Contemporary Educational Psychology 60 (2020) 101823

Contents lists available at ScienceDirect

Contemporary Educational Psychology

journal homepage: www.elsevier.com/locate/cedpsych

Writing about personal goals and plans regardless of goal type boosts academic performance

Michaéla C. Schippers[a,*], Dominique Morisano[b,c,1], Edwin A. Locke[d,1], Ad W.A. Scheepers[a,1], Gary P. Latham[e,2], Elisabeth M. de Jong[a]

[a] Rotterdam School of Management, Erasmus University Rotterdam, the Netherlands
[b] Dalla Lana School of Public Health, University of Toronto, Canada
[c] Institute for Mental Health Policy Research, Centre for Addiction and Mental Health, Canada
[d] Robert H. Smith School of Business, Department of Management and Organization, University of Maryland, USA
[e] Rotman School of Management, University of Toronto, Canada

ARTICLE INFO

Keywords:
Goal setting
Life goals
Future-oriented writing
Goal-achievement plans
Academic performance

ABSTRACT

Academic underachievement is a problem for both our education system and general society. Setting personal goals has the potential to impact academic performance, as many students realize through reflection that studying is a path towards realizing important life goals. Consequently, the potential impact of a brief (4–6 h), written, and staged personal goal-setting intervention on undergraduate academic performance (earned European Credit Transfer and Accumulation System credits) was investigated. Using a time-lagged quasi-experimental design, our model was tested with two first-year university goal-setting cohorts and two control cohorts (total n = 2928). The goal-setting cohorts (n = 698 and 711) showed a 22% increase in academic performance versus the control cohorts (n = 810 and 707). This increase depended on (1) the extent of participation in the 3-stage goal-setting intervention, (2) number of words written in the exercise, and (3) the specificity of students' goal-achievement plans (GAP). Contrary to goal-setting theory, which necessitates goal-task specificity, the results revealed that it did not matter whether the students wrote about academic or non-academic goals, or a combination of both. Rather, it appeared to be the overall process of writing about their personal goals, the specificity of their strategies for goal attainment, and the extent of their participation in the intervention that led to an increase in their academic performance. This study suggests an important modification to goal-setting theory, namely a potential contagion effect of setting life goals, an academic goal primed in the subconscious, and subsequent academic performance.

1. Introduction

Goal setting is a key element of self-regulation and behavior change. It has been shown to have unique effects on behavior in many domains including industry, education, sports, and health care (Epton, Currie, & Armitage, 2017; Locke & Latham, 2013). Especially promising is research on the effects of personal goals, or individuals' desires for their current or future lives (Locke, 2019; Locke & Latham, 2019). These goals provide a sense of meaning and hence can contribute to the feeling of having a purpose in life (Emmons, 1999; for a review, see (Schippers & Ziegler, n.d.). Life goals in particular can provide centrality to a person's identity and give direction to chosen daily activities (McKnight & Kashdan, 2009).

Adolescents are often searching for a general sense of purpose or meaning (Steger, Oishi, & Kashdan, 2009). This lack of clear direction might explain why academic achievement falls below standards for many students. Other factors that are associated with whether students complete their university education include cognitive ability, socio-economic status, and university policies (Balduf, 2009; Fehrenbach, 1993). At least 40 percent of first-year, full-time undergraduate students in the United States fail to earn their bachelor's degree within six years (U.S. Department of Education, 2017). Similar graduation rates have been reported in Europe for students in 3-year full-time bachelor degree programs (European Commission, 2015). College completion rates have changed very little over the past several decades (Carey,

* Corresponding author at: Rotterdam School of Management, Erasmus University, PO Box 1738, 3000 DR Rotterdam, the Netherlands.
E-mail addresses: mschippers@rsm.nl (M.C. Schippers), dominique.morisano@utoronto.ca (D. Morisano), elocke@rhsmith.umd.edu (E.A. Locke), ascheepers@rsm.nl (A.W.A. Scheepers), Latham@Rotman.Utoronto.Ca (G.P. Latham), e.m.dejong@rsm.nl (E.M. de Jong).
[1] Note that the second through fourth author have contributed equally to this paper.
[2] Cross-appointed in Psychology, Industrial Relations and Nursing.

https://doi.org/10.1016/j.cedpsych.2019.101823

Available online 25 November 2019

2004; Tinto, 2010). Consequently, there is substantial pressure, particularly for publicly funded institutions, to increase graduation rates and enhance student academic achievement (Charlton, Barrow, & Hornby-Atkinson, 2006; Pascarella & Terenzini, 2005).

For some time, causal linkages have been made between academic goals and academic outcomes (e.g., Locke & Bryan, 1968; see Morisano, 2013 for a review). For example, Latham and Brown (2006) reported the positive effects of MBA students setting a specific, high learning goal on their grade-point averages at the end of the academic year. Furthermore, recently, Alessandri et al. (2020) showed that students' self-set goals were associated with higher performance if the goals were highly specific and of moderate difficulty. Richardson, Abraham, and Bond (2012) recommended, based on their meta-analysis of the psychological correlates of academic performance, that early intervention strategies should include specific, challenging goal-setting interventions as well as performance-focused interventions targeting self-efficacy. Therefore, goal-setting theory (Locke, 1968; Locke & Latham, 1990, 2013), discussed in more depth below, was used as a framework for conducting the present study on academic achievement by undergraduate students. Specifically, we examined associations between a brief, online goal-setting intervention and academic performance.

An important tenet of goal-setting theory is that task-specific goals elicit task-specific outcomes (Locke & Latham, 1990). However, a conceptual paper by Höchli, Brügger, and Messner (2018) argued that superordinate (i.e., abstract) goals play a crucial role in motivating behaviors, especially in combination with subordinate (i.e., challenging, specific, and concrete) goals. Recent studies have begun to assess the effectiveness of personal (not specifically academic) goal-setting interventions on academic performance. For example, Travers, Morisano, and Locke (2015) found that participation in a diary-based personal growth goal-setting program was related to student performance, and that non-academic goals (e.g., stress management) positively impacted self-rated academic growth. Morisano et al. (2010) found that a 2-hour online, narrative, life goal-setting intervention increased academic achievement, retention rates, and a positive mood among academically "struggling" undergraduate students compared to those in a control condition. Surprisingly, the majority of personal goals that the struggling students set (e.g., eat healthier food, drink less alcohol, spend more time with friends, exercise) were not about academic achievement. The academic boost they achieved runs counter to goal-setting theory. However, because over 80% of the students set at least one academic goal, the authors were unable to make definitive conclusions about this trend, and challenged future researchers for an explanation. Was it the process of clarifying one's life goals itself that impacted academic performance, or was it just another example of setting at least one academic goal leading to an increase in academic outcomes?

An important aim of the present study was to elucidate the mechanisms by which personal goal setting is academically effective for students. Specifically, we examined associations between the processes involved in a personal goal-setting intervention and academic performance. Consequently, we compared the academic trajectories of ~2900 first-year university students from four cohorts on the basis of their participation in a brief, 4–6 h, three-stage goal-setting program, using a quasi-experimental design. Rather than focusing only on struggling students (cf. Morisano et al., 2010), we assessed the efficacy of the intervention for two full cohorts of students, compared to two cohorts of students who did not receive the intervention. In order to investigate the efficacy of the intervention, we determined which variables were related to academic outcomes in the goal-setting process: (a) the quantity and quality of participation (i.e., the number of words students wrote to describe their life goals and the quantity and the quality of goal-attainment strategies a student developed); (b) the general goal domain or category (i.e., academic or non-academic) of the goals set; and (c) the extent of participation (i.e., the number of intervention stages a student completed).

1.1. Literature review and hypotheses

1.1.1. Writing about goals

As previously mentioned, the underpinnings of the present study is goal-setting theory (GST; Locke, 1968; Locke & Latham, 1990, 2013). This theory is based on more than 1000 laboratory and field experiments developed over a 25-year period (Locke, 2019; Locke & Latham, 1990, 2013; Locke & Latham, 2019). A recent meta-analysis on goal-setting and subsequent behavior concluded that "goal setting is an effective behavior change technique that has the potential to be considered a fundamental component of successful interventions" (Epton et al., 2017; p. 1182). Furthermore, when self-concordant goals (i.e., goals that are aligned with who people are, and with what people want to do in their lives) are combined with implementation intentions that specify the when, where, and how of goal attainment, goal progress is facilitated (for a meta-analysis see Gollwitzer & Sheeran, 2006; Koestner, Lekes, Powers, & Chicoine, 2002). The act of planning and strategizing is a mediator in goal-setting theory (Latham & Arshoff, 2015; Locke & Latham, 1990, 2013), and goal setting can set students on a path of self-regulation (Latham & Locke, 1991). Thus, in our work with first-year university students, we predicted that there would be performance-related benefits that come from them not only describing their ideal future, but also identifying personal goals and developing specific plans for attaining them.

