, goal mindset or individuals placed in extrinsic, relative to an intrinsic, goal environments are less able to satisfy their basic needs for autonomy, competence, and relatedness.

Three interrelated micro-mediational processes would be activated when individuals adopt an extrinsic, relative to an intrinsic, goal when engaging in a specific activity. Their attention would shift away from the activity at hand, precluding task-absorption and a full commitment to the learning activity. Because the attainment of extrinsic goals yields implications for one's self-worth, individuals would become concerned with making more progress towards these extrinsic goals than others and, as such, engage in a debilitating process of social comparisons. Finally, because of this concern with living up to the external indicators of worth, individuals would put effort in the activity at hand. Unfortunately, the activity would be approached in a rather superficial, rigid

and narrowly focused way, because doing well on the activity would only be seen as a route to the attainment of extrinsic goals.

We believe that the present research provides evidence for these proposed micro-mediational processes (i.e., attentional shift, social comparison, and rigid approach). The present research shows that extrinsic goal framing undermines a task involvement, suggesting that extrinsic goal framing shifts individuals' attention away from the activity at hand. In contrast, intrinsic goal framing promotes a task involvement. Future research might want to assess this process of attentional shift even more directly, for instance, by measuring participants' task-irrelevant thoughts during their activity engagement (Linnenbrink, Ryan, & Pintrich, 1999). Further, a person's degree of ego involvement in the activity can be considered as a manifestation of social comparison processes that are taking place, because being motivated to outperform others implies by definition that one compares one's own performance with other individuals' performance. The present research reveals that extrinsic goal framing promotes an ego-involved engagement in the exercise activity, whereas the opposite is true for intrinsic goal framing. No evidence was collected for the third micro-mediational process, that is, rigid approach in the present report. If the PE teachers had been able to grade students' deep level versus more superficial engagement in the exercise activities, it would have been possible to explore whether extrinsic, relative to intrinsic, goal framing would also undermine this superficial and "light" engagement in the exercise activity. Based on past research in the educational domain (Vansteenkiste, Simons, Lens et al., 2005), we would predict that extrinsic goal framing would not yield a debilitating effect on superficial engagement in the exercises.

Whereas attentional shift and social comparison processes represent indicators of individuals' affective engagement in the learning activity, future research might want to examine the cognitive processes that are activated under intrinsic versus extrinsic goal circumstances as well. For instance, it could be examined whether extrinsic, relative to intrinsic, goal framing negatively impacts individuals' working memory capacity (Baddeley, 1986) by detracting individuals' attention from the activity at hand and by promoting social comparison processes. If individuals want to deeply process the learning information, they need to have sufficient working memory available (Pintrich & Schrauben, 1992; Linnenbrink et al., 1999). However, if individuals in extrinsic goal circumstances get involved in various social comparison processes that capture their attention and fill their limited available working memory capacity, it seems normal that they are unable to do well on tests that assess deep-level learning, while the minimal available memory capacity is sufficient to promote straightforward memorization of the learning material (Vansteenkiste, Simons et al., 2005).

Task and ego involvement

The present experimental results are clearly inconsistent with previous correlational work on task and ego-approach orientations. Previous questionnaire-based studies indicated that task and ego-approach goal orientations are largely orthogonal, indicating that exercisers can pursue both goals simultaneously (see Brophy, 2005; Duda, 2005; Elliot, 1999). In contrast with these findings, the present experimental research suggests that the activation of ego involvement interferes with being focused on mastering the activity at hand. In both studies, task and ego involvement were highly negatively correlated, suggesting that becoming ego involved in the activity occurs at the

expense of gaining understanding and mastery of the new exercises or new physical skills. Thus, under experimental circumstances, both types of goals can be contrasted with each other, so that they fall along one single task versus ego involvement dimension. Indeed, factor analyses indicated that the items of both types of involvement loaded on the same underlying factor. These observations nicely fit with Harwood et al.'s (2000) claim that although people's goal orientations are orthogonal, states of goal involvement are bipolar, because interpersonal and evaluative cues of an ego involvement diminish a task involvement (see also Nicholls, 1989).

Further, the effects of task and ego involvement on exercisers' performance were also surprising in light of previous correlational research with the AGA. This correlational research has found that an ego-approach orientation positively predicts performance (e.g., Barron & Harackiewicz, 2003). In contrast to such findings, the present study indicates that becoming ego involved rather than task involved in a specific experimental situation in which focused attention and skill use are required to master new exercises impairs instead of facilitates performance. When individuals need to learn new material, the best approach seems to be a focus on mastering the techniques that are required to optimally execute the exercises, as suggested by various achievement goal theorists (Duda, 1996; Nicholls, 1989).

