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Attaining Personal Goals: Self-Concordance Plus Implementation Intentions Equals Success

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The present article includes separate meta-analyses showing that self-concordance and implementation intentions are significantly positively associated with goal progress. Study 1 confirmed the positive relations of both self-concordance and implementation intentions to weekend goal progress. Study 2 confirmed the positive relation of self-concordance with monthly progress on New Year's resolutions but failed to find a direct benefit for implementation intentions. Both studies, however, obtained a significant interaction effect indicating that goal self-concordance and implementation intentions combined synergistically to facilitate goal progress. The article also reports a meta-analysis and results from the 2 studies that demonstrated that goal progress was associated with improved affect over time.

Motivation concerns the selection, energization, and direction of behavior (McClelland, 1988). A common way that people seek to motivate themselves is by setting personal goals. Thus, an individual may decide over the New Year holidays that she wants to begin an exercise program, invite friends over more often, and learn to use the Internet. It is common experience, however, that simply listing one's goals is not sufficient to ensure that the goals will be accomplished.

Recent goal research points to three main reasons why making a list of personal goals is often ineffective. First, people often structure their goals poorly. They set too many goals, or they set goals that conflict with one another (Baumeister & Heatherton, 1996). Alternatively, the goals may be too ambiguous, too difficult, or set too far in the future to serve as useful behavioral guides (Austin & Vancouver, 1996). Considerable evidence indicates that specific, proximal, and optimally challenging goals are the most likely to yield success, particularly when people have strong self-efficacy beliefs toward their goals (Bandura, 2001).

A second reason for ineffective goal pursuit is that people often fail to sufficiently weigh why they want to reach their goals. Instead of setting goals that reflect their interests and personal values, people often adopt goals for external reasons such as social pressure or because of expectations of what they should do (Sheldon & Kasser, 1998). Recent research suggests that the source or impetus that gives rise to a goal has direct implications for how goal pursuit is regulated and whether it will meet with success (Ryan, 1995; Ryan, Sheldon, Kasser, & Deci, 1996). Goals that are not endorsed by the self are likely to generate intrapersonal conflict, whereas self-concordant goals allow individuals to draw on volitional resources such as the capacity to exert sustained effort (Sheldon & Elliot, 1999; Sheldon & Houser-Marko, 2001).

A third reason for ineffective goal pursuit is that people often fail to develop specific action plans for how they will attain their goals. Thus, they fail to specify when they will initiate their goal pursuit and how they will ensure their persistence in the face of distractions and obstacles (Gollwitzer, 1999). Recent research suggests that furnishing goals with specific implementation intentions can greatly enhance success because it links the desired behaviors with certain situations and allows for automatized responding that is not as volitionally demanding as is continually making decisions about when and how to behave to accomplish one's goals (Gollwitzer & Schaal, 1998).

From Self-Concordance to Goal Attainment

Sheldon and colleagues (Sheldon & Elliot, 1998, 1999; Sheldon & Houser-Marko, 2001; Sheldon & Kasser, 1998) have completed a series of short-term, prospective studies that examined the extent to which the source of students' goals influences their success in reaching their goals. Participants were asked to list several goals that they planned to strive for during the semester and then rated the goals in terms of self-concordance. Self-concordance was defined as the extent to which a goal reflects personal interests and values versus something one feels compelled to do by external or internal pressures. In keeping with Deci and Ryan (2000), participants were asked to rate four different reasons that ranged from highly controlled to highly autonomous. The four reasons for

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pursuing goals were external (i.e., "because somebody else wants you to"), introjected (i.e., "because you would feel ashamed, guilty, or anxious if you didn't"), identified (i.e., "because you really believe that it is an important goal to have"), and intrinsic (i.e., "because of the fun and enjoyment which the goal will provide"). The authors calculated goal self-concordance by combining the intrinsic and identified ratings and subtracting the introjected and external ratings. Self-concordance and goal progress scores were aggregated across the various goals that participants selected.

We performed a meta-analysis on the seven published studies that examined the relation between goal self-concordance and goal progress. Correlations and regression coefficients were converted to Cohen's *d*. Composite effect size estimates ($d+$) were calculated as the average of individual effects (d) weighted by the reciprocal of their variance, which thus gave greater weight to more reliable effect size estimates (Hedges & Olkin, 1985). All effect size computations and summary analyses were done using DSTAT (Johnson, 1993), a meta-analytic software program. Each calculation of $d+$ provided both a test of whether the value differed from 0.00 and a 95% confidence interval (CI). The homogeneity of the set of effect sizes was tested by the within-class goodness-of-fit statistic (Qw), which has an approximate chi-square distribution with $k - 1$ degrees of freedom, where k equals the number of effect sizes (Johnson, 1993).

Table 1 shows the results of the meta-analysis. A highly significant overall effect emerged, $d+ = 0.37$ (CI = 0.29, 0.48), $p < .0001$. The set of effects was homogeneous, Q (6) = 10.54, *ns*. Participants were significantly more likely to make successful progress when they had selected goals that were self-concordant.

The studies performed by Sheldon and colleagues (Sheldon & Elliot, 1998, 1999; Sheldon & Houser-Marko, 2001; Sheldon & Kasser, 1998) also examined the parameters of the relationship between self-concordance and goal progress. Thus, it was shown that the benefits of having self-concordant goals were maintained after neuroticism (Sheldon & Houser-Marko, 2001) and self-regulatory factors such as self-regulatory skill, goal efficacy, and goal commitment (Sheldon & Kasser, 1998) were controlled. The benefits of self-concordance were also demonstrated using sophisticated goal-attainment scaling methods (Sheldon & Elliot, 1998). Self-reports of self-concordance were confirmed by peer reports, and it was shown that the goal-progress effects held up over a 3-month time span (Sheldon & Houser-Marko, 2001). Finally, the impact of self-concordant goals on progress was shown to be mediated by the capacity to maintain sustained effort (Sheldon & Elliot, 1998, 1999). That is, self-concordant goals appear to be protected and maintained in the face of task-irrelevant temptations because they are continually energized.

Table 1
Meta-Analysis of Relation of Goal Self-Concordance to Goal Progress

Study	*n*	*d*
Sheldon & Kasser (1998)[a]	90	0.04
Sheldon & Elliot (1998)[a]		
Study 2	141	0.16
Study 3	82	0.18
Sheldon & Elliot (1999)		
Study 1	169	0.41
Study 3	73	0.69
Sheldon & Houser-Marko (2001)[b]		
Study 1	189	0.63
Study 2	94	0.53

[a] Results were reported separately for autonomous (intrinsic and identified) and controlled (extrinsic and introjected) reasons. We reversed the results for controlled reasons and averaged them with those for autonomous reasons to create a self-concordance index. [b] Studies included two cycles of data collection. We calculated effects from the first cycle, although highly similar results emerged for the second cycle.

From Implementation Intentions to Goal Attainment

Whereas Sheldon and colleagues (Sheldon & Elliot, 1998, 1999; Sheldon & Houser-Marko, 2001; Sheldon & Kasser, 1998) examined goal progress as a function of individual differences in the source of goals, Gollwitzer and colleagues (Brandstätter, Lengfelder, & Gollwitzer, 2001; Gollwitzer & Brandstätter, 1997) have used brief paper-and-pencil exercises to determine whether furnishing goals with implementation intentions facilitates goal progress. Gollwitzer (1999) noted that forming a goal intention induces a sense of commitment that obligates the individual to realize the goal. Nevertheless, to facilitate efficient task performance and the avoidance of distractions, it is necessary to find a way to make the initiation of goal-related behaviors nearly automatic. Gollwitzer conceptualized implementation intentions as separate from and subordinate to goal intentions—they specify the where, when, and how of responses leading to goal attainment. Formulating a well-elaborated action plan greatly eases the self-regulatory demands of goal pursuit because the mental representation of the anticipated situation becomes highly activated and thus easily accessible—leading to perceptual, attentional, and mnemonic advantages. Action initiation becomes swift and efficient and does not require conscious intent because the direct control of one's behavior has been passed to the environment.

For example, a professor who has the goal of drinking eight glasses of water per day can develop implementation intentions that specify when, where, and how he will reach his water intake goals. He might decide to keep a water bottle at his desk, drink while he is in front of his computer, and refill the bottle from the water fountain each time he goes to the bathroom or checks his mail. The daily implementation intention (e.g., drink while at his desk, refill the bottle whenever he passes the fountain) is thus placed under the direct control of situational cues (e.g., computer screen, passing water fountain) and removed from conscious and effortful control.