The effectiveness of goal setting on job performance is well established in the literature (Latham & Locke, 2018; Locke & Latham, 2006, 2013; Locke & Latham, 2019). Most of the research related to goal-setting theory has stressed the importance of aligning a task-specific, challenging goal with a specific, desired and related outcome. In the current study, we examined the relationship between setting general life goals, combined with detailed plans to achieve those "bigger picture" goals, with academic performance. Prior research has shown that participation in a goal-setting intervention helps students to set themselves on track for goal attainment (Epton et al., 2017). Making distant life goals (e.g., obtaining a degree, having a good career, improving a relationship) salient, and describing them in concrete rather than abstract terms can offset the negative effects of potential temporal discounting, or devaluing the future (Trope & Liberman, 2003). As these goals seem more proximal, it makes it easier for students to self-regulate in general (Latham & Locke, 1991; McCrea, Liberman, Trope, & Sherman, 2008).

The mere listing of goals, however, seldom impacts outcomes (Koestner et al., 2002). This is because the cognitive processing involved in "listing" is minimal, and goal commitment, a moderator in goal-setting theory, may not occur (Koestner et al., 2002). Furthermore, a recent meta-analysis showed that goal-setting interventions are more effective when a goal is made public (Epton et al., 2017). Thus, we decided to implement a 4–6 h three-stage personal goal-setting process for students that would combine (1) stage 1: descriptive and detailed writing about one's values, passions and ideal future (King, 2001), (2) stage 2: a detailed goal-attainment plan (GAP; visualizing strategies to overcome obstacles; Morisano et al., 2010), and (3) stage 3: a publicly presented (university wide) goal commitment statement from each student ("I WILL…") attached to their names and photographs (for a more elaborate description of the intervention, see Schippers, Scheepers, & Peterson, 2015; supplementary material). Questionnaires were given pre- and post-intervention. We used full cohorts of students to allow us to examine whether a full cohort of students, instead of only struggling students, could profit from goal setting. The following hypothesis was tested:

Hypothesis 1.. Participation in an online personal, narrative goal-setting intervention is associated with higher academic performance.

Building on prior work (e.g., Morisano et al., 2010; Schippers et al., 2015; Travers et al., 2015), we also investigated associations between a number of goal-setting process variables, such as the extent of

participation and quantity and quality of the writing, with academic performance.

1.1.2. Quantity and quality of participation: Number of words written and goal-attainment plans

Students differ in the amount of effort they put into writing and dreaming about their future, specifically with regard to the number of words that they use and the quality of their strategies to overcome obstacles and achieve their goals. Prior research has shown that writing about and making sense of one's life experiences, and pulling together otherwise fragmented stories and thoughts, has psychological and behavioral benefits (e.g., Lumley & Provenzano, 2003; Pennebaker, 1990). Prior research also showed that thinking about personal goals in concrete rather than abstract terms makes it more likely to achieve them (Höchli et al., 2018). Within the goal-setting intervention we used, students could differ in the quantity and the quality of writing about goal strategies and obstacles to goal completion. Morisano et al. (2010) found that the number of words students used to describe their ideal future (in the first part of the program) correlated positively with academic achievement. Thus, we expected that similar results will hold for the total number of words written in the entire goal-setting intervention, when controlling for motivation to do well in the study, and the extent of a student's participation.

Goal-setting theory states that strategy is a mediator in the goal setting – performance relationship. Goals require both specificity and plans (Latham & Arshoff, 2015; Locke & Latham, 1990, 2013). Fantasies of the future do not motivate action unless they are combined with a recognition of obstacles and plans for overcoming them (Oettingen, Wittchen, & Gollwitzer, 2013; Oettingen and Gollwitzer, 2010). A recent *meta*-analysis showed that "monitoring goal progress is an effective self-regulation strategy, and that interventions that increase the frequency of monitoring are likely to promote behavior change" (Harkin et al., 2016; p. 198). In the current intervention, students were required to write plans for attaining each goal. They were also asked to describe how they would monitor progress towards their goals. We predicted that both the quality (i.e., specificity and thoroughness) and quantity of strategies students developed to overcome obstacles, achieve their goals, and monitor their goals progress would affect performance positively. To address quality of writing about strategies and obstacles, we formulated a qualitative analysis of students' "goal-attainment plans" (GAP score; see details under "Content Analyses" in Results). Hence the following two hypotheses.

Hypothesis 2.. Number of words written to describe the life goals is associated with higher academic performance.

Hypothesis 3.. Quality and quantity of goal strategies (i.e., GAP) are associated with higher academic performance.

1.1.3. Goal type

We were also interested in whether specifying *any* goal versus *only* academic goals differentially affects academic performance. Prior research found a direct relationship between task-oriented goals and their task-oriented outcomes, including academic goal setting and academic performance (for a meta-analysis see Robbins et al., 2004; Zimmerman, Bandura, & Martinez-Pons, 1992). However, these studies did not compare the effects of setting task-specific academic goals versus non-academic personal goals (e.g., career, health, social) on academic outcomes. It may be the case that the type of goal, academic or non-academic, is not a key to increasing academic outcomes. Nevertheless, according to goal-setting theory, goals must be specific to the dependent variable (i.e., academic performance). Thus, we tested the following hypothesis:

Hypothesis 4.. Writing about academic performance goals is associated with increases in academic performance (i.e., a greater number of earned course credits (ECTS) in the students' first year).

1.1.4. Extent of participation

In the current study, the goal-setting intervention was part of the students' academic curriculum, three weeks after students entered the university, and took place over three stages. Students differed in terms of the number of stages that they chose to complete (e.g., zero, one, two, or three stages). Extent of participation in assignments in general has been shown to be a determinant of academic success (Finn, 1989; Finn & Rock, 1997; Holland & Andre, 1987). Moreover, students who chose not to participate in all three stages of the goal-setting intervention presumably could not gain its full benefits. For instance, students who completed only the first stage would reflect on their values, passions, and ideal future, but they would miss out on outlining the concrete plans necessary to realize that ideal future (stage 2). Similarly, if students did only the first two stages, they would miss the opportunity to set their top goal publicly (via a photo and statement; stage 3) and benefit from the impacts of public goal commitment (Epton et al., 2017).

Hypothesis 5.. The extent of participation in the goal-setting intervention (i.e., the number of stages completed) is related to academic performance.

2. Method

2.1. Participants

The participants included 2934 first-year students from four consecutive cohorts in a Dutch Business Administration bachelor's degree program over a 4-year period. The average age of the students was 18.72 years (SD = 1.41), 70.3% were male, and 27% were ethnic minority [3]students. We used a quasi-experimental cohort design (Cook & Campbell, 1979; Grant & Wall, 2009). All first-year students in the two goal-setting cohorts were given access to the goal-setting intervention as part of a required Managerial Skills course. Providing the present goal-setting intervention to all students, rather than to only struggling students (cf. Morisano et al., 2010), provided a conservative test of our hypotheses because the two goal-setting cohorts likely contained high-achieving students with less room to improve their academic performance.

In total, data were collected from four complete first-year student cohorts within a highly structured, consistent curriculum: goal-setting cohorts 1 (n = 700; academic year 2011–2012) and 2 (n = 711; academic year 2012–2013) and control cohorts 1 (n = 812; academic year 2009–2010) and 2 (n = 711, academic year 2010–2011). Thus, control cohorts 1 and 2 served as comparison groups (see DeRue, Nahrgang, Hollenbeck, & Workman, 2012, for a similar study design). The two control cohorts did not significantly differ from the two goal-setting cohorts on age, t = 1.32, p = .19, gender, X^2 (1, N = 2925) = 0.01, p = .92, or ethnicity, X^2 (2, N = 2700) = 4.46, p = .11.

The participants were contacted by email for permission to use these data for research purposes. They were provided an opportunity to opt out. Two students in goal-setting cohort 1 opted out, thus reducing the sample size to 698; none of the students in goal-setting cohort 2 opted out[4].

[3] For ethnic minority students, we applied the definition most commonly used by the Dutch governmental Statistics Body (CBS) to distinguish between ethnic majority (i.e., Dutch) and ethnic minorities. It has been widely applied by ministries, local governments and media in the Netherlands (Alders, 2001). Specifically, "Ethnic minorities" were defined as individuals with a first- and second-generation foreign (non-Dutch) background. The definition of Alders (2001) states that "the first generation consists of persons who are born abroad and have at least one parent who is also born abroad. The second generation consists of persons who are born in the Netherlands and have at least one parent who belongs to the first generation" (p. 2).