The performance-debilitating impact of ego involvement versus task involvement, especially if it is also characterized by self-worth and self-validation concerns, is not surprising from the viewpoint of SDT (Ryan, 1982; Ryan, Koestner, & Deci, 1991). When individuals are concerned with outperforming others to maintain their self-worth, they are likely to pressure themselves in the activity and to hamper a voluntary engagement in the activity at hand, which undermines individuals' basic need for autonomy (Rawsthorne & Elliot, 1999; Ryan, 1982; Ryan & Deci, 1989). Further, the social comparison processes that are activated when one is ego involved might cause interpersonal rivalry and relational difficulties and might lead individuals to feel alienated from others, which frustrates their basic need for relatedness. Finally, when individuals are concerned with proving their self-worth in comparison with others, they are less likely to become fully immersed and absorbed in the activity at hand, which precludes them from mastering the activity at hand and developing their competencies. In short, being concerned with preserving one's self-esteem through outperforming others seems to make individuals vulnerable for a lack of basic need satisfaction (see also Reinboth & Duda, 2006), which, from the viewpoint of SDT, is the catalyzer of an authentic and deep-level learning process.

These need-thwarting effects might occur to a lesser extent if performance goals are not coupled with these self-presentational concerns. In line with this, Elliot and Moller (2003) have suggested that ego-approach goals that are not accompanied by self-validated concerns can be considered as a natural manifestation of a basic need for competence. Further, this type of ego-approach goals might lead individuals to experience achievement tasks as optimally challenging and holding such goals might help individuals in gaining competence feedback. Thus, overall, we suggest that ego-approach goals are less likely to promote optimal learning, the more individuals hang their self-esteem upon outperforming others. Such an analysis fits with various social psychologists' viewpoint (e.g., Crocker & Park, 2004; Kernis, 2003; Ryan & Deci, 2004) that the explicit pursuit of self-esteem is likely to yield some costs and might lead people to end up with having low self-esteem (Ryan & Brown, 2003). We suggest that further insight in the effects of ego-approach goals might be gained by more explicitly integrating some of the psychological dynamics that have been proposed to underlie the effects of the active pursuit of self-esteem.

A new multiple-goal model: regulatory multiple-goal perspective

The present research reveals that experimental research on the effects of ego and task involvement leads to a different set of findings than the ones obtained in questionnaire-based research. Thus, it seems important to consider the level of generality (Vallerand, 1997) at which task and ego goals are studied; the results look different if the effects of goals are studied at the situational level in a specific experiment that aims to induce an ego or task involvement compared to when goals are studied at a more general level in which task and ego-approach orientations are assessed through questionnaires. Do the current experimental findings also point towards a different view on the role of task and ego-approach goals in the prediction of achievement? We believe they might.

At first sight, the present experimental data provide evidence for the task or mastery perspective on goals, which suggests that instructors need to create a task-oriented environment to promote optimal performance (Dweck, 1999). However, a pure mastery perspective fails to explain the positive effects of an ego-approach orientation on performance that has been observed in various correlational (either cross-sectional or longitudinal) studies at the domain level of generality, especially in the educational domain (e.g., Elliot & McGregor, 1999; Barron & Harackiewicz, 2003). We propose the following multiple-goal perspective to account for these two contrary sets of findings (see also Vansteenkiste, Simons, Lens, Soenens et al., 2004). We suggest that it will be more adaptive for learners if they are able to switch their goals depending on the moment of the learning process. Specifically, if learners are required to master new behaviors, as was the case in the present study, or when they are required to deeply process learning material, adopting a task-focused approach will be most conducive to performance. Being ego involved at this moment of the learning process, especially if it is accompanied by self-worth concerns, is likely to detract individuals' attention from the activity at hand and precludes task-absorption and focused attention, which are necessary to deeply process and master the new material. As suggested by Pintrich and Schrauben (1992), being concerned with outperforming others during the learning activity itself is likely to fill up one's limited amount of working memory and, hence, leaves no further capacity available for the deep processing of learning information.

After "awaking" from this task-involved engagement in the learning (state level), strongly ego-approach-oriented individuals (trait level) might decide to put further effort in the learning activity (Bouffard et al., 1995). Thus, an ego-approach orientation might energize the learning process, so that individuals who display a strong ego-approach orientation at the trait level would continue to study and would spend more time to the learning activity instead of engaging in another non-academic activity (Elliot et al., 1999). Spending extra effort to learning activities might be adaptive given that grades are still the way in which being successful in school settings is assessed. However, once learners start to get engaged again in the learning activity, it would be crucial to put their ego concerns aside and to again become task involved to create the opportunity to become fully absorbed in the learning activity itself.

