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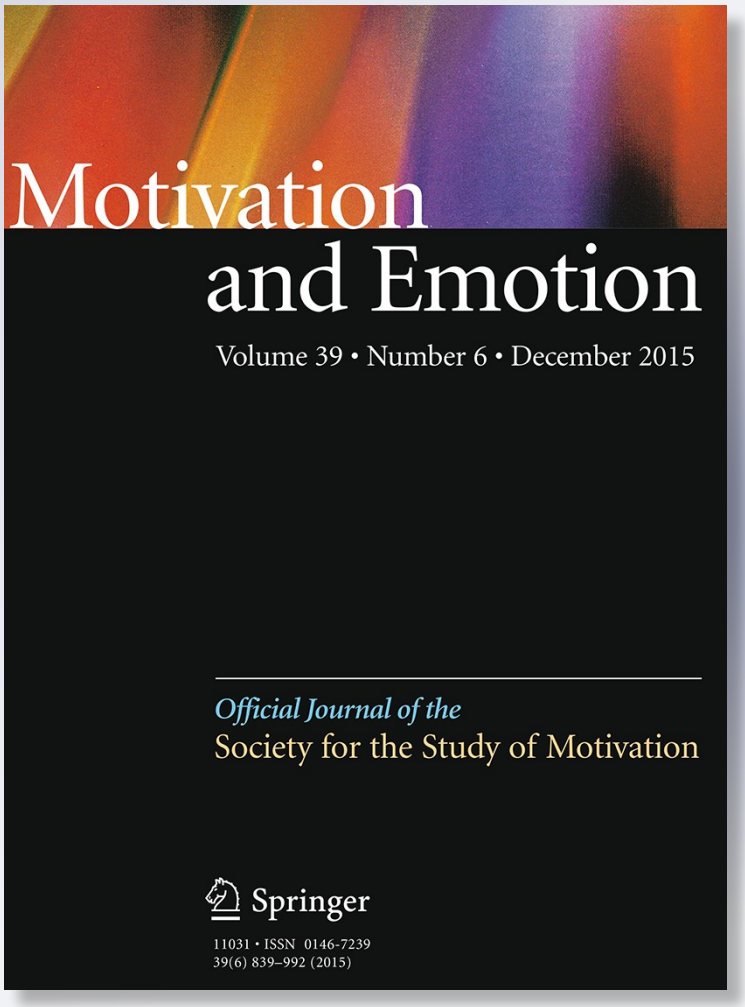

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ORIGINAL PAPER

Autonomous and controlled reasons underlying achievement goals: Implications for the 3 × 2 achievement goal model in educational and work settings

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Abstract The main purpose of the present research was to examine the effects of achievement goals (i.e., task-approach, task-avoidance, self-approach, self-avoidance, other-approach, and other-avoidance) and the autonomous and controlling reasons underlying their pursuit on educational (samples 1 and 2) and work (sample 3) outcomes (i.e., engagement, satisfaction, positive affect, and anxiety). The present results revealed that motivations underlying achievement goals are stronger predictors of subjective well-being than the endorsement of goals themselves. Theoretical implications and directions for future research are discussed.

Keywords Achievement goals · Autonomous and controlled motivations · Satisfaction · Engagement · Positive affect · Anxiety

Introduction

The achievement goal construct was developed in the late 1970s and early 1980s (see Dweck 1986; Nicholls 1984). Initially, two qualitatively distinct goals for achievement behavior were differentiated (e.g., Ames 1992): mastery (i.e., a focus on learning) and performance (i.e., a focus on outperforming others) goals. Elliot and Harackiewicz (1996) then proposed the trichotomous achievement goal model in which they distinguished performance-approach (i.e., focus on the demonstration of competence relative to that of others) from performance-avoidance (i.e., avoid performing worse than others do) goals. Finally, Elliot (1999) made a distinction between mastery-approach (i.e., attaining task-based or intrapersonal competence) and mastery-avoidance (i.e., avoidance of task-based or intrapersonal-based incompetence) goals in the 2 × 2 achievement goal model.

Numerous studies in various contexts (e.g., education, sport, work) have investigated the effects of mastery and performance goals on well-being, ill-being, and performance (e.g., Isoard-Gautheur et al. 2013; Putwain et al. 2013; Shim and Finch 2014). Mastery-approach goals have been systematically and positively related to performance, satisfaction, and positive affect (see Huang 2012; Senko et al. 2011). Past research has also suggested that adopting mastery-avoidance goals is not as desirable as adopting mastery-approach goals, albeit not systematically linked to negative outcomes. For instance, Van Yperen et al. (2009) revealed that mastery-avoidance goals were deleterious for performance improvement, whereas no significant association was found between mastery-avoidance goals and performance in other studies (e.g., Cury et al. 2006; Elliot and McGregor 2001). Moreover, in a meta-analysis by Baranik et al. (2010), mastery-avoidance goals were found to positively correlate with interest and negative affect and negatively so with performance. Performance-avoidance goals have been almost uniformly correlated to negative outcomes such as burnout and negative affect (e.g., Kumar and Jagacinski 2011; Tuominen-Soini et al. 2008). There have been inconsistent findings with respect to the effects

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of performance-approach goals in prior research. Indeed, performance-approach goals were significantly and positively associated with positive affect and satisfaction in some studies (e.g., Mouratidis et al. 2013; Papaioannou et al. 2008), whereas other research did not find any significant relationship with these outcomes (e.g., Adie et al. 2008; Poortvliet and Giebels 2012). In sum, there are inconsistent findings in the literature regarding the effects of achievement goals, especially for mastery-avoidance and performance-approach goals.

Recently, Elliot et al. (2011) suggested that mastery-based goals contain two different standards for evaluation: task-based competence and self-based competence. In this vein, a 3 × 2 model of achievement goals was proposed to extend and clarify the study of achievement goals. This model encompasses six goal constructs: task-approach, task-avoidance, self-approach, self-avoidance, other-approach, and other-avoidance. A task-approach goal focused on the attainment of task-based competence, while a task-avoidance goal focused on the avoidance of task-based incompetence. For these goals, competence is defined in terms of doing well or poorly relative to what the task itself requires (e.g., "Do the task correctly" or "Avoid doing the task incorrectly"). A self-approach goal focused on the attainment of self-based competence, while a self-avoidance goal focused on the avoidance of self-based incompetence. For these goals, competence is defined in terms of doing well or poorly relative to past performance and/or personal expectations (e.g., "Perform better than before" or "Avoid performing worse than before"). Finally, other-based goals are a direct analog of performance-based goals described in prior research (e.g., Law et al. 2012; Murayama et al. 2011).

Elliot et al. (2011, Study 2) have examined the consequences of each of these six achievement goals in an educational context. Results provided clear support for the separation of task-based and self-based goals. As such, task-based and self-based goals were linked differently to outcomes (i.e., exam performance, intrinsic motivation, learning efficacy, worry about exams, absorption in class, and energy in class). Specifically, task-approach goals positively related to intrinsic motivation, learning efficacy, and absorption in class, whereas self-based and task-avoidance goals were not significantly correlated to each of these variables. In contrast, self-approach and self-avoidance goals were positively and negatively linked to energy in class, respectively, whereas task-based goals were unrelated. In addition, other-approach goals were positively associated with exam performance and learning efficacy, but were not significantly correlated to other outcomes, in accordance with past studies on performance-approach goals (e.g., Darnon et al. 2009; Phan 2010). Finally, other-avoidance goals were negatively linked to exam performance and learning efficacy, and positively related to worry about exams.