[4] Note that the current study was part of a larger data-gathering effort (see Schippers et al., 2015).

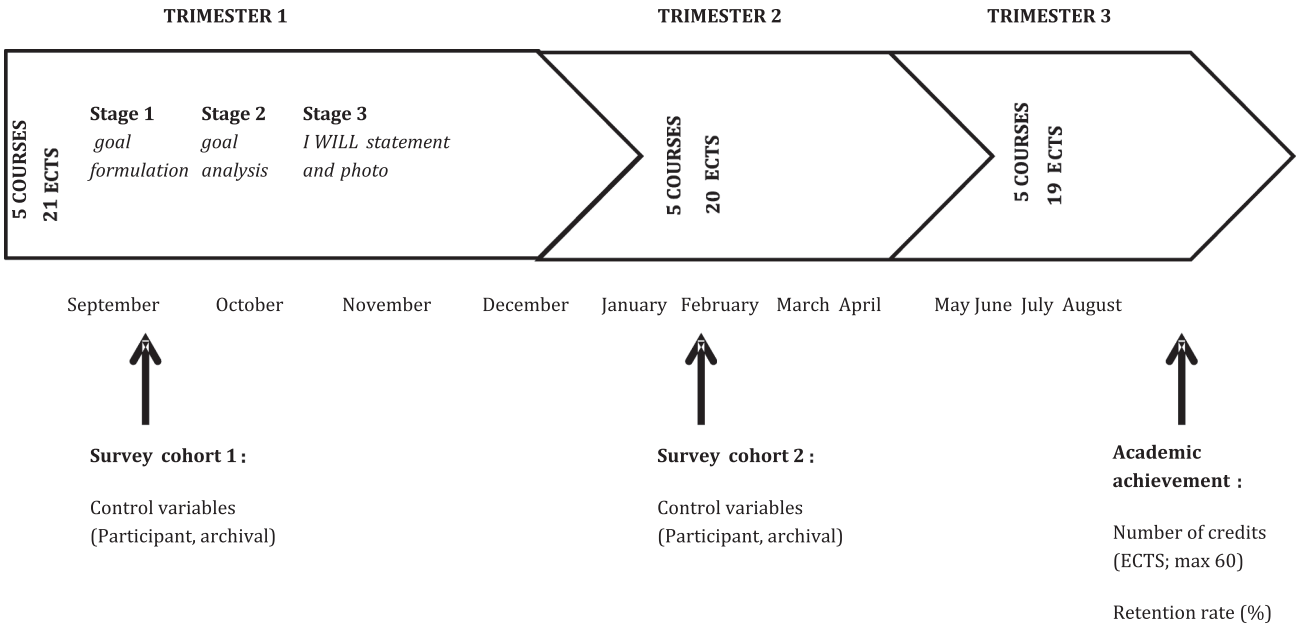

Fig. 1. Study timeline goal-setting intervention (Goal-setting cohorts 1 and 2).

2.1.1. Context

The business school uses the European Credit Transfer and Accumulation System (ECTS). One successful academic year corresponds to 60 ECTS credits, or 1500–1800 study hours. In order to earn ECTS credits for a course, a student needs to achieve a passing mark on the final exam. Under the university's previous Binding Study Advice (BSA) system, business students from both control cohorts and goal-setting cohort 1 were required to achieve a minimum of two-thirds (i.e., 40) of the required 60 ECTS credits in year 1 to avoid expulsion. By the end of their second study year, students were required to have attained all first-year ECTS credits. The general effect of this system was frequent student dropouts in the first academic year. In an attempt to rectify this behavior, and raise academic achievement, the university required students from goal-setting cohort 2 onwards to earn all 60 credits in their first year. This is a very specific, difficult performance goal. This credit shift is the only major difference between goal-setting cohorts 1 and 2.

2.2. Procedure

Early in their first year, the students in the two goal-setting cohorts were required to complete an online, narrative, three-stage personal goal-setting intervention from a location of their choice (e.g., home, library). The students were explicitly instructed to find a noise-free location where they could work on the intervention uninterrupted for at least two hours per stage. The intervention required the students to articulate a specific plan for attaining their desired future. Stages 1 and 2 occurred in two ~2 to 3-hour sessions over two consecutive days. Stage 3 consisted of a 10-minute goal-statement identification and photo-shoot on a third day (for an elaborate description of the intervention, see Schippers et al, 2015, supplementary material). In Stage 1, the students identified their desired future by listing 6–8 goals using a free-writing format. In Stage 2, the students evaluated and elaborated on the goals they had set as well as articulated specific plans for attaining them. In stage 3, each student scheduled a portrait photoshoot with the university photographer, and then provided an overall personal goal statement (e.g., "I will work as hard as possible to attain my goals;" "I will work to sustain our world for future generations"). The photograph and the "I will" statement were then published together on both the university's website and Facebook page.

As stated earlier, the students participated in one or more sections of this three-stage intervention as part of a required management-skills course during their first trimester. The deadline for Stage 1 was set for three weeks into the course; Stage 2's deadline was two weeks later; Stage 3's deadline was set following the completion of Stages 1 and 2 within the first trimester (see Fig. 1).

2.2.1. Words written

Word count was calculated by summing the number of words written in Stages 1 and 2; Stage 3 consisted of one sentence and was therefore not included in the word count.

2.2.2. Goal-attainment plans

For both goal-setting cohorts, we &analyzed the quality and quantity of goal-attainment plans (GAP) for each of the students' top six goals. The resulting GAP score is described in the results section.

2.2.3. Goal type

Goals were coded as either academic = 0 or non-academic = 1, via a content analysis of the goals that students listed (see results section for the content analyses and procedure for creating the dummy variable).

2.2.4. Extent of participation

Extent of participation in the goal-setting intervention was assessed using a scale from 1 to 4 (1 = no participation; 4 = full participation in all three stages). Students needed to complete Stage 1 in order to advance to Stage 2. Although students could technically participate in Stage 3 (i.e., formulating the "I WILL" statement), without participating in Stages 1 and 2, only four students in goal-setting cohort 1 and three students in goal-setting cohort 2 chose to do so. We listed those students as "participated in part 3" in our dataset.

2.2.5. Academic performance

Official university transcripts were collected for all participants in the four cohorts after the first year in order to derive the number of

obtained European Credit Transfer and Accumulation System or ECTS credits (min = 0, max = 60).[5]

2.3. Control variables

Control variables for both goal-setting cohorts included age, gender, ethnicity, registration date, and study motivation (see below for definition). Official university transcripts were used to obtain data on age, gender, ethnicity and registration date. We also controlled for student participation in an intervention that took place prior to entering the university, namely Study Choice Meetings (SCM).

2.3.1. Study Choice Meetings (SCM)

SCM represent a pre-entry program for helping students to make an informed choice of their studies. For SCM participation, three dummy variables were created: 1 = invited and participated, 2 = invited and did not participate, and 3 = not invited. Since the relationship with academic performance was relatively linear for these three dummy variables, we converted them into a continuous variable from 1 to 3. This variable was added as a control variable to the subsequent regression analyses. The pattern of results did not change when using this continuous variable as opposed to the dummy variables.

2.3.2. Study motivation

We adapted four items from the Hackman and Lawler (1971) motivation scale and Pintrich and de Groot's (1990) intrinsic value scale. Items included: "I am willing to work hard at my studies", "I am willing to immerse myself in my studies", "It is important to me to fully engage in my studies", "My study program is very important to me" (1 = totally disagree; 5 = totally agree). Cronbach's alpha was 0.82 and 0.83 respectively for the two goal-setting cohorts, and 0.79 and 0.83 for the two control cohorts.

3. Results

3.1. Content analyses

3.1.1. Goal-attainment plans

The majority of the students completed all three stages of the intervention (e.g., 89% of goal-setting cohort 1 and 91% of goal-setting cohort 2). We content-analyzed the quality and quantity of the goal-attainment plans (GAP) for each student's top six goals, in both goal-setting cohorts. The analysis included: (1) the number of goal-attainment strategies, (2) the specificity and thoroughness of those strategies, (3) the number of goal obstacles students anticipated, and (4) the specificity and thoroughness of their plans for overcoming those obstacles.

