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The effects of autonomous and controlled regulation of performance-approach goals on well-being: A process model

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The main purpose of the present research was to propose and test a motivational model linking achievement goal approach and self-determination theory. First, the effects of performance-approach goals and the autonomous and controlling reasons underlying their pursuit on well-being were investigated. Second, the mediating variables (i.e., effort, goal attainment, need satisfaction, and thwarting) at play in these relationships were examined based on the self-concordance model (Sheldon & Elliot, 1999). The model was tested in two studies in educational and work settings using cross sectional (Study 1) and prospective designs (Study 2). The present results revealed that considering autonomous and controlled regulations underlying performance-approach goals predicted well-being above and beyond the strength of performance-approach goals. Moreover, the mediational sequence based on the self-concordance model was supported in both studies. Theoretical implications and directions for future research are discussed.

Some individuals enjoy surpassing others because striving towards such goal represents an agreeable and stimulating challenge to them. This goal of outdoing others may prompt increased effort, and ultimately even increased performance. Other individuals, however, feel pressured to outdo others, either because some authority figures coerce them to outperform others or because self-worth contingencies pressure them to do so. Such ambition might undermine subjective experience and trigger feeling of anxiety. It thus seem that reasons underlying individuals' performance strivings might play a critical role in the consequences of such goal. The present research aimed to investigate these hypotheses.

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A focus on outperforming others has been labelled a performance-approach goal within the achievement goal literature (Elliot, 1999; Harackiewicz, Barron, Pintrich, Elliot & Thrash, 2002). A debate has been raging on whether performance-approach strivings facilitate or impede individuals' well-being and adaptive behaviours (see Senko, Hulleman & Harackiewicz, 2011). To solve this controversy, recent studies have examined whether or not autonomous (i.e., engaging in an activity out of pleasure and/or volition and choice) and controlled (i.e., engaging in an activity for internal or external pressure) regulations underlying performance-approach goals contribute above and beyond the strength of performance-approach goals (Vansteenkiste, Mouratidis & Lens, 2010a; Vansteenkiste *et al.*, 2010b).

Vansteenkiste and his colleagues relied on the achievement goal approach (Elliot, 2005; Harackiewicz *et al.*, 2002) and self-determination theory (Deci & Ryan, 1985, 2008) to gain insight into the reasons underlying the performance-approach goal strivings. More specifically, they posited that regulating the very same performance goals for autonomous reasons will be positively associated with adaptive outcomes, whereas regulating these goals for controlled reasons will be related to negative consequences. Along these lines, results revealed that autonomous reasons underlying performance-approach goals were positively associated with concentration, persistence, subjective vitality, and positive affect above and beyond the strength of performance-approach goals. On the other hand, controlled reasons underlying performance-approach goals were associated positively with anxiety and negative affect, and negatively with positive affect, again, above and beyond the strength of performance-approach goals (Vansteenkiste *et al.*, 2010a,b).

In a similar fashion, Sheldon and his colleagues (e.g., Sheldon & Elliot, 1999; Sheldon & Houser-Marko, 2001) have developed a theoretical framework focusing on the 'why' of individuals' personal goal pursuits. The self-concordance model (Sheldon & Elliot, 1999) links personal goal constructs to self-determination theory (Deci & Ryan, 1985) by capturing the autonomous and controlled reasons behind goal pursuit. Furthermore, this model suggests specific mediational processes involved in the relationships between underlying reasons of goal pursuits and outcomes (see below for a detailed discussion). To date, only one research that has looked at the reasons underlying performance-approach goals have examined the mediational variables involved (Vansteenkiste *et al.*, 2010a). Accordingly, based on the self-concordance model (Sheldon & Elliot, 1999), we examined the mediational processes involved in the consequences of both performance-approach goals and the reasons (i.e., autonomous and controlled motivation) underlying their pursuit on well-being.

Achievement goal approach

According to achievement goal approach, individuals might be motivated to endorse mastery goals or performance goals (Elliot, 1999; Nicholls, 1984). Those who pursue mastery goals seek to develop competence through the acquisition of new skills, whereas performance goals focus on the demonstration of normative competence (e.g., trying to outperform others). Elliot and his colleagues (e.g., Elliot, 1999; Elliot & McGregor, 2001) extended this dichotomous model to a trichotomous goal framework (i.e., mastery goals, performance-approach goals, and performance-avoidance goals) and then to a 2 × 2 achievement goal framework by distinguishing performance-approach goals from performance-avoidance goals and mastery-approach goals from mastery-avoidance goals. Individuals who pursue performance-approach goals focus on attaining competence

relative to others, whereas performance-avoidance goals focus on avoiding demonstrating normative incompetence. Mastery-approach goals focus on attaining task-based or intrapersonal competence, whereas mastery-avoidance goals are focused on the avoidance of task-based and intrapersonal-based incompetence.

Numerous studies in various contexts have investigated the effects of mastery and performance goals on well-being (e.g., Adie, Duda & Ntoumanis, 2010; Job, Langens & Brandstätter, 2009). Mastery goals have been systematically and positively related to positive affect (e.g., Pekrun, Elliot & Maier, 2006, 2009) and satisfaction (e.g., Papaioannou, Ampatzoglou, Kalogiannis & Sagovits, 2008; Verner-Filion & Gaudreau, 2010). In addition, performance-avoidance goals have been almost uniformly associated with negative outcomes such as high anxiety and low interest (see Hulleman, Schrager, Bodman & Harackiewicz, 2010), whereas there have been inconsistent findings with respect to the effects of performance-approach goals in prior research. Indeed, performance-approach goals were significantly and positively associated with positive affect in some studies (Mouratidis, Vansteenkiste, Lens & Van den Auweele, 2009), whereas other research did not find any significant relationships between performance-approach goals and positive affect (Adie, Duda & Ntoumanis, 2008), negative affect (Dewar & Kavussanu, 2011), and satisfaction (Verner-Filion & Gaudreau, 2010).

Elliot and Fryer (2008) highlighted that several different definitions of achievement goals are present in the literature, which could have contributed to the emergence of these divergent findings. Moreover, Elliot and Murayama (2008) argued that the pursuit of achievement goals can be regulated by different reasons. Elliot and Fryer (2008) thus suggested detaching reasons from aims of performance-approach goals to more precisely examine their motivational outcomes. Such a detachment is an important deviation from the classic view on achievement goals (e.g., Nicholls, 1984), but the empirical disentanglement of goals and reasons would allow to more precisely examine the associations between achievement goals and outcomes.