Table 2 presents the results of a meta-analysis we conducted of 13 published studies that examined the hypothesis that goal intentions are more easily attained when they are furnished with implementation intentions. Studies that measured goal attainment exclusively in terms of performance on computerized tasks (e.g., Lengfelder & Gollwitzer, 2001) rather than in the form of everyday actions were not included in the meta-analysis. Cohen's *d* was calculated as the difference between the means of the implementation and control groups divided by the within-group standard deviations, adjusted for sample size (Hedges & Olkin, 1985). The mean of the control group was subtracted from the mean of the implementation group, so a positive *d* reflects an enhancement effect in which the implementation group showed greater progress

Table 2
Meta-Analysis of Implementation Intentions and Goal Progress

Study	*n*	*d*	Type of goal
Gollwitzer & Brandstatter (1997)			
Study 1	85	0.21	Personal goals for Christmas break
Study 2	39	0.89	Write essay over Christmas break
Study 3	60	0.00	Speaking up in experimental setting
Orbell et al. (1997)	155	0.41	Breast self-examination
Aarts et al. (1999)	40	0.66	Coupon collection
Verplanken & Faes (1999)	102	0.47	Establishing healthy diet
Sheeran & Orbell (1999)			
Study 1	78	0.47	Taking Vitamin C pills
Study 2	37	0.58	Taking Vitamin C pills
Koole & Spijker (2000)	80	0.73	Reports on daily experiences
Oettingen et al. (2000)			
Study 1	20	1.44	Compose a curriculum vitae
Study 2	25	0.74	Do weekly math problems
Orbell & Sheeran (2000)	64	0.93	Resumption of functional activity
Brandstätter et al. (2001)			
Study 1	41	1.15	Compose a curriculum vitae

than did the control group. The composite $d+$ and homogeneity statistics were calculated as described earlier.

A highly significant overall effect emerged, $d+ = 0.54$ (CI = 0.41, 0.67), $p < .0001$. Participants were significantly more likely to make successful progress when they had furnished their goals with implementation intentions. This effect was homogeneous, $Q(12) = 16.44$, *ns*. The meta-analysis clearly suggests that it is useful to buttress one's personal goals with implementation intentions.

The parameters of the relationship between implementation intentions and goal attainment have also been explored. Thus, the relation has been confirmed by direct behavioral measures of goal attainment (Sheeran & Orbell, 1999) and for periods of time as long as 3 months (Orbell & Sheeran, 2000). The beneficial effects of implementation intentions are apparent even when attitudes, subjective norms, and self-efficacy beliefs are controlled for (Orbell, Hodgkins, & Sheeran, 1997; Sheeran & Orbell, 1999; Orbell & Sheeran, 2000). However, the difficulty level of the goals appears to moderate the relation such that the implementation intentions are particularly helpful for goal progress when the goals are difficult rather than easy (Gollwitzer & Brandstätter, 1997). There is also evidence that implementation intentions are particularly useful for individuals who possess poor self-regulatory skills or who are preoccupied by cognitive distractions (Brandstätter, Lengfelder, & Gollwitzer, 2001; Lengfelder & Gollwitzer, 2001).

Several studies have examined mediating mechanisms that might account for the beneficial effects of implementation intentions on goal progress. There is evidence that implementation intentions (a) facilitate retrieval of goal intentions in memory (Orbell et al., 1997), (b) heighten accessibility of environmental cues for goal completion (Aarts, Dijksterhuis, & Midden, 1999), (c) increase the speed of action initiation (Orbell & Sheeran, 2000), and (d) reduce the number of interruptions while one is in goal pursuit (Koole & Spijker, 2000). Furthermore, implementation intentions have been shown to promote immediate action initiation when one encounters the specified situation, even under conditions of high cognitive load (Brandstätter et al., 2001). Together, these results support Gollwitzer's (1996) thesis that implementation intentions make goal pursuit more automatic and efficient.

From Goal Progress to Well-Being

People generally expect to feel good if they successfully reach their goals. Indeed, telic models suggest that goals serve as an important reference for the affect system so that people react positively when they make progress toward goals and negatively when they fail to reach their goals (Diener, Suh, Lucas, & Smith, 1999). Table 3 presents the results of a meta-analysis of nine published studies that have examined the hypothesis that goal progress is associated with increased positive affect and decreased negative affect. Correlations and regression coefficients were converted to Cohen's *d*. When studies reported results for positive and negative affect separately, we reversed the negative affect results and calculated the mean. A highly significant overall effect emerged, $d+ = 0.61$ (CI = 0.48, 0.74), $p < .0001$. Participants reported significantly more positive affect and less negative affect over time when they had made greater goal progress. This effect was homogeneous, $Q(8) = 7.52$, *ns*. The meta-analysis clearly suggests that there is an emotional payoff for making progress toward one's goals.

There is some evidence that goal attainment results in enhanced well-being because it promotes need-satisfying experiences related to feeling competent, self-determined, and related to others (Sheldon & Elliot, 1999). There has also been support for the hypothesis that goal attainment will fail to be accompanied by enhanced well-being if people pursue goals that are incongruent with the intrinsic needs for competence, self-determination, and relatedness (Sheldon & Kasser, 1998). Finally, there is recent evidence that the relations from self-concordance to goal progress and from goal progress to well-being are bidirectional. Thus, using a two-cycle prospective design, Sheldon and Houser-Marko (2001) demonstrated that not only does goal progress result in greater well-being but the enhanced well-being promotes the setting of more self-

Table 3
Meta-Analysis of Relation of Goal Progress to Changes in Well-Being

Study	*n*	*d*
Brunstein (1993)	88	0.70
Brunstein et al. (1998)	98	0.41
Sheldon & Kasser (1998)	90	0.41
Sheldon & Elliot (1999)		
Study 1	170	0.72
Study 3	73	0.58
Sheldon & Elliot (1999)	82	1.07
Sheldon & Houser-Marko (2001)		
Study 1	191	0.69
Study 2	94	0.39
King et al. (1998)	80	0.56

concordant goals, which, in turn, foster further goal attainment and well-being enhancement.

Present Studies

The meta-analyses described above provide evidence that both self-concordance and implementation intentions promote goal attainment. The effects were obtained from short-term, prospective studies in which goal self-concordance was measured as an individual-differences factor, whereas implementation intentions were manipulated experimentally. It is important to note that no study has yet examined the interactive effects of self-concordance and implementation intentions. Such an examination seems opportune given that the self-concordance and implementation intentions complement one another. Self-concordance allows one to confidently answer the question "Do I really want to pursue these goals?" whereas implementation intentions allow one to answer such critical self-regulatory questions as "How will I get started?" and "How will I stay on task?" Kuhl and Fuhrmann (1998) have noted that effective goal pursuit involves two distinct volitional components, which they labeled *self-maintenance* and *goal maintenance*. The former involves maintaining awareness of aspects of oneself that support the goal, whereas the latter involves strategies that maintain the goal in consciousness when competing motivations arise. These researchers argued that the seamless coordination of these two volitional systems is a prerequisite for robust goal progress. We propose that goal self-concordance and implementation intentions serve to operationalize Kuhl and Fuhrmann's (1998) self- and goal-maintenance systems. Together, self-concordance and implementation intentions may equip individuals to persist through the entire goal-pursuit sequence. Implementation intentions facilitate smooth and efficient task engagement, whereas self-concordance prevents ambivalence and conflict from affecting one's effort and persistence toward goal completion.

We designed two prospective, short-term studies to examine whether implementation intentions and self-concordance interact to produce greater goal attainment. Study 1 examines weekend goals, whereas Study 2 examines New Year's resolutions. Both studies measure participants' goal progress over time as well as their level of efficacy and commitment toward their goals. The difficulty level of goals was also assessed. We hypothesized that the greatest success would be achieved by students who combined self-concordant goals with implementation intentions. The studies also examine whether goal progress resulted in improved affect over time.

Study 1

Study 1 combines the methodology of previous studies that have tested the relation of goal self-concordance and implementation intentions on goal progress. We selected very short-term goals for the study by asking student participants to list three goals for the weekend. We thought that weekend goal progress would be particularly interesting to examine because college students frequently report that their mood worsens from Friday night to Sunday night, and we guessed that such a predictably downward emotional spiral could be rooted in students' failure to accomplish their weekend goals.

Students were randomly assigned to either an implementation intentions condition, in which they did a brief planning exercise, or a control condition. In both conditions, participants listed their three most important weekend goals and rated each one in terms of self-concordance. Goal progress and affect change were measured at the end of the weekend. We expected to replicate the three major results of the meta-analyses described above: (a) self-concordant goals would be significantly positively related to progress, (b) participants who formed implementation intentions would show greater progress than would those in the control condition, and (c) goal progress would be significantly related to increased positive affect and decreased negative affect. We also planned to test the following original hypothesis: Goal self-concordance particularly leads to greater goal progress when it is combined with implementation intentions. In other words, we expected a significant interaction effect, reflecting the fact that the relation of goal self-concordance to progress was moderated by whether participants had made implementation intentions. All of these effects were expected to be independent of participants' level of goal commitment and self-efficacy.

Method

Participants

One hundred six undergraduates attending McGill University, Montreal, Quebec, Canada, participated in the study. The sample comprised 93 women and 13 men whose ages ranged from 17 to 31 years, with a mean of 20.1. The study was described to them as an investigation into emerging adulthood and goal pursuit. Seventy-six participants received course credit for their participation, whereas 30 received $10. Paid participants did not differ from those who received course credit in terms of age, gender, mood ratings, and goal ratings.

Procedure

Participants were tested over a period of 2 weeks during the fall or winter semester. All groups were first tested on Thursday or Friday and then followed up on Sunday evening. Testing groups included 5 to 7 participants. Prior to distribution of the questionnaires, students were informed that they would be asked to complete a questionnaire that asked them to list some goals they had for the weekend and that their responses would remain confidential. As the follow-up questionnaire was to be sent to the participants by E-mail, participants were asked to provide their E-mail address or their phone number if they did not have access to the Internet.