Two coders independently rated the statements using the following coding schemes. For categories 1 and 3, the scores that students could receive had no upper limit: 0 = section left blank; 1 = no strategies or obstacles mentioned; 2 = one strategy or obstacle listed; 3 = two strategies or obstacles listed; 4 = three strategies or obstacles listed, and so on. For categories 2 and 4, the scores were on a 4-point scale: 0 = section left blank; 1 = no strategies or obstacle solutions mentioned; 2 = strategies or obstacle solutions named but not explained (e.g., for category 2: "get more sleep; do more sports"; for category 4, listing the obstacle of "losing touch with family" with the solution "call them more often"); 3 = strategies or obstacle solutions named and moderately explained (e.g., for category 2: "stay in contact with friends by calling or visiting them"; for category 4, naming the obstacle "not having enough time for school" with the solution "skip exercising if necessary on Tuesdays, spend more time in the library after lectures"); 4 = strategies or obstacles and obstacle solutions named alongside a clear, detailed, and measurable plan (e.g., for category 2, "build up my social network by creating a detailed Linked-In profile, go to a specified number of business events each month, and browse through network listserv daily"; for category 4, listing the obstacle "not enough time for friends" with a measurable solution such as, "reserve every Thursday evening for my school friends, meet with hometown friends on the weekends, plan a time every Friday to call a long-distance friend").

Interrater reliability was assessed using a two-way mixed consistency average-measures intraclass correlation coefficient (ICC; Hallgren, 2012; McGraw & Wong, 1996) that assessed the consistency of the raters with respect to the four categories. The ICCs ranged from 0.96 to 0.98 for goal-setting cohort 1, and 0.91 to 0.97 for goal-setting cohort 2.

The intercorrelations among the four categories ranged from 0.82 to 0.91 for goal-setting cohort 1 and from 0.69 and 0.86 for goal-setting cohort 2. The students who were relatively specific in their descriptions of obstacles to goal attainment were also specific in the plans they listed for overcoming them. Exploratory factor analyses were conducted for each goal-setting cohort. The results indicated that the four categories represent one construct; hence, we treated this as one variable that represented each student's level of goal-attainment planning. Scores for each of the four categories were summed together across the top six goals; this elicited what we call the goal-attainment plan (GAP) score.

3.1.2. Goal type

Content analyses of the type of goals the students set were performed for the three top-ranked goals. Two coders independently rated each goal as belonging to one of seven categories: academic, career, social relationships, material, physical health, mental well-being, and miscellaneous. Differences between the two raters were resolved through discussion. The non-academic goals were collapsed into one category. Goals were coded as either academic = 0 or non-academic = 1, creating a dummy variable for inclusion in the regression analysis. An example of an academic goal is "I would like to be a good student," whereas a non-academic goal might be "I want to exercise more". The interrater agreement was high for both goal-setting cohorts: the top goal, k = 0.85 for goal-setting cohort 1; 0.87 for goal-setting cohort 2; for the second goal, k = 0.87 for goal-setting cohort 1; 0.87 for goal-setting cohort 2; and for the third goal, k = 0.87 for goal-setting cohort 1; 0.84 for goal-setting cohort 2.

With regard to academic vs non-academic goals, among the top three goals that students set in goal-setting cohort 1, 20.08% were academic. In goal-setting cohort 2, 20.31% of the top three goals were academic. When both goal-setting cohorts were combined, 20.20% of the top 3 goals were academic. Furthermore, 323 (22.90%) of the students chose an academic goal as their most important (top) goal.

3.2. Descriptive statistics

On average, students in both goal-setting cohorts wrote over 3,000 words across the first two intervention stages. The content analysis of goal-attainment plans (GAP) revealed a mean of 35.17 points (SD = 24.34) and 32.51 points (SD = 19.19) for goal-setting cohorts 1 and 2, respectively. With regard to the type of top three goals set, 49% were academically related.

Extent of participation was positively related to academic

[5] Many studies of academic success use grade-point average as the dependent variable. Although GPA is an important indicator of student success in North America, in Europe the number of earned credits best reflects incremental progress (e.g., Triventi, 2014; Schippers et al., 2015). Hence, in line with previous research in the European academic context, we chose to use this indicator of academic achievement. Also, in the Dutch grading system, students can resit course exams several times, and only the passing grade (sufficient) is formally recorded and rewarded with credits (ECTS). Therefore, grades do not adequately differentiate between performance levels of students and could give a biased picture. The number of course credits earned in a given period (e.g. one year) does more adequately indicate performance levels.

Table 1
Means, standard deviations and number of students of the control cohorts and goal-setting cohorts.

	Control cohort 1			Control cohort 2			Goal-setting cohort 1			Goal-setting cohort 2		
	M	*SD*	*N*	*M*	*SD*	*N*	*M*	*SD*	*N*	*M*	*SD*	*N*
1. Age	18.70	1.42	812	18.82	1.58	711	18.68	1.30	698	18.67	1.27	711
2. Gender (dummy)	0.69	0.46	811	0.71	0.45	706	0.71	0.46	698	0.70	0.46	710
3. Ethnicity (dummy)	1.48	0.82	712	1.46	0.79	652	1.29	0.46	653	1.25	0.43	682
4. Registration date	1.57	0.68	792	1.67	0.72	709	1.97	0.65	698	1.71	0.72	711
5. Study Choice Meetings (SCM)	1.56	0.73	812	2.00	0.85	711	1.21	0.84	698	2.57	0.72	711
6. Study motivation	3.93	0.67	622	4.00	0.66	655	4.07	0.63	633	4.34	0.62	596
7. Words written							3,344.62	1,599.76	698	3,205.69	1,617.30	711
8. Goal-attainment plans (GAP)							35.17	24.34	698	32.51	19.19	711
9. Goal type (dummy)							0.49	0.50	609	0.49	0.50	672
10. Extent of participation							3.47	1.10	698	3.73	0.81	711
11. Academic performance	32.16	20.99	811	32.49	22.06	710	38.28	20.50	698	40.70	22.83	711

Table 2
Aggregate level intercorrelations of the goal-setting cohorts.

	1	2	3	4	5	6	7	8	9	10	11
1. Age	–	0.05	0.22**	0.24**	−0.18**	0.09*	−0.18**	−0.10*	−0.11**	0.01	−0.15**
2. Gender	0.11**	–	−0.04	0.14**	−0.07	−0.11**	−0.05	0.25**	−0.08*	−0.08*	−0.17**
3. Ethnicity	0.11**	−0.11**	–	0.12**	−0.13**	0.03	−0.18**	−0.06	−0.09*	0.01	−0.15**
4. Registration date	0.29**	0.10*	0.05	–	−0.55**	−0.09*	−0.17**	−0.12**	−0.12**	0.02	−0.18**
5. Study Choice Meetings (SCM)	−0.26**	−0.05	−0.07	−0.55**	–	0.03	0.17**	0.10**	0.08*	−0.01	0.14**
6. Study motivation	0.06	−0.11**	0.11**	−0.07	0.03		0.02	0.09*	0.06	0.06	0.30**
7. Extent of participation	−0.11**	0.03	−0.13**	−0.14**	0.19**	0.08*	–	0.44**	0.35**	0.03	0.30**
8. Words written	−0.12**	−0.16**	−0.06	−0.15**	0.15**	0.09*	0.52**	–	0.38**	0.05	0.26**
9. Goal-attainment plans (GAP)	−0.06	−0.04	−0.09*	−0.16**	0.12**	0.06	0.28**	0.42**	–	0.05	0.08*
10. Goal type (dummy)	0.07	−0.08*	0.03	−0.08*	−0.02	−0.03	−0.02	0.04	−0.04	–	0.08
11. Academic Performance	−0.14**	−0.02	−0.10*	−0.16**	0.17**	0.18**	0.50**	0.32**	0.31**	−0.02	–

Note: Goal-setting cohort 1 at left side of the diagonal; goal-setting cohort 2 at right side of diagonal.
* $p < .05$.
** $p < .01$.

performance ($r_{\text{goal-setting cohort 1}} = 0.50$, $p < .001$; $r_{\text{goal-setting cohort 2}} = 0.30$, $p < .001$). Similar relationships were found for number of words written with academic performance ($r_{\text{goal-setting cohort 1}} = 0.31$, $p < .001$; and $r_{\text{goal-setting cohort 2}} = 0.26$, $p < .001$) and GAP ($r_{\text{goal-setting cohort 1}} = 0.30$, $p < .001$; and $r_{\text{goal-setting cohort 2}} = 0.26$, $p < .001$). The dummy variable for goal type (i.e., academic versus non-academic) was not related to academic achievement in either goal-setting cohort. Descriptive statistics are shown in Tables 1 and 2. The regression results are shown in Table 3.