Self-concordance model

The self-concordance model (Sheldon & Elliot, 1999) examines the reasons for which individuals strive towards their personal goals. More specifically, this model posits that individuals who pursue personal goals for autonomous reasons (i.e., self-concordant goals) put more sustained effort into achieving those goals and thus are more likely to attain them. Such individuals are thus able to satisfy their psychological needs for autonomy (i.e., experiencing oneself as the originator of one's behaviour), competence (i.e., feeling proficient in one's actions), and relatedness (i.e., feeling connected to the social environment), leading to greater well-being. Prior studies have provided support to the self-concordance model in different settings (e.g., Greguras & Diefendorff, 2010; Judge, Bono, Erez & Locke, 2005).

First, the self-concordance model advocates the benefits of personal goal strivings for autonomous motives in comparison to controlled motives. Second, the model proposes that setting goals for autonomous reasons (i.e., self-concordant goals) should promote goal attainment (Sheldon & Kasser, 1998). Along these lines, results revealed that pursuing goals out of autonomous motivation, but not controlled motivation, yielded salutary effects on goal attainment (e.g., Koestner, Otis, Powers, Pelletier & Gagnon, 2008). Third, the model posits that goal attainment should satisfy the innate psychological needs for autonomy (i.e., experiencing oneself as the originator of one's behaviour),

competence (i.e., feeling proficient in one's actions), and relatedness (i.e., feeling connected to the social environment). Over the years, numerous studies have provided empirical support for this proposition in various domains (Greguras & Diefendorff, 2010; Smith, Ntoumanis, Duda & Vansteenkiste, 2011). Finally, the model proposes that need satisfaction should increase individuals' well-being. Prior research has consistently demonstrated the positive role of need satisfaction in well-being (e.g., Boezeman & Ellemers, 2009; Milyavskaya & Koestner, 2011).

The present research

The first purpose was to determine if individuals' autonomous and controlled reasons for endorsing a performance-approach goal would predict a significant increase in explained variance in outcomes above and beyond the effect of performance-approach goal strength. Based on the self-concordance model (Sheldon & Elliot, 1999), the second purpose of the present research was to examine through structural equation modelling the mediational processes involved in the relationships between autonomous and controlled regulations underlying performance-approach goals and well-being. Specifically, it was expected that autonomous reasons to pursue performance-approach goals should be positively associated with goal attainment which, in turn, should be positively related to need satisfaction. Lastly, in line with self-determination theory, need satisfaction should be positively associated with well-being indices.

Study 1 investigated the role of both performance-approach goals and the autonomous and controlled reasons for endorsing these goals in well-being, as well as the mediational processes involved in a sample of students. To enhance the validity and generalization of the findings, the purpose of Study 2 was to replicate the results of Study 1 in a sample of workers. This is particularly important as few studies using the achievement goal approach have been conducted in the work domain (e.g., VandeWalle, 1997, 2003). Moreover, none of these investigations, to the best of our knowledge, have detached reasons and aims. The present research is thus the first to examine the empirical disentanglement of goals and reasons in a work setting. Furthermore, Study 2 improved upon Study 1 by using a prospective design and integrating other variables in the tested model (i.e., goal-directed effort, need thwarting, and negative affect).

STUDY 1

The aims of Study 1 were threefold. The first objective was to investigate the role of autonomous and controlled reasons for pursuing performance-approach goals in goal attainment, need satisfaction, positive affect, and satisfaction beyond the strength of performance-approach goals *per se*. Based on self-determination theory (Deci & Ryan, 2008), it was hypothesized that autonomous and controlled reasons would be positively and negatively related to these outcomes, respectively. Second, the interactions between performance-approach goals, and autonomous and controlled reasons, in the prediction of outcomes, were examined. Gaudreau (2012) has found that performance-approach goals were associated with higher performance, but only for students who pursue these goals for autonomous reasons (i.e., self-concordant goals). Thus, self-concordant endorsement of performance-approach goals is likely to promote more positive outcomes. In contrast, in line with past research (e.g., Vansteenkiste *et al.*, 2010b), it

was hypothesized that no significant interactions between performance-approach goal strength and controlled reasons for pursuing these goals would occur.

Finally, based on the self-concordance model (Sheldon & Elliot, 1999), a mediational sequence was tested using structural equation modelling. First, it was hypothesized that performance-approach goals and autonomous reasons should positively predict goal attainment (e.g., Koestner *et al.*, 2008; Powers *et al.*, 2009). Second, goal attainment should be positively related, while controlled reasons should be negatively associated, to need satisfaction (e.g., Greguras & Diefendorff, 2010). Finally, it was hypothesized that need satisfaction would be positively related to high levels of satisfaction and positive affect (e.g., Boezeman & Ellemers, 2009).

Method

Participants

Participants were 424 university students (274 women and 148 men; 2 unspecified) with a mean age of 23.87 years ($SD = 5.13$ years). The mean number of semesters completed by these students at their university was 4.58 ($SD = 3.38$).

Procedure

Questionnaires were completed in classrooms. After signing an informed consent form, participants were asked to complete a questionnaire including basic demographic questions, as well as the scales depicted below. Each participant took 15–20 min to complete the questionnaire.

Measures

Performance-approach goals

The strength of participants' performance-approach goal was assessed with one item (i.e., 'My goal is to perform better than the other students') from the Achievement Goal Questionnaire-Revised (AGQ-R; Elliot & Murayama, 2008) completed on a 7-point Likert scale, ranging from 1 (does not correspond at all) to 7 (corresponds exactly).

Reasons for endorsing performance-approach goals

After participants responded to the performance-approach goal item, participants were asked why they pursued this specific performance-approach goal. Specifically, as in Sheldon and Elliot (1999), two items that assessed autonomous reasons (i.e., 'Because of the fun and enjoyment that it provides me', intrinsic motivation; 'Because I really believe it is an important goal to have', identified regulation) and two items that assessed controlled reasons (i.e., 'Because I would feel ashamed, guilty, or anxious if I did not', introjected regulation; 'Because somebody else wants me to or because the situation demands it', external regulation) were presented. Items were completed on a 7-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' life goals (e.g., Sheldon & Kasser, 2008) and performance-approach goals (Vansteenkiste *et al.*, 2010b). 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 ($r = .72$) items, and the introjected and external regulations items ($r = .41$), respectively.