To convey the idea that learners who are able to adequately regulate their goal-focus according to the moment of the learning process will be the highest achievers, we propose the term *regulatory multiple-goal perspective*. Senko and Harackiewicz (2005b) recently showed that students are regulating their goals depending on the competence feedback they receive, so that poor exam performance predicted a significant decrease in ego-approach and mastery goals and an increase in ego-avoidance goals throughout the semester. In a similar vein, we propose that

students might not only need regulatory skills to adjust their goals according to the competence feedback they receive, but that learners can better learn to regulate their achievement goals during the learning process itself. Specifically, regulatory skills would be needed to determine which type of goal is most salient and which goals are outside one's focal awareness during the learning process. The introduction of such a skill to regulate one's goal focus would help to resolve the apparent contradictions in the literature on the effect of ego-approach goals on achievement.⁴ Specifically, the current experimental data show that when students are involved in the very process of mastering new material (state level), being ego involved conflicts with being task involved and forestalls instead of promotes active learning. However, when students are no longer involved in the active learning process itself, a strong ego-approach orientation (trait level) might lead them to go back to continue their study behavior in order to fulfill the purpose of showing superiority compared to others, and might encourage them to rehearse and improve the memorization of the learning material they already deeply processed. As a result of this rehearsal, they might do well on a test that assesses a rather superficial understanding of the learning material. Ego-oriented individuals might even perform well on tests that assess deep-level learning, given that they managed to be task involved during the active learning process itself, that is, given that they were able to adaptively switch their salient goal depending on the moment of the learning process. Because ego-approach goals might function as a catalytor of the learning process in the sense that they prompt *more* effort, it becomes clear why an ego-approach orientation has been found to predict performance in correlational research.

The current study results are, however, in contrast with the work of Senko and Harackiewicz (2005a) and Elliot (2005), who found that an ego, compared to mastery, goal induction promoted or did not undermine performance. However, as noted above, participants were asked to perform activities they were familiar with, participants' performance was assessed in a relatively superficial way and self-worth concerns were not implied in the ego-approach goal induction in the study by Senko and Harackiewicz (2005a) and Elliot (2005). All these elements might help to explain why promoting ego involvement facilitated instead of hindered performance in their study. In the current study, the reference to the extrinsic goal of physical appeal and attractiveness is likely to have placed individuals' self-worth at stake. Many individuals in our current post-modern society are exposed to various types of extrinsic goal messages of the media that aim to provide them with a sense of worth and meaning (Cushman, 1990; Vansteenkiste, 2005). Hence, individuals in an extrinsic goal condition are likely to consider the exercise activity as a mean to improve their figure and to validate their self-esteem, which, however, leads them to be less deeply absorbed in the activity at hand.

Thus, we suggest that self-regulation does not only imply that learners are aware of the different learning strategies that are involved in a deep processing of information, but it also implies that students can identify which goals (i.e., task versus ego-approach) need to be salient at which moment of the learning process. Of course, future research would need to directly assess students' capacity to regulate their goals to provide further evidence for our proposed explanation. Such studies would help to further resolve the apparent contradiction in correlational and the current experimental research on the role of ego-approach goals in the prediction of achievement. Also,

⁴Various studies within the AGA (e.g., Wolters, 2004; Wolters et al., 1996; Wolters, Yu, & Pintrich, 1996) have examined the relationship between task and ego orientation and various components of self-regulated learning. Herein, we suggest that goals themselves need to be regulated by the learner.

future experimental research might better directly manipulate learners' goal focus (instead of using an intrinsic versus extrinsic goal manipulation) and needs to include assessments of both deep-level and superficial learning (Midgley et al., 2001) to sort out whether the herein reported negative effect of ego involvement equally applies to rote learning outcomes. Overall, we suggest that only a combination of experimental and longitudinal research (including cross-lagged analyses to examine the possible reciprocal role between goal orientation and different types of learning) will complement the bulk of correlational research that has been conducted to date (Brophy, 2005). Such experimental and longitudinal research will help to enrich our understanding of the different psychological dynamics that underlie a task versus ego involvement and orientation.

Further, the current experimental results need to be replicated in other domains. In this regard, initial evidence was provided in the educational domain by Vansteenkiste and colleagues (Vansteenkiste, Simons, Lens, Soenens et al., 2004, 2005), who found that the effect of intrinsic versus extrinsic goal framing on high school students' and 11–12-year-old children's deep-level learning was mediated by task orientation. Another issue that could be examined in future research is whether framing intrinsic and extrinsic goals as a goal that one should avoid not attaining (e.g., "by doing these exercises you avoid becoming ill and physically inactive"; avoidance orientation) or as a goal that one could try to achieve (approach orientation) would differently affect participants' approach versus avoidance goal adoption. In the current studies, approach and avoidance components were balanced in the instruction sets and we only assessed task-approach and ego-approach goals. Elliot and McGregor (2001) developed a 2×2 goal framework in which they bifurcated task and ego into an approach or an avoidance orientation. If intrinsic and extrinsic goals are presented as negative possibilities that should be avoided or as positive possibilities that should be attained, they might differentially affect participants' performance by differentially affecting individuals' approach and avoidance achievement goals.