Recent research also stressed that reasons underlying individuals' performance-approach strivings should play a critical role in the consequences of such goal (e.g., Gaudreau 2012; Gillet et al. 2014; Vansteenkiste et al. 2010a, b). More generally, Vansteenkiste et al. (2014a) argued for a systematic consideration of the autonomous and controlled reasons underlying individuals' achievement goals, Accordingly, studies have investigated the role of autonomous and controlled reasons underlying achievement goals using self-determination theory (Deci and Ryan 2008) as a conceptual basis. Autonomous motivation is expected to lead to positive outcomes because when autonomously motivated, individuals experience volition, or a self-endorsement of their actions. In this case, autonomous motivation accurately reflects one's values and interests, thereby allowing the individual to fully partake in the activity (Deci and Ryan 2000). In contrast, controlled motivation is predicted to lead to negative outcomes because individuals experience pressure to think, feel, or behave in particular ways making goal pursuit less aligned with one's values and interests (see Deci and Ryan 2008, 2012). The conjugation of achievement goal and self-determination theories has led to encouraging findings.

Vansteenkiste et al. (2010a, b) showed that regulating performance-approach goals for autonomous reasons (i.e., pursuing a goal out of pleasure and/or volition and choice) was positively associated with adaptive consequences (e.g., concentration, persistence, positive affect), whereas regulating these same goals for controlled reasons (i.e., pursuing a goal for internal or external pressure) was related to negative outcomes (e.g., anxiety, negative affect), above and beyond the strength of performance-approach goals. In two studies in educational and work settings using cross-sectional (Study 1) and prospective designs (Study 2), Gillet et al. (2014) showed that considering autonomous and controlled regulations underlying performance-approach goals predicted well-being, above and beyond the strength of performance-approach goals. In the study conducted by Vansteenkiste et al. (2014b), autonomous reasons underlying mastery-approach goal pursuit positively related to prosocial behavior, enjoyment, and performance satisfaction. Michou et al. (2014) showed that autonomous reasons underlying mastery approach, performance approach, and performance avoidance goals positively related to learning strategies in two studies in the educational context. Additionally, controlled reasons underlying these goals were positively associated with cheating in Study 2. Benita, Roth, and Deci (2014, Study 2) found stronger links between mastery-approach goals and interest/enjoyment and behavioral engagement when students' sense of choice was high, rather than low. Finally, Gaudreau (2012) found that

the relationships of mastery-approach and performance-approach goals with academic satisfaction, anxiety, and performance are moderated by the extent to which they are pursued for autonomous reasons. Specifically, mastery-approach goals were more strongly associated with both academic satisfaction and performance when these goals were pursued for autonomous reasons. Moreover, performance-approach goals were more strongly associated with academic performance when these goals were pursued for autonomous reasons. No such effect was found for mastery and performance-avoidance goals.

In sum, past studies examined whether performance-approach goals and the autonomous and controlling reasons underlying their pursuit related to well-being and moral functioning in the sport (Vansteenkiste et al. 2010a), educational (Gillet et al. 2014, Study 1; Vansteenkiste et al. 2010b), and work (Gillet et al. 2014, Study 2) settings. Moreover, Benita et al. (2014) as well as Vansteenkiste et al. (2014b) only focused on mastery-approach goals when examining the links between goals and outcomes. Finally, Michou et al. (2014) assessed the autonomous reasons underlying mastery approach, performance approach, and performance avoidance goals, while Gaudreau (2012) considered the four goals in the 2 × 2 achievement goal model (Elliot 1999).

The present research

The first purpose of the present research was to investigate the links between the six achievement goals proposed by Elliot et al. (2011) and various educational and work outcomes (e.g., engagement, satisfaction, positive affect, and anxiety). Such work would provide support for the generalizability of the 3 × 2 model. Several researchers propose a multiple goal perspective in which different types of achievement goals play a differential role in the prediction of outcomes (Barron and Harackiewicz 2001; Pintrich 2000). Task-approach goals are viewed as focusing attention on ongoing mastery of the activity and the positive value of the activity itself, and facilitate positive activity emotions (Pekrun et al. 2014). We thus expected that task-approach goals would be the most significant predictor of the study's positive outcomes. Specifically, task-approach goals should be a positive predictor of satisfaction (e.g., Gaudreau 2012; Verner-Filion and Gaudreau 2010), engagement (e.g., Luo et al. 2013; Walker and Greene 2009), and positive affect (e.g., Mouratidis et al. 2013). In contrast, task-approach goals should be a negative predictor of anxiety (e.g., Ranellucci et al., in press). In addition, based on the specialized goal pattern hypothesis (Barron and Harackiewicz 2001), self-approach goals would be a weaker positive predictor or even not significantly associated with positive affect, satisfaction, engagement, and anxiety (e.g., Elliot et al. 2011). The specialized goal pattern hypothesis proposes that two goals (e.g., task-approach and self-approach goals) have unique relationships with outcomes. For instance, Elliot and Church (1997) provided support for this hypothesis by showing that students who endorsed mastery goals reported more interest in a course, while performance goals were unrelated to interest.

We also expected that task-avoidance and self-avoidance goals would be unrelated or weakly related to satisfaction, engagement, positive affect, and anxiety (Elliot et al. 2011). However, in light of the minimal empirical evidences to date for omnibus mastery-avoidance goals (see Baranik et al. 2010), hypotheses with respect to task-avoidance and self-avoidance should be deemed as exploratory. In addition, we hypothesized that other-avoidance goals would be unrelated or weakly related to satisfaction (e.g., Verner-Filion and Gaudreau 2010), engagement (e.g., Church et al. 2001; Luo et al. 2011), and positive affect (e.g., Kumar and Jagacinski 2011; Mouratidis et al. 2013). We also expected that other-avoidance goals would be significantly and positively related to anxiety (e.g., Elliot et al. 2011). Finally, other-approach goals entail an approach tendency and thus an appetitive form of motivation (see Elliot 2005). Therefore, other-approach goals do orient individuals towards success, resulting in positive value and control appraisals and subsequent hope and pride (Pekrun et al. 2009). However, other studies showed that other-approach goals were unrelated to satisfaction (e.g., Gaudreau 2012; Poortvliet and Giebels 2012) and engagement (e.g., Linnenbrink 2005). Based on these findings, we hypothesized that other-approach goals would be a weak and positive predictor of positive affect, satisfaction, and engagement (e.g., Diseth and Samdal 2014; Kumar and Jagacinski 2011; Mouratidis et al. 2013), or even not significantly correlated with positive outcomes. Moreover, other-approach-goals should be unrelated or weakly related to anxiety (e.g., Elliot et al. 2011).