3.3. Hypotheses

We hypothesized that goal-setting cohorts 1 and 2 would do better academically than the control cohorts 1 and 2 (Hypothesis 1). Consequently, we compared academic performance (i.e., the number of earned credits or ECTS after year one) of the goal-setting cohorts with the two control cohorts.[6] As predicted, goal-setting cohort performance was higher in terms of ECTS, $M = 38.28$, $SD = 20.50$/$M = 40.70$, $SD = 22.83$ for goal-setting cohorts 1 and 2, respectively versus $M = 32.16$, $SD = 20.99$ / $M = 32.49$, $SD = 22.06$ for control cohorts 1 and 2. Independent two-tailed t-tests indicated that the difference in ECTS between the two control cohorts was not significant ($t = -0.30$; $p = .764$, $d = 0.02$). The average ECTS of goal-setting cohort 2 was slightly higher than the average ECTS of goal-setting cohort 1 ($t = -2.16$; $p = .031$, $d = 0.12$). However, due to the large sample sizes, significant effects may unjustly occur (Type I error). To correct for possible Type I errors, we also performed an ANOVA with a Bonferroni post-hoc test. This analysis showed that differences between the control cohorts and the goal-setting cohorts were significant, whereas the difference between control cohorts 1 and 2, as well as the difference between goal-setting cohorts 1 and 2, were not significant (see Table 4). Importantly, the total mean difference in academic performance, as measured by ECTS, was an additional 21.6% for the two goal-setting cohorts, compared to the two control cohorts. In general, the regression results show a strong goal-intervention effect (see Table 3). When we combined the two goal-setting cohorts and the two control cohorts respectively, the average ECTS of the combined goal-setting cohorts ($M = 39.46$, $SD = 21.76$, n = 1408) was also significantly higher than the average ECTS of the combined control cohorts ($M = 32.31$, $SD = 21.48$, n = 1,521): $t = -8.93$, $p < .001$, $d = 0.34$, a medium effect size for education research (Calin-Jageman & Cumming, 2019).

Hypothesis 2 stated that the number of words written by students in stages 1 and 2 of the goal-setting intervention would be positively related to academic achievement. As shown in Table 1, the average total word count for both stages was 3345 words ($SD = 1.60$) for goal-setting cohort 1 and 3206 words ($SD = 1.62$) for goal-setting cohort 2. The extent of participation in the first two stages of the intervention affected the number of words the students wrote. Controlling for the extent of participation removed some of the variance in the number of words written. Doing so underestimated the relationship between word count and academic performance. A similar line of reasoning holds for goal-attainment plans (GAP). The intercorrelations of those variables and the extent of participation in the intervention are moderately high (for word count $r = 0.52$ and $r = 0.44$, respectively; for GAP $r = 0.38$ and $r = 0.35$, respectively). To better understand the association of word count with academic performance, we entered the participation variable into the regression model (Model 3), and reported the effect of

[6] Control cohort 1 began their studies one year after a thorough change in curriculum, which has since stayed the same, and also coincided with the first year that Study Choice Meetings were organized for students.

Table 3
Hierarchical regressions with dependent variable academic performance.

	Goal-setting cohort 1 # Credits (βs)						Goal-setting cohort 2 # Credits (βs)					
	Model 1		Model 2		Model 3		Model 1		Model 2		Model 3	
	β	*p*	β	*p*	β	*p*	β	*p*	β	*p*	β	*p*
Control variables												
Age	−0.10*	0.017	−0.09	0.027	−0.08	0.049	−0.12*	0.004	−0.10*	0.014	−0.08*	0.034
Gender	0.02	0.696	0.05	0.220	0.02	0.655	−0.13*	0.001	−0.08	0.036	−0.09*	0.022
Ethnicity	−0.10*	0.015	−0.07	0.072	−0.04	0.312	−0.13*	0.002	−0.11*	0.005	−0.09*	0.019
Registration date	−0.06	0.249	−0.02	0.634	−0.02	0.589	−0.06	0.203	−0.04	0.333	−0.04	0.407
Study Choice Meetings (SCM)	0.10	0.037	0.08	0.094	0.03	0.458	0.06	0.207	0.05	0.254	0.04	0.394
Study motivation	0.20*	0.000	0.17*	0.000	0.15*	0.000	0.29*	0.000	0.27*	0.000	0.27*	0.000
Intervention effects												
Words written			0.20*	0.000	0.11*	0.007			0.13*	0.002	0.09*	0.028
Goal-attainment plans (GAP)			0.18*	0.000	0.09*	0.041			0.16*	0.000	0.11*	0.007
Goal type (dummy)			−0.00	0.969	−0.00	0.954			0.04	0.328	0.04	0.330
Extent of participation					0.39*	0.000					0.17*	0.000
	Model 1		Model 2		Model 3		Model 1		Model 2		Model 3	
R^2	0.09**		0.18**		0.31**		0.16**		0.22**		0.24**	
ΔR^2	0.09		0.10		0.12		0.16		0.05		0.02	
ΔF	8.97**		22.18**		99.29**		18.58**		13.23**		17.63**	
Dfs	(6, 565)		(3, 562)		(1, 561)		(6, 574)		(3, 571)		(1, 570)	

Note: For top part of the table, * significant after Benjamini-Hochberg (1995) procedure. For bottom part of the table, * $p < .05$, ** $p < .01$.

Table 4
Bonferroni post-hoc test on ECTS per control and goal-setting cohorts.

	Control cohort 1	Control cohort 2	Goal-setting cohort 1	Goal-setting cohort 2
Control cohort 1	–			
Control cohort 2	−0.33 /1.11	–		
Goal-setting cohort 1	−6.04*/1.12	−5.71*/1.15	–	
Goal-setting cohort 2	−8.54*/1.11	−8.21*/1.15	−2.50 /1.15	–

Note. In cells: Mean Difference (Std. Error).
* $p < .001$.

Table 5
Average academic performance (ECTS) after year one in relation to participation in the goal-setting intervention.

	No participation			Participation in one part			Participation in two parts			Full participation		
	M	*SD*	*N*	*M*	*SD*	*N*	*M*	*SD*	*N*	*M*	*SD*	*N*
Goal-setting cohort 1	6.86	14.34	56	14.00	18.67	17	37.13	23.97	15	41.87	17.89	610
Goal-setting cohort 2	12.37	20.26	27	15.11	24.29	9	28.59	23.17	22	42.63	21.81	653
Goal-setting cohort 1 + 2	8.65	16.58	83	14.39	20.30	26	32.05	23.55	37	42.26	20.01	1263

word count and GAP in a separate model in the step before (Model 2; See Table 3).

In support of the second hypothesis, there was a significant relationship in both goal-setting cohorts between word count and academic performance (Table 3, Model 2). Because of our large sample size, we used the Benjamini-Hochberg (1995) procedure to control for Type I errors in all our regression analyses (see Table 3). When entered into the regression, word count was significantly related to ECTS earned in both goal-setting cohorts ($\beta = 0.20$, $p < .001$; and $\beta = 0.13$, $p < .001$, respectively).

Consistent with Hypothesis 3, the goal-attainment plan score (GAP) was positively related to academic performance in Model 2 ($\beta = 0.18$, $p < .001$; and $\beta = 0.16$, $p < .001$, respectively. Word count and GAP were moderately correlated ($r_{goal\text{-}setting\ cohort\ 1} = 0.42$, $p < .001$; $r_{goal\text{-}setting\ cohort\ 2} = 0.38$, $p < .001$). Both variables predicted unique variance in Model 2.

Hypothesis 4 predicted that writing about academic goals would be related to academic performance. This hypothesis was not supported in both goal-setting cohorts 1 or 2, as goal type did not explain additional variance ($\beta = -0.002$, $p = .97$; and $\beta = 0.04$, $p = .33$, respectively). It was the act of writing about personal life goals, regardless of goal type (academic or non-academic), and then specifying plans for attaining them, that was related to academic performance.

Hypothesis 5 predicted that the extent of participation in the goal-setting intervention (i.e., number of stages) would be positively related to academic performance. Tables 3 and 5 reveal support for this hypothesis. The extent of participation in the intervention on academic performance was positive in both goal-setting cohorts ($\beta = 0.39$, $p < .001$, and $\beta = 0.17$, $p < .001$, respectively, Model 3). Students who participated in one stage of the goal-setting intervention performed better than students who did not participate at all. However, those who only participated in one stage performed more poorly than those who participated in two or more stages. Students who did not participate at all earned an average of 6.86 ECTS ($SD = 14.34$) in goal-setting cohort 1 and an average of 12.37 ECTS ($SD = 20.26$) in goal-setting cohort 2. Those who participated in one stage earned 14.00 ECTS ($SD = 18.67$) in goal-setting cohort 1 and an average of 15.11 ECTS ($SD = 24.29$) in goal-setting cohort 2. But students who

participated in all three stages earned on average 41.87 ECTS (SD = 17.89) in goal-setting cohort 1 and an average of 42.63 ECTS (SD = 21.81) in goal-setting cohort 2. The effect of extent of participation on number of credits earned is not only large; the relationship with performance is also linear in relation to the number of stages in which the students participated.