Goal attainment

Four items (e.g., 'I have made considerable progress toward attaining this goal') from prior self-concordance research (e.g., Greguras & Diefendorff, 2010) were used to assess goal attainment for the performance-approach goal ($\alpha = .96$). Responses were anchored on a 7-point Likert ranging from 1 (strongly disagree) to 7 (strongly agree).

Need satisfaction

A modified version of the Basic psychological needs scale in sports (Gillet, Rosnet & Vallerand, 2008) was used to assess satisfaction of the three psychological needs in the educational domain. Specifically, to adapt the scale to the context of our study, the heading of the scale was changed from *In my sport* to *In my university courses*. This questionnaire was composed of three-five-item subscales assessing competence (e.g., 'Often, I feel that I am very efficient'; $\alpha = .89$), autonomy (e.g., 'I feel free to express my choices'; $\alpha = .84$), and relatedness (e.g., 'I consider the persons with whom I interact as my friends'; $\alpha = .87$). Items were completed on a 7-point Likert scale ranging from 1 (totally disagree) to 7 (totally agree). Gillet *et al.* (2008) have provided strong evidence for the factorial structure, construct validity, and internal consistency of this scale (see also Gillet, Berjot & Gobancé, 2009).

Satisfaction

Student's satisfaction towards their university courses (e.g., 'I am satisfied with my university courses'; $\alpha = .87$) was assessed with five items derived from the Satisfaction with Life Scale (Diener, Emmons, Larsen & Griffin, 1985). The word 'life' was replaced by 'university courses'. Responses were made on a 7-point Likert scale ranging from 1 (strongly disagree) to 7 (strongly agree).

Positive affect

As in Miquelon and Vallerand (2006), positive affect ($\alpha = .89$) was assessed with five items taken from the Positive and Negative Affect Schedule (i.e., 'excited', 'enthusiastic', 'alert', 'inspired', and 'determined'; Watson, Clark & Tellegen, 1988). Participants were asked to rate each item on the basis of how they generally felt in their life since the beginning of the academic year. The scale was completed on a 7-point Likert scale ranging from 1 (not agree at all) to 7 (very strongly agree).

Results

Preliminary analyses

Skewness indices for all variables were normal (values ranged from -1.03 to 1.05). Data screening revealed no value higher than three standard deviations from the mean. We excluded gender and age from the results below, because preliminary analyses produced no effects involving these variables. We display means, standard deviations, and correlations for all measures in Table 1.

Table 1. Means, standard deviations, and correlations involving all variables (Study 1)

	M	SD	2	3	4	5	6	7	8	9
Performance-approach goals (1)	4.32	1.69	.64*	.31*	.59*	.19*	.40*	.05	.16*	.17*
Autonomous reasons (2)	4.14	1.81		.39*	.61*	.11*	.33*	.04	.17*	.19*
Controlled reasons (3)	2.67	1.44			.30*	−.09	.04	−.10*	.01	−.02
Goal attainment (4)	3.78	1.60				.20*	.41*	.06	.23*	.23*
Autonomy (5)	5.37	1.02					.60*	.57*	.48*	.49*
Competence (6)	5.28	0.99						.55*	.45*	.51*
Relatedness (7)	5.36	1.02							.40*	.42*
Satisfaction (8)	4.25	1.24								.57*
Positive affect (9)	5.09	1.12								

Note. *$p < .05$.

Table 2. Results of the hierarchical linear regression analyses (Study 1)

		R^2	ΔR^2	Performance-approach goals	Autonomous reasons	Controlled reasons
Goal attainment	Step 1	.35*	–	.60*	–	–
	Step 2	.44*	.09*	.34*	.37*	.05
Autonomy	Step 1	.04*	–	.18*	–	–
	Step 2	.06*	.03*	.23*	.02	−.18*
Competence	Step 1	.16*	–	.40*	–	–
	Step 2	.18*	.02*	.33*	.17*	−.13*
Relatedness	Step 1	.00	–	.04	–	–
	Step 2	.02*	.02*	.03	.09	−.15*
Satisfaction	Step 1	.03*	–	.16*	–	–
	Step 2	.04*	.01*	.07	.16*	−.07
Positive affect	Step 1	.03*	–	.17*	–	–
	Step 2	.05*	.02*	.07	.19*	−.12*

Note. *$p < .05$.

Hierarchical regression analyses

To examine whether or not underlying regulations of performance-approach goals explained additional variance over and above the strength of performance-approach goals, we performed a series of hierarchical multiple regression (see Table 2) analyses for all outcomes (i.e., goal attainment, autonomy, competence, relatedness, positive affect, and satisfaction). Strength of performance-approach goal was entered in the first step, whereas autonomous and controlled reasons underlying performance-approach goal were entered in the second step to examine whether or not these reasons would account for incremental variance in the outcomes. Finally, we entered two-way interactions between autonomous and controlled reasons for pursuing performance-approach goals and performance-approach goals strength, as well as between autonomous and controlled reasons for pursuing performance-approach goals. According to Aiken and West's (1991) procedures, predictors were centred before calculating the interaction products. Because only one of the two-way interactions was significant (i.e., performance-approach goal
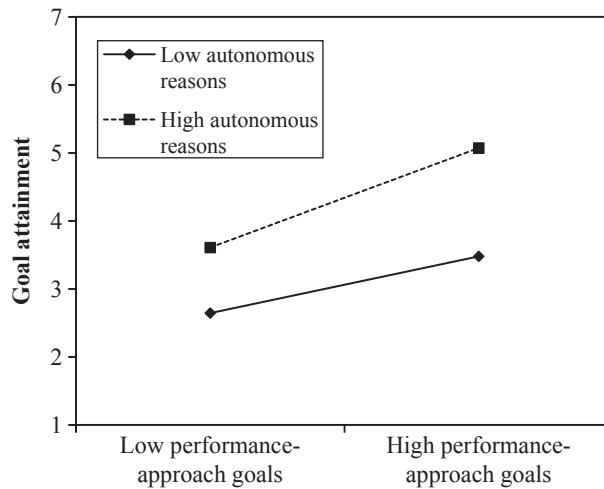
Figure 1. The moderating role of autonomous reasons on the relationship between performance-approach goals and goal attainment (Study 1).

strength $\times$ autonomous reasons for goal attainment; see Figure 1), Step 3 is not reported in Table 2. As expected, performance-approach goals were most strongly related to goal attainment when autonomous motivation was high.