Conclusion

To conclude, various recent studies have shown that the way socializing agents frame an exercise activity yields implications for individuals' quality of performance (Vansteenkiste et al., 2006). The present research sheds light on the mediating mechanisms underlying the effects of intrinsic versus extrinsic goal framing. Specifically, it was shown that focusing exercisers' attention onto external indicators of worth, such as physical appeal, undermines performance compared to framing the same activity in terms of the intrinsic goal of health and physical fitness, because individuals are no longer able to get fully absorbed in the activity and instead become concerned with proving their self-worth. Thus, socializing agents who want to promote exercise performance, such as PE teachers, dieticians, and doctors, might do well in pointing towards the intrinsic instead of extrinsic goal relevance of the exercise activity.

References

- Ames, C. (1992). Classrooms: Goals, structures, and student motivation. *Journal of Educational Psychology*, *84*, 261–271.
- Baddeley, A. (1986). *Working memory*. Oxford: Clarendon Press.

- Barron, K. E., & Harackiewicz, J. M. (2001). Achievement goals and optimal motivation: Testing multiple goal models. *Journal of Personality and Social Psychology, 80*, 706–722.
- Barron, K. E., & Harackiewicz, J. M. (2003). Revisiting the benefits of performance-approach goals in the college classroom: Exploring the role of goals in advanced college courses. *International Journal of Educational Research, 39*, 357–374.
- Botsas, G., & Padelidu, S. (2003). Goal orientation and reading comprehension strategy use among students with and without reading difficulties. *International Journal of Educational Research, 39*, 477–495.
- Bouffard, T., Boisvert, J., Vezeau, C., & Larouche, C. (1995). The impact of goal orientation on self-regulation and performance among college students. *British Journal of Educational Psychology, 65*, 317–329.
- Brophy, J. (2005). Goal theorists should move on from performance goals. *Educational Psychologist, 40*, 167–176.
- Butler, R. (1987). Task-involving and ego-involving properties of evaluation: The effects of different feedback conditions on motivational perceptions, interest, and performance. *Journal of Educational Psychology, 79*, 474–482.
- Crocker, J., & Park, L. E. (2004). The costly pursuit of self-esteem. *Psychological Bulletin, 130*, 392–414.
- Cury, F. (2000). Predictive validity of the approach and avoidance achievement in sport model. *Journal of Sport and Exercise Psychology, 22*, S32.
- Cury, F., Famose, J. P., & Sarrazin, P. (1997). Achievement goal theory and active search for information in a sport task. In R. Lidor & M. Bar-Eli (Eds.), *Innovations in sport psychology: Linking theory and practice. Proceedings of the IX world congress in sport psychology: Part I* (pp. 218–220). Netanya, Israel: Ministry of Education, Culture and Sport.
- Cury, F., Da Fonseca, D., Rufo, M., & Sarrazin, P. (2002). Perceptions of competence, implicit theory of ability, perception of motivational climate, and achievement goals: A test of the trichotomous conceptualization of the endorsement of achievement motivation in the physical education setting. *Perceptual and Motor Skills, 95*, 233–244.
- Cury, F., Da Fonseca, D., Rufo, M., Peres, C., & Sarrazin, P. (2003). The trichotomous model and investment in learning to prepare a sport test: A mediational analysis. *British Journal of Educational Psychology, 73*, 529–543.
- Cushman, P. (1990). Why the self is empty: Toward a historically situated psychology. *American Psychologist, 45*, 599–611.
- Deci, E. L., & Ryan, R. M. (1985). *Intrinsic motivation and self-determination in human behavior*. New York: Plenum.
- Deci, E. L., & Ryan, R. M. (2000). The “what” and the “why” of goal pursuits: Human needs and the self-determination of behavior. *Psychological Inquiry, 11*, 227–268.
- Dempsey, J. M., Kimieck, J., & Horn, T. S. (1993). Parental influence on children’s moderate to vigorous physical activity participation: An expectancy-value approach. *Pediatric Exercise Science, 5*, 151–167.
- Duda, J. L. (1989). Relationship between task and ego orientation and the perceived purpose of sport among high school athletes. *Journal of Sport and Exercise Psychology, 11*, 318–335.
- Duda, J. L. (1992). Motivation in sport settings: A goal perspective approach. In G. C. Roberts (Ed.), *Motivation in sport and exercise* (pp. 59–92). Champaign, IL: Human Kinetics.
- Duda, J. L. (1996). Maximizing motivation in sport and physical education among children and adolescents: The case for greater task involvement. *Quest, 48*, 290–302.
- Duda, J. L. (2001). Achievement goal research in sport: Pushing the boundaries and clarifying some misunderstandings. In G. C. Roberts (Ed.), *Advances in motivation in sport and exercise* (pp. 129–182). Champaign, IL: Human Kinetics.
- Duda, J. L. (2005). Motivation in sport: The relevance of competence and achievement goals. In A. J. Elliot, & C. S. Dweck (Eds.), *Handbook of competence and motivation* (pp. 318–335). New York: Guilford Press.
- Duda, J. L., & Hall, H. K. (2001). Achievement goal theory in sport: Recent extensions and future directions. In R. Singer, H. Hausenblas, & C. Janelle (Eds.), *Handbook of research in sport psychology* (pp. 417–434). New York: Wiley.
- Duda, J. L., & Ntoumanis, N. (2003). Correlates of achievement goal orientations in physical education. *International Journal of Educational Research, 39*, 415–436.
- Duriez, B., Vansteenkiste, M., Soenens, B., & De Witte, H. (2006). Evidence for the social costs of extrinsic relative to intrinsic goal pursuits: Their relation with right-wing authoritarianism, social dominance, and prejudice. Manuscript submitted for publication.
- Dweck, C. S., & Leggett, E. L. (1988). A social-cognitive approach to motivation and personality. *Psychological Review, 95*, 256–273.