The second objective was to examine whether or not autonomous and controlled regulations underlying achievement goals explain incremental variance in outcomes for each of the six achievement goals in the 3 × 2 achievement goal model (Elliot et al. 2011). The present research is thus consistent with Elliot and colleagues' (e.g., Elliot and Fryer 2008; Elliot et al. 2011) suggestion about the necessity to detach reasons from aims of achievement goals to more precisely examine their motivational outcomes. This is also in accordance with Vansteenkiste et al. (2014a) propositions regarding the possibility to consider self-determination theory in order to enrich the achievement goal approach. It represents an extension of past research (e.g., Gaudreau 2012; Gillet et al. 2014; Vansteenkiste et al. 2010a, b) because no study, to the best of our knowledge, examined autonomous and controlled regulations underlying achievement goals using the 3 × 2

framework (Elliot et al. 2011). We investigated the role of both achievement goals and the autonomous and controlled reasons for endorsing these goals in satisfaction, engagement, and positive affect in a first sample of university students. To enhance the validity and generalization of the findings, we then aimed to replicate these results in two samples of students and workers.

Based on self-determination theory (Deci and Ryan 2008) and in line with prior research on achievement goals (e.g., Gaudreau 2012; Gillet et al. 2014; Vansteenkiste et al. 2010a, b), it was hypothesized that autonomous reasons would be positively related to positive outcomes. Because the effects of autonomous motivation on positive outcomes are stronger than those of controlled motivation (see Deci and Ryan 2012), we expected that controlled reasons would be unrelated or weakly and negatively related to satisfaction, engagement, and positive affect. This is because autonomous motivation accurately reflects the values and interests of one's true self, while controlled motivation is not aligned with one's values and interests thereby preventing one from fully focusing on the activity. Past studies found that autonomous motivation more strongly influenced positive outcomes than controlled motivation, while the opposite was true for negative outcomes (e.g., Koestner et al. 2008; Stanley et al. 2012). Consequently, it would be important that not only positive indicators of well-being are considered in the present research. Therefore, a negative indicator of well-being (i.e., anxiety) was considered in our second sample, to examine if regulating achievement goals for controlled reasons is related to ill-being, above and beyond the strength of each achievement goal.

Third and finally, the interactions between each goal and autonomous and controlled reasons, in the prediction of outcomes, were examined for exploratory purposes. Gaudreau (2012) has found that performance-approach goals were associated with higher performance, but only for students who pursue these goals for autonomous reasons. Thus, autonomous endorsement of all six achievement goals could potentially promote increasingly positive outcomes. In contrast, in line with past research (e.g., Vansteenkiste et al. 2010b), it was hypothesized that no significant interaction between each goal strength and underlying controlled reasons would occur.

Method

Sample 1

A total of 278 (48 male and 230 female) undergraduates in an introductory level psychology class in France voluntarily participated in the study. Their mean age was 18.93 years (SD = 1.70). Two hundred and sixty-nine students were enrolled in their first year of psychology and nine students repeated their first year. Thirteen percent were working during the semester for an average of 12.64 h weekly (SD = 7.37).

Sample 2

A total of 327 (56 male and 271 female) undergraduates in an introductory level psychology class in France voluntarily participated in the study. Their mean age was 18.93 years (SD = 1.70). Three hundred and one students were enrolled in their first year of psychology and twenty-six students repeated their first year. Seventeen percent were working during the semester for an average of 12.01 h weekly (SD = 7.84).

Sample 3

A total of 169 (74 male and 92 female, three people did not report their gender) workers were recruited via Amazon.com's Mechanical Turk online survey program. Their mean age was 32.48 years (SD = 6.51). Organizational tenure was 6.06 years (SD = 6.63) and average tenure in the current job was 4.36 years (SD = 5.23). One hundred and twenty-four participants were full-time workers (73.4 %). The mean for the hours worked per week (without overtime) was 36.45 h (SD = 11.09). Most participants (82 %) were from English-speaking Western countries (i.e., Australia, Canada, UK, USA). We checked IP addresses to detect potential duplicate responders but found none.

Procedure

For the two first samples, 8 weeks into the course, participants completed a questionnaire including basic demographic questions as well as the scales depicted below in group sessions. Participants were assured that all of their responses would remain confidential and would not influence their course grade. Each participant provided informed consent and took 20–25 min to complete the questionnaire. Participants in the third sample also completed a questionnaire including basic demographic questions as well as the scales depicted below. They were assured that all of their responses would remain confidential. Each participant provided informed consent and took 15–20 min to complete the questionnaire.

Measures

Achievement goals

The strength of participants' achievement goals for their psychology class (α between .87 and .95 for sample 1 and α between .87 and .97 for sample 2) was assessed with 18 items from the 3 × 2 Achievement Goal Questionnaire (Elliot et al. 2011) and completed on a seven-point Likert scale, ranging from 1 ("strongly disagree") to 7 ("strongly agree"). The items were translated and back-translated for use in the French language (Brislin 1970). The strength of participants' achievement goals for their work (α between .83 and .97 for sample 3) was also assessed with 18 items from the 3 × 2 Achievement Goal Questionnaire (Elliot et al. 2011). Items were adapted to refer to participants' work (e.g., "To avoid doing my job poorly").

Reasons for endorsing achievement goals

After participants in sample 1 responded to the achievement goals items, they were asked why they pursued each scale item. Specifically, as Sheldon and Elliot (1999), two items that assessed autonomous reasons (i.e., intrinsic motivation: "Because of the fun and enjoyment that it provides me"; identified regulation: "Because I really believe it is an important goal to have") and two items that assessed controlled reasons (i.e., introjected regulation: "Because I would feel ashamed, guilty, or anxious if I did not"; external regulation: "Because somebody else wants me to or because the situation demands it") were presented. Items were completed on a seven-point Likert scale ranging from 1 ("does not correspond at all") to 7 ("corresponds exactly"). This procedure is identical to the one used in prior studies that focused on the reasons behind individuals' achievement (e.g., Gillet et al. 2014; Vansteenkiste et al. 2010b) or life goals (e.g., Sheldon and Kasser 1998). To reduce the number of variables to a manageable set that was conceptually consistent with the self-determination theory formulations, scores for autonomous and controlled reasons were obtained by averaging the intrinsic motivation and identified regulation items (α between .94 and .98), and the introjected and external regulations items (α between .89 and .93), respectively.

Contrarily to sample 1, reasons for endorsing achievement goals were completed in samples 2 and 3 toward a single item per achievement goal (*r*s between .36 and .85 for sample 2 and *r*s between .33 and .67 for sample 3) and not toward all scale items. To do so, we selected the highest loader, from the first sample, from each subscale as candidate.

Satisfaction

Student's satisfaction toward their introduction to psychology course (α = .79 for sample 1 and α = .82 for sample 2) was assessed with five items derived from the Satisfaction with Life Scale (Diener et al. 1985). The word "life" was replaced by "introduction to psychology course" (e.g., "I am satisfied with my introduction to psychology course"). Responses were made on a seven-point Likert scale ranging from 1 ("strongly disagree") to 7 ("strongly agree"). Employees' satisfaction toward their work (α = .90 for sample 3) was also assessed with these five items. The words "introduction to psychology course" were replaced by "job" (e.g., "I am satisfied with my job").