In Step 1, performance-approach goals were positively related to goal attainment, autonomy, competence, positive affect, and satisfaction. Adding autonomous and controlled regulation underlying performance-approach goals in Step 2 resulted in a significant increase in explained variance in all outcomes. Specifically, autonomous reasons were positively related to goal attainment, competence, satisfaction, and positive affect, whereas controlled reasons were negatively related to autonomy, competence, relatedness, and positive affect. Interestingly, the initially observed significant relations of performance-approach goals to satisfaction and positive affect in Step 1 became non-significant after taking into account the autonomous and controlled reasons underlying performance-approach goals in Step 2.

Structural equation modelling analyses

To test the mediational sequence presented above, we performed structural equation modelling with EQS 6.1 (Bentler, 1993). The model tested (see Figure 2) in the present study was composed of one observed (i.e., performance-approach goals) and nine latent variables, which were defined by their respective items. Moreover, a second-order latent variable was created representing need satisfaction. Need satisfaction was defined by autonomy, competence, and relatedness (see Smith, Ntoumanis & Duda, 2007). Paths were specified according to the hypotheses mentioned above. Furthermore, covariance paths among performance-approach goals and autonomous and controlled reasons were estimated. In addition, an error covariance path between satisfaction and positive affect was estimated. The model had an acceptable fit to the data, χ^2 ($df = 515$, $N = 424) = 1341.86$, $p < .05$, normed $\chi^2 = 2.61$, CFI $= .92$, SRMR $= .07$, and RMSEA $= .06$ (.06–.07).

Performance-approach goals and autonomous reasons were positively related to goal attainment that in turn predicted basic need satisfaction. In addition, controlled reasons
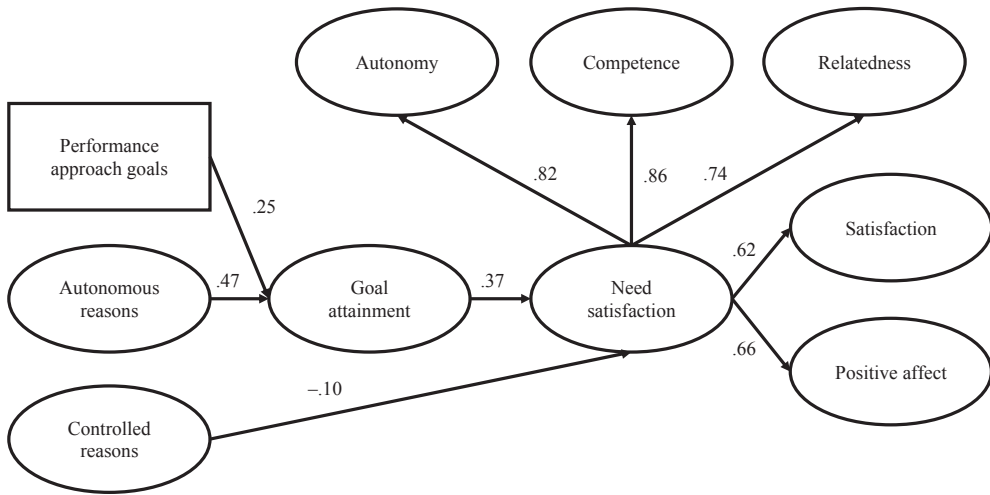
Figure 2. Results from the structural equation analysis (Study 1) Note 1. All coefficients are standardized. Note 2. All relationships are significant ($p < .05$). Note 3. For sake of clarity, covariances and indicators of latent variables are not shown.

were negatively related to need satisfaction. Finally, need satisfaction was positively linked to both satisfaction and positive affect. Indirect effects were investigated to further test the mediating sequence. Consequently, bootstrapped confidence interval estimates of the indirect effect (see Preacher & Hayes, 2008) were calculated to confirm the significance of mediations. In the present study, the 95% confidence interval of the indirect effects was obtained with 5,000 bootstrap resamples. Results confirmed the mediating role of goal attainment between performance-approach goals and need satisfaction ($\beta = .09$; CI = .03–.16), the mediating role of goal attainment between autonomous motivation and need satisfaction ($\beta = .17$; CI = .10–.27), the mediating role of need satisfaction between goal attainment and satisfaction ($\beta = .23$; CI = .15–.32) and positive affect ($\beta = .24$; CI = .16–.33), and the mediating role of need satisfaction between controlled motivation and satisfaction ($\beta = -.06$; CI = −.14 to −.00) and positive affect ($\beta = -.07$; CI = −.15 to −.01) .[1]

Discussion

First, the present results revealed that performance-approach goals are positively associated with positive outcomes. Second and more importantly, it was found that considering the autonomous and controlled reasons underlying performance-approach goals provides additional insight into the relationships between performance-approach goals and well-being. Third, when the reasons underlying performance-approach goals were entered in the regression model, the effect of performance-approach goals dropped

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[1] *As some participants scored low on performance-approach goals it might have being odd for them to answer why they pursued these goals, so we repeated the full sequence of analyses after removing participants with a performance-approach goal score below 1 and 2. The relations of autonomous and controlled regulation of performance-approach goals to outcomes in both subsamples (N = 350 for Study 1; 83%; N = 93 for Study 2; 76%) of high performance-approach-goal oriented individuals were essentially identical to the results obtained in the total sample.*

substantially and was no longer significant for positive affect and satisfaction. These results are in line with those reported in recent studies (Vansteenkiste *et al.*, 2010a) and suggest that the reasons underlying students' performance-approach goals are more strongly related to well-being than are the endorsement of performance-approach goals *per se*.