The initial questionnaire required all participants to complete scales in the following order: demographic information; positive and negative affect; list of weekend goals; and ratings of self-concordance, self-efficacy, commitment, and difficulty. After these rating were completed, participants were randomly assigned to the two conditions. In the implementation condition, the questionnaires prompted the participants to form implementation intentions for their weekend goals. Forming implementation intentions involved indicating when and where each goal was to be carried out, three possible distractions that could occur during pursuit of the goal, and three strategies for managing those distractions.

Participants assigned to the control group were not prompted to form implementation intentions about their goals. A no-intervention control group was chosen because that is what was used in the original study of implementation intentions by Gollwitzer and Brandstätter (1997) as well as in most other implementation studies (Orbell et al., 1997; Verplanken & Faes, 1999; Sheeran & Orbell, 1999). It should be noted, however, that two more recent studies used active control groups in which participants

formed implementation intentions that were irrelevant to the target goal (Brandstätter, Lengfelder, & Gollwitzer, 2001) or planned what to do after goal completion (Aarts et al., 1999). The positive effects of implementation intentions on goal progress relative to the control group were just as strong as in the earlier studies that had used passive control groups.

All participants were contacted on Sunday evening to complete a follow-up questionnaire that asked them to indicate their level of progress on a scale ranging from 0% to 100% for each goal. Participants were also asked to complete a mood inventory that had also appeared in the initial questionnaire. The progress questions were presented prior to the mood inventory.

Measures

Positive and Negative Affect Schedule. The Positive and Negative Affect Schedule (Watson, Clark, & Tellegen, 1988) contains 10 items that measure negative affect and 10 that measure positive affect. The mood descriptions were selected as relatively pure markers of either high negative affect or high positive affect. The Positive Affect scale consists of the items "active," "alert," "attentive," "determined," "enthusiastic," "excited," "inspired," "interested," "proud," and "strong" ($\alpha = .89$). The items composing the Negative Affect scale are "afraid," "ashamed," "distressed," "guilty," "hostile," "irritable," "jittery," "nervous," "scared," and "upset" ($\alpha = .81$). Participants were asked to rate each item on the basis of how they felt that day, using a scale of 1 to 5, with 1 representing *very slightly* and 5 representing *extremely*. We calculated a summary affect score by subtracting negative affect from positive affect. The two scales were significantly negatively related ($r = -.38$, $p < .01$).

Weekend goals. The instructions for listing the personal goals were as follows:

> Personal goals are projects and concerns that people think about, plan for, carry out, and sometimes (though not always) complete or succeed at. They may be more or less difficult to implement; require only a few or a complex series of steps; represent different areas of a person's life; and be more or less time consuming, attractive, and urgent. Please list three personal goals that you have for the weekend.

These instructions were adapted from the assessment of personal projects (Little, 1993) by Sheldon and Kasser (1998) and revised to focus on weekend projects.

One hundred three participants listed an academic goal (e.g., "write a rough draft of my research paper"), 55 listed a social goal (e.g., "show my visiting friend the sights of Montreal"), 45 listed a health goal (e.g., "sleep at least 8 hours each night"), 23 listed a personal chore (e.g., "clean up my room"), and 15 mentioned doing a fun activity as a goal (e.g., "go skiing"). Several participants listed more than one academic, social, or health goal.

Self-concordance of goals. Sheldon and Kasser's (1995, 1998) method of measuring self-concordance in terms of people's reasons for pursuing their goals was used. For each goal, participants rated four reasons that corresponded to a continuum of self-determination ranging from highly controlled to highly autonomous. Ratings ranged from 1 to 9, with 1 representing *not at all for this reason* and 9 representing *completely because of this reason*. The four types of reasons for pursuing goals were external (i.e., "because somebody else wants you to, or because you'll get something from somebody if you do"), introjected (i.e., "because you would feel ashamed, guilty, or anxious if you didn't—you feel that you ought to strive for this"), identified (i.e., "because you really believe that it is an important goal to have—you endorse it freely and value it wholeheartedly"), and intrinsic (i.e., "because of the fun and enjoyment which the goal will provide you—the primary reason is simply your interest in the experience itself").

As in previous research, we calculated a self-concordance index for each goal by subtracting the sum of the extrinsic and introjected ratings from the sum of intrinsic and identified ratings (Grolnick & Ryan, 1989; Sheldon & Kasser, 1995, 1998). Following Sheldon and Kasser (1998), we combined participants' self-concordance scores and reports of goal progress across the three weekend goals. The internal reliability of the self-concordance measure was .68. The internal reliability for goal progress was .48, nearly identical to the level reported by Sheldon and Kasser (1998).

Other goal ratings. We followed Sheldon and Kasser (1998) in asking participants to use 9-point scales (1 = *not at all*; 9 = *very much*) to assess self-efficacy, commitment, and difficulty in relation to their goals. Participants were thus asked to rate "the extent to which you feel you have the skills and resources necessary to attain this goal," "how committed you feel to each goal," and "the difficulty of each goal."

Implementation intention instructions. Participants were instructed to specify a time and place for pursuing each of their three personal goals. Furthermore, for each goal, if–then contingencies were presented in which participants identified three distractions that could occur and a counterbehavior for each distraction.

Two examples clarify the implementation exercise. A woman who listed reading the first half of *Paradise Lost* as her goal specified Saturday afternoon as the time and at home in the kitchen as the place for implementation. Her boyfriend and phone interruptions were listed as possible obstacles or distractions along with preoccupation with other school work. Counterbehaviors included scheduling to see the boyfriend later in the day, turning the phone off, and reminding herself how important it was to finish the book before turning to other academic tasks.

Another woman had the goal of meeting at least one new person over the weekend. The time and place specified for this goal was Friday or Saturday night at a party. Feeling antisocial and feeling discouraged were listed as possible distractions. Counterbehaviors listed involved reminding herself of the need to meet people and asking friends for encouragement.

Results and Discussion

Preliminary Analyses

We aggregated goal-related measures by calculating the mean score across the three goals. Thus, progress, self-concordance, difficulty, self-efficacy, and commitment were all assessed as a summary across the three goals. Table 4 presents the means and standard deviations for all variables and the correlations among them. Participants generally reported making good progress in their weekend goals ($M = 61.7\%$ completion). Goals were rated moderately high in difficulty, and participants reported very high levels of efficacy and commitment. Participants tended to report more autonomous than controlled reasons for pursuing their goals, as reflected in a positive mean score for self-concordance. Participants reported significantly worse affect on Sunday ($M = 0.67$) than on Friday ($M = 0.97$), $t(106) = 2.68$, $p < .01$.

Table 4 shows that goal progress was significantly positively related to levels of self-concordance but unrelated to difficulty, commitment, and efficacy. Efficacy was significantly positively related to commitment and negatively related to difficulty. The affect measures were significantly related to goal progress, efficacy, and self-concordance. We explore the relations involving goal progress and affect more carefully using regression analyses.

Preliminary analyses examined the relations between gender and all of the goal-related and affect variables. Because no relations approaching significance (ps $> .10$) were obtained, the central analyses did not include gender.

Central Analyses

Goal progress. To examine the factors that influenced goal progress, we performed a hierarchical multiple regression analysis

Table 4
Means, Standard Deviations, and Correlations Among all Variables: Study 1

Variable	*M*	*SD*	1	2	3	4	5	6	7
1. Goal progress	61.68	25.87	—	−.16	.18	.12	.33**	.26**	.40**
2. Goal difficulty	5.22	1.46		—	.15	−.43**	−.18	−.17	−.14
3. Goal commitment	7.07	1.00			—	.23*	.13	.17	.04
4. Goal efficacy	7.58	1.00				—	.05	.23*	.25**
5. Goal self-concordance	2.16	4.90					—	.36**	.27**
6. Fri. affect	1.77	0.61						—	.53**
7. Sun. affect	2.01	0.73							—

Note. Fri. = Friday; Sun. = Sunday.
* $p < .05$. ** $p < .01$.

with total goal progress as the dependent variable. All predictor variables were standardized. Goal difficulty, goal commitment, goal efficacy, and goal self-concordance were entered together as a first set of predictors. Experimental condition (1 = implementation intentions, −1 = control condition) was entered next. The 4 two-way interactions between condition and the goal-related variables (difficulty, commitment, efficacy, and self-concordance) were entered together as a third set of predictors.

The predictors accounted for a highly significant 25% of the variance in goal progress, $F(9, 96) = 3.60$, $p < .001$. Table 5 presents the standardized regression coefficients for all of the predictors. Of the four goal-related measures, only self-concordance had a significant main effect ($\beta = .29$), $t(101) = 3.06$, $p < .001$, indicating that progress was positively associated with setting more self-concordant goals. A significant main effect for experimental condition ($\beta = .20$), $t(100) = 2.11$, $p < .05$, indicated that participants who had been instructed in making implementation intentions were more successful in accomplishing their goals than were those in the control condition. Two significant interactions also emerged. A significantly positive Implementation Intention × Difficulty interaction effect ($\beta = .24$), $t(96) = 2.26$, $p < .05$, revealed that implementation intentions were especially predictive of greater goal progress when the goals were difficult. A significantly positive Implementation Intention × Self-Concordance interaction effect ($\beta = .24$), $t(96) = 2.50$, $p < .05$, revealed that the relation of goal self-concordance to progress was qualified by whether participants had received information regarding implementation intentions.