3.4. Additional analyses

University rules allowed students to skip a maximum of four regular exams and wait for later exam resits in the summer. These exam-related rules allow for flexibility. However, they also enable avoidance behavior and procrastination (Schippers et al., 2015). Thus, taking part in the goal-setting intervention could be related to taking more exams during the year instead of waiting for the summer resits. Using "taking scheduled exams on time" as the dependent variable, the extent of participation in the goal-setting intervention was a significant predictor ("Taking scheduled exams on time" ranged from 0 to 12, as there were 12 exams in the first academic year; $\beta = 0.61$, $p < .001$ for goal-setting cohort 1 and $\beta = 0.30$, $p < .001$ for goal-setting cohort 2, with Benjamini-Hochberg procedure). In addition, word count ($\beta_{\text{goal-setting cohort 1}} = 0.25$, $p < .001$, $\beta_{\text{goal-setting cohort 2}} = 0.15$, $p < .001$, with Benjamini-Hochberg procedure) and GAP ($\beta_{\text{goal-setting cohort 1}} = 0.21$, $p < .001$, $\beta_{\text{goal-setting cohort 2}} = 0.16$, $p < .001$, with Benjamini-Hochberg procedure) predicted participation in scheduled exams. This suggests that the students who participated more fully in the goal-setting intervention also showed more self-regulation and less procrastination with respect to taking the scheduled course examinations on time.

4. Discussion

This research demonstrated the positive effects of a life goal-setting intervention on the academic performance of two cohorts of undergraduate management students. The students who participated in the goal-setting intervention demonstrated higher academic performance as measured by number of credits obtained in their first year of university. The two goal-setting cohorts demonstrated over 20% higher academic performance, as compared to the two control cohorts. This difference in academic performance appeared to increase linearly with the extent of student participation in the intervention. The intervention was especially effective for students who participated in all three stages of goal setting, and who were more cognitively involved in the quality and quantity of words they used to describe their goal-attainment plans (GAP). Both word count and GAP scores added unique performance variance in the analyses; these effects were independent of the control variables. Importantly, the type of goals set, namely, academic versus non-academic, did not affect academic performance. The combination of writing about personal life goals and then specifying a strategy to attain them was related to academic performance.

The results of this study expand the literature on the positive effects of personal-goal reflection on academic achievement in several key ways. First, we were able to take to scale previous applications of personal goal setting (e.g., Morisano et al., 2010; Travers et al., 2015) by showing evidence of the positive effects across two large, diverse cohorts of first-year students of varying ability levels. Second, the present study was done in a different cultural context, namely, the Netherlands vs. Canada and the UK. Thus, the present results suggest the robustness of the relationship of personal goal setting with academic achievement across diverse cultures. Third, the results revealed that the goal-performance relationship remains significant after controlling for demographic and study motivation variables. Fourth, this study showed that the total number of words written and the quality of student's goal-attainment plans (GAP) were positively related to academic success; strategizing was key. Fifth, this study demonstrated the importance of the extent of participation in the goal-setting intervention, the number of words written, and the quantity and quality of GAP on academic performance. These relationships, for the most part, remained significant, after controlling for other factors related to academic performance (i.e., motivation).

Sixth, and most importantly, the theoretical significance of these findings for goal-setting theory are at least two-fold. First, in the context of an academic setting, setting life goals can be beneficial even if they are not academic. The process of writing about a desired future and then specifying plans for goal attainment appear to have been more important for improving academic performance than the type of goals that students set (academic versus non-academic). This is an important finding, because it contradicts goal-setting theory, which states that only task-specific goals elicit task-specific outcomes (Locke & Latham, 1990, 2013). Second, we speculate that developing a specific strategy for goal attainment appears to compensate for lack of specificity in the goal that is set.

Goal-setting theory was built inductively (Locke & Latham, 1990, 2013) so that new discoveries, rather than being a threat to the theory, suggest the need for expansion and modification. Research is now needed to elucidate the mechanisms by which writing about non-academic life goals, followed by specific strategies for their attainment, increase academic performance. As noted throughout this paper, strategy is a mediator in goal-setting theory (Latham & Arshoff, 2015; Locke & Latham, 1990). Perhaps the process of painting a broad picture of important life goals makes these goals conscious, and subsequently brings all major goals to the forefront (Locke, 2015). Having major or superordinate goals in the forefront may make the path to goal attainment clearer and in addition may free up cognitive resources to pursue those goals once strategies for goal setting have been specified. In addition, prior research has shown that setting goals in one domain (e.g., exercising more often) can enhance self-regulation in other domains (e.g., putting more hours in studying; for a review see Baumeister, Gailliot, DeWall, & Oaten, 2006; Oaten & Cheng, 2006; Pintrich, 2000). Furthermore, although there is a scarcity of research on the impact of personal goals, Emmons and Diener (1986) showed that simply having self-rated "important" personal goals was as strongly correlated with positive affect as attaining them. Identifying implementation plans for any particular goal will increase the likelihood of attainment of that goal, and goal attainment is associated with increases in self-efficacy, which may lead to increased goal setting and achievement in unrelated domains (Morisano et al., 2010).

Our results suggest that it is the process of choosing and writing about personal goals and how to achieve them, rather than the inclusion of specifically academic versus non-academic goals, that is related to academic performance. Developing domain-relevant and specific strategies for goal attainment appears to compensate for setting a general goal (for a review see Gollwitzer & Sheeran, 2006; Schippers & Hogenes, 2011).

A further explanation for the positive effect of a goal expressed in general terms on performance is suggested in the literature on goal contagion. At its core, goal contagion, Laurin (2016) argued, is a priming phenomenon. Academic goals are more likely to be primed when an individual is enrolled in a university environment, as was the case in this study, than when the person is largely in another environment (e.g., out of school, or in a full-time job). Goals are also primed by those around an individual, especially when there is a social identity. In the present study, an individual was surrounded by fellow students who were taking the same academic courses in the same university. Consequently, in addition to the general life-style goals that were consciously set, it would appear that academically related goals, namely credits earned, could have been primed by the academic setting (Locke, 2019). Locke (2019) has indicated the need to discover why and how writing works to promote goal attainment and has offered a number of hypotheses.

Goals primed in the subconscious have an effect on an individual's behavior that is similar to that which occurs when a specific, high goal

is consciously set (Latham, Brcic, & Steinhauer, 2017). Besides this, setting personal goals and making goal-attainment plans may lead to a self-reinforcing virtuous cycle of goal attainment (cf. Morisano, 2013; Schippers et al., 2015). Prior research has suggested that brief psychological interventions in education may have long-lasting positive effects for students, because they instigate a positive recursive cycle (e.g., Walton, 2014; Yeager & Walton, 2011). This cycle is a self-reinforcing, virtuous succession of goal attainment, similar to an "upward spiral" (Sekerka, Vacharkulksemsuk, & Fredrickson, 2012; Sheldon & Houser-Marko, 2001). Thus, departing from traditional goal-setting research, we believe that our results show that even without obvious direct correspondence between the goal and the dependent variable (e.g., a health goal and academic performance), setting goals in different domains can lead to improved academic outcomes. Finally, for most life goals that students set (e.g., starting a family, career choices) students may realize that an important prerequisite may be to do well in their studies. The current study lends credibility to the concluding remark of Covington (2000, p. 193), who noted that schooling should be viewed as "future-building, and personal goals as mediators of the future."

4.1. Limitations and future directions

A time-lagged, quasi-experimental design has both strengths and limitations. This research design allowed for an ecologically valid and ethical approach, in which all students over two years were given access to the goal-setting intervention as part of their course curriculum, and thus they were given the opportunity to benefit from its possible positive effects. Although we were able to compare full cohorts of participants and non-participants (the control cohorts), the quasi-experimental design was also a limitation in that it prevented us from drawing causal inferences due to the possible confound of time itself. Furthermore, we were unable to randomly assign participants to a particular condition in our study design, therefore the possibility holds that the differences we found were due to unknown factors that differentiated students from each cohort. Future research is needed to determine whether academic performance differs between students randomly assigned to a goal-setting condition and a control condition, or randomly assigned to different versions of the goal-setting intervention.

It has been suggested that educational institutions may benefit from using positive psychology interventions, and that they may work best when the interventions are made part of the curriculum (Clonan, Chafouleas, McDougal, & Riley-Tillman, 2004). Indeed, calls have been made for interventions that "work" (Murphy, 2015). These may be especially useful when people are embarking on a new path in their life, as in the transition from high school to university (Schippers et al., 2015; Wilson, 2011; for a review see (Schippers & Ziegler, n.d.). Future research could look especially at the timing of the intervention in a student's academic trajectory.