Positive affect

Positive affect (α = .81 for sample 1 and α = .79 for sample 2) was assessed with three items taken from the Positive and Negative Affect Schedule (i.e., "enthusiast", "inspired", and "determined"; Watson et al. 1988). Participants were asked to rate each item on the basis of how they generally felt in the introduction to psychology course since the beginning of the academic year. The scale was completed on a five-point Likert scale ranging from 1 ("not at all") to 5 ("very strongly"). In the third sample, positive affect (α = .92) was assessed with ten items also taken from the Positive and Negative Affect Schedule (Watson et al. 1988).

Engagement

Study engagement (α = .81 for sample 1 and α = .79 for sample 2) was assessed using three slightly modified items from the absorption subscale (i.e., "I feel happy when I am captivated by the introduction to psychology courses", "I am immersed in the introduction to psychology courses", and "I get carried away when I am in the introduction to psychology courses") of the Utrecht Work Engagement Scale (UWES-9; Schaufeli et al. 2006). This scale has been adapted and validated in a sample of university students (Schaufeli et al. 2002). Answers were given on a seven-point Likert scale from 0 ("never") to 6 ("always").

We also used Schaufeli et al. (2006) short version of the UWES-9 to measure work engagement in our third sample. This scale captures vigor (three items, α = .86; e.g., "At my work, I feel bursting with energy"), absorption (three items, α = .81; e.g., "I feel happy when I am working intensely"), and dedication (three items, α = .89; e.g., "I am enthusiastic about my job"). A seven-point Likert-type scale (1 = *never*; 7 = *always*) was used for all items.

Work engagement was treated as a unidimensional construct and individual scores were interpreted in a summative manner, giving a single global score of work engagement ($\alpha = .94$; see Sonnentag 2003).

Anxiety

Academic anxiety ($\alpha = .87$) was assessed using a five-item subscale from the Motivated Learning Strategies Questionnaire (Pintrich et al. 1993). Responses were anchored on a seven-point Likert ranging from 1 ("totally disagree") to 7 ("totally agree") and students in the second sample were asked to rate the extent to which each statement refers to their feelings toward university exams (e.g., "I have an uneasy, upset feeling when I take an exam").

Results

Preliminary analyses

We first examined the dimensionality of our variables using a confirmatory factor analysis. The analysis was conducted on a covariance matrix, and the solution was generated on the basis of maximum-likelihood estimation. As recommended by Hu and Bentler (1998), we used several different indices to evaluate the fit of the model to the data, including the incremental fit index (IFI), Tucker–Lewis index (TLI), comparative fit index (CFI), and root-mean-square error of approximation (RMSEA). The following criteria were used to evaluate the adequacy of model fit: IFI = .90, CFI = .90, TLI = .90, and RMSEA = .08 (Kline 2005). In samples 1 and 3, the model tested was composed of task-approach goals, task-avoidance goals, self-approach goals, self-avoidance goals, other-approach goals, other-avoidance goals, satisfaction, engagement, and positive affect as separate latent variables. The same confirmatory factor analysis was conducted in the second sample with the addition of anxiety.

All standardized factor loadings were moderate to strong (ranging from .73 to .99 for achievement goals, ranging from .52 to .97 for satisfaction, ranging from .51 to .94 for engagement, ranging from .46 to .85 for positive affect, and ranging from .60 to .85 for anxiety), and each fit statistic met the criteria for an adequate fitting model: $\chi^2(338) = 587.99$, $p < .001$, $\chi^2/df = 1.74$, IFI = .96, TLI = .95, CFI = .96, and RMSEA = .05 in sample 1; $\chi^2(479) = 744.93$, $p < .001$, $\chi^2/df = 1.56$, IFI = .97, TLI = .96, CFI = .97, and RMSEA = .04 in sample 2; $\chi^2(770) = 1476.71$, $p < .001$, $\chi^2/df = 1.92$, IFI = .89, TLI = .88, CFI = .89, and RMSEA = .07 in sample 3. In addition, each subscale demonstrated good reliability (see Tables 1, 2, 3).

Correlational analyses

Tables 1, 2, and 3 also provides the descriptive statistics of the achievement goal variables and the correlations between these variables and outcomes. Overall, the majority of results were concordant between the three samples and provided support for our hypotheses. For instance, task-approach goals were significantly and positively correlated to engagement and positive affect, and not significantly correlated to anxiety. Self-avoidance goals were not significantly correlated to satisfaction, engagement, positive affect, and anxiety. Other-approach goals were significantly and positively correlated to positive affect ($p = .05$ in sample 1), and not significantly correlated to satisfaction and anxiety. Nevertheless, some findings did contradict. Self-approach goals were significantly and positively correlated to satisfaction and engagement in sample 1, not significantly correlated to these two variables in sample 2, as well as significantly and positively correlated to engagement and not significantly correlated to satisfaction in sample 3. Moreover, task-avoidance goals and other-avoidance goals were not significantly correlated to satisfaction, engagement, and positive affect in samples 1 and 3, while positively correlated in sample 2. These results stressed the importance of examining the reasons underlying achievement goal pursuit in order to better understand the effects of each achievement goals on outcomes.

Hierarchical regression analyses

To examine whether underlying regulations of each achievement goal explained additional variance over and above the strength of each goal per se, we performed a series of hierarchical multiple regression analyses (see Tables 4, 5, 6) for all outcomes (i.e., satisfaction, engagement, positive affect, and anxiety). Strength of each achievement goal was entered in the first step, while underlying autonomous and controlled reasons of goal pursuits were entered in the second step to examine whether these reasons would account for incremental variance in outcomes. Finally, we entered two-way interactions between autonomous and controlled reasons for pursuing each goal and goal strength. According to Aiken and West's (1991) procedures, predictors were centered before calculating the interaction products.

In Step 1, task-approach goals were positively related to engagement and positive affect, while not significantly related to anxiety. Other-approach goals were significantly and positively related to positive affect, while not significantly related to satisfaction and anxiety. Self-avoidance goals were not significantly related to satisfaction, engagement, positive affect, and anxiety. Adding

Table 1 Means, standard deviations, alpha reliabilities, and correlations involving achievement goals and outcomes (sample 1)

	M	SD	1	2	3	4	5	6	7	8	9
Task-approach goals (1)	6.16	0.93	(.87)	.60**	.40**	.30**	.29**	.32**	.14*	.13*	.14*
Task-avoidance goals (2)	6.27	1.03		(.91)	.44**	.45**	.13*	.32**	.04	.02	.01
Self-approach goals (3)	5.35	1.27			(.91)	.58**	.34**	.41**	.13*	.13*	.11
Self-avoidance goals (4)	5.33	1.43				(.94)	.26**	.44**	.01	.03	−.00
Other-approach goals (5)	4.17	1.68					(.95)	.66**	.07	.07	.12
Other-avoidance goals (6)	4.86	1.68						(.95)	−.08	.01	.01
Satisfaction (7)	4.54	0.91							(.79)	.59**	.56**
Engagement (8)	3.78	0.99								(.81)	.67**
Positive affect (9)	3.33	0.90									(.81)