Table 5
Predictors of Weekend Goal Progress: Study 1

Predictor	β	*t*	Significance
Set 1			
Goal difficulty	−.12	−1.12	*ns*
Goal commitment	.15	1.48	*ns*
Goal efficacy	.02	0.15	*ns*
Goal self-concordance	.29	3.06	.01
Set 2			
Goal self-concordance	.20	2.11	.05
Set 3			
Implementation × Difficulty	.24	2.26	.05
Implementation × Commitment	−.15	−1.55	*ns*
Implementation × Self-Concordance	.24	2.50	.01
Implementation × Self-Efficacy	−.02	0.80	*ns*

Note. For Set 1, $t(101)$; for Set 2, $t(100)$; for Set 3, $t(96)$.

To examine this interaction more closely, we performed a split-group analysis in which we examined the partial correlation of self-concordance with goal progress separately for participants in the two experimental conditions. These correlations controlled for difficulty, commitment, and efficacy. The results showed that self-concordance was significantly related to goal progress when combined with implementation intentions, partial $r(50) = .50$, but not in the control condition, partial $r(47) = .00$.

Affect. To examine the factors that influenced affect, we performed a hierarchical multiple regression analysis with Sunday affect as the dependent variable. All predictor variables were standardized. Friday affect was entered as the first predictor. Goal difficulty, goal commitment, goal efficacy, and goal self-concordance were entered together as a second set of predictors. Experimental condition (1 = implementation intentions, −1 = control condition) and the interaction of self-concordance with experimental condition were entered next. Goal progress was entered alone in a fifth step.

The predictors accounted for a highly significant 40% of the variance in Sunday affect, $F(8, 97) = 8.09$, $p < .001$. Affect on Friday was highly positively related to affect reported on Sunday ($\beta = .53$, $p < .0001$). None of the four goal-related measures was significantly related to improved affect on Sunday, although there was a marginal positive relation for self-efficacy ($\beta = .18$, $p = .07$). People who felt greater efficacy about their goals reported increased positive relative to negative affect. Experimental condition and the interaction of self-concordance with experimental condition had no effect on changes in affect. As predicted, however, goal progress was significantly positively related to improved affect ($\beta = .30$, $p < .001$).

Summary

The results strongly support previous research that has examined the relations of self-concordance and implementation intentions to goal progress. Self-concordant goals were significantly related to greater goal progress, indicating that students whose goals were based in personal interest and meaningful values were more likely to make progress than were students whose goals were derived from external or internal pressures. Forming implementation intentions also resulted in significantly greater goal progress, with students who were asked to make such intentions reporting

that they had accomplished 68% of their weekend goals, whereas those in the control condition reported accomplishing only 55% of their goals.

The most original finding was the demonstration that implementation intentions and self-concordant goals combined synergistically to influence goal progress. Thus, the unique combination of having both self-concordant goals and clear implementation intentions resulted in especially high levels of goal progress. This supports the thesis that maximal progress toward personal goals can be achieved when individuals have worked through not only what they want to accomplish but also why they are pursuing these particular goals and how they plan to reach them.

The results also confirm previous research in showing that goal progress was systematically related to increased positive affect and decreased negative affect over the course of the weekend. Thus, although college students typically experience worsening mood as they go from the beginning of the weekend on Friday to the end of the weekend on Sunday night (which likely brings to mind all of the work that will be required during the school week), students who made good progress on their weekend goals showed highly stable affect. They were just as happy and without negative affect on Sunday as they had been on Friday.

Study 2

Study 2 sought to replicate the findings of Study 1 in the context of pursuing New Year's resolutions. New Year's resolutions represent self-change attempts in which individuals develop personal goals to improve themselves or their life. The most common resolutions among adults are to quit smoking and to lose weight, whereas academic goals are most common among college students (Marlatt & Kaplan, 1972; Norcross, Ratzin, & Payne, 1989). Previous research indicates that 35% of college students make New Year's resolutions each year (Marlatt & Kaplan, 1972) but that a majority report being unsuccessful in keeping them. Indeed, one community-based study showed that a large percentage of resolvers reported failing in their resolution after only 1 month (Norcross et al., 1989). The spontaneous, naturally occurring nature of New Year's resolutions seemed a good test of the real world significance of self-concordance and implementation intentions.

In the 1st week of January, students who had made New Year's resolutions were recruited to attend an experimental session during which they listed their three most important resolutions prior to being randomly assigned to the implementation intention and control conditions used in Study 1. (A third experimental condition is described below). Participants rated the self-concordance of their resolutions 2 weeks later in an E-mail questionnaire. They also completed measures of commitment, self-efficacy, and positive and negative affect at this time. Goal progress and affective changes were measured at 1 month with an E-mail questionnaire. We hypothesized that goal self-concordance and implementation intentions would both be significantly positively related to progress and that the unique combination of having self-concordant goals that were accompanied by implementation intentions would result in especially high levels of progress. Goal progress was also expected to be associated with positive affective changes.

In Study 2 we also sought to consider whether we could directly influence goal self-concordance by asking participants to reflect on the meaning and significance of their resolutions. Previous research has relied on measuring individual differences in the self-concordance of goals and relating these to goal progress. To our knowledge, no study has tried to enhance individuals' level of goal self-concordance. We therefore created a third experimental condition in which a paper-and-pencil exercise guided participants to identify personally meaningful reasons for pursuing their resolutions. We planned to test whether the self-reflection exercise resulted in enhanced goal self-concordance (measured 2 weeks later) and whether such a shift toward more integrated goals translated into greater progress (measured at 1 month).

Method

Participants

Sixty-one undergraduates attending McGill University participated in the study. Two participants completed only the initial assessment and are not included in the results presented below. The sample comprised 46 women and 13 men whose ages ranged from 18 to 36 years, with a mean of 20.6. The study was described to them as an investigation into New Year's resolutions. All participants received $20.

Procedure

Participants responded to an advertisement that was published in the student newspaper during the 1st week of January. They were tested in small groups early in the 2nd week of January and were then followed up by E-mail at 2 weeks and 1 month. Participants were informed that they would complete a questionnaire that asked them to list their resolutions for the year and that their responses would remain confidential. As follow-up questionnaires were to be sent to participants by E-mail, participants were asked to provide their E-mail address.

Participants were randomly assigned to one of three conditions. Participants in all conditions were first asked to report on their demographic characteristics, to complete a mood scale, and to list three resolutions that they had made for the year. They were also asked to rate the difficulty level of each resolution. The ratings were made in the order described above.

In the implementation condition, the questionnaires prompted the participants to form implementation intentions for their resolutions. Forming implementation intentions involved indicating when and where each goal was to be carried out, three possible distractions that could occur during the pursuit of this goal, and three strategies for managing those distractions. In the self-reflection condition, the questionnaires prompted the participants to reflect on why they were pursuing their resolutions. This reflection process involved indicating personally meaningful reasons for each resolution and describing the rewarding aspects of goal pursuit. Participants assigned to the control group were not prompted to form implementation intentions about their resolutions or to reflect on their reasons for setting them.

All participants were contacted at 2 weeks to complete scales assessing self-efficacy, commitment, and self-concordance (in that order) and at 1 month to report on their level of progress for their resolutions. Positive and negative affect were assessed at the initial session and at both follow-ups. The mood scales were completed prior to the goal ratings.

Measures

Listing of New Year's resolutions. The instructions were adapted from those used in Study 1. Participants were told that

> New Year's resolutions are projects and concerns that people think about, plan for, carry out, and sometimes (though not always) complete or succeed at. They may be more or less difficult to implement; require only a few or a complex sequence of steps; represent different areas of a person's life; and be more or less time consuming, attractive, or urgent. Please list three New Year's resolutions that you plan to carry out this year.

Forty-five participants listed a health resolution (e.g., "exercise regularly," "lose 10 pounds"), 25 listed an academic resolution (e.g., "study at the library 15 hours per week"), 22 listed a social resolution (e.g., "call my family and friends back home more frequently), 14 stated a desire to improve some aspect of their personality (e.g., "be less judgmental of others"), 12 resolved to accomplish a certain task (e.g., "earn my yellow belt in Karate"), and 10 resolved to pursue a certain fun activity (e.g., "travel to Mongolia"). Several participants reported more than one resolution in a given category.

Goal difficulty. Prior to assignment to experimental condition, participants were asked to use 9-point scales (1 = *not at all*; 9 = *very much*) to assess the difficulty of each resolution.

Goal progress. Participants were asked to rate how much progress they had made in achieving their resolution, using a 9-point Likert scale. The mean of the ratings for the three resolutions was used as an index of resolution success. The internal reliability across the resolutions was .36. Reliability was no doubt limited by the fact that there were only three items in the analysis. Sheldon and colleagues (Sheldon & Elliot, 1999; Sheldon & Houser-Marko, 2001) have recently sought to collect at least eight goals from each participant. Such a procedure was not possible in the present study because we were interested in naturally occurring New Year's resolutions, and college students typically make only about three such resolutions (Marlatt & Kaplan, 1972).