- Dweck, C. S. (1999). *Self-theories: Their role in motivation, personality and development*. Philadelphia: Psychology Press.
- Elliot, A. J. (1999). Approach and avoidance motivation and achievement goals. *Educational Psychologist*, *34*, 169–189.
- Elliot, A. J. (2005). A conceptual history of the achievement goal construct. In A. J. Elliot, & C. S. Dweck (Eds.), *Handbook of competence and motivation* (pp. 52–72). New York: Guilford Press.
- Elliot, A. J., & Church, M. A. (1997). A hierarchical model of approach and achievement motivation. *Journal of Personality and Social Psychology*, *72*, 218–232.
- Elliot, A. J., & Harackiewicz, J. M. (1996). Approach and avoidance achievement goals and intrinsic motivation: A mediational analysis. *Journal of Personality and Social Psychology*, *70*, 461–475.
- Elliot, A. J., & McGregor, H. A. (1999). Test anxiety and the hierarchical model of approach and avoidance achievement motivation. *Journal of Personality and Social Psychology*, *76*, 628–644.
- Elliot, A. J., & McGregor, H. A. (2001). A 2 × 2 achievement goal framework. *Journal of Personality and Social Psychology*, *80*, 501–519.
- Elliot, A. J., McGregor, H. A., & Gable, S. (1999). Achievement goals, study strategies, and exam performance: A mediational analysis. *Journal of Educational Psychology*, *91*, 549–563.
- Elliot, A. J., & Moller, A. C. (2003). Performance-approach goals: Good or bad forms of regulation? *International Journal of Educational Research*, *39*, 336–356.
- Elliott, E. S., & Dweck, C. S. (1988). Goals: An approach to motivation and achievement. *Journal of Personality and Social Psychology*, *54*, 5–12.
- Elliot, A. J., Shell, M. M., Henry, K. B., & Maier, M. A. (2005). Achievement goals, performance contingencies, and performance attainment: An experimental test. *Journal of Educational Psychology*, *97*, 630–640.
- Ferrer-Caja, E., & Weiss, M. R. (2000). Predictors of intrinsic motivation among adolescent students in physical education. *Research Quarterly for Exercise and Sport*, *71*, 267–279.
- Grant, H., & Dweck, C. S. (2003). Clarifying achievement goals and their impact. *Journal of Personality and Social Psychology*, *85*, 541–553.
- Grouzet, F. M. E., Kasser, T., Ahuvia, A., Dols, J. M. F., Kim, Y., Lau, S., et al. (2006). The structure of goal contents across 15 cultures. *Journal of Personality and Social Psychology*, *89*, 800–816.
- Harackiewicz, J., Barron, K., Carter, S., Letho, A., & Elliot, A. J. (1997). Determinants and consequences of achievement goals in the college classroom: Maintaining interest and making the grade. *Journal of Personality and Social Psychology*, *73*, 1284–1295.
- Harackiewicz, J. M., Barron, K. E., & Elliot, A. J. (1998). Rethinking achievement goals: When are they adaptive for college students and why? *Educational Psychologist*, *33*, 1–21.
- Harackiewicz, J. M., Barron, K. E., Pintrich, P. R., Elliot, A. J., & Thrash, T. M. (2002). Revision of achievement goal theory: Necessary and illuminating. *Journal of Educational Psychology*, *94*, 638–645.
- Harackiewicz, J. M., Barron, K. E., Tauer, J. M., Carter, S. M., & Elliot, A. J. (2000). Short-term and long-term consequences of achievement goals: Predicting interest and performance over time. *Journal of Educational Psychology*, *92*, 316–330.
- Harwood, C., Hardy, L., & Swain, A. (2000). Achievement goals in sport: A critique of conceptual and measurement issues. *Journal of Sport and Exercise Psychology*, *22*, 235–255.
- Kaplan, A., & Middleton, M. J. (2002). Should childhood be a journey or a race? Response to Harackiewicz et al. (2002). *Journal of Educational Psychology*, *94*, 646–648.
- Kasser, T. (2002). *The high price of materialism*. London: The MIT Press.
- Kasser, T., & Ryan, R. M. (1993). A dark side of the American dream: Correlates of financial success as a central life aspiration. *Journal of Personality and Social Psychology*, *65*, 410–422.
- Kasser, T., & Ryan, R. M. (1996). Further examining the American dream: Differential correlates of intrinsic and extrinsic goals. *Personality and Social Psychology Bulletin*, *22*, 280–287.
- Kasser, T., Vansteenkiste, M., & Deckop, J. R. The ethical problems of a materialist value orientation for business. In J. R. Deckop, (Ed.), *Human resource management ethics*. Greenwich, CT: Information Age Publishers.
- Kernis, M. (2003). Toward a conceptualization of optimal self-esteem. *Psychological Inquiry*, *14*, 1–26.
- Linnenbrink, E. A., Ryan, A. M., & Pintrich, P. R. (1999). The role of goals and affect in working memory capacity. *Learning and Individual Differences*, *11*, 213–230.