Alpha coefficients are reported in parentheses along the diagonal

* $p < .05$; ** $p < .001$

Table 2 Means, standard deviations, alpha reliabilities, and correlations involving achievement goals and outcomes (sample 2)

	M	SD	1	2	3	4	5	6	7	8	9	10
Task-approach goals (1)	6.21	0.86	(.87)	.56***	.21***	.22***	.14*	.08	.19**	.17**	.21***	.07
Task-avoidance goals (2)	6.35	0.87		(.92)	.31***	.27***	.07	.18**	.18**	.14*	.14*	.12*
Self-approach goals (3)	5.37	1.29			(.90)	.57***	.31***	.28***	.09	.11	.10	.09
Self-avoidance goals (4)	5.35	1.45				(.93)	.23***	.39***	−.01	−.00	.04	.05
Other-approach goals (5)	4.19	1.60					(.97)	.70***	.07	.11*	.15**	.05
Other-avoidance goals (6)	4.79	1.59						(.95)	.11*	.11*	.15**	.14*
Satisfaction (7)	4.09	1.02							(.82)	.58***	.55***	.06
Engagement (8)	3.44	0.91								(.79)	.58***	.14*
Positive affect (9)	3.25	0.85									(.79)	.06
Anxiety (10)	4.01	1.53										(.87)

Alpha coefficients are reported in parentheses along the diagonal

* $p < .05$; ** $p < .01$; *** $p < .001$

Table 3 Means, standard deviations, alpha reliabilities, and correlations involving achievement goals and outcomes (sample 3)

	M	SD	1	2	3	4	5	6	7	8	9
Task-approach goals (1)	6.20	.99	(.91)	.40***	.52***	.19*	.31***	.28***	.15	.23**	.31***
Task-avoidance goals (2)	5.81	1.48		(.96)	.21**	.65***	.32***	.71***	−.02	−.02	−.01
Self-approach goals (3)	5.56	1.09			(.83)	.26**	.40***	.26**	.11	.29***	.28***
Self-avoidance goals (4)	5.29	1.69				(.95)	.28***	.61***	−.08	−.06	−.05
Other-approach goals (5)	4.93	1.48					(.87)	.47***	.09	.21**	.19*
Other-avoidance goals (6)	5.26	1.66						(.97)	−.02	−.02	.07
Satisfaction (7)	4.23	1.55							(.90)	.74***	.59***
Engagement (8)	4.58	1.36								(.94)	.79***
Positive affect (9)	3.43	.87									(.92)

Alpha coefficients are reported in parentheses along the diagonal

* $p < .05$; ** $p < .01$; *** $p < .001$

Table 4 Results of the hierarchical linear regression analyses (sample 1)

	ΔF	ΔR^2	GS	AR	CR	GS × AR	GS × CR
Task-approach goals							
Satisfaction							
Step 1	5.75*	.02	.14*	–	–	–	–
Step 2	9.44*	.06	.08	.25*	−.10	–	–
Step 3	2.53	.02	.09	.28*	−.09	.15*	−.10
Engagement							
Step 1	5.03*	.02	.13*	–	–	–	–
Step 2	27.81*	.16	−.01	.44*	−.03	–	–
Step 3	2.89	.02	.01	.46*	−.02	.15*	−.08
Positive affect							
Step 1	5.27*	.02	.14*	–	–	–	–
Step 2	32.70*	.19	−.01	.46*	−.04	–	–
Step 3	2.87	.01	.05	.49*	−.05	.13*	.03
Task-avoidance goals							
Satisfaction							
Step 1	.43	.00	.04	–	–	–	–
Step 2	12.14*	.08	−.05	.30*	−.07	–	–
Step 3	3.82*	.03	.05	.32*	−.07	.18*	.02
Engagement							
Step 1	.16	.00	.02	–	–	–	–
Step 2	29.66*	.18	−.13*	.45*	.00	–	–
Step 3	2.35	.01	−.04	.46*	−.01	.09	.07
Positive affect							
Step 1	.04	.00	.01	–	–	–	–
Step 2	26.41*	.16	−.13*	.43*	−.02	–	–
Step 3	5.20*	.03	.00	.45*	−.04	.12	.13
Self-approach goals							
Satisfaction							
Step 1	4.69*	.02	.13*	–	–	–	–
Step 2	14.37*	.09	.01	.35*	−.07	–	–
Step 3	.05	.00	.02	.36*	−.07	.06	.00
Engagement							
Step 1	4.36*	.02	.13*	–	–	–	–
Step 2	18.67*	.11	−.02	.39*	−.03	–	–
Step 3	4.85*	.03	.02	.40*	−.04	.11	.10
Positive affect							
Step 1	3.25	.01	.11	–	–	–	–
Step 2	17.77*	.12	−.03	.38*	−.06	–	–
Step 3	6.78**	.04	.02	.40*	−.08	.04	.19*
Self-avoidance goals							
Satisfaction							
Step 1	.01	.00	.01	–	–	–	–
Step 2	13.27*	.09	−.12	.33*	−.04	–	–
Step 3	4.14*	.03	−.07	.36*	−.04	.16*	.03
Engagement							
Step 1	.33	.00	.03	–	–	–	–
Step 2	15.34*	.10	−.11	.35*	−.01	–	–
Step 3	6.30*	.04	−.04	.38*	−.01	.18*	.06

Table 4 continued

	ΔF	ΔR^2	GS	AR	CR	GS × AR	GS × CR
Positive affect							
Step 1	.00	.00	.00	–	–	–	–
Step 2	15.76*	.10	−.15*	.35*	.02	–	–
Step 3	6.31*	.04	−.09	.38*	.03	.20*	.03
Other-approach goals							
Satisfaction							
Step 1	1.21	.00	.07	–	–	–	–
Step 2	3.56*	.03	−.07	.22*	−.03	–	–
Step 3	2.50	.02	−.05	.22*	−.04	.09	.07
Engagement							
Step 1	1.44	.01	.07	–	–	–	–
Step 2	3.60*	.02	−.06	.22*	−.04	–	–
Step 3	7.14*	.05	−.05	.20*	−.01	.23*	−.02
Positive affect							
Step 1	3.84	.01	.12*	–	–	–	–
Step 2	6.57*	.05	−.06	.30*	−.05	–	–
Step 3	1.03	.01	−.05	.29*	−.04	.08	.01
Other-avoidance goals							
Satisfaction							
Step 1	1.62	.01	−.08	–	–	–	–
Step 2	9.51*	.06	−.22*	.34*	−.14	–	–
Step 3	.28	.00	−.21*	.34*	−.13	.04	.01
Engagement							
Step 1	.05	.00	.01	–	–	–	–
Step 2	6.18*	.04	−.13	.28*	−.05	–	–
Step 3	3.03*	.02	−.09	.26*	−.03	.15*	.00
Positive affect							
Step 1	.02	.00	−.01	–	–	–	–
Step 2	7.64*	.05	−.17*	.30*	−.04	–	–
Step 3	1.67	.01	−.14	.30*	−.03	.08	.05

GS goal strength, *AR* autonomous reasons, *CR* controlled reasons

* $p < .05$

autonomous and controlled regulations underlying achievement goals in Step 2 resulted in a significant increase in explained variance in all outcomes for the six achievement goals (a marginal increase in explained variance in engagement for other-approach goals in sample 2). Specifically, across all three samples, autonomous reasons were positively related to satisfaction, engagement ($p = .06$ for other-approach goals in sample 2), and positive affect, while controlled reasons were unrelated or weakly negatively related to these outcomes. In addition, controlled reasons significantly and positively predicted anxiety. Interestingly, some of the initially observed significant relations of achievement goals to outcomes in Step 1 became non significant after taking into account the autonomous and controlled reasons in Step 2. For instance, the relations of task-approach goals to satisfaction, engagement, and positive affect in sample 1, the relations of task-avoidance and other-avoidance goals to anxiety in sample 2, and the relations of self-approach to engagement and positive affect in sample 3 became non significant in Step 2.