Self-concordance of goals. As in Study 1, participants rated four reasons that ranged from highly controlled to highly autonomous. Ratings ranged from 1 to 9, with 1 representing *not at all for this reason* and 9 representing *completely because of this reason*. The reasons offered were identical to those in Study 1, as was the method for calculating a summary score of goal self-concordance. The internal reliability of the self-concordance measure was .71.

Commitment and efficacy. As in Study 1, participants used 9-point scales (1 = *not at all*; 9 = *very much*) to assess commitment and self-efficacy in relation to their goals. Participants were thus asked to rate "how committed you feel to this goal" and "the extent to which you feel you have the skills and resources necessary to attain this goal."

Affect scale. A shorter nine-item affect scale was used (Emmons, 1992). Participants were asked to rate each item on the basis of how they felt during the past week, using a scale of 1 to 5, with 1 representing *very slightly* and 5 representing *extremely*. The items were "joyful," "unhappy," "worried/anxious," "enjoyment/fun," "depressed," "pleased," "happy," "angry/hostile," and "frustrated." This scale has excellent temporal reliability and internal consistency (Diener & Emmons, 1984). This scale was completed at the initial session prior to participants' listing their New Year's resolutions. It was also completed at the 2- and 4-week follow-ups. We calculated a summary affect score by subtracting the negative affect score from the positive affect score. The positive and negative affect subscales were significantly negatively related ($r = -.52$, $p < .01$).

Implementation intention instructions. Participants were instructed to specify a time and place for pursuing each of their resolutions. Furthermore, for each resolution, if–then contingencies were presented in which participants identified three distractions or obstacles that could occur and a counterbehavior for each one. For example, a given participant listed the resolution of becoming more self-confident. The time and place specified for this goal was as often as possible, especially at interviews. Having an insecure day, failing at something, and not doing well in an interview were listed as possible distractions. Counterbehaviors listed involved reading a favorite psalm, reminding herself that everyone fails sometimes, and telling herself that she can learn from her mistakes.

Self-reflection instructions. Participants were instructed to think about why they were pursuing each resolution. They were then asked to think of some personally meaningful reasons for pursuing this resolution and to list them on the questionnaire. They were then instructed to "try to focus on the process of pursuing your resolutions rather than the outcome" and to "think about what will be personally satisfying about the process and list some examples below." For example, a participant resolved to "smoke only occasionally." She reflected that she wanted to feel free of any kind of addiction, strong, and in control of her life. She stated that there are health disadvantages to smoking. She felt that smoking less would be an inherently rewarding process because she would feel more fit, clear headed, and in control of her life. She added that instead of being rigidly focused on a concrete outcome, she would focus on the day-to-day process of smoking less.

Results and Discussion

Preliminary Analyses

Table 6 presents the means and standard deviations for all of the summary goal-related variables and the correlations among them. Participants generally reported making only moderate progress on their resolutions ($M = 3.89$ on a 7-point scale). They reported high levels of difficulty, efficacy, and commitment and tended to report more autonomous than controlled reasons for pursuing their goals, as reflected in a positive mean score for self-concordance.

Table 6 shows that goal progress was significantly positively related to levels of self-concordance, commitment, and self-efficacy. Self-concordance, commitment, and efficacy were all significantly related to one another. Difficulty was unrelated to efficacy and commitment but significantly negatively related to self-concordance. That is, goals that were less self-concordant were perceived as more difficult to achieve, suggesting that participants recognized that resolutions that were not self-endorsed were more onerous.

It was possible to compare the means for goal difficulty, efficacy, commitment, and self-concordance with those obtained in Study 1 because identical rating scales were used. This comparison revealed that New Year's resolutions were rated as significantly more difficult ($M = 5.87$) to attain than were weekend goals ($M = 5.22$), $t(164) = 4.67$, $p < .001$, and that participants reported significantly lower levels of commitment and efficacy for their New Year's resolutions, $ts(164) = -20.15$ and -18.96, respectively, $ps < .001$. It is interesting to note that participants reported significantly more self-concordant reasons for pursuing New

Table 6
Means and Correlations for Resolution-Related Variables: Study 2

Variable	*M*	*SD*	1	2	3	4	5
1. Progress	3.86	0.73	—	−.23	.38**	.27*	.35**
2. Difficulty	5.87	1.18		—	.00	−.17	−.26*
3. Commitment	5.03	0.91			—	.31*	.32*
4. Efficacy	5.56	1.02				—	.30*
5. Self-concordance	4.68	3.39					—

* $p < .05$. ** $p < .01$.

Year's resolutions than for their weekend goals (Ms = 4.68 and 2.16, respectively), $t(164) = 5.76$, $p < .001$.

Preliminary analyses examined the relations between gender and all of the goal-related variables. Because no main effects or interactions with group approaching significance (ps > .10) were obtained, the central analyses did not include gender.

Central Analyses

Self-reflection and implementation exercise effects. The impact of the manipulations on the summary goal-related measures was examined in a series of one-way analyses of variance with group (self-reflection vs. implemental vs. control) as the between-subjects factor. A highly significant group effect was obtained for goal difficulty, $F(1, 56) = 6.39$, $p < .01$. Control participants reported that their resolutions were significantly less difficult ($M = 5.21$) than did participants in the self-concordance ($M = 6.14$) and implementation conditions ($M = 6.35$). Because goal difficulty was assessed prior to the manipulation of conditions, this points to a failure of the random assignment procedure. The analyses of the other goal-related variables therefore controlled for level of difficulty.

No group main effects approaching significance were obtained for goal progress (ps > .10). Thus, contrary to Study 1, the implementation exercise did not affect participants' progress on their New Year's goals. The self-reflection exercise also failed to impact goal progress. The goal-progress means and standard deviations for the three conditions were as follows: control, $M = 4.01$ ($SD = 0.69$); implementation, $M = 3.72$ ($SD = 0.94$); self-reflection, $M = 3.85$ ($SD = 0.56$).

A significant effect did emerge, however, for goal self-concordance, $F(1, 55) = 3.53$, $p < .05$. A planned contrast showed that participants who completed the self-reflection exercise reported significantly more self-concordant goals ($M = 5.92$) than did participants in the implemental ($M = 3.16$) or control conditions ($M = 4.92$), contrast $F(1, 54) = 4.77$, $p < .05$. No group effects were obtained for goal commitment or goal efficacy (ps > .10).

The central purpose of Study 2 was to confirm the interactive effects of self-concordance and implementation intentions on goal progress. To test for this pattern, we performed a hierarchical multiple regression analysis with goal progress as the dependent variable. All predictor variables were standardized. We created two contrast codes (implementation condition vs. others and self-reflection condition vs. others) to represent the experimental manipulations, and these were entered with goal difficulty as a first set of predictors. Goal self-concordance was entered second. The two-way interactions between condition and goal self-concordance were entered together as a third set of predictors. The regression equation accounted for a significant 22% of the variance, $F(6, 52) = 2.40$, $p < .05$ (see Table 7). Goal self-concordance was significantly positively related to goal success ($\beta = .33$), $t(53) = 2.43$, $p < .05$. The interaction of implementation intentions and goal self-concordance was also significant ($\beta = .30$), $t(52) = 2.00$, $p < .05$. The interaction of self-reflection and goal self-concordance did not approach significance ($p > .20$). (A preliminary regression analysis revealed no interaction effects involving efficacy or commitment, so these variables were trimmed from the central analysis.)

Table 7
Predictors of Resolution Progress: Study 2

Predictor	β	t	Significance
Set 1			
Implementation contrast	−.10	−0.61	*ns*
Self-reflection contrast	−.03	−0.20	*ns*
Goal difficulty	−.19	−1.35	*ns*
Set 2			
Goal self-concordance	.33	2.43	.05
Set 3			
Implementation × Self-Concordance	.30	2.01	.05
Self-Reflection × Self-Concordance	.08	0.54	*ns*

Note. For Set 1, $t(55)$; for Set 2, $t(54)$; for Set 3, $t(51)$.

To examine this interaction more closely, we performed a split-group analysis in which we examined the partial correlation of self-concordance with goal progress (controlling for goal difficulty) separately for participants in the three experimental conditions. The results showed that self-concordance was significantly related to goal progress when combined with implementation intentions, partial $r(18) = .56$, $p < .05$, but not in the self-reflection, partial $r(18) = .22$, or control conditions, partial $r(20) = .02$.[1]

Affect. To examine the factors that influenced affect, we performed a hierarchical multiple regression analysis with summary affect (positive affect − negative affect) at 1 month as the dependent variable. All predictor variables were standardized. Initial affect was entered as the first predictor. Goal difficulty and the dummy codes for experimental condition were entered as a second set of predictors. Goal commitment, goal efficacy, and goal self-concordance were entered together next. The two Experimental Condition × Self-Concordance interactions were entered as a fourth set, and goal progress was entered alone in a fifth step.