Fourth, as hypothesized, the relationship of performance-approach goals with goal attainment was moderated by their underlying level of autonomous motivation. In contrast, the relationships of performance-approach goals with the other outcomes were not moderated by their underlying level of autonomous motivation. Moreover, no significant interactions between performance-approach goal strength and controlled reasons for pursuing these goals occurred. Fifth, results revealed that the influence of performance-approach goals as well as autonomous and controlled reasons on well-being was mediated by goal attainment and need satisfaction. These findings are in line with proposals of the self-concordance model (Sheldon & Elliot, 1999). Finally, the present results also revealed that pursuing performance-approach for controlled reasons was negatively associated with need satisfaction. Although reaching significance, this association was small in magnitude. Bartholomew, Ntoumanis, Ryan and Thøgersen-Ntoumani (2011) have recently suggested that controlled motivation correlated more strongly with basic need thwarting rather than with basic need satisfaction. To address this issue, Study 2 thus intended to incorporate need thwarting in the model.

STUDY 2

Results from Study 1 revealed that performance-approach goals and autonomous reasons positively predicted goal attainment which, in turn, was positively associated with need satisfaction. On the other hand, controlled reasons negatively predicted need satisfaction. Finally, need satisfaction was positively related to both positive affect and satisfaction. A first goal of Study 2 was to study how the findings of Study 1 would generalize to the realm of work with a sample of police officers. Examining how police officers' motivation relates to their well-being is an important topic for researchers and practitioners alike (Chan & Hagger, 2012).

Results from Study 1 provided support for the hypothesized model. However, a cross sectional design was used. Consequently, a prospective design would represent a methodological improvement. Indeed, a time interval between assessments of performance-approach goals and the reasons underlying their pursuit (assessed in the beginning of a training programme; Time 1), goal attainment and need satisfaction (assessed 6 weeks after the beginning of the training programme; Time 2), and well-being (assessed 3 months after the beginning of the training programme; Time 3), would provide additional support for the proposed sequence. The second goal was thus to attempt to replicate the results of Study 1 using a prospective design.

The third goal was to extend our understanding of the mediational processes involved in the relationships between reasons underlying and strength of performance-approach goals and individuals' well-being in three ways. First, as proposed by the self-concordance model (Sheldon & Elliot, 1999), the mediating role of goal-directed effort in the relationships of performance-approach goals and autonomous reasons to goal attainment was investigated. Past studies have shown that the association between autonomous goal motives and goal attainment was mediated by effort (Smith *et al.*, 2007, 2011). Consequently, in line with past research, it was hypothesized that performance-approach goals and autonomous motives would be positively related to goal-directed effort that, in

turn, would be positively associated to goal attainment. Second, a possible drawback of Study 1 was that only positive indicators of well-being (i.e., positive affect and satisfaction) were considered. Accordingly, negative affect was included in Study 2 as a negative indicator of well-being.

Third, the mediating role of need thwarting in the relationships between controlled reasons underlying performance-approach goals and well-being was examined. Needs for autonomy, competence, and relatedness are thwarted when individuals perceive their needs to be actively undermined by their social environment (Bartholomew *et al.*, 2011). Contrary to need satisfaction, need thwarting has significant negative consequences for health and well-being (Deci & Ryan, 2000). However, primarily due to the absence of scales assessing this construct, need thwarting represented an under-studied area of conceptual and practical importance (Vallerand, Pelletier & Koestner, 2008). To address this issue, Bartholomew *et al.* (2011) have recently developed a multidimensional measure designed to assess psychological need thwarting in the sport context.

Results from Bartholomew *et al.* (2011) revealed that need satisfaction and need thwarting are two independent constructs. This finding thus suggested that low need satisfaction scores do not necessarily imply that psychological needs are thwarted. Consequently, we believe that considering both need satisfaction and need thwarting in the present study is an important improvement in identifying the determinants of well-being (i.e., work satisfaction and positive affect) and ill-being (i.e., negative affect). Furthermore, Bartholomew *et al.* (2011) have shown that need satisfaction and thwarting were negatively and positively related to burnout, respectively. In line with self-determination theory (Deci & Ryan, 2000), it was thus hypothesized that controlled motives for performance-approach goals would be positively related to need thwarting which, in turn, should be positively related to negative affect.

Method

Participants
Participants were 123 individuals (53 women and 70 men) with a mean age of 21.33 years ($SD = 2.11$ years) who were beginning a police officer training programme.

Procedure
After signing an informed consent form, participants were asked to complete a questionnaire in the beginning, the middle (i.e., 6 weeks after the beginning of the training programme), and the end (i.e., 3 months after the beginning of the training programme) of the training programme. The first questionnaire included basic demographic questions, assessments of performance-approach goals and the reasons underlying their pursuit, as well as goal-directed effort. The second questionnaire included assessments of goal attainment, need satisfaction, and need thwarting. Finally, the third questionnaire comprised assessments of satisfaction, positive affect, and negative affect.

Measures
The measures used to assess performance-approach goals, reasons for endorsing perfor-mance-approach goals ($r = .71$ for autonomous reasons and .39 for controlled reasons), and

satisfaction (α = .91) were the same as those of Study 1. However, it was necessary to adapt these measures to the present setting. Thus, the word 'university courses' was replaced by 'training program' and the word 'students' was replaced by 'recruits'.

Goal effort and attainment

Goal-directed effort was measured using a single item (i.e., 'I am engaged in the pursuit of this goal') taken from Sheldon and Kasser (1998). The degree to which the performance-approach goal was attained was measured using one item (i.e., 'Since the beginning of the training session, I was able to achieve this goal') adapted from Sheldon and Elliot (1999). Responses were anchored on a 9-point Likert ranging from 1 (Not at all) to 9 (Totally).

Need satisfaction

The Work-related Basic Need Satisfaction scale (Van den Broeck, Vansteenkiste, De Witte, Soenens & Lens, 2010) was used to assess satisfaction of psychological needs in the context of the training programme. This scale was composed of one 4-item subscale assessing competence (e.g., 'I really master my tasks'; α = .74), one 6-item subscale assessing autonomy (e.g., 'The tasks I have to do are in line with what I really want to do'; α = .65), and one 6-item subscale assessing relatedness (e.g., 'I feel part of a group'; α = .82). Items were completed on a 5-point Likert scale ranging from 1 (totally disagree) to 5 (totally agree).