Finally, we added two-way interaction terms between autonomous and controlled regulations, and achievement goal strength in Step 3 to determine if some of the relationships of achievement goals to positive and negative outcomes were moderated by their underlying level of autonomous and controlled motivations. Results were not consistent across the three samples (see Tables 4, 5, 6). Nevertheless, the addition of the two-way interaction terms between autonomous regulation and other-avoidance goal

Table 5 Results of the hierarchical linear regression analyses (sample 2)

	ΔF	ΔR^2	GS	AR	CR	GS × AR	GS × CR
Task-approach goals							
Satisfaction							
Step 1	12.14*	.04	.19*	–	–	–	–
Step 2	26.08*	.13	.11*	.39*	−.09	–	–
Step 3	.31	.00	.11*	.39*	−.09	.01	.04
Engagement							
Step 1	10.19*	.03	.17*	–	–	–	–
Step 2	31.70*	.16	.08	.42*	−.03	–	–
Step 3	.43	.00	.09	.42*	−.03	.01	.05
Positive affect							
Step 1	14.80*	.04	.21*	–	–	–	–
Step 2	69.34*	.29	.09	.56*	−.12*	–	–
Step 3	.00	.00	.09	.56*	−.12*	.00	.00
Anxiety							
Step 1	1.53	.01	.07	–	–	–	–
Step 2	14.41*	.08	.02	.05	.27*	–	–
Step 3	1.14	.01	.01	.04	.28*	−.08	−.01
Task-avoidance goals							
Satisfaction							
Step 1	12.14*	.04	.19*	–	–	–	–
Step 2	26.08*	.13	.11*	.39*	−.09	–	–
Step 3	.31	.00	.11*	.39*	−.09	.01	.04
Engagement							
Step 1	10.19*	.03	.17*	–	–	–	–
Step 2	31.70*	.16	.08	.42*	−.03	–	–
Step 3	.43	.00	.09	.42*	−.03	.01	.05
Positive affect							
Step 1	6.22*	.02	.14*	–	–	–	–
Step 2	43.42*	.21	.04	.48*	−.09	–	–
Step 3	.04	.00	.04	.48*	−.09	−.01	.00
Anxiety							
Step 1	1.53	.01	.07	–	–	–	–
Step 2	14.41*	.08	.02	.05	.27*	–	–
Step 3	1.14	.01	.01	.04	.28*	−.08	−.01
Self-approach goals							
Satisfaction							
Step 1	2.49	.01	.09	–	–	–	–
Step 2	21.76*	.12	−.01	.38*	−.10	–	–
Step 3	2.92	.01	.01	.40*	−.08	.15*	−.03
Engagement							
Step 1	3.67	.01	.11	–	–	–	–
Step 2	23.43*	.13	.00	.39*	−.09	–	–
Step 3	2.63	.01	.02	.41*	−.08	.13*	−.01
Positive affect							
Step 1	3.07	.01	.10	–	–	–	–
Step 2	31.59*	.16	−.03	.44*	−.07	–	–
Step 3	3.98*	.02	−.01	.47*	−.05	.16*	−.02
Anxiety							

Table 5 continued

	ΔF	ΔR^2	GS	AR	CR	GS × AR	GS × CR
Step 1	2.84	.01	.09	–	–	–	–
Step 2	7.69*	.04	.02	.02	.22*	–	–
Step 3	.85	.01	.01	−.00	.23*	−.04	−.05
Self-avoidance goals							
Satisfaction							
Step 1	.05	.00	−.01	–	–	–	–
Step 2	17.81*	.10	−.05	.35*	−.13*	–	–
Step 3	.49	.00	−.05	.35*	−.12*	.07	−.04
Engagement							
Step 1	.00	.00	−.00	–	–	–	–
Step 2	22.12*	.12	−.01	.37*	−.08	–	–
Step 3	.71	.00	−.01	.39*	−.07	.07	−.01
Positive affect							
Step 1	.61	.00	.04	–	–	–	–
Step 2	37.67*	.19	−.02	.47*	−.14*	–	–
Step 3	.56	.00	−.02	.48*	−.13*	.07	−.04
Anxiety							
Step 1	.71	.00	.05	–	–	–	–
Step 2	10.82*	.07	−.00	.09	.21*	–	–
Step 3	1.32	.00	−.01	.08	.19*	−.11	.05
Other-approach goals							
Satisfaction							
Step 1	1.38	.00	.07	–	–	–	–
Step 2	3.12*	.02	.01	.18*	−.09	–	–
Step 3	5.37*	.03	.01	.15*	−.02	.21*	−.19*
Engagement							
Step 1	3.91*	.01	.19*	–	–	–	–
Step 2	2.07	.01	.03	.14	−.01	–	–
Step 3	1.38	.01	.04	.14	−.02	.09	−.00
Positive affect							
Step 1	7.52*	.02	.15*	–	–	–	–
Step 2	4.62*	.03	.06	.22*	−.07	–	–
Step 3	.91	.01	.07	.21*	−.06	.09	−.08
Anxiety							
Step 1	.71	.00	.05	–	–	–	–
Step 2	10.19*	.06	−.09	−.01	.29*	–	–
Step 3	.58	.00	−.10	−.02	.31*	−.01	−.05
Other-avoidance goals							
Satisfaction							
Step 1	3.95*	.01	.11*	–	–	–	–
Step 2	5.49*	.03	.05	.24*	−.14	–	–
Step 3	3.78*	.03	.07	.24*	−.10	.21*	−.09
Engagement							
Step 1	4.26*	.01	.11*	–	–	–	–
Step 2	7.12*	.05	.03	.27*	−.11	–	–
Step 3	1.48	.00	.04	.29*	−.12	.07	.03
Positive affect							
Step 1	7.93*	.02	.15*	–	–	–	–

Table 5 continued

	ΔF	ΔR^2	GS	AR	CR	GS × AR	GS × CR
Step 2	8.14*	.05	.07	.29*	−.14*	–	–
Step 3	.26	.00	.08	.28*	−.13	.06	−.05
Anxiety							
Step 1	6.21	.02	.14*	–	–	–	–
Step 2	7.62*	.04	.04	−.02	.24*	–	–
Step 3	.89	.01	.03	−.02	.23*	−.10	.04

GS goal strength, *AR* autonomous reasons, *CR* controlled reasons

* $p < .05$

strength in Step 3 increased explained variance in satisfaction in samples 1 and 3. Results showed that autonomous reasons × other-avoidance goal strength interaction significantly predicted satisfaction. Simple slope analyses revealed that other-avoidance goals were most strongly related to satisfaction when autonomous motivation was high in comparison to when autonomous motivation was low (see Fig. 1). In addition, results showed that autonomous reasons × other-approach and other-avoidance goal strength interaction significantly predicted engagement in samples 1 and 3. Simple slope analyses revealed that other-approach and other-avoidance goals were most strongly related to engagement when autonomous motivation was high in comparison to when autonomous motivation was low. Finally, results showed that autonomous reasons × self-avoidance goal strength interaction significantly predicted engagement and positive affect in samples 1 and 3. Simple slope analyses revealed that self-avoidance goals were most strongly related to engagement and positive affect when autonomous motivation was high in comparison to when autonomous motivation was low.