4.2. Conclusion

In terms of practical significance, a personal goal-setting intervention is a relatively straightforward way to improve first year university student performance: reflect on one's best possible life, list salient goals, strategize their attainment, reflect in writing about anticipated obstacles, and then develop specific plans for overcoming those obstacles. In terms of theoretical significance, the findings suggest an important modification to goal-setting theory: to elicit task-specific outcomes (e.g., academic outcomes), goals do not have to be task-specific (i.e., setting non-academic goals was associated with higher academic outcomes). This finding coincides with the arguments of Höchli et al., (2018). Our study showed that in order to elicit these positive achievement outcomes, it is important that goal-attainment plans are of good quality and quantity. In other words, specific strategies for attaining goals may help to improve performance even in broadly written, abstract, personal goals. It appears that the process of writing about personal goals, regardless of domain, is associated with better academic performance. Thus, while students may have experienced domain-specific effects from their specific individual life goals (e.g., setting the goal of exercising may have caused them to exercise more), the effects of goal setting spread beyond goal-specific domains—to academic performance. Although further examination in terms of replicability in other domains is needed, our findings do seem to imply that a personal goal-setting intervention is a powerful tool to enhance academic performance.

Declarations of Competing Interest

None.

Acknowledgements

The authors wish to thank Jordan Peterson, Izaak Dekker, Niklas Ziegler and the members of the Erasmus Centre for Study and Career Success for their helpful comments on an early version of this paper. We thank Janieke Bouwman and Jade van Zeeland for their help in gathering and handling the data, and Jan van Dalen for his statistical advice.

An earlier version of this paper was presented at the symposium: Improving Lives: Personal goal setting boosts student performance and happiness, at the 2018 Academy of Management Meeting in Chicago.

Funding sources

This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

References

Alders, M. (2001). Classification of the population with a foreign background in the Netherlands. Paper presented at the Conference "The measure and mismeasure of populations. The statistical use of ethnic and racial categories in multicultural societies", Paris.

Alessandri, G., Borgogni, L., Latham, G. P., Cepale, G., Theodorou, A., & De Longis, E. (2020). Self-set goals improve academic performance through nonlinear effects on daily study performance. *Learning and Individual Differences, 77*, 101784.

Balduf, M. (2009). Underachievement among college students. *Journal of Advanced Academics, 20*(2), 274–294. https://doi.org/10.1177/1932202x0902000204.

Baumeister, R. F., Gailliot, M., DeWall, C. N., & Oaten, M. (2006). Self-regulation and personality: How interventions increase regulatory success, and how depletion moderates the effects of traits on behavior. *Journal of Personality, 74*(6), 1773–1802.

Benjamini, Y., & Hochberg, Y. (1995). Controlling the false discovery rate: A practical and powerful approach to multiple testing. *Journal of the Royal Statistical Society: Series B (Methodological), 57*(1), 289–300. https://doi.org/10.1111/j.2517-6161.1995.tb02031.x.

Calin-Jageman, R. J., & Cumming, G. (2019). The new statistics for better science: Ask how much, how uncertain, and what else is known. *The American Statistician, 73*(sup1), 271–280. https://doi.org/10.1080/00031305.2018.1518266.

Carey, K. (2004). A matter of degrees: improving graduation rates in four-year colleges and universities Washington, DC: Education Trust.

Charlton, J. P., Barrow, C., & Hornby-Atkinson, P. (2006). Attempting to predict withdrawal from higher education using demographic, psychological and educational measures. *Research in Post-Compulsory Education, 11*(1), 31–47. https://doi.org/10.1080/13596740500507904.

Clonan, S. M., Chafouleas, S. M., McDougal, J. L., & Riley-Tillman, T. C. (2004). Positive psychology goes to school: Are we there yet? *Psychology in the Schools, 41*(1), 101–110.

Commission, E. (2015). *Dropout and Completion in Higher Education in Europe: Main Report.* Luxembourg: Publications Office of the European Union.

Cook, T. H., & Campbell, D. T. (1979). *Quasi-experimentation: Design and analysis issues for field settings.* Chicago, IL: Rand-McNally.

Covington, M. V. (2000). Goal theory, motivation, and school achievement: An integrative review. *Annual Review of Psychology, 51*(1), 171–200. https://doi.org/10.1146/annurev.psych.51.1.171.

DeRue, D. S., Nahrgang, J. D., Hollenbeck, J. R., & Workman, K. (2012). A quasi-experimental study of after-event reviews and leadership development. *Journal of Applied Psychology, 97*(5), 997–1015. https://doi.org/10.1037/a0028244.

Education, U. S. D. o. (2017). National Center for Education Statistics, Integrated Postsecondary Education Data System (IPEDS), Winter 2016–17, Graduation Rates component, and Fall 2010, Institutional Characteristics component.: Digest of