- Lochbaum, M. R., & Roberts, G. C. (1993). Goal orientations and perceptions of the sport experience. *Journal of Sport and Exercise Psychology, 15*, 160–171.
- Matos, L. (2005). *School culture, teachers' and students' achievement goals as communicating vessels. A study in Peruvian Secondary schools*. Unpublished doctoral dissertation, University of Leuven, Belgium. <http://hdl.handle.net/1979/149>
- Meece, J. K. L., Anderman, E. M., & Anderman, L. H. (2006). Classroom goal structure, student motivation, and academic achievement. *Annual Review of Psychology, 57*, 487–503.
- Meece, J. L., & Holt, K. (1993). A pattern analysis of students' achievement goals. *Journal of Educational Psychology, 85*, 582–590.
- Midgley, C., Arunkumar, R., & Urdan, T. C. (1996). If I don't do well tomorrow, there's a reason: Predictors of adolescents' use of academic self-handicapping strategies. *Journal of Educational Psychology, 88*, 423–434.
- Midgley, C., Kaplan, A., & Middleton, M. (2001). Performance-approach goals: Good for what, for whom, under what circumstances? *Journal of Educational Psychology, 93*, 77–86.
- Nicholls, J. G. (1984). Achievement motivation: Conceptions of ability, subjective experience, task choice, and performance. *Psychology Review, 91*, 328–346.
- Nicholls, J. G. (Ed.). (1989). *The competitive ethos and democratic education*. Cambridge, MA: Harvard University Press.
- Niemiec, C. P., Deci, E. L., & Ryan, R. M. (2006). On the development and consequences of intrinsic and extrinsic aspirations: A two-year longitudinal analysis. Manuscript submitted for publication.
- Ntoumanis, N. (2005). A prospective study of participation in optional school physical education using a self-determination theory framework. *Journal of Educational Psychology, 97*, 444–453.
- Ntoumanis, N., & Biddle, S. J. H. (1999). Affect and achievement goals in physical activity: A meta-analysis. *Scandinavian Journal of Medicine and Science in Sport, 9*, 315–332.
- Papaioannou, A. (1999). Goal perspectives, reasons for being disciplined and self-reported discipline in physical education classes. *Journal of Teaching in Physical Education, 17*, 421–441.
- Papaioannou, A., & Kouli, O. (1999). The effect of task structure, perceived motivational climate and goal orientations on students' task involvement and anxiety. *Journal of Applied Sport Psychology, 11*, 51–71.
- Pintrich, P. R., Conley, A. M., & Kempler, T. M. (2003). Current issues in achievement goal theory and research. *International Journal of Educational Research, 39*, 319–337.
- Pintrich, P. R., & De Groot, E. V. (1990). Motivational and self-regulated learning components of classroom academic performance. *Journal of Educational Psychology, 82*, 33–40.
- Pintrich, P. R., & Schrauben, B. (1992). Students' motivational beliefs and their cognitive engagement in the classroom academic tasks. In D. Schunk, & J. Meece (Eds.), *Student perception in the classroom* (pp. 149–183). Hillsdale, NJ: Lawrence Erlbaum Associates Inc.
- Pintrich, P. R., & Schunk, D. (2002). *Motivation in education. Theory, research and applications* (2nd ed.). Upper Saddle River, NJ: Merrill/Prentice Hall.
- Rawsthorne, L. J., & Elliot, A. J. (1999). Achievement goals and intrinsic motivation: A meta-analytic review. *Personality and Social Psychology Review, 3*, 326–344.
- Reinboth, M., & Duda, J. L. (2006). Perceived motivational climate, need satisfaction and indices of well-being in team sports: A longitudinal perspective. *Psychology of Sport and Exercise, 1*, 269–286.
- Ryan, R. M. (1982). Control and information in the intrapersonal sphere: An extension of cognitive evaluation theory. *Journal of Personality and Social Psychology, 43*, 450–461.
- Ryan, R. M. (1995). Psychological needs and the facilitation of integrative processes. *Journal of Personality, 63*, 397–427.
- Ryan, R. M., & Brown, K. W. (2003). Why we don't need self-esteem: Basic needs, mindfulness, and the authentic self. *Psychological Inquiry, 14*, 71–76.
- Ryan, R. M., & Deci, E. L. (1989). Bridging the research traditions of task/ego involvement and intrinsic/extrinsic motivation: A comment on Butler (1987). *Journal of Educational Psychology, 81*, 265–268.
- Ryan, R. M., & Deci, E. L. (2000). Self-determination theory and the facilitation of intrinsic motivation, social development and well-being. *American Psychologist, 55*, 68–78.