Discussion

We relied on the 3 × 2 model of achievement goals (Elliot et al. 2011) and self-determination theory (Deci and Ryan 2008, 2012) to gain insight into the reasons underlying achievement goal strivings. More specifically, the effects of achievement goals (i.e., task-approach, task-avoidance, self-approach, self-avoidance, other-approach, and other-avoidance) and autonomous and controlling reasons underlying their pursuit on satisfaction, engagement, positive affect, and anxiety were investigated in educational and work settings. Second, we examined, for exploratory purposes, the interactions between each achievement goal, and autonomous and controlled reasons, in the prediction of outcomes. The present results lead to a number of theoretical and practical implications.

First, the effects of achievement goals on outcomes were not consistent in the present research. For instance, task-avoidance goals and other-avoidance goals were not significantly correlated to satisfaction, engagement, and positive affect in samples 1 and 3, whereas all these correlations were positive in sample 2. In addition, the present results were not entirely consistent with those found by Elliot et al. (2011). For instance, task-avoidance goals were not significantly related to anxiety in the second study conducted by Elliot et al. (2011), while task-avoidance goals were negatively correlated to anxiety in sample 2. One possible reason for these inconsistent findings may be that the pursuit of achievement goals can be regulated by different reasons (see Elliot and Murayama 2008; Urdan and Mestas 2006). In this vein, Elliot and Fryer (2008) as well as Vansteenkiste et al. (2014a) recently suggested to separate reasons from aims of achievement goals to more precisely examine their motivational outcomes. Such a detachment is an important deviation from the classic view on achievement goals (e.g., Dweck 1986; Nicholls 1984). Nevertheless, the present results confirmed that the disentanglement of goals and reasons allow to more precisely examine the links between achievement goals and educational and work outcomes.

Indeed, the present results suggested that individuals could embrace each achievement goals for diverse reasons (i.e., autonomous and controlled reasons). Moreover, considering the autonomous and controlled reasons underlying individuals' achievement goal pursuit explained additional variance in the outcomes, over and above the strength of achievement goals. Specifically, results from regression analyses revealed that autonomous reasons to pursue achievement goals predicted higher levels of satisfaction, engagement and positive affect (marginally so for other-approach goals in the prediction of engagement in sample 2, $p = .06$). In contrast, controlled reasons to pursue achievement goals predicted higher levels of anxiety. These findings are in line with results from prior studies (e.g., Gillet et al. 2014; Vansteenkiste et al. 2010a).

Table 6 Results of the hierarchical linear regression analyses (sample 3)

	ΔF	ΔR^2	GS	AR	CR	GS × AR	GS × CR
Task-approach goals							
Satisfaction							
Step 1	3.73	.02	.15	–	–	–	–
Step 2	24.39*	.22	−.15	.55*	.02	–	–
Step 3	1.00	.01	−.08	.57*	.02	.10	.05
Engagement							
Step 1	9.04*	.05	.23*	–	–	–	–
Step 2	49.32*	.36	−.12	.69*	−.06	–	–
Step 3	2.02	.01	−.04	.71*	−.06	.13	.05
Positive affect							
Step 1	17.32*	.09	.31*	–	–	–	–
Step 2	31.00*	.25	.03	.57*	−.09	–	–
Step 3	1.79	.01	.11	.60*	−.11	.11	.07
Task-avoidance goals							
Satisfaction							
Step 1	.07	.00	−.02	–	–	–	–
Step 2	7.68*	.09	−.07	.32*	−.17	–	–
Step 3	3.29*	.04	.08	.34*	−.17	.17	.09
Engagement							
Step 1	.04	.00	−.02	–	–	–	–
Step 2	21.14*	.20	−.09	.50*	−.26*	–	–
Step 3	6.83*	.06	.09	.51*	−.26*	.26*	.06
Positive affect							
Step 1	.02	.00	−.01	–	–	–	–
Step 2	14.08*	.15	−.10	.43*	−.18*	–	–
Step 3	6.42*	.06	.10	.45*	−.19*	.21	.12
Self-approach goals							
Satisfaction							
Step 1	2.08	.01	.11	–	–	–	–
Step 2	22.25*	.21	−.09	.50*	.04	–	–
Step 3	.15	.00	−.10	.50*	.05	.02	−.03
Engagement							
Step 1	14.97*	.08	.29*	–	–	–	–
Step 2	46.69*	.33	.03	.63*	.06	–	–
Step 3	.18	.00	.04	.63*	.06	.04	.01
Positive affect							
Step 1	13.88*	.08	.28*	–	–	–	–
Step 2	34.14*	.27	.06	.56*	−.02	–	–
Step 3	.78	.01	.04	.56*	.01	.02	−.08
Self-avoidance goals							
Satisfaction							
Step 1	1.01	.01	−.08	–	–	–	–
Step 2	10.44*	.11	−.18*	.35*	−.00	–	–
Step 3	3.46*	.04	−.10	.37*	.01	.12	.13
Engagement							
Step 1	.53	.00	−.06	–	–	–	–
Step 2	23.66*	.22	−.17*	.51*	−.10	–	–
Step 3	12.37*	.10	−.03	.55*	−.09	.27*	.14

Table 6 continued

	ΔF	ΔR^2	GS	AR	CR	GS × AR	GS × CR
Positive affect							
Step 1	.46	.00	−.05	–	–	–	–
Step 2	25.15*	.23	−.17*	.52*	−.09	–	–
Step 3	9.83*	.08	−.04	.56*	−.08	.20*	.18*
Other-approach goals							
Satisfaction							
Step 1	1.44	.01	.09	–	–	–	–
Step 2	7.91*	.09	−.09	.37*	−.06	–	–
Step 3	1.44	.02	−.09	.37*	−.01	.17	−.07
Engagement							
Step 1	7.79*	.05	.21*	–	–	–	–
Step 2	18.61*	.18	.01	.51*	−.21*	–	–
Step 3	2.55	.02	.02	.50*	−.15	.21*	−.10
Positive affect							
Step 1	6.23*	.04	.19*	–	–	–	–
Step 2	18.77*	.18	−.06	.53*	−.14	–	–
Step 3	.99	.01	−.05	.53*	−.11	.12	−.03
Other-avoidance goals							
Satisfaction							
Step 1	.09	.00	−.02	–	–	–	–
Step 2	6.15*	.07	−.06	.30*	−.14	–	–
Step 3	3.20*	.04	−.02	.27*	−.10	.23*	−.05
Engagement							
Step 1	.08	.00	−.02	–	–	–	–
Step 2	14.73*	.15	−.07	.43*	−.24*	–	–
Step 3	6.82*	.07	−.02	.39*	−.18*	.33*	−.11
Positive affect							
Step 1	.73	.00	.07	–	–	–	–
Step 2	14.47*	.15	−.01	.44*	−.17*	–	–
Step 3	4.91*	.05	.04	.41*	−.13	.26*	−.04