The only significant predictor of positive affect at 1 month was initial affect ($\beta = .44$), $t(57) = 3.75$, $p < .001$. Goal progress was marginally positively related to improved affect ($\beta = .25$), $t(47) = 1.87$, $p = .07$. As in Study 1, participants who made greater progress with their resolutions also tended to report improved affect. No other effects approached significance (ps > .10) in the analysis of change of affect.

[1] A 3-month follow-up was attempted, but only 36 of the original participants responded (59%). The low response rate was due to the fact that the follow-up occurred during final exam period. The pattern of results for the 3-month follow-up was similar to that obtained at 1 month. The experimental manipulations were unrelated to goal progress (ps > .20). Self-concordance was significantly positively related to goal progress, partial $r(34) = .48$, $p < .01$. There was also evidence that the relation of self-concordance to goal progress was moderated by implementation intentions. Thus, the partial correlation of self-concordance with goal progress (with goal difficulty controlled) was partial $r(10) = .56$, $p < .05$, in the implementation condition compared with nonsignificant partial correlations of .26 and .20 in the self-reflection and control conditions, respectively. This pattern of results failed to reach statistical significance, however, because of the limited statistical power of the 3-month analyses.

Summary

Study 2 confirms two of the three key findings from Study 1. The self-concordance of New Year's resolutions was significantly positively related to how much progress participants made over the 1st month of the new year. It is important to note that this relation between goal self-concordance and progress was significantly moderated by whether participants had been asked to set implementation intentions. Thus, the highest levels of progress were, once again, attained by participants who had self-concordant goals that had been furnished with implementation intentions.

Study 2 does not replicate the direct impact of implementation intentions on goal progress that was evidenced in Study 1 and in the studies in the meta-analysis reported in Table 1. Thus, developing specific plans for when and how to perform behaviors related to their resolutions did not lead to implementation condition participants' greater progress on New Year's resolutions relative to those in the control condition. Reasons for the failure to obtain an implementation intention main effect are explored in the General Discussion.

An original aspect of Study 2 is the attempt to test the effects of a paper-and-pencil self-reflection exercise designed to promote goal self-concordance. There is evidence that the exercise resulted in significantly increased levels of self-concordance for participants' resolutions. However, participants in the self-reflection condition did not show greater goal progress.

General Discussion

The present article examines the role of self-concordance and implementation intentions in facilitating goal-setting efforts. Two separate meta-analyses are presented that confirm that both goal self-concordance and implementation intentions are significantly positively associated with goal progress. Two studies were designed to test whether self-concordance interacted with implementation intentions to influence goal progress. We hypothesized that pursuing goals because of personal interest and meaning is especially helpful to progress when such self-concordant goals are accompanied by implementation plans specifying "How will I get started?" and "How will I stay on task?" The studies also test the direct effects of goal self-concordance and implementation intentions on goal progress.

The results of both studies confirm Sheldon and colleagues' (Sheldon & Elliot, 1999; Sheldon & Houser-Marko, 2001) finding that self-concordant goals were significantly positively associated with goal progress. Thus, participants whose goals reflected their intrinsic interests and integrated values were significantly more likely to make progress on their goals relative to participants whose goals resulted from external or introjected pressures. The self-concordance effects were equally strong for weekend goals and New Year's resolutions. It is interesting that the strength of the effects of self-concordance on goal progress in our studies was somewhat superior ($d+ = 0.63$) to the effects obtained in the meta-analysis of previous studies that have examined this relationship ($d+ = 0.37$). The increased potency of self-concordance may have resulted because the present studies monitored progress for participants' three most important goals, whereas Sheldon and colleagues typically elicited a larger number of goals.

It is important to note that the results of both studies also confirm the hypothesis that implementation intentions moderate the impact of self-concordance on goal progress. Significant Self-Concordance × Implementation Intention interaction effects emerged in both studies, reflecting the fact that self-concordance was associated with relatively greater goal progress when combined with implementation intentions than when not. In Study 1, the relation of goal self-concordance to progress was highly significant for participants in the implementation condition (partial $r = .50$), whereas there was no relation between self-concordance and progress in the control condition (partial $r = .00$). In Study 2, the relation of goal self-concordance to progress was highly significant for participants in the implementation condition (partial $r = .56$), whereas there was no relation between self-concordance and progress in the control and self-reflection conditions (average partial $r = .12$). These results clearly suggest that goal pursuits that are both self-concordant and carefully planned can be highly successful.[2]

Why do implementation intentions play such an important moderating role for goal self-concordance? Previous research by Sheldon and colleagues (Sheldon & Elliot, 1999; Sheldon & Houser-Marko, 2001) suggested that goal self-concordance leads to higher attainment primarily because people invest more effort in their goals when the goals are personally endorsed. Gollwitzer (1999) noted, however, that goal pursuit is greatly complicated by the fact that people simultaneously pursue multiple goals and are invariably faced with diverse distractions and obstacles. In such a distraction- and obstacle-rich motivational context, it is possible that even the most self-concordant goal pursuits can be steered awry. Gollwitzer (1999) would argue that it is essential to find a way to relieve the volitional burden of goal pursuit so that one does not continually have to make conscious commitments and adjustments to one's goal-related activities. One can accomplish this by carefully thinking through how one plans to reach one's goals and linking these plans to specific environmental cues. It is possible that such automatization of goal-related behaviors enables the advantages of having developed self-concordant goals to become especially evident.

The synergistic effects of having self-concordant goals along with implementation intentions can also be explained in reference to Kuhl and Fuhrmann's (1998) dual-component model of volition. These researchers contended that effective goal pursuit involves maintaining an awareness of aspects of oneself that support the goal while concomitantly developing strategies to maintain the goal in consciousness when competing motivations arise. One can accomplish the former process of self-maintenance by selecting goals that are self-concordant, whereas one can facilitate the latter process of goal maintenance by making implementation intentions, which have been shown to facilitate retrieval of goal intentions in memory, heighten accessibility of environmental cues for goal

[2] The interaction results can also be described in the reverse manner. Thus, it is equally accurate to state that the impact of implementation intentions on goal progress was moderated by the extent to which the goals were self-concordant. That is, implementation intentions produced especially strong results for goals that were high in self-concordance. Conversely, having well thought out, clear, precise, and even automatic plans but unclear or ambivalent motivation may result in obstructed goal progress. We have chosen to frame the interaction results in terms of implementation intentions moderating the impact of goal self-concordance because we assume that self-concordance has temporal priority.

completion, and reduce the number of interruptions while one is in goal pursuit (Gollwitzer, 1999)

Another framework of goal pursuit that is relevant to understanding the interactive effects of self-concordance and implementation intentions is Heckhausen's (1986) Rubicon model of action, which segments the course of action into distinct temporal phases. The model distinguishes primarily between a predecisional, deliberative stage in which an individual contemplates whether to act on his or her wishes and a postdecisional, implemental phase in which issues of how to accomplish the goal come to the forefront of consciousness (Heckhausen & Gollwitzer, 1987). There is evidence that each of these phases elicits a distinctive mind set, with predecisional individuals attuned to the potential positive and negative consequences of achieving the intended goal (i.e., expected value) as well as the likelihood of reaching the goal (i.e., action-outcome expectancy) and postdecisional individuals oriented toward thinking about when, where, and how to act on the chosen goal (Gollwitzer & Kinney, 1989). The present study examines participants' goal pursuit after they had already made the decision to pursue certain goals. It does, however, attempt to tap into predecisional motivational factors by inquiring about participants' reasons for pursuing their goals, commitment toward their goals, and feelings of efficacy about reaching their goals. As in many previous studies (Austin & Vancouver, 1996), commitment and efficacy were both positively related to goal progress in our studies. The Pearson correlation with goal progress across the two studies was .25 for commitment ($p = .001$) and .17 for self-efficacy ($p < .05$). It is noteworthy, however, that self-concordance was significantly positively related to goal progress even after we controlled for commitment and self-efficacy and that only self-concordance interacted with implementation intentions.

It is important to discuss one expected finding that failed to emerge in Study 2; namely, that the implementation intention exercise was unrelated to progress on New Year's resolutions. One might argue that this failure derives from the fact that New Year's resolutions are very difficult to keep (Marlatt & Kaplan, 1972; Norcross et al., 1989). Indeed, we found that New Year's resolutions were rated as more difficult than were weekend goals, and participants in Study 2 also had lower self-efficacy beliefs. However, such an argument is contradicted by the fact that Gollwitzer (1999) has shown that implementation intentions are particularly helpful for difficult-to-reach goals. Indeed, Study 1 replicates Gollwitzer and Brandstätter's (1997) finding that implementation intentions were especially helpful when participants' goals were more difficult.

A better explanation for the failure to find that the implementation manipulation produced a direct impact on progress for New Year's resolutions concerns the possibility that many of the participants in the control condition may have spontaneously formed implementation intentions. Gollwitzer (1999) reported that people spontaneously furnish their goals with implementation intentions about 67% of the time. This percentage may be even higher among New Year's resolvers because they recognize the difficulty of their pursuits. To the extent that participants in the control condition spontaneously set implementation intentions, it would have mitigated the effects of explicitly soliciting such intentions in the other conditions. It would have been wise to ask control and self-reflection participants at the end of the study whether they had spontaneously formed implementation intentions.