Need thwarting

The Psychological Need Thwarting Scale (Bartholomew *et al.*, 2011) was used to assess thwarting of psychological needs in the context of the training programme. This scale was composed of three-four-item subscales assessing competence (e.g., 'There are times when I am told things that make me feel incompetent'; α = .80), autonomy (e.g., 'I feel pushed to behave in certain ways'; α = .87), and relatedness (e.g., 'I feel I am rejected by those around me'; α = .84). Items were completed on a 7-point Likert scale ranging from 1 (strongly disagree) to 7 (strongly agree). We have conducted a confirmatory factor analysis with the present data to examine the factor structure of the scales used to assess need satisfaction and need thwarting. Items were uniquely loaded on appropriate factors and factors were allowed to correlate. Results had an acceptable fit to the data, χ^2 (df = 335, N = 118) = 594.40, p < .05, normed χ^2 = 1.77, CFI = .93, SRMR = .09, and RMSEA = .08 (.07–.09).

Positive and negative affect

In line with Thrash, Elliot, Maruskin and Cassidy (2010), positive and negative affect were assessed with nine items taken from the Positive and Negative Affect Schedule (Watson *et al.*, 1988). This scale was composed of one 4-item subscale assessing positive (i.e., 'joyful', 'happy', 'pleased', and 'cheerful'; α = .83) and one 5-item subscale assessing negative affect (i.e., 'distressed', 'upset', 'scared', 'nervous', and 'afraid'; α = .80). Participants were asked to rate each item on the basis of how they generally felt during the training programme. The scale was completed on a 5-point Likert scale ranging from 1 (very little) to 5 (very often).

Table 3. Means, standard deviations, and correlations involving all variables (Study 2)

	M	SD	2	3	4	5	6	7	8	9	10
Performance-approach goals (1)	4.11	1.76	.61*	.38*	.54*	.45*	−.05	.11	.06	−.05	.09
Autonomous reasons (2)	4.57	1.73		.34*	.57*	.24*	.06	.11	.09	.03	.02
Controlled reasons (3)	2.38	1.37			.38*	.20*	−.02	.17†	.09	.06	.03
Goal effort (4)	6.01	2.20				.38*	.03	.04	.05	.05	.07
Goal attainment (5)	5.23	2.29					.19*	−.03	.02	.03	.11
Need satisfaction[a] (6)	3.83	0.54						−.61*	.58*	.58*	−.42*
Need thwarting[a] (7)	2.68	1.08							−.29*	−.40*	.38*
Satisfaction (8)	5.31	1.20								.60*	−.36*
Positive affect (9)	3.95	0.77									−.43*
Negative affect (10)	1.63	0.66									

Note. [a]The score reflects the mean of autonomy, competence, and relatedness subscales.
*p < .05; †p = 0.06.

Results

Preliminary analyses

Skewness indices for all variables were normal (values ranged from − 1.16 to 1.46). Data screening revealed no value higher than three standard deviations from the mean. We display means, standard deviations, and correlations for all measures in Table 3. For sake of brevity, autonomy, competence, and relatedness subscales of need satisfaction and need thwarting are aggregated in Table 3.

Hierarchical regression analyses

As in Study 1, we performed a series of hierarchical multiple regression analyses for all outcomes. Strength of performance-approach goal was entered in the first step, while autonomous and controlled reasons underlying performance-approach goal in the second step. For goal effort, two-way interactions between autonomous and controlled reasons for pursuing performance-approach goals and performance-approach goals strength, as well as between autonomous and controlled reasons for pursuing performance-approach goals, were entered in the third step. Because the two-way interactions were not significant, Step 3 is not reported in Table 4. In Step 1, performance-approach goals were positively related to goal effort, goal attainment, and relatedness thwarting. Adding autonomous and controlled regulation underlying performance-approach goals in Step 2 resulted in a significant increase in explained variance in goal effort.

Structural equation modelling analyses

In the light of the relatively low number of participants, the model tested was composed of 14 observed variables and two latent variables. Need satisfaction and need thwarting were defined by autonomy, competence, and relatedness (see Smith *et al.*, 2007, 2011). Paths were specified according to the hypotheses mentioned above. Furthermore, covariance

Table 4. Results of the hierarchical linear regression analyses (Study 2)

		R^2	ΔR^2	Performance-approach goals	Autonomous reasons	Controlled reasons
Goal effort	Step 1	.29*	–	.54*	–	–
	Step 2	.41*	.12*	.26*	.36*	.16*
Goal attainment	Step 1	.20*	–	.45*	–	–
	Step 2	.20*	.00	.47*	−.05	.04
Autonomy satisfaction	Step 1	.00	–	.01	–	–
	Step 2	.00	.00	.00	.05	−.06
Competence satisfaction	Step 1	.00	–	.05	–	–
	Step 2	.02	.02	−.07	.18	.03
Relatedness satisfaction	Step 1	.02	–	−.14	–	–
	Step 2	.03	.01	−.22	.13	−.02
Autonomy thwarting	Step 1	.00	–	.04	–	–
	Step 2	.02	.02	−.06	.11	.08
Competence thwarting	Step 1	.00	–	.04	–	–
	Step 2	.02	.01	.03	−.05	.12
Relatedness thwarting	Step 1	.04	–	.20*	–	–
	Step 2	.06	.02	.13	.02	.15
Satisfaction	Step 1	.00	–	.06	–	–
	Step 2	.01	.01	−.02	.08	.07
Positive affect	Step 1	.00	–	−.05	–	–
	Step 2	.02	.02	−.14	.08	.09
Negative affect	Step 1	.01	–	.09	–	–
	Step 2	.01	.00	.12	−.05	.00

Note. *$p < .05$.

paths among performance-approach goals and autonomous and controlled reasons were estimated. In addition, error covariance paths between need satisfaction and thwarting and among satisfaction and positive and negative affect were estimated. The model had an acceptable fit to the data, χ^2 (*df* = 67, *N* = 123) = 116.77, *p* < .05, normed χ^2 = 1.74, CFI = .92, SRMR = .07, and RMSEA = .08 (.05–.10).

As shown in Figure 3, performance-approach goals and autonomous reasons were positively related to goal effort that in turn positively predicted goal attainment. Moreover, goal attainment was positively related to need satisfaction that in turn positively predicted satisfaction and positive affect. Finally, controlled motivation was positively related to need thwarting that in turn was positively linked to negative affect.