GS goal strength, *AR* autonomous reasons, *CR* controlled reasons

* $p < .05$

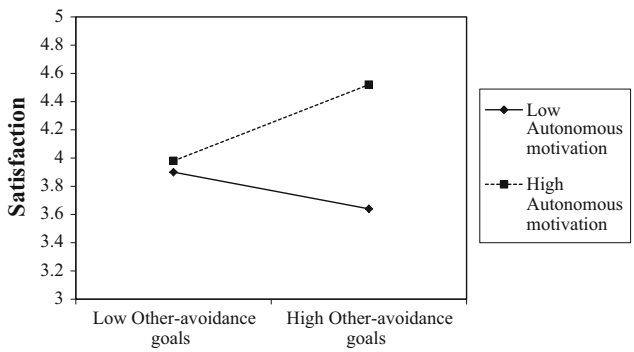

Fig. 1 The moderating role of autonomous motivation on the relationship between other-avoidance goals and satisfaction (sample 1). *Note* High = one standard-deviation higher than the mean; Low = one standard-deviation lower than the mean

Additionally, this research is the first, to our knowledge, to examine autonomous and controlled reasons underlying the pursuit of the six achievement goals proposed by Elliot et al. (2011) and thus represents an extension of past research which only focused on one (Benita et al. 2014; Vansteenkiste et al. 2010a, b), three (Michou et al. 2014) or four achievement goals (Gaudreau 2012). More generally, as suggested by Vansteenkiste et al. (2014a, b), a systematic consideration of the reasons underlying achievement goals allows to examine the underlying regulations of achievement goals in greater detail.

Results of regression analyses suggested that achievement goals and their underlying goal motivation did not systematically interact to predict educational and work outcomes. In sample 1, some of the relationships of

achievement goals to positive outcomes were moderated by their underlying level of autonomous motivation, suggesting that achievement goals were most strongly related to positive outcomes when individuals pursue these goals for autonomous reasons. In sample 2, only three interactions between achievement goal and autonomous reasons in the prediction of positive outcomes reached significance. Specifically, results revealed that self-approach goals were associated with higher positive affect when students pursue these goals for autonomous reasons. Moreover, other-approach and other-avoidance goals were associated with higher satisfaction when students pursue these goals for autonomous reasons. Finally, in sample 3, seven interactions between achievement goal and autonomous reasons in the prediction of work satisfaction, engagement, and positive affect reached significance. Vansteenkiste et al. (2010b, Study 1) found that out of 21 interactions tested, only one reached significance. In the study by Gaudreau (2012), results revealed that the positive effects of mastery-approach goals on both academic performance and interest/satisfaction were stronger for individuals pursuing mastery-approach in a self-concordant manner. In contrast, mastery-approach goals were increasingly positively associated with academic anxiety for individuals pursuing mastery-approach in a non self-concordant manner. Similar results were found for performance-approach goals.

The discrepancy between the present findings and the ones of Gaudreau (2012) might have been produced by different measurement technique. In all studies, participants answered four items (i.e., intrinsic motivation, identified regulation, introjected regulation, and external regulation) designed to evaluate the reasons underlying achievement goal pursuit. Whereas we computed separated indexes for autonomous and controlled regulations, Gaudreau (2012) calculated a self-concordant score by subtracting autonomous motivation from controlled motivation. This difference in methodological approach (i.e., two scores of autonomous and controlled motivations vs. a self-concordant score) might explain these inconsistent findings. Nevertheless, despite being not completely consistent with Gaudreau (2012), the present research did provide some evidence for the interactive role of underlying reasons for achievement goal pursuit in outcomes. Therefore, future research would do well to continue scrutinizing whether the relationships of achievement goals to key outcomes are moderated by the extent to which they are pursued for autonomous and controlled reasons.

The current results revealed that autonomous motivation underlying achievement goals was associated with positive outcomes. Moreover, our results showed that controlled motivation underlying the pursuit of these goals was linked to anxiety. From a practical standpoint, these findings suggest that teachers and managers should encourage students and workers to set autonomous rather than controlled goals. Teachers and supervisors' autonomy-supportive behaviors (e.g., provide a meaningful rationale for doing the tasks, acknowledge one's feelings and perspectives) are an important factor for fostering autonomous motivation (e.g., Gillet et al. 2012; Hagger et al. 2005). Contrary to autonomy-supportive behaviors, controlling interpersonal behaviors (i.e., a coercive and authoritarian way to pressure people to behave in a specific way) have been found to negatively predict autonomous motivation (e.g., Blanchard et al. 2009). In addition, recent studies have shown that controlling behaviors were positively associated with controlled motivation (e.g., Assor et al. 2005; De Meyer et al. 2014). Teachers and supervisors should thus constantly promote, through autonomy-supportive behaviors rather than controlling behaviors, individuals' autonomous motivation to increase their well-being.

The present research contains limitations that might be addressed in future investigations. First, our design was correlational in nature and it is thus inappropriate to make causal inferences. Future research with experimental designs is needed in order to provide more clarity regarding the direction of causality among achievement goals, reasons underlying their pursuit, and educational and work outcomes. Second, study variables were assessed at the same time and the design of the research could be improved by incorporating multiple measurement points, such that achievement goals and the reasons (i.e., autonomous and controlled motivations) underlying their pursuit would be measured at Time 1 and well-being at Time 2. Moreover, it would be interesting to assess the underlying reasons over a longer period of time and with several data points since there is a lack of dynamic study designs into integrating achievement goal and self-determination theories. Third, the samples used in Studies 1 and 2 only comprised students from one country (i.e., France). In order to strengthen confidence in the present findings, it is necessary to replicate the results in other samples of students from different cultures. Fourth, we relied exclusively on self-report measures. Such measures can be impacted by social desirability, and we thus encourage researchers to conduct additional research using objective assessment of achievement and absenteeism to extend the present results. Finally, future research would do well to examine potential antecedents (e.g., fear of failure, need for achievement, perfectionism) of the adoption of achievement goals and their underlying reasons (see De Castella et al. 2013; Michou et al. 2013).

In conclusion, the present research confirmed the importance and significance of considering the autonomous and controlled reasons underlying students and workers' achievement goals. Indeed, our results revealed that when

individuals pursued each achievement goal for autonomous reasons, their well-being was higher than when these goals are pursuit for controlled reasons. In contrast, controlled reasons underlying achievement goals significantly and positively predicted anxiety.

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