The self-report nature of the goal-progress measures raises concerns about the influence of socially desirable response sets on our results. Social desirability pressures no doubt led participants to inflate their estimates of goal progress, yet it is also true that we obtained adequate variance and no ceiling effects on the progress measures. Furthermore, it seems unlikely that social desirability could account for the obtained relations between self-concordance and implementation intentions on goal progress. Previous research indicates that self-reports of self-regulatory style, which served as the basis of the self-concordance indices, are unrelated to socially desirable response sets (Deci & Ryan, 1985). Previous research has also confirmed the positive impact of implementation intentions on goal success with objective measures such as test performance and pill counts (Gollwitzer, 1999). Moreover, it seems highly unlikely that self-report biases could account for the synergistic interaction effects between self-concordance and implementation intentions that we obtained in both studies.

The present studies also consider the relation of goal progress to affective outcomes. Indeed, we report a meta-analysis of previous studies that demonstrates that goal progress reliably translates into improved affect, as telic models of well-being suggest. The two empirical studies yield similar results regarding the impact of goal progress on affect. Study 1 found that participants' progress toward their weekend goals was significantly predictive of enhanced positive affect and diminished negative affect. Study 2 found that 1-month progress on New Year's resolutions was marginally associated with increased positive affect and decreased negative affect. The similarity of the results across two such different goal-setting contexts attests to the robustness of the linkage between goal progress and affect change.

An interesting perspective from which to examine the synergistic impact of self-concordance and implementation intentions on goal progress is provided by Prochaska, DiClemente, and Norcross's (1992) stage theory of personal change. These researchers argued that successful change of behaviors such as smoking involves a progression through a series of stages and that there are relatively distinct processes associated with each stage. Within this approach, the self-concordance of goals is considered to be of primary importance during the stage Prochaska et al. labeled *contemplation*, whereas implementation intentions are of primary importance during the *preparation* and *action* stages. During the contemplation stage, individuals reflect on why they are doing what they are doing and whether they really want to do it. Self-checking processes related to values clarification and goal alignment are important at this stage.

During the preparation stage, people make a formal intention to change the behavior and perhaps also take some small action in that direction. Self-liberation is the key process during this stage, and it involves making a choice and committing oneself to action while simultaneously bolstering one's belief in one's ability to succeed. Implementation intentions serve to bolster such choices and commitments because they link actions to specific environmental circumstances. During the action stage, people actively modify their behavior, experience, or environment to reach their goals. Common processes during this stage are (a) substituting alternatives for the problem behavior, (b) avoiding or countering stimuli that elicit problem behaviors, and (c) restructuring one's environment to avoid high-risk cues. The formation of implementation intentions can involve all three of these processes.

The present studies follow previous research on implementation intentions by focusing on relatively short-term goal pursuits. Prochaska, Norcross, and DiClemente (1994) noted that it is common for people to overlook the final stage, maintenance, and they highlighted the crucial importance of working to prevent relapse and consolidate gains. It seems that implementation intentions could be adapted during this stage so that individuals who have achieved their initial goals could assess conditions under which they may relapse and develop plans to prevent this. It would be interesting to determine whether such a relapse-prevention strategy is actually more beneficial for most people than is the typical pattern of setting new and more challenging goals. The focus on maintenance is vital because the progression of change, according to Prochaska and colleagues, is spiral in nature, not linear. Relapse and recycling through stages occurs frequently for people who are trying to stop an addiction. Linear progress is possible but relatively rare.

Limitations and Future Directions

The present studies suffer from three major shortcomings. First, both studies compare the effects of implementation intentions with a control group in which participants did not complete an alternative paper-and-pencil exercise. Recent implementation studies have used control groups in which participants plan what to do after they accomplish their goal (Aarts et al., 1999) or make implementation plans for an irrelevant goal (Gollwitzer & Brandstätter, 1997). Such active control groups certainly are better for ruling out attention and expectancy effects, but it is worth noting that the recent studies using more rigorous control groups have obtained implementation effects that are as just strong as those obtained in the early studies using no-intervention control groups. Nonetheless, future studies that explore the combined effects of self-concordance and implementation intentions should use more rigorous control conditions.

Second, the present study failed to assess any of the mediating processes that have been shown to account for the relation of self-concordance and implementation intentions to goal progress. It would have been interesting to examine the impact of implementation intentions on the accessibility of goals and goal-related situational cues and the relation of self-concordance to the amount of effort exerted toward goal attainment. Moreover, it would have been valuable to explore whether the unique combination of self-concordance plus implementation intentions had a particularly strong effect on any of these mediators. The studies also could have been designed to consider whether commitment and self-efficacy served to mediate the impact of implementation intentions on goal progress. Only direct effects of these variables on goal progress were considered in the present studies.

Third, it is natural to wonder why Study 2 did not include a fourth condition in which both self-reflection and implementation exercises were administered. If the self-reflection condition facilitated the formation of self-concordant goals, then such a combined condition would have allowed for a more powerful test of the interaction of self-concordance and implementation intentions. We did not include this condition because we first wanted to demonstrate that a self-reflection exercise could lead people to shape their goals in a self-concordant manner and that this, in turn, would promote greater goal success. Study 2 does show that a self-reflection exercise can promote more self-concordant goals, but there is no evidence that this had a direct impact on goal progress. In retrospect, we recognize that a suitable experimental test of the separate and combined effects of self-reflection and implementation intentions would require a more sophisticated research design in which the temporal patterning of self-reflection and implementation processes were taken into account. Thus, in a study of New Year's resolutions, it would be best to seek to influence self-concordance during the month of December, while individuals are still deliberating which resolutions to select. Implementation intentions are best assessed in early January, after the turn of the year marks the obligation to accomplish the resolutions. To optimize the success of New Year's resolutions, one should intervene both in December (to encourage people to select self-concordant resolutions) and in early January (to provide guidance about how to implement the resolutions).

Future research should consider how other forms of self-concordance are affected by implementation intentions. For example, Sheldon and Houser-Marko (2001) noted that there are at least three other methodologies by which to assess self-concordance. Thus, one could examine the match of personal goals with implicit social motives such as need for affiliation or power (Brunstein, Schultheis, & Grassmann, 1998), with personal resources such as attractiveness (Diener & Fujita, 1995), or with identity themes such as agency (McGregor & Little, 1998). It would be interesting to examine whether implementation intentions also moderate the impact of these forms of self-congruence on goal progress.

Future experimental research on goal pursuit could also seek to test whether the effects of implementation intentions and self-concordance can be combined with other strategies designed to improve goal success. For example, Bandura (1989) has noted that researchers can enhance people's feelings of self-efficacy by having them recall previous mastery experiences or think of similar others who have succeeded at the same goals. Perhaps paper-and-pencil exercises designed to promote self-efficacy in goal setters by such means could be combined with self-concordance and implementation intentions to yield even higher levels of success.

A final important issue to explore is how to motivate others to reach their goals. When attempting to increase the motivation of others, people only rarely consider issues of self-concordance and implementation intentions. Instead, the most common ways to motivate others are to promise rewards (e.g., "I'll give you $1 if you practice your piano") or to provide target goals (e.g., "I want you to practice 30 min every night"). Indeed, these two approaches are commonly combined in the practice of giving performance-contingent rewards, in which children or workers are encouraged to reach specific goals by the promise of bonuses or merit increases. Although such practices may promote compliance with imposed goals, there is evidence that they interfere with the development of intrinsic motivation and thus probably compromise the experience of self-concordance (Deci, Koestner, & Ryan, 1999, 2001). Indeed, some recent evidence indicates that using rewards to get children to do boring school activities directly undermines self-concordance (Joussemet, Koestner, Lekes, & Houlfort, 2001). As well, we guess that most supervisors use motivational strategies that directly interfere with the development of self-concordant goals.

Conclusion

The present article is the first to report meta-analyses of the relation of self-concordance and implementation intentions to goal progress and of goal progress to positive affective change. The results reported in the three meta-analyses are impressive in that they not only confirm the expected positive relationships but also show that these relations are highly reliable across studies (as reflected by the homogeneity of effects). These meta-analytic results permit three important conclusions regarding goal progress: (a) self-concordant goals are associated with greater progress, (b) implementation intentions are associated with greater progress, and (c) goal progress translates into improved affect.

The unique contribution of our empirical studies is the demonstration that the combination of self-concordance and implementation intentions is especially potent in the prediction of goal progress. Thus, goal progress was maximized when people selected goals that were self-concordant and then furnished these goals with well-elaborated implementation intentions. The implication of this finding is that goal setters must simultaneously provide compelling answers to the questions "Why are you pursuing these goals?" and "How do you plan to initiate and maintain your goal-directed behaviors in the face of competing goals and other distractions?" That is, goal setters optimize their progress when they align their goals with personal interests and values and buttress their goals with specific plans that allow them to automatize their goal-directed behavior. This finding may have important implications for clinical, corporate, and educational settings, in which goal-setting is currently viewed as an essential mechanism responsible for successful growth and adaptation, but often without a recognition of the complex volitional challenges that arise on the way to goal attainment.