- Ryan, R. M., & Deci, E. L. (2004). Avoiding death or engaging in life as accounts of meaning and culture: Comment on Pyszczynski et al. (2004). *Psychological Bulletin*, *130*, 473–477.
- Ryan, R. M., Koestner, R., & Deci, E. L. (1991). Varied forms of persistence: When free-choice behavior is not intrinsically motivated. *Motivation and Emotion*, *15*, 185–205.
- Senko, C., & Harackiewicz, J. M. (2005a). Achievement goals, task performance, and interest: Why perceived goal difficulty matters. *Personality and Social Psychology Bulletin*, *31*, 1739–1753.
- Senko, C., & Harackiewicz, J. M. (2005b). Regulation of achievement goals: The role of competence feedback. *Journal of Educational Psychology*, *97*, 320–336.
- Shaw, J., & Waller, G. (1995). The media's impact on body image: Implications for prevention and treatment. *Eating Disorders: The Journal of Treatment and Prevention*, *3*, 115–123.
- Simons, J., Dewitte, S., & Lens, W. (2003). “Don't do it for me, do it for yourself”. Stressing the personal relevance enhances motivation in physical education. *Journal of Sport and Exercise Psychology*, *25*, 145–160.
- Simons, J., & Lens, W. (2001). Motivatie en sport. Een Vlaamse versie van de ‘taak- en egogerichtheid in sport’-vragenlijst. In J. Simons (Red.). *Actuele themata uit de psycho-motorische therapie. Jaarboek 2001* (pp. 111–127). Leuven: Acco.
- Spera, C., & Wentzel, K. R. (2003). Congruence between students' and teachers' goals: Implications for social and academic motivation. *International Journal of Educational Research*, *39I*, 395–413.
- Soenens, B., & Vansteenkiste, M. (2005). Antecedents and outcomes of self-determination in three life domains: The role of parents' and teachers' autonomy support. *Journal of Youth and Adolescence*, *34*, 589–604.
- Solmon, M., & Boone, J. (1993). The impact of student goal orientation in physical education classes. *Research Quarterly for Sport and Exercise*, *64*, 418–424.
- Standage, M., Duda, J. L., & Ntoumanis, N. (2003). Predicting motivational regulations in physical education: The interplay between dispositional goal orientations, motivational climate, and perceived competence. *Journal of Sports Sciences*, *21*, 631–647.
- Standage, M., & Treasure, D. (2002). Relationship among achievement goal orientations and multidimensional situational motivation in physical education. *British Journal of Educational Psychology*, *72*, 87–103.
- Stice, E., & Shaw, H. E. (1994). Adverse effects of the media portrayed thin-ideal on women and linkages to bulimic symptomatology. *Journal of Social and Clinical Psychology*, *13*, 288–308.
- Sheldon, K. M., Ryan, R. M., Deci, E. L., & Kasser, T. (2004). The independent effects of goal contents and motives on well-being: It's both what you pursue and why you pursue it. *Personality and Social Psychology Bulletin*, *30*, 475–486.
- Swain, A. (1996). Social loafing and identifiability: The mediating role of achievement goal orientations. *Research Quarterly for Exercise and Sport*, *67*, 337–344.
- Vallerand, R. J. (1997). Toward a hierarchical model of intrinsic and extrinsic motivation. In M. P. Zanna (Ed.), *Advances in experimental social psychology* (pp. 271–360). San Diego: Academic Press.
- Van den Broeck, A., Vansteenkiste, M., Lens, W., & De Witte, H. (2006). The relationship between intrinsic versus extrinsic work value orientations and job flexibility among long-term unemployed individuals. Manuscript submitted for publication.
- Vansteenkiste, M. (2005). *Intrinsic versus extrinsic goal framing and autonomy-support versus control: Promoting performance, persistence, well-being and socially adaptive functioning*. Unpublished doctoral dissertation, University of Leuven, Belgium.
- Vansteenkiste, M., Duriez, B., Soenens, B., & De Witte, H. (2005). Examining the impact of parental extrinsic versus intrinsic goal promotion and parental educational level on ethnic prejudice. Manuscript submitted for publication.
- Vansteenkiste, M., Lens, W., & Deci, E. L. (2006). Intrinsic versus extrinsic goal-contents in self-determination theory: Another look at the quality of academic motivation. *Educational Psychologist*, *41*, 19–31.
- Vansteenkiste, M., Neyrinck, B., Niemiec, C., Soenens, B., De Witte, H., & Van den Broeck, A. (in press). On the relations among work value orientations, psychological need satisfaction, and job outcomes: A self-determination theory approach. *Journal of Occupational and Organizational Psychology*.
- Vansteenkiste, M., Simons, J., Braet, C., Bachman, C., & Deci, E. L. (2006). Promoting maintained weight loss through healthy lifestyle changes among obese children: An experimental test of self-determination theory. Manuscript submitted for publication.

