
Not All Personal Goals Are Personal: Comparing Autonomous and Controlled Reasons for Goals as Predictors of Effort and Attainment

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Even when goals are self-generated, they may not feel truly "personal," that is, autonomous and self-integrated. In three studies (one concurrent and two prospective), we found that the autonomy of personal goals predicted goal attainment. In contrast, the strength of "controlled" motivation did not predict attainment. Studies 2 and 3 validated a mediational model in which autonomy led to attainment because it promoted sustained effort investment. In Study 3, the Goal Attainment Scaling methodology was used to provide a more objective measure of goal attainment, and additional analyses were performed to rule out expectancy, value, and expectancy \times value explanations of the autonomy-to-attainment effects. Results are discussed in terms of contemporary models of volition and self-regulation.

Many of us have had the experience of making a New Year's resolution that quickly faded. Unfortunately, this phenomenon is not limited to New Year's resolutions but occurs throughout the year; all too often, we fail to follow through on our goals. In the present research, we explore this phenomenon by considering people's initial reasons for pursuing their self-generated goals. Although the idiographic units of analysis investigated in this research are generally referred to as "personal goals" (Pervin, 1989; Ruehlman & Wolchik, 1988; Wadsworth & Ford, 1983), we suggest that not all personal goals are truly "personal" in the sense of being integrated with a core volitional self (Deci & Ryan, 1991; Kuhl & Kazen, 1994; Sheldon & Kasser, 1995). Our primary contention is that autonomous goals, which are undertaken with a sense of full willingness and choice, are better attained than controlled goals, which are felt to be compelled by internal or external forces or pressures. This contention is based on our assumption that people invest more sustained effort into their autonomous goals.

AUTONOMY AND CONTROLLEDNESS IN PERSONAL GOALS

Motivational autonomy has been shown to be important for many aspects of task performance, in many areas of life. For example, when people feel fully volitional in their actions, they evidence greater creativity (Koestner, Ryan, Bernieri, & Holt, 1984), depth of information processing (Grolnick & Ryan, 1987), and task persistence (Ryan & Connell, 1989). In contrast, when people are motivated by external controls and prods, their performance is often adversely affected. Such studies have typically operationalized autonomy and control in terms of the quality of the social and interpersonal environments in which people find themselves. For example, Grolnick, Ryan, and Deci (1991) found that parents' controllingness negatively predicted children's level of achievement in school, Amabile (1983) demonstrated that external incentives and surveillance have a negative impact on creative performance, and Williams, Grow, Freedman, Ryan, and Deci (1996) showed that the controllingness of health care providers negatively predicted adherence to a weight loss program.

One might expect that these problems would not arise in the realm of idiographic personal goals, given that such goals are self-generated and their content is unconstrained. "Controlledness," however, is a state of mind, as well as of one's environment. That is, internally generated intentions can feel just as authoritarian as external rules and constraints (Ryan, 1982). Supporting the

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idea that controlledness and autonomy are important dimensions along which personal goals vary, the relative autonomy of individuals' enduring personal strivings (Emmons, 1989) has been shown to predict a wide variety of healthy personality characteristics (Sheldon & Kasser, 1995). Relative autonomy also has been shown to moderate the effects of progress in short-term personal projects (Little, 1989) on increases in well-being (Sheldon & Kasser, in press). The hypothesis has not been tested, however, that autonomy predicts the successful attainment of personal goals. Below, we consider reasons to expect such an association.

Autonomy, as measured by the "perceived locus of causality" methodology (Ryan & Connell, 1989; Sheldon & Kasser, 1995), comes in two forms: intrinsic and identified. Intrinsically motivated behavior arises from the person's developing interests and is assumed to be inherently enjoyable, autonomous, and self-integrated (Deci & Ryan, 1985). Moreover, intrinsic motivation is often operationally defined in the laboratory in terms of the persistence of self-initiated behavior (Deci, 1971; Lepper, Greene, & Nisbett, 1973), and persistence in academic endeavors recently has been linked to intrinsic academic motivation (Vallerand & Bissonette, 1992; Vallerand, Fortier, Daoust, & Blais, 1996). Accordingly, it seems reasonable to posit that goals pursued for intrinsic reasons receive sustained effort.

Identified motivation, on other hand, involves acting out of a sense of personal conviction. Identified activity may not be enjoyable (i.e., changing one's child's diaper); nevertheless, it fits with the person's superordinate values and deeper beliefs. Such "value congruence" (Little, 1989) is likely to ensure that the goal remains enduringly relevant, and thus also ensure the sustained investment of personal resources and mobilization of energy (Vallerand et al., 1996). In short, in the present research we predicted that both the intrinsic and identified facets of autonomy would predict intended and actual effort, because both forms express the deeper interests of the core self (Deci & Ryan, 1991). In turn, greater effort was expected to lead to greater goal attainment, as is commonly found in (task-specific) goal-setting studies (Locke & Latham, 1990).

"Controlled" motivation also comes in two forms, extrinsic and introjected. Extrinsic motivation involves acting with the experience that environmental contingencies are the cause of one's behavior. In this case, the individual strives only to get some incentive or payoff, such as money, awards, or approval. Introjected motivation involves acting because one would feel guilty or anxious if one did not. That is, rather than feeling compelled by the situation, the person feels coerced by his or her own internal processes. In either case, we assume that the individual does not feel a complete sense

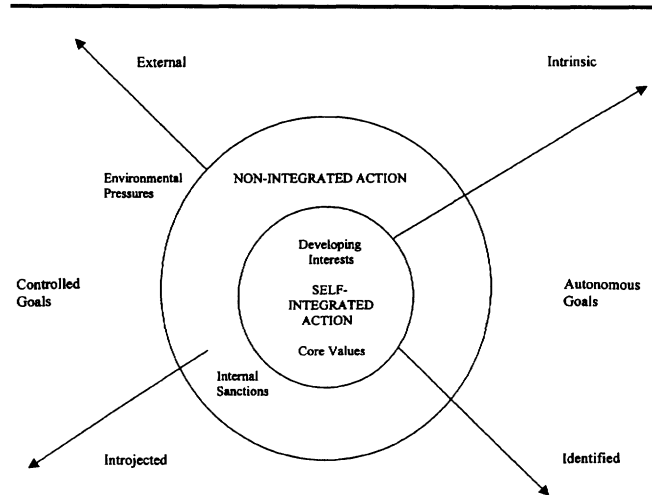


Figure 1 A spatial representation of the degree of self-integration of personal goals

of ownership or personal causation (deCharms, 1968) regarding the goal. Accordingly, controlled goals are less likely to be well protected from competing desires and temptations (Kuhl, 1986) and are more likely to fade with the passage of time. Thus, in the present research we expected that controlled motivation might be associated with intended effort, but that it would be unrelated to sustained effort and attainment.

Figure 1 provides a spatial representation of the orienting ideas of the study, in which goals are depicted as arrows originating from various phenomenal locations within the individual. Autonomous goals are felt to emanate from developing interests or from core values. Such interests and values are a key part of the self as defined by Deci and Ryan (1991), and thus Figure 1 labels such goals as emerging from a "self-integrated" zone.¹ Autonomous goals receive sustained energization, we assume, because they express the enduring interests of the evolving self (Csikszentmihalyi, 1993). In contrast, controlled goals are felt to arise in response to external enticements or internal compulsions. Because such goals are often felt to be external to the phenomenal self, Figure 1 represents them as arising from a "nonintegrated" zone. Controlled goals do not receive sustained energization, we assume, because they do not well represent the needs, values, and interests of the individual.

Figure 1 refers to the *perceived* locus of causality for goals, not necessarily the "true" causes. Regardless of the latter, we contend, the sense of subjective ownership is a critical self-regulatory issue. It is also worth noting that all of us face actual controlling and even inescapable environmental constraints (like tax return deadlines), in the face of which we act, and often act effectively, out of necessity. As stated above, however, many personal goals

TABLE 1: The Four Reasons for Goals Assessed in Studies 1, 2, and 3

Reason	Type	Wording
External	Controlled	"Striving because somebody else wants you to or thinks you ought to, or because you'll get something from somebody if you do. That is, you probably wouldn't strive for this if you didn't get some kind of reward, praise, or approval for it."
Introjected	Controlled	"Striving because you would feel ashamed, guilty, or anxious if you didn't. Rather than striving just because someone else thinks you ought to, you feel that you ought to strive for that something."
Identified	Autonomous	"Striving because you really believe that it's an important goal to have. Although this goal may once have been taught to you by others, now you endorse it freely and value it wholeheartedly."
Intrinsic	Autonomous	"Striving because of the fun and enjoyment which the goal provides you. While there may be many good reasons for the goal, the primary 'reason' is simply your interest in the experience itself."

(like New Year's resolutions) are in a sense optional; the objectives sought typically are not mandatory and may have only temporary appeal. To reiterate, our primary hypothesis is that personal goals perceived to be caused by external incentives or by nagging introjects are less "personal" and are most likely to lose their appeal as time goes by. In contrast, goals that are autonomous and self-integrated will receive sustained effort over time, and thus will be better attained.

THE PRESENT RESEARCH

In the present research, we investigated the aforementioned hypotheses in a set of three studies.² Study 1 examined the concurrent relationship of goal autonomy and controlledness to current rated attainment, attempting to establish that these two types of motivation are differentially related to attainment. Study 2 employed a prospective design to test the proposition that autonomy leads to greater attainment because it engenders greater sustained effort. Study 3 replicated and extended this path model, and also showed that the autonomy effects are not reducible to the effects of initial expectancy, commitment, or their interaction (i.e., the expectancy-value product). An added feature of Study 3 is that we applied the Goal Attainment Scaling methodology (Kiresuk, Smith, & Cardillo, 1994), in which ranges of potential outcomes identified at the beginning of the study are used to assess goal attainment at the end of the study. This methodology was employed to obtain more objective and convincing support for our substantive hypotheses, and also to confirm the validity of the Likert-type measures of attainment used in Studies 1 and 2.

STUDY 1

Method

Participants were 128 undergraduates (36 males, 92 females) in a psychology class at the University of Rochester who received extra course credit in exchange for their participation in the study. They completed the

assessment materials in group sessions conducted by trained research assistants.

At the beginning of the session, participants generated a list of 10 personal strivings, defined as "objectives that you are typically or characteristically trying to attain in your daily life" (Emmons, 1986). Examples include "trying to be physically attractive to others" and "trying to seek new and exciting experiences." Next, participants rated how much they pursue each striving for each of four reasons, using a 1 (*not at all because of this reason*) to 9 (*completely because of this reason*) scale (Sheldon & Kasser, 1995, in press). Table 1 presents these four reasons and the items used to assess them. Next, participants were asked, "In the recent past (within the last month or so), how successful have you been in attaining your strivings?" These ratings of recent attainment were made using a 0 (0-9% successful) to 10 (90-100% successful) scale.

We wished to focus on individual goals (rather than persons) as the unit of analysis for this research. Thus, to prepare the data for analysis, we split the file by participant and standardized each of the variables (extrinsic, introjected, identified, intrinsic, and recent attainment) across the 10 strivings generated by each participant. This procedure controls for mean-level differences between participants, making the strivings given by different participants more directly comparable (Elliot & Sheldon, 1997; Emmons, 1991).³ The final pool of strivings was 1,280 (128 participants \times 10 strivings per participant, $M = 0$ and $SD = 1$ for all variables). For each striving, we computed a summary autonomy variable by averaging the standardized intrinsic and identified ratings for that striving. A summary controlledness variable was also computed by averaging the standardized extrinsic and introjected ratings.

Results

First, we examined the intercorrelation between autonomy and controlledness. The association was $r = -.14$, $p < .001$. Next, we computed correlations between each of these motivational variables and recent attain-

ment. As expected, autonomy was associated with recent attainment, $r = .20$, $p < .001$, whereas controlledness was not, $r = -.05$.

As an ancillary analysis, we separated the autonomy variable into its component parts to examine whether both facets were independently associated with recent attainment. A simultaneous regression showed this to be the case, identified $\beta = .16$, intrinsic $\beta = .10$, both $ps < .01$.

Discussion

Study 1 provides preliminary support for our primary hypothesis, in that the autonomy of goals was associated with greater attainment, whereas the controlledness of goals was not. Moreover, both the intrinsic and identified facets of autonomy accounted for unique variance in the prediction of attainment, consistent with our supposition that the two forms of autonomy offer distinctive motivational benefits.

Clearly, however, there are substantial limitations to these data. First, the direction of the relationship between autonomy and attainment is not clear, because participants rated their recent attainment at the same time that they rated their present reasons for striving. It may be that participants who recently have been doing well in a striving give inflated estimates of the enjoyability of, or their identification with, that striving. In a related concern, the ratings were all made concurrently, and it is possible that momentary mood or state variables unduly influenced the ratings. Another limitation is that Study 1 provided no information regarding the processes through which autonomous goals are better attained.

STUDY 2

In Study 2, a prospective investigation of goal attainment, participants selected a set of achievement goals at the beginning of a semester and rated both the reasons they would pursue their goals and the amount of effort they intended to invest in the goals. Eight weeks later, participants rated the amount of effort they were actually investing in each goal at that point in time. Finally, at the end of the semester, participants rated how well they had attained each goal during the period of the study.

We hypothesized that the relationship between autonomy and attainment, established in Study 1, would be replicated in this prospective study. We also examined the relation of autonomy and controlledness to the two effort variables. We hypothesized that autonomy and controlledness both would be associated with initial intended effort, because high scores on either measure indicate a strong quantity of motivation (Deci & Ryan, 1985). Based on our assumption that autonomous motivation is a higher quality of motivation and is thus more sustainable than controlled motivation, we expected that

autonomy would be correlated with mid-semester effort, whereas controlledness would not. We used a path analysis to explicitly test the hypothesis that mid-semester effort would mediate the predictive relationship between autonomy and attainment.

Method

Participants were 141 undergraduates (53 males, 88 females) in a psychology class at the University of Rochester, who participated in the study for extra course credit. During group sessions at the beginning of the semester, each participant completed the Achievement Goals Questionnaire (Elliot & Sheldon, 1997). This questionnaire presents 51 achievement personal strivings (Emmons, 1986, 1989) that are commonly reported during free-listing procedures. We asked participants to select the eight goals from this list that best represent their ongoing achievement concerns (see Elliot & Sheldon, 1997, for information on the development of this measure). Examples include "Try new and challenging activities," "Avoid procrastination," and "Fulfill my potential." Participants were given the option of generating their own achievement goals, although few actually did so. When asked how well their selected goals represented their actual achievement concerns, participants reported a mean rating of 8.03 on a scale of 1 (*not at all*) to 9 (*perfectly*). Thus, although the goals were not self-generated, it appears that participants did indeed endorse them.

During the first session, participants rated each of their eight goals in terms of each of the four reasons employed in Study 1 (extrinsic, introjected, identified, and intrinsic). In addition, they rated how hard they intended to try at each goal, using a 1 (*not at all hard*) to 9 (*very hard*) scale (intended effort). Eight weeks later, participants attended another group session in which they indicated how hard they were actually trying on each goal at that point in time, using a 1 (*not at all*) to 9 (*very much*) scale (mid-semester effort). Finally, 15 weeks after the initial assessment, participants attended a final group session in which they rated how well they had done on each goal over the course of the study, using a 1 (*not well at all*) to 9 (*very well*) scale (semester attainment). As in Study 1, each variable was standardized within participants, and summary autonomy and controlledness variables were computed. The final pool of strivings was 1,128 (141 participants \times 8 strivings per participant).

Results

Autonomy and controlledness were not significantly correlated, although the relationship was in the same direction as that in Study 1 ($r = -.07$). Conceptually replicating the results of Study 1, autonomy was associated with semester attainment, $r = .16$, $p < .001$, whereas

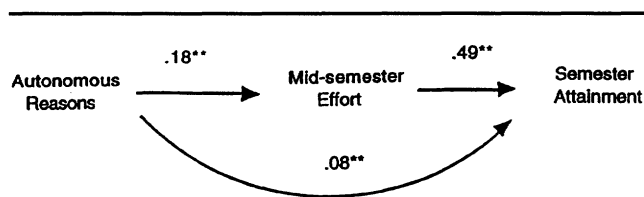


Figure 2 The mediational model for the autonomy to attainment effect, Study 2.

NOTE: Path values are standardized regression coefficients.

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

controlledness was not ($r = .00$). Supporting our effort hypotheses, both autonomy and controlledness were correlated with intended effort, $r = .22$ and $r = .15$, respectively, both $ps < .001$, but only autonomy was correlated with mid-semester effort, $r = .19$, $p < .001$. Controlledness correlated $r = .01$, ns .

To test the hypothesis that mid-semester effort mediated the relationship between autonomy and semester attainment, we used the method recommended by Judd and Kenny (1981). The analyses reported above demonstrated a direct relationship between autonomy and semester attainment and a relationship between autonomy and mid-semester effort. To establish that the autonomy-to-attainment effect was mediated by mid-semester effort, we regressed semester attainment on autonomy and mid-semester effort simultaneously. Judd and Kenny's (1981) criteria for mediation are that the proposed mediator variable should be significantly related to the outcome variable with the predictor variable controlled, and furthermore, that the direct relationship between the predictor variable and the outcome variable should be reduced. These criteria were met: Mid-semester effort was significantly associated with semester attainment, $\beta = .49$, $p < .001$, and the autonomy to semester attainment beta coefficient was reduced from .16 to .08. Sobel's (1982) test provided further documentation for the indirect, mediational relationship, $z = 5.64$, $p < .001$. Interestingly, despite the substantial reduction in the beta coefficient, autonomy remained a significant predictor of semester attainment, $p < .01$. Figure 2 presents the full model, with path coefficients.

As in Study 1, we conducted an ancillary analysis in which the two aspects of autonomy (identified and intrinsic) were tested as unique predictors of semester attainment. A simultaneous regression indicated that both variables made a significant contribution, identified $\beta = .08$, intrinsic $\beta = .13$, both $ps < .01$, thereby replicating Study 1. We also tested the aforementioned mediational model separately for intrinsic and identified motivation and found that mid-semester effort indeed mediated the direct effects for both of these variables.

Supplementary Structural Equation Modeling Analysis

Next we employed LISREL VIII (Jöreskog & Sörbom, 1993) to assess all paths in one simultaneous model. Because most of the constructs were measured by a single indicator, we tested a structural model only. Autonomy was an exogenous variable, and mid-semester effort and attainment were downstream variables. None of the resulting three path coefficients differed from those reported in Figure 2 by more than .01. Because the model was saturated, goodness-of-fit statistics are not reported.

Discussion

Study 2 demonstrates that achievement goals pursued for more autonomous (i.e., identified and/or intrinsic) reasons were better attained over a 15-week period. Path analyses indicate that this occurred, in part, because participants were still investing effort into their autonomous goals 8 weeks into the study. In contrast, the controlledness of a goal did not predict attainment; although participants intended to try hard in their highly controlled goals, this intention apparently faded.

STUDY 3

In Study 3, we expanded on the Study 1 and Study 2 findings in several ways. First, we considered a number of potential alternative explanations for the autonomy effects observed in Studies 1 and 2. One such candidate was participants' initial expected competence regarding their goals. Because self-efficacy has been identified as an important predictor of positive emotions regarding goals (Little, 1989) and performance in goals (Bandura, 1989), it is possible that initial expected competence is a third variable that drives both high initial autonomy and high eventual attainment. Based on our assumption that autonomy affords motivational benefits above and beyond high competence expectancies, we anticipated that the autonomy-to-attainment relationship would remain significant with expected competence controlled. In addition, we assessed participants' initial sense of commitment regarding their goals, because goal commitment also has been documented as a predictor of attainment (Locke & Latham, 1990). Demonstrating that autonomy has effects beyond initial commitment would further support the notion that striving for autonomous reasons gives an individual access to deep motivational resources. Finally, we planned to examine the expected competence \times commitment interaction, or expectancy-value product (Brunstein, 1993; Sheldon & Kasser, in press; Vroom, 1964), because this construct is also commonly used as an indicator of the strength of motivation.

A second aim of Study 3 was to examine intermediate effort more comprehensively. Study 2 asked participants "How hard are you trying?" at a point 8 weeks into the semester. The momentary emphasis of this wording may not have afforded an accurate picture of the actual effort invested over the course of the entire semester. In Study 3, a month-long investigation of self-generated goals, participants retrospectively reported on the effort they had expended on each goal during each of the two 2-week periods of the study. This assessment procedure ensured that the entire temporal span of the study would be covered by the effort measures. We believed that this more comprehensive measurement might enable us to completely account for the influence of autonomy on attainment. Another advantage of this approach was that it enabled us to examine the relationship of early effort to later effort, and to examine the role of each within a more complex path model. Specifically, we anticipated that autonomy would predict early effort, which would predict later effort, which would then predict final attainment.

The most important innovation within Study 3 was our adoption of the Goal Attainment Scaling methodology (GAS; Kiresuk et al., 1994), in which ranges of potential outcomes identified at the beginning of the study are used to objectively assess goal attainment at the conclusion of the study. This was to address a potential weakness of Studies 1 and 2, namely, that participants' Likert-type ratings of attainment might be inaccurate or biased. To find convergent results using Likert-type and GAS methodologies would help alleviate these concerns and provide additional support for our substantive hypotheses. Because it seemed wise to examine more specific goals in the context of the Goal Attainment Scaling procedure, in Study 3 we chose to investigate participants' short-term "personal projects" (Little, 1989) rather than their enduring personal strivings (Emmons, 1986). An advantage of this choice is that it enabled us to examine whether the autonomy effects would generalize to a different type and level of personal goal construct.

Method

PARTICIPANTS AND OVERVIEW

Participants were 82 undergraduates (45 males, 37 females) in a psychology class at the University of Rochester, who participated in the study to fulfill a course requirement. Participants were asked to generate a set of five "personal projects for the next month" and to bring these projects to an initial interview with a research assistant. During the interview, participants generated possible outcomes for their projects with the help of the research assistant (see below) and then completed an initial project questionnaire. Approximately 2 weeks later, participants were sent another project questionnaire, which they completed and returned. Four weeks

after the initial interview, participants attended an exit interview conducted by a different research assistant, at which time they determined their level of attainment for each project and completed a final project questionnaire.

THE GOAL ATTAINMENT SCALING (GAS) PROCEDURE

The GAS procedure has been employed extensively for evaluating the effects of different community mental health and service delivery programs on individuals. It provides a common metric in which a wide variety of objectives can be compared (Kiresuk et al., 1994). In the GAS procedure, participants are interviewed at the outset of the study to identify a set of concrete possible outcomes for each goal. At the end of the study, participants' actual levels of attainment are determined through review of these concrete, prespecified outcomes. One advantage of this procedure is that it provides both participant and experimenter with a much clearer sense of what the goal means, at the beginning of the study. A second advantage is that it provides a clearer and more objective set of criteria for quantifying performance at the end of the study.

Learning the GAS technique takes considerable time and practice. During training, interviewers were taught to identify a concrete and readily scalable dimension for each of participants' five goals. For some goals this was easy; for example, "get more exercise" could be scaled in terms of the number of hours per week spent working out, or the number of visits to the gym. Other goals were more difficult to scale; for example, "control my emotions better" might be scaled in terms of the number of blowups per week that the participant experienced, whereas "increase my self-esteem" might be scaled in terms of the percentage of time a participant felt more positive than negative about herself.

For each goal, participants first identified a "most likely" outcome. They then identified a "much less than expected" outcome, a "somewhat less than expected" outcome, a "somewhat more than expected" outcome, and a "much more than expected" outcome. In an attempt to obtain a normally distributed outcome variable, interviewers were instructed to keep a 10-20-40-20-10 distribution in mind as they discussed the likelihood of various possibilities with participants. Care was taken to ensure that the possible outcomes were as concrete as possible, that there were no gaps between the five outcomes, that outcomes were nonoverlapping, and that the outcomes were unidimensional (see Kiresuk et al., 1994, for a discussion of these issues). Many participants arrived with goals that were themselves outcomes (e.g., get a B on my chemistry midterm); in these cases, they were helped to rephrase the goal in more general terms (e.g., "get a B on my midterm" would become "do well on my midterm," and "B" would be one of the possible

TABLE 2: Study 3: Goals and Possible Outcomes Generated by One Participant During the Initial Goal Attainment Scaling Interview

Possible Outcomes	Goal 1: Go to Organic Chemistry More Often	Goal 2: Spend More Time on Vector Calculus	Goal 3: Keep to Weight- Lifting Schedule	Goal 4: Be More on Time for Classes	Goal 5: Talk More to Sister on Phone
Much less than expected (-2)	6 or less classes during month	Less than 4 hours during month	0 to 4 sessions during month	Never	10 minutes or less during month
Somewhat less than expected (-1)	7 to 8 classes	4 to 6 hours	5 to 6 sessions	Occasionally	11-20 minutes
Expected level of outcome (0)	9 classes	6+ to 9 hours	7 to 9 sessions	Sometimes	21 to 40 minutes
Somewhat more than expected (+1)	10 to 11 classes	9+ to 10 hours	10 sessions	Most of the time	41 to 60 minutes
Much more than expected (+2)	12 or more classes	More than 10 hours	11 or more sessions	Always	61 or more minutes

outcomes). Table 2 provides an illustration of the goals and scalings for one participant.⁴

During the GAS exit interview, participants and interviewers examined the potential outcomes specified during the initial interview, and together determined the level of attainment for each goal (henceforth referred to as GAS attainment). Possible scores were -2 (*much less than expected*), -1 (*less than expected*), 0 (*most likely*), +1 (*more than expected*), and +2 (*much more than expected*). The observed frequencies for these five categories were 14%, 23%, 26%, 24%, and 13%, respectively, for the projects in this sample. Thus, it appears that we were largely successful in our attempt to generate a normally distributed outcome variable.⁵

GOAL QUESTIONNAIRES

During the first session, participants completed a questionnaire regarding their five projects. They rated their initial commitment to each of their goals, on a 1 (*not at all committed*) to 7 (*extremely committed*) scale; their expected competence for each goal (i.e., "How well do you expect to do on this goal?"), using a 1 (*not well at all*) to 7 (*very well*) scale; and their intended effort for each goal, using a 1 (*not hard at all*) to 7 (*very hard*) scale. In addition, they rated their reasons (extrinsic, introjected, identified, and intrinsic) for pursuing each of their goals, following the same instructions used in the previous two studies.

Two weeks after the initial session, participants received and returned a questionnaire via intracampus mail. In this questionnaire, they rated how much effort they had invested into each project since the study began, using a 1 (*none*) to 7 (*very much*) scale (early effort).

During the final session (4 weeks after the initial session), participants completed a questionnaire in which they rated how much effort they had put into each goal during the past 2 weeks, using the same scale as above (later effort). Participants then rated the total progress they made on each goal during the month covered by the study, using a 1 (*not much at all*) to 7 (*very much*) scale (rated attainment). We collected this latter data to examine the degree of convergence between the GAS measure of attainment and a conventional Likert-

type measure (the type of measure employed in Studies 1 and 2). We followed the same within-participant standardization procedure employed in Studies 1 and 2 for the Likert-type data, and again computed summary autonomy and controlledness variables. The final pool of projects was 410 (82 participants \times 5 projects per participant).

Results

PRIMARY ANALYSES

Autonomy and controlledness were not significantly correlated, although the association was again in the negative direction, $r = -.08$. The correlation between GAS attainment and rated attainment was .71, $p < .001$, indicating strong convergence between the two measures. Table 3 presents the correlations between autonomy and controlledness and both attainment measures. Conceptually replicating Studies 1 and 2, autonomy was positively associated with both rated attainment and GAS attainment, whereas controlledness was unrelated to either of the attainment variables.

Table 4 presents the correlations of autonomy and controlledness with the three effort variables. Replicating and extending Study 2, both motivational variables were positively associated with intended effort, but only autonomy was associated with early effort and later effort. In other words, participants again showed greater sustained effort in their autonomous goals than in their controlled goals. Table 4 also presents the correlations of autonomy and controlledness with initial commitment and expected competence. All four correlations were significant, although the associations involving autonomy were stronger than those for controlledness. The significant results involving controlledness further support the contention that controlledness is a form of motivation, associated with positive initial intentions and expectancies (Deci & Ryan, 1985). Again, however, controlledness does not seem to provide enduring motivation.

Next, we tested the hypothesized mediational model in which autonomy leads to early effort, which leads to later effort, which leads to attainment. Prior to testing the complete model, we conducted a number of prepara-

TABLE 3: Study 3: Correlations Between Autonomy and Controlledness and the Attainment Variables

	<i>Rated Attainment</i>	<i>Attainment on Goal Attainment Scale</i>
Autonomy	.27**	.21**
Controlledness	.06	.08

** $p < .01$.

tory analyses. First, we verified that early effort and later effort were significantly associated with GAS attainment, $r = .26$, $p < .001$, and $r = .47$, $p < .001$, respectively. Then, we conducted a regression analysis to examine the simultaneous effects of autonomy and early effort on later effort. In this analysis, early effort was a significant predictor of later effort, $\beta = .34$, $p < .001$, and autonomy maintained its significant direct effect on later effort, $\beta = .11$, $p < .05$. We then tested the full model by regressing GAS attainment on early effort, later effort, and autonomy. In this analysis, the beta coefficient for later effort was significant, $\beta = .42$, $p < .001$, and the beta coefficient for autonomy was substantially reduced, from .21 to .09. Sobel's (1982) test supported the existence of an indirect, mediational path from autonomy to GAS attainment via effort, $z = 4.75$, $p < .001$.⁶ As in Study 2, autonomy maintained a direct effect on GAS attainment in the mediational analysis, $p < .05$. Figure 3 presents the resulting path coefficients. Notably, the same direct and mediated relationships emerged when the rated attainment measure, rather than the GAS attainment measure, was utilized as the outcome variable.⁷ In other words, the hypothesized causal model was supported using both the GAS and Likert-type measures of goal attainment.

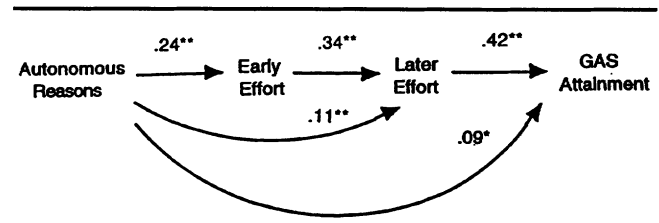
As in the first two studies, we next conducted an ancillary analysis to examine the independent effects of the identified and intrinsic facets of autonomy on GAS attainment and rated attainment, using the same simultaneous regression strategy. Conceptually replicating Studies 1 and 2, identified motivation made a significant contribution in predicting both GAS attainment, $\beta = .23$, $p < .001$, and rated attainment, $\beta = .32$, $p < .001$. Intrinsic motivation significantly predicted rated attainment, $\beta = .10$, $p < .05$, and was a marginally significant predictor of GAS attainment, $\beta = .09$, $p < .07$.

ANALYSES INVOLVING ALTERNATIVE MOTIVATIONAL CONSTRUCTS

We then examined whether the autonomy effects observed were reducible to those of expected competence, initial commitment, or their interaction (the expectancy-value product). To do this, we conducted a regression analysis using GAS attainment as the dependent measure and autonomy, expected competence, in-

TABLE 4: Study 3: Correlations Between Autonomy and Controlledness and the Effort Variables, Initial Commitment, and Expected Competence

	<i>Intended Effort</i>	<i>Early Effort</i>	<i>Later Effort</i>	<i>Initial Commitment</i>	<i>Expected Competence</i>
Autonomy	.30**	.24**	.24**	.29**	.23**
Controlledness	.12*	.05	.06	.10*	.11*

* $p < .05$. ** $p < .01$.**Figure 3 The mediational model for the autonomy to Goal Attainment Scaling (GAS) attainment effect, Study 3.**

NOTE: Path values are standardized regression coefficients.

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

initial commitment, and the Expected Competence \times Initial Commitment interaction as simultaneous predictor variables. The autonomy effect remained significant in this analysis, $\beta = .16$, $p < .001$.⁸ We then included the two effort variables in the equation to test the robustness of the model; the direct and mediated effects reported above were unchanged in these analyses. Next, these analyses were repeated, using the rated attainment variable as the dependent measure. The autonomy effect remained significant when expected competence, initial commitment, and their interaction were controlled, $\beta = .18$, $p < .001$, and the path results involving effort were unchanged. In summary, the positive effects of autonomy were independent of the effects of several alternative measures of initial motivation.

SUPPLEMENTARY STRUCTURAL EQUATION ANALYSIS

Finally, we again employed LISREL VIII (Jöreskog & Sörbom, 1993) to examine all paths simultaneously. We also evaluated the overall goodness of fit of the structural model. Included in the model were autonomy, early effort, later effort, and GAS attainment. The model provided a good fit, $n = 410$, χ^2 with 1 $df = .96$, $p > .05$, goodness-of-fit/adjusted goodness-of-fit = 1.00/.99, root mean square residual = .012. The path coefficients were essentially equivalent to those reported in Figure 3.

GENERAL DISCUSSION

The present studies clearly demonstrate that autonomous motivation for personal goals positively predicts attainment, whereas controlled motivation does not.

This pair of findings emerged consistently across three different samples, across concurrent and prospective methodologies, across Likert-type and GAS measures of attainment, and across short-term and longer-term personal goals (personal projects and personal strivings, respectively). In addition, mediational analyses from the two prospective studies revealed that autonomy promotes attainment by engendering sustained effort. Finally, in Study 3, the direct and mediational results involving autonomy remained significant with expected competence, initial commitment, and Expected Competence \times Initial Commitment controlled. This indicates that the positive effects of autonomy were not simply reducible to the influence of any of these alternative indicators of motivation.

Why do autonomous goals receive sustained effort, or, stated differently, why are autonomous goals more continuously energized? Notably, both the intrinsic and identified facets of autonomy independently predicted effort and attainment, indicating that both provide distinctive motivational benefits. For goals pursued for intrinsic reasons, these benefits are obvious; intrinsically motivated behavior is by definition interesting and enjoyable (Deci & Ryan, 1985), and is thus likely to be self-energizing or autotelic (Omodei & Wearing, 1990). That is, the positive emotions and experiences afforded by the very process of striving for intrinsic goals may serve to reinforce and maintain such goals. Goals, however, are not all fun and games; they usually entail work and often require the overcoming of obstacles, competing temptations, or just plain inertia (Gollwitzer, 1990; Kuhl, 1986). This may be where the other facet of autonomy, identified motivation, is helpful. Identified motivation occurs when a goal concords with one's enduring values and beliefs. Because of such value congruence (Little, 1989; Lydon & Zanna, 1990), an identified goal may remain personally salient, and thus continue to receive effort, even when it is not enjoyable (related conceptualizations include Gollwitzer's [1987] proposition that people are more persistent in their self-defining goals, and Nuttin's [1987] assertion that motivation is enhanced when intentions are personalized and thus integrated into the self-concept). Rather than the interest or enjoyment evoked by intrinsically motivated action, identified action may evoke different but perhaps equally reinforcing positive emotions and experiences, such as those involving pride, a sense of virtue, or a sense of symbolic self-completion (Gollwitzer, 1987).

In contrast, why was controlled motivation not predictive of sustained effort? Notably, in Studies 2 and 3 controlledness was found to be positively associated with intended effort. This indicates that highly controlled motivation may help with the process of forming a preliminary sense of commitment and determination re-

garding a goal (Gollwitzer, 1996). The fact that controlledness did not predict actual effort 2 and 4 weeks later, however, indicates that people have difficulty translating their controlled intentions into action. In terms of Gollwitzer's model of action phases (1990, 1996), it appears that controlledness provides strong motivation at the decisional phase, but that this motivation fades during the pre-actional (in which planning occurs) or actional (in which plans are carried out) phases. Although our data do not speak directly to this issue, we suggest that problems with such goals are most likely to arise during the actional phase. Controlled goals, by definition, are pursued without a full sense of ownership (Ryan, 1995). Thus, when frustrations or setbacks are encountered, such goals may have to contend against the appeal of competing action tendencies, or against the anticipated relief the individual might feel were he or she to simply disengage from the goal (Carver & Scheier, 1981). Because such task-irrelevant temptations are more likely to intrude upon awareness while controlled goals are being enacted, such goals may be harder to protect and maintain (Kuhl & Fuhrman, *in press*) than autonomous goals. Future research is needed to directly test the proposition that controlled goals lose strength in the actional phase (Gollwitzer, 1996), and that this occurs because controlled motives are more easily usurped when frustration or other negative emotions are experienced.

Given the self-regulatory difficulties controlled goals may engender, why do people adopt such goals? We suggest that such goals are selected when the individual fails to create an accurate assessment of his or her deeper needs, values, and interests. That is, the "supervisory subsystem" (Kuhl & Goshke, *in press*) that is active at a given moment may not have access to the holistic self feelings (Kuhl & Fuhrman, *in press*) or organismic valuing process (Rogers, 1951) that would correctly represent the individual's deeper condition. Lacking such information, the person might select a goal based on momentary enticements or lingering introjects, rather than on the needs of the self as a whole. Thus, although the individual may have every intention of trying hard at a controlled goal at the decisional phase, this intention may fade because the goal does not represent enduring, self-based interests (see Figure 1).

We believe the current results and conceptualization, which are rooted in self-determination theory (Deci & Ryan, 1985, 1991), nicely complement Kuhl and Fuhrman's (*in press*) theory of volition. Kuhl and Fuhrman's model thoroughly addresses the processes by which goals are maintained or dissipated but says little about the motives that fuel goal-oriented behavior. We suggest that a comprehensive conceptualization of volition must consider the dynamic processes by which goals are in-

spired and energized (Elliot & Sheldon, 1997), as well as the cognitive processes by which goals are protected. Consideration of energizational issues may afford a clearer understanding of why some goals make the transition from intention to action (Gollwitzer, 1996), whereas others do not.

Although much of its effect was mediated through interim effort, autonomy maintained a significant direct path to attainment in the two prospective studies. This suggests that autonomy has other positive effects besides that of engendering greater effort. We suspect that these effects are related to the greater creativity, flexibility, and adaptiveness of cognitive activity that typically occurs when action is autonomous (Deci & Ryan, 1985