Bootstrapped confidence interval estimates of the indirect effect (see Preacher & Hayes, 2008) were calculated to confirm the significance of mediations. Results confirmed the mediating role of effort between performance-approach goals and goal attainment (β = .15; CI = .00–.37), the mediating role of effort between autonomous motivation and goal attainment (β = .19; CI = .06–.38), the mediating role of goal attainment between effort and need satisfaction (β = .01; CI = .00–.03), the mediating role of need satisfaction between goal attainment and satisfaction (β = .12; CI = .08–.15),and positive affect (β = .08; CI = .05–.10), and the mediating role of need thwarting between controlled motivation and negative affect (β = .02; CI = .00–.06).
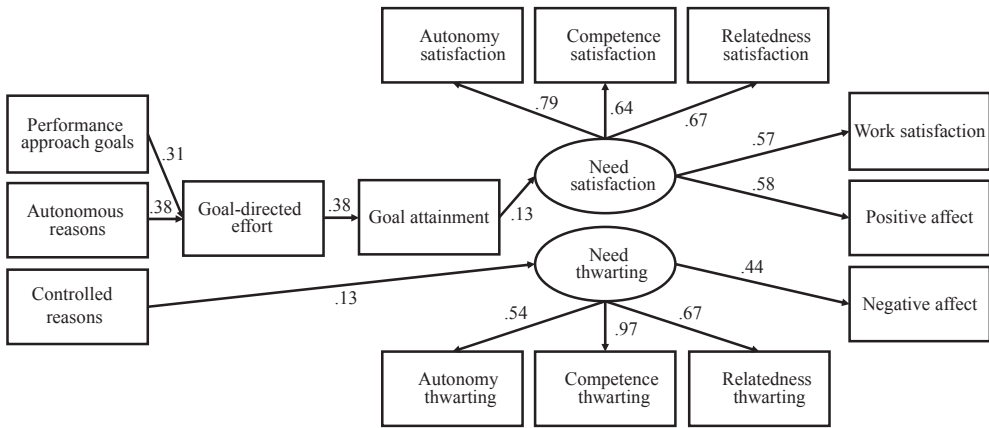
Figure 3. Results from the path analysis (Study 2) Note 1. All coefficients are standardized. Note 2. For sake of clarity, covariances are not shown.

Discussion

First, as in Study 1, results of Study 2 suggest that performance-approach goals can relate to both good and bad work outcomes, depending on the reasons for which an employee pursues these goals. However, results of hierarchical regression analyses revealed that goal motivations underlying performance-approach goals are not stronger predictors of subjective well-being, than the endorsement of goals themselves. In addition, in Study 2, performance-approach goals and their underlying goal motivation did not significantly interact to predict outcomes. The two present studies were conducted in different life domains (i.e., education and work) and as mentioned above, our second study is the first to examine the empirical disentanglement of goals and reasons in the work domain. Prior investigations did not report evidence for the interactive role of performance-approach goals and goal motivation in the sport domain (Vansteenkiste *et al.*, 2010a). Therefore, future research in achievement-related domains should continue to examine the interactions between performance-approach goals and their underlying autonomous and controlled reasons in the prediction of key outcomes (e.g., well-being, performance).

Second, results of Study 2 replicated the mediating role of goal attainment and need satisfaction in the relationships of performance-approach goals and reasons underlying these performance strivings to well-being, as in Study 1. Third, Study 2 expanded the model of Study 1 by investigating additional mediational processes in the relationships between performance-approach goals and reasons underlying these performance strivings and well-being. In agreement with previous research (e.g., Smith *et al.*, 2007, 2011), the present findings provided support for the mediating role of goal-directed effort in the relationships between performance-approach goals and autonomous reasons underlying their pursuit and goal attainment. Finally, consistent with the predictions of self-determination theory (Deci & Ryan, 2000), the present findings also showed that need thwarting mediated the effects of controlled reasons underlying performance-approach goals on negative affect.

GENERAL DISCUSSION

Building on recent studies that have looked at the autonomous and controlled reasons underlying performance-approach goals (Vansteenkiste *et al.*, 2010a,b) and the

self-concordance model (Sheldon & Elliot, 1999), the present research examined the relationships between performance-approach goals and their underlying reasons and well-being. The present results are in line with proposals of the self-concordance model and demonstrate support for the proposed model in educational (Study 1) and work (Study 2) settings.

The results of Study 1 revealed that performance-approach goals positively related to well-being outcomes (i.e., positive affect and satisfaction). These findings are consistent with previous studies which have shown that performance-approach goals were significantly and positively associated with well-being indices (e.g., Mouratidis *et al.*, 2009) and suggested that performance-approach goals are not essentially maladaptive (e.g., Senko *et al.*, 2011).

However, the critical query of the present research was whether or not considering the autonomous and controlled reasons underlying individuals' performance-approach goal pursuit would explain additional variance in the outcomes over and above the strength of performance-approach goals. First, the present results showed that individuals could embrace performance-approach goals for diverse reasons (i.e., autonomous and controlled reasons). In addition, these results are in accordance with Elliot and Fryer's (2008) and previous empirical findings (Urdan & Mestas, 2006; Vansteenkiste *et al.*, 2010a). Moreover, although Vansteenkiste *et al.* (2010a,b) have investigated the underlying reasons of performance-approach goal strivings both in education and sport settings, Study 2 is the first to our knowledge to examine autonomous and controlled reasons of performance-approach goals in the work setting.

Second, results from regression analyses in Study 1 revealed that individuals who pursue performance-approach goals for autonomous reasons reported higher levels of satisfaction and positive affect. In contrast, when these goals are motivated by internal or external demands (i.e., controlled reasons), individuals displayed lower levels of positive affect. These findings are in line with results from prior studies (Vansteenkiste *et al.*, 2010b). Interestingly, adding autonomous and controlled regulation to pursue performance-approach goals resulted in a significant increase in explained variance in all outcomes suggesting that the reasons underlying individuals' performance-approach goals might be more critical to predict well-being differences than the endorsement of performance-approach goals *per se*. We thus believe that the assessment of the reasons for which performance-approach goals are endorsed shed light on the ongoing debate about the adaptive and maladaptive consequences of performance-approach goals (see Senko *et al.*, 2011).