- Vansteenkiste, M., Simons, J., Lens, W., Sheldon, K. M., & Deci, E. L. (2004). Motivating persistence, deep level learning and achievement: The synergistic role of intrinsic-goal content autonomy-supportive context. *Journal of Personality and Social Psychology*, *87*, 246–260.
- Vansteenkiste, M., Simons, J., Lens, W., Soenens, B., & Matos, L. (2005). Examining the impact of extrinsic versus intrinsic goal framing and internally controlling versus autonomy-supportive communication style upon early adolescents' academic achievement. *Child Development*, *76*, 483–501.
- Vansteenkiste, M., Simons, J., Lens, W., Soenens, B., Matos, L., & Lacante, M. (2004). Less is sometimes more: Goal content matters. *Journal of Educational Psychology*, *96*, 755–764.
- Vansteenkiste, M., Simons, J., Soenens, B., & Lens, W. (2004). How to become a persevering exerciser: The importance of providing a clear, future goal in an autonomy-supportive way. *Journal of Sport and Exercise Psychology*, *26*, 232–249.
- Vansteenkiste, M., Soenens, B., & Lens, W. (in press). Intrinsic versus extrinsic goal promotion in sport and exercise: Understanding their differential impact on performance and persistence. In M. S. Hagger & N. Chatzisarantis (Eds.), *Self-determination theory in exercise and sport*. Human Kinetics.
- Williams, G. C., Cox, E. M., Hedberg, V. A., & Deci, E. L. (2000). Extrinsic life goals and health-risk behaviors among adolescents. *Journal of Applied Social Psychology*, *30*, 1756–1771.
- Wolters, C. A. (2004). Advancing achievement goal theory: Using goal structures and goal orientations to predict students' motivation, cognition, and achievement. *Journal of Educational Psychology*, *96*, 236–250.
- Wolters, C. A., Yu, S. L., & Pintrich, P. R. (1996). The regulation between goal orientation and students' motivational beliefs and self-regulated learning. *Learning and Individual Differences*, *8*, 211–238.

Further reading

- Bouffard, T., Vezeau, C., & Bordeleau, L. (1998). A developmental study of the relation between combined learning and performance goals and students' self-regulated learning. *British Journal of Educational Psychology*, *68*, 309–319.
- Deci, E. L., & Ryan, R. M. (1995). Human autonomy: The basis for true self-esteem. In M. H. Kernis (Ed.), *Efficacy, agency, and self-esteem* (pp. 31–49). New York: Plenum Press.
- Dweck, C. S. (1986). Motivational processes affecting learning. *American Psychologist*, *41*, 1040–1048.
- Elliot, A. J., & Sheldon, K. M. (1997). Avoidance achievement motivation: A personal goal analysis. *Journal of Personality and Social Psychology*, *73*, 171–185.
- Harackiewicz, J. M., & Sansone, C. (1991). Goals and intrinsic motivation. You can get there from here. In M. L. Maehr, & P. R. Pintrich (Eds.), *Advances in motivation and achievement* (pp. 21–49). Greenwich, CJ: JAI Press.
- Pintrich, P. R. (2000). Multiple goals, multiple pathways: The role of goal orientation in learning and achievement. *Journal of Educational Psychology*, *92*, 544–555.