Education Statistics 2017, table 326.10.
Emmons, R. A. (1999). *The psychology of ultimate concerns: Motivation and spirituality in personality*. New York, NY, US: Guilford Press.
Emmons, R. A., & Diener, E. (1986). A goal-affect analysis of everyday situational choices. *Journal of Research in Personality, 20*(3), 309–326. https://doi.org/10.1016/0092-6566(86)90137-6.
Epton, T., Currie, S., & Armitage, C. J. (2017). Unique effects of setting goals on behavior change: Systematic review and meta-analysis. *Journal of consulting and clinical psychology, 85*(12), 1182–1198. https://doi.org/10.1037/ccp0000260.
Fehrenbach, C. R. (1993). Underachieving gifted students: Intervention programs that work. *Roeper Review, 16*(2), 88–90. https://doi.org/10.1080/02783199309553546.
Finn, J. D. (1989). Withdrawing from school. *Review of Educational Research, 59*(2), 117–142. https://doi.org/10.3102/00346543059002117.
Finn, J. D., & Rock, D. A. (1997). Academic success among students at risk for school failure. *Journal of Applied Psychology, 82*(2), 221–234. https://doi.org/10.1037/0021-9010.82.2.221.
Gollwitzer, P. M., & Sheeran, P. (2006). Implementation intentions and goal achievement: A meta-analysis of effects and processes. In P. Z. Mark (Ed.), Advances in Experimental Social Psychology (Vol. Volume 38, pp. 69-119): Academic Press.
Grant, A. M., & Wall, T. D. (2009). The neglected science and art of quasi-experimentation: Why-to, when-to, and how-to advice for organizational researchers. *Organizational Research Methods, 12*(4), 653–686. https://doi.org/10.1177/1094428108320737.
Hackman, J. R., & Lawler, E. E. (1971). Employee reactions to job characteristics. *Journal of Applied Psychology, 55*(3), 259–286. https://doi.org/10.1037/h0031152.
Hallgren, K. A. (2012). Computing inter-rater reliability for observational data: An overview and tutorial. *Tutorials in Quantitative Methods for Psychology, 8*(1), 23–34.
Harkin, B., Webb, T. L., Chang, B. P. I., Prestwich, A., Conner, M., Kellar, I., ... Sheeran, P. (2016). Does monitoring goal progress promote goal attainment? A meta-analysis of the experimental evidence. *Psychological Bulletin, 142*(2), 198–229. https://doi.org/10.1037/bul0000025.
Höchli, B., Brügger, A., & Messner, C. (2018). How focusing on superordinate goals motivates broad, long-term goal pursuit: A theoretical perspective. *Frontiers in Psychology, 9*, 1879-1879. https://doi.org/10.3389/fpsyg.2018.01879.
Holland, A., & Andre, T. (1987). Participation in extracurricular activities in secondary school: What is known, what needs to be known? *Review of Educational Research, 57*(4), 437–466.
King, L. A. (2001). The health benefits of writing about life goals. *Personality and Social Psychology Bulletin, 27*(7), 798–807. https://doi.org/10.1177/0146167201277003.
Koestner, R., Lekes, N., Powers, T. A., & Chicoine, E. (2002). Attaining personal goals: Self-concordance plus implementation intentions equals success. *Journal of Personality and Social Psychology, 83*(1), 231–244. https://doi.org/10.1037/0022-3514.83.1.231.
Latham, G. P., & Arshoff, A. S. (2015). Planning: A mediator in goal-setting theory. *The Psychology of Planning in Organizations* (pp. 105–120). Routledge.
Latham, G. P., Brcic, J., & Steinhauer, A. (2017). Toward an integration of goal setting theory and the automaticity model. *Applied Psychology, 66*(1), 25–48. https://doi.org/10.1111/apps.12087.
Latham, G. P., & Brown, T. C. (2006). The effect of learning vs. outcome goals on self-efficacy, satisfaction and performance in an MBA program. *Applied Psychology: An International Review, 55*(4), 606–623.
Latham, G. P., & Locke, E. A. (1991). Self-regulation through goal setting. *Organizational Behavior and Human Decision Processes, 50*(2), 212–247. https://doi.org/10.1016/0749-5978(91)90021-K.
Latham, G. P., & Locke, E. A. (2018). Goal setting theory: Controversies and resolutions. In D. Ones, N. Anderson, C. Viswasveran, & T. H. Sinangil (Eds.). *Handbook of industrial, work & organizational psychology* (pp. 103–124). Sage.
Laurin, K. (2016). Interpersonal influences on goals: Current and future directions for goal contagion research. *Social and Personality Psychology Compass, 10*(11), 668–678. https://doi.org/10.1111/spc3.12289.
Locke, E. A. (1968). Toward a theory of task motivation and incentives. *Organizational Behavior and Human Performance, 3*(2), 157–189. https://doi.org/10.1016/0030-5073(68)90004-4.
Locke, E. A. (2015). Theory building, replication, and behavioral priming: Where do we need to go from here? *Perspectives on Psychological Science, 10*(3), 408–414. https://doi.org/10.1177/1745691614567231.
Locke, E. A. (2019). GUIDEPOST: What makes writing about goals work? *Academy of Management Discoveries*https://doi.org/10.5465/amd.2018.0187 (in press).
Locke, E. A., & Latham, G. P. (2019). The development of goal setting theory: A half century retrospective. Motivation Science, in press.
Locke, E. A., & Bryan, J. F. (1968). Grade goals as determinants of academic achievement. *The Journal of General Psychology, 79*(2), 217–228. https://doi.org/10.1080/00221309.1968.9710469.
Locke, E. A., & Latham, G. P. (1990). *A theory of goal-setting and task performance*. Englewood Cliffs, NJ: Prentice Hall.
Locke, E. A., & Latham, G. P. (2006). New directions in goal-setting theory. *Current Directions in Psychological Science, 15*(5), 265–268. https://doi.org/10.1111/j.1467-8721.2006.00449.x.
Locke, E. A., & Latham, G. P. (2013). *New developments in goal setting and task performance*. New York, NY: Routledge.
Lumley, M. A., & Provenzano, K. M. (2003). Stress management through written emotional disclosure improves academic performance among college students with physical symptoms. *Journal of Educational Psychology, 95*, 641–649. https://doi.org/10.1037/0022-0663.95.3.641.
McCrea, S. M., Liberman, N., Trope, Y., & Sherman, S. J. (2008). Construal level and procrastination. *Psychological Science, 19*(12), 1308–1314. https://doi.org/10.1111/j.1467-9280.2008.02240.x.
McGraw, K. O., & Wong, S. P. (1996). Forming inferences about some intraclass correlation coefficients. *Psychological Methods, 1*(1), 30–46. https://doi.org/10.1037/1082-989X.1.1.30.
McKnight, P. E., & Kashdan, T. B. (2009). Purpose in life as a system that creates and sustains health and well-being: An integrative, testable theory. *Review of General Psychology, 13*(3), 242.
Morisano, D. (2013). Goal setting in the academic arena. In E. A. Locke, & G. Latham (Eds.). *New Developments in Goal Setting and Task Performance* (pp. 495–506). New York: Taylor and Francis Group.
Morisano, D., Hirsh, J. B., Peterson, J. B., Pihl, R. O., & Shore, B. M. (2010). Setting, elaborating, and reflecting on personal goals improves academic performance. *Journal of Applied Psychology, 95*(2), 255–264.
Murphy, K. P. (2015). Marking the way: School-based interventions that "work". *Contemporary Educational Psychology, 40*, 1–4. https://doi.org/10.1016/j.cedpsych.2014.10.003.
Oaten, M., & Cheng, K. (2006). Longitudinal gains in self-regulation from regular physical exercise. *British Journal of Health Psychology, 11*(4), 717–733.
Oettingen, G., & Gollwitzer, P. M. (2010). Strategies of setting and implementing goals: Mental contrasting and implementation intentions. In J. E. Maddox, & J. P. Tangney (Eds.). *Social psychological foundations of clinical psychology* (pp. 114–135). New York: The Guilford Press.
Oettingen, G., Wittchen, M., & Gollwitzer, P. M. (2013). Regulating goal pursuit through Mental Contrasting with Implementation Intentions. In E. A. Locke, & G. P. Latham (Eds.). *New developments in goal setting and task performance* (pp. 523–548). New York, NY: Routledge.
Pascarella, E. T., & Terenzini, P. T. (2005). *How college affects student (Vol. 2): A third decade of research*. San Francisco: Jossey-Bass.
Pennebaker, J. W. (1990). *Opening up: The healing power of expressing emotions*. New York: Guilford Press.
Pintrich, P. R. (2000). The role of goal orientation in self-regulated learning. In M. Boekaerts, P. R. Pintrich, & M. Zeidner (Eds.). *Handbook of self-regulation* (pp. 451–502). San Diego, CA, US: Academic Press.
Pintrich, P. R., & de Groot, E. V. (1990). Motivational and self-regulated learning components of classroom academic performance. *Journal of Educational Psychology, 82*(1), 33–40. https://doi.org/10.1037/0022-0663.82.1.33.
Richardson, M., Abraham, C., & Bond, R. (2012). Psychological correlates of university students' academic performance: A systematic review and meta-analysis. *Psychological Bulletin, 138*(2), 353–387.
Robbins, S. B., Lauver, K., Le, H., Davis, D., Langley, R., & Carlstrom, A. (2004). Do psychosocial and study skill factors predict college outcomes? A meta-analysis. *Psychological Bulletin, 130*(2), 261–288.
Schippers, M. C., & Hogenes, R. (2011). Energy management of people in organizations: A review and research agenda. *Journal of Business and Psychology, 26*(2), 193–203.
Schippers, M. C., Scheepers, A. W. A., & Peterson, J. B. (2015). A scalable goal-setting intervention closes both the gender and ethnic minority achievement gap. *Palgrave Communications, 1*. https://doi.org/10.1057/palcomms.2015.14 http://www.palgrave-journals.com/articles/palcomms201514#supplementary-information.
Schippers, M. C., & Ziegler, N. (n.d.). Life crafting through personal goal setting as a way to find meaning in life. *Frontiers in Psychology*. http://doi.org/doi:10.3389/fpsyg.2019.02778 (in press).
Sekerka, L. E., Vacharkulksemsuk, T., & Fredrickson, B. L. (2012). Positive emotions: Broadening and building upward spirals of sustainable development. *The Oxford Handbook of Positive Organizational Scholarship*, 168–177.
Sheldon, K. M., & Houser-Marko, L. (2001). Self-concordance, goal attainment, and the pursuit of happiness: Can there be an upward spiral? *Journal of Personality and Social Psychology, 80*(1), 152.
Steger, M. F., Oishi, S., & Kashdan, T. B. (2009). Meaning in life across the life span: Levels and correlates of meaning in life from emerging adulthood to older adulthood. *The Journal of Positive Psychology, 4*(1), 43–52.
Tinto, V. (2010). From theory to action: Exploring the institutional conditions for student retention. In J. C. Smart (Vol. Ed.), *Higher Education: Handbook of Theory and Research: Vol. 25*, (pp. 51–89). Netherlands: Springer.
Travers, C. J., Morisano, D., & Locke, E. A. (2015). Self-reflection, growth goals, and academic outcomes: A qualitative study. *British Journal of Educational Psychology, 85*(2), 224–241. https://doi.org/10.1111/bjep.12059.
Triventi, M. (2014). Does working during higher education affect students' academic progression? Economics of Education Review, 41, 1–13.
Trope, Y., & Liberman, N. (2003). Temporal construal. *Psychological Review, 110*(3), 403.
Walton, G. M. (2014). The new science of wise psychological interventions. *Current Directions in Psychological Science, 23*(1), 73–82.
Wilson, T. D. (2011). *Redirect: The surprising new science of psychological change*. New York: Little, Brown.
Yeager, D. S., & Walton, G. M. (2011). Social-psychological interventions in education: They're not magic. *Review of Educational Research, 81*(2), 267–301. https://doi.org/10.3102/0034654311405999.
Zimmerman, B. J., Bandura, A., & Martinez-Pons, M. (1992). Self-motivation for academic attainment: The role of self-efficacy beliefs and personal goal setting. *American Educational Research Journal, 29*(3), 663–676. https://doi.org/10.3102/00028312029003663.