References

Aarts, H., Dijksterhuis, A., & Midden, C. (1999). To plan or not to plan: Goal achievement of interrupting the performance of mundane behaviors. *European Journal of Social Psychology, 29,* 971–979.

Austin, J. T., & Vancouver, J. B. (1996). Goal constructs in psychology: Structure, process, and content. *Psychological Bulletin, 120,* 338–375.

Bandura, A. (1989). Human agency in social cognitive theory. *American Psychologist, 44,* 1175–1184.

Bandura, A. (2001). Social cognitive theory: An agentic perspective. *Annual Review of Psychology, 2001,* 1–26.

Baumeister, R. F., & Heatherton, T. F. (1996). Self-regulation failure: An overview. *Psychological Inquiry, 7,* 1–15.

Brandstätter, V., Lengfelder, A., & Gollwitzer, P. M. (2001). Implementation intentions and efficient action initiation. *Journal of Personality and Social Psychology, 81,* 946–960.

Brunstein, J. C. (1993). Personal goals and subjective well-being: A longitudinal study. *Journal of Personality and Social Psychology, 65,* 1061–1070.

Brunstein, J. C., Schultheis, O. C., & Grassmann, R. (1998). Personal goals and emotional well-being. The moderating role of motive dispositions. *Journal of Personality and Social Psychology, 75,* 494–508.

Deci, E. L., Koestner, R., & Ryan, R. M. (1999). A meta-analytic review of the effects of rewards on intrinsic motivation. *Psychological Bulletin, 125,* 627–668.

Deci, E. L., Koestner, R., & Ryan, R. M. (2001). Extrinsic rewards and intrinsic motivation in education: Reconsidered once again. *Review of Education Research, 71,* 1–29.

Deci, E. L., & Ryan, R. M. (1985). The general causality orientations scale: Self-determination in personality. *Journal of Research in Personality, 19,* 109–134.

Deci, E. L., & Ryan, R. M. (2000). The "what" and "why" of goal pursuits: Human needs and the self-determination of behavior. *Psychological Inquiry, 11,* 227–268.

Diener, E., & Emmons, R. A. (1984). The independence of positive and negative affect. *Journal of Personality and Social Psychology, 47,* 1105–1117.

Diener, E., & Fujita, F. (1995). Resources, personal strivings, and subjective well-being: A nomothetic and idiographic approach. *Journal of Personality and Social Psychology, 68,* 926–935.

Diener, E., Suh, E. M., Lucas, R. E., & Smith, H. L. (1999). Subjective well-being: Three decades of progress. *Psychological Bulletin, 125,* 276–302.

Emmons, R. A. (1992). Abstract versus concrete goals: Personal striving level, physical illness, and psychological well-being. *Journal of Personality and Social Psychology, 62,* 292–300.

Gollwitzer, P. M. (1996). The volitional benefits of planning. In P. M. Gollwitzer & J. A. Bargh (Eds.), *The psychology of action: Linking cognition and motivation to behavior* (pp. 287–312). New York: Guilford Press.

Gollwitzer, P. M. (1999). Implementation intentions: Strong effects of simple plans. *American Psychologist, 54,* 493–503.

Gollwitzer, P. M., & Brandstätter, V. (1997). Implementation intentions and effective goal pursuit. *Journal of Personality and Social Psychology, 73,* 186–199.

Gollwitzer, P. M., & Kinney, R. F. (1989). Effects of deliberative and implemental mind-sets on illusions of control. *Journal of Personality and Social Psychology, 56,* 531–542.

Gollwitzer, P. M., & Schaal, B. (1998). Metacognition in action: The importance of implementation intentions. *Personality and Social Psychology Review, 2,* 124–136.

Grolnick, W. S., & Ryan, R. M. (1989). Parent styles associated with children's self-regulation and competence in school. *Journal of Educational Psychology, 81,* 143–154.

Heckhausen, H. (1986). Why some time out might benefit achievement motivation research. In J. H. L. van den Bercken, E. E. J. De Bruyn, & T. C. M. Bergen (Eds.), *Achievement and task motivation* (pp. 7–39). Lisse, the Netherlands: Swets & Zeitlinger.

Heckhausen, H., & Gollwitzer, P. M. (1987). Thought contents and cognitive functioning in motivational and volitional states of mind. *Motivation and Emotion, 11,* 101–120.

Hedges, L. V., & Olkin, I. (1985). *Statistical methods for meta-analysis.* New York: Academic Press.

Johnson, B. T. (1993). DSTAT 1.10: Software for the meta-analytic review of literatures. [Computer software and manual]. Hillsdale, NJ: Erlbaum.

Joussemet, M., Koestner, R., Lekes, N., & Houlfort, N. (2001). *Introducing uninteresting tasks to children: A comparison of the effects of rewards and autonomy support.* Unpublished manuscript, McGill University.

King, L. A., Richards, J. H., & Stemmerich, E. (1998). Daily goals, life goals, and worst fears: Means, ends, and subjective well-being. *Journal of Personality, 66,* 713–744.

Koole, S., & Spijker, M. V. (2000). Overcoming the planning fallacy through willpower: Effects of implementation intentions on actual and predicted task-completion times. *European Journal of Social Psychology, 30,* 873–888.

Kuhl, J., & Fuhrmann, A. (1998). Decomposing self-regulation and self-control: The volitional components inventory. In J. Heckhausen & C. Dweck (Eds.), *Lifespan perspectives on motivation and control* (pp. 15–49). Hillsdale, NJ: Erlbaum.

Lengfelder, A., & Gollwitzer, P. M. (2001). Reflective and reflexive action control in patients with frontal brain lesions. *Neuropsychology, 15,* 80–100.

Little, B. R. (1993). Personal projects and the distributed self: Aspects of

a conative psychology. In J. Suls (Ed.), *The self in social perspective: Psychological perspectives on the self* (Vol. 4, pp. 157–185). Hillsdale, NJ: Erlbaum.

Marlatt, A. G., & Kaplan, B. E. (1972). Self-initiated attempts to change behavior: A study of New Year resolution's. *Psychological Reports, 30,* 123–131.

McClelland, D. C. (1988). *Human motivation.* New York: Cambridge University Press.

McGregor, I., & Little, B. R. (1998). Personal projects, happiness, and meaning: On doing well and being yourself. *Journal of Personality and Social Psychology, 74,* 494–512.

Norcross, J. C., Ratzin, A. C., & Payne, D. (1989). Ringing in the New Year: Change processes and reported outcomes of resolutions. *Addictive Behavior, 14,* 205–212.

Oettingen, G., Hönig, G., & Gollwitzer, P. M. (2000). Effective self regulation of goal attainment. *International Journal of Education Research, 33,* 705–732.

Orbell, S., Hodgkins, S., & Sheeran, P. (1997). Implementation intentions and the theory of planned behavior. *Personality and Social Psychology Bulletin, 23,* 945–954.

Orbell, S., & Sheeran, P. (2000). Motivational and volitional processes in action initiation: A field study of the role of implementation intentions. *Journal of Applied Social Psychology, 30,* 780–797.

Prochaska, J. O., DiClemente, C. C., & Norcross, J. C. (1992). In search of how people change. *American Psychologist, 47,* 1102–1114.

Prochaska, J. O., Norcross, J. C., & DiClemente, C. C. (1994). *Changing for good.* New York: Avon.

Ryan, R. M. (1995). Psychological needs and the facilitation of integrative processes. *Journal of Personality, 63,* 397–427.

Ryan, R. M., Sheldon, K. M., Kasser, T., & Deci, E. L. (1996). All goals are not created equal: An organismic perspective on the nature of goals and their regulation. In P. M. Gollwitzer & J. A. Bargh (Eds.), *The psychology of action: Linking cognition and motivation to behavior* (pp. 7–26). New York: Guilford Press.

Sheeran, P., & Orbell, S. (1999). Implementation intentions and repeated behavior: Augmenting the predictive validity of the theory of planned behavior. *European Journal of Social Psychology, 29,* 349–369.

Sheldon, K. M., & Elliot, A. J. (1998). Not all personal goals are personal: Comparing autonomous and controlled reasons as predictors of effort and attainment. *Personality and Social Psychology Bulletin, 24,* 546–557.

Sheldon, K. M., & Elliot, A. J. (1999). Goal striving, need-satisfaction, and longitudinal well-being: The self-concordance model. *Journal of Personality and Social Psychology, 76,* 482–497.

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,* 152–165.

Sheldon, K. M., & Kasser, T. (1995). Coherence and congruence: Two aspects of personality integration. *Journal of Personality and Social Psychology, 68,* 531–543.

Sheldon, K. M., & Kasser, T. (1998). Pursuing personal goals: Skills enable progress, but not all progress is beneficial. *Personality and Social Psychology Bulletin, 24,* 1319–1331.

Verplanken, B., & Faes, S. (1999). Goal intentions, bad habits, and the effects of forming implementation intentions on healthy eating. *European Journal of Social Psychology, 29,* 591–604.

Watson, D., Clark, L., & Tellegen, A. (1988). Development and validation of brief measures of positive and negative affect: The PANAS scales. *Journal of Personality and Social Psychology, 54,* 1063–1070.

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