Based on the self-concordance model (Sheldon & Elliot, 1999), the second purpose of the present research was to explore whether performance-approach goals and their underlying reasons may be indirectly associated with well-being outcomes through goal attainment and need satisfaction. Specifically, it was hypothesized that performance-approach goals and autonomous reasons should lead to high levels of goal attainment. Then, goal attainment was hypothesized to be positively related, whereas controlled reasons underlying performance-approach goals should be negatively associated, to need satisfaction. Finally, it was hypothesized that need satisfaction should predict high levels of well-being. To investigate these issues, two studies were conducted in educational (Study 1) and work (Study 2) settings.

Consistent with the hypotheses, Study 1 revealed that performance-approach goals and their underlying reasons were indirectly related to well-being through goal attainment and basic need satisfaction. More precisely, in Study 1, performance-approach goals and autonomous reasons to pursue these goals were positively related to goal attainment

which, in turn, was positively related to need satisfaction. This is consistent with recent studies that have shown that goal pursuit for autonomous reasons is positively related to goal progress (e.g., Koestner *et al.*, 2008). The present results are also in agreement with Greguras and Diefendorff (2010), who revealed that goal attainment positively predicted need satisfaction. Moreover, in line with self-determination theory (Deci & Ryan, 1985) and other studies (e.g., Boezeman & Ellemers, 2009; Milyavskaya & Koestner, 2011), results from Study 1 revealed that need satisfaction was positively associated with well-being. The results of Study 1 also provided support for the mediating role of need satisfaction in the relationship between controlled reasons underlying performance-approach goals and well-being. However, it should be noted that the relationship between controlled reasons and need satisfaction was rather weak, although in the expected direction.

The results of Study 2 replicated the model tested in Study 1. More importantly, Study 2 deepened our understanding of the mediational variables involved in the relationships between performance-approach goals and the autonomous and controlling reasons underlying their pursuit and well-being in two major ways. First, in Study 2, the mediating role of need thwarting in the relationships between controlled reasons underlying performance-approach goals and negative affect was examined. In line with Bartholomew *et al.* (2011) and self-determination theory (Deci & Ryan, 2000), results revealed that controlled motives for performance-approach goals were positively related to need thwarting which, in turn, positively predicted negative affect. Future research is needed to further examine the mediating role of need thwarting between controlled reasons and other affective, cognitive, and behavioural outcomes (e.g., depression, burnout, performance). Second, consistent with the self-concordance model (Sheldon & Elliot, 1999) and previous studies (e.g., Smith *et al.*, 2007, 2011), the associations between performance-approach goals and autonomous motives and goal attainment were mediated by goal-directed effort. These results suggest that the effects of performance-approach goals and autonomous motives on goal attainment are incurred through increases in goal effort. In line with previous studies (e.g., Sheldon & Kasser, 2008), which have identified additional mechanisms by which the effect of autonomous motivated goals can be conveyed to goal attainment, future research investigating additional mediators (e.g., sense of self-efficacy, implementation intentions) will undoubtedly provide further understanding of the processes through which performance-approach goals and their underlying motives are related to goal attainment.

The current results revealed that performance-approach goals are neither all good nor all bad as their effects depend on the reasons why they are pursued. From a practical standpoint, our findings suggest that supervisors should encourage individuals to set autonomous goals. Autonomy-supportive behaviours from the direct supervisor (e.g., providing a meaningful rationale for doing the tasks, emphasizing on choice rather than control) appear to be an important factor for fostering autonomous motivation (e.g., Chirkov & Ryan, 2001; Gillet, Vallerand, Amoura & Baldes, 2010). Therefore, it is reasonable to suggest that supervisors should constantly promote, through autonomy-supportive behaviours, individuals' autonomous motivation to increase their well-being.

The present findings can be enriched in several ways. First, due to the correlational nature of the present research, causality cannot be ascertained. Future investigations should endeavour the use of experimental designs to identify the causal influences of performance-approach goals and motives on goal attainment, need satisfaction and thwarting, and well-being. For instance, it would be interesting to examine whether or not inducing a performance-approach goal in an autonomy-supportive – relative to a

controlling way – would instigate differences in outcomes. Second, the correlations between the controlled items were fairly low. It would be useful in future work to measure aspects of controlled functioning with more than two items and to study the separate effects of the different forms of controlled motivation (i.e., introjected and external regulations) as well as autonomous motivation. Third, future research should assess performance-approach goals, goal effort, and goal attainment with multi-item scales. Fourth, another limitation concerns the number of measurement points included in the Study 2. Goal attainment, need satisfaction, and need thwarting were assessed at the same time. The design of the study could be improved by incorporating a fourth measurement point, such that goal attainment would be measured at Time 2, need satisfaction and need thwarting at Time 3, and well-being at Time 4. Such a design would be a more appropriate manner to make inferences about the direction of the links between the determinant, mediator, and outcome variables (Frazier, Tix & Barron, 2004). Fifth, the present research relied exclusively on self-report measures which may be subject to social desirability biases. It would thus be interesting to replicate the present findings using objective assessments of goal attainment, informant reports (e.g., spouse, friends, family), and expert evaluations (Vazire, 2010) of one's well-being. Sixth, future research should examine the role of social-environment variables (e.g., autonomy support, transformational leadership), as well as individual-difference variables (e.g., need for achievement, fear of failure) and personality traits (e.g., core self-evaluations, proactive personality) in the prediction of performance-approach goals and their underlying reasons. Finally, the present research focused exclusively on the reasons underlying the endorsement of performance-approach goals. Dompnier, Darnon and Butera (2009) have demonstrated that the relationship between mastery goals and achievement-related outcomes depends on the reasons (i.e., to get teachers' appreciation or to succeed at university) why students endorse mastery goals. Based on these findings, it would be equally instructive to examine whether or not the autonomous and controlled reasons behind mastery-approach goals, mastery-avoidance goals, and performance-avoidance goals would yield differential effects on well-being outcomes.

The present results confirm the importance and significance of considering the autonomous and controlled reasons underlying one's performance strivings. Indeed, the present results suggest that when individuals strive towards performance-approach goals because it is fun, challenging, and stimulating and/or in accordance with their personal values and beliefs (i.e., autonomous reasons), their well-being is higher than when these goals are pursuit for internal and/or external pressure to beat their opponent (i.e., controlled reasons). The present research also showed that goal effort, goal attainment, need satisfaction, and need thwarting represent mechanisms that mediate the relationships of performance-approach goals and their underlying reasons to well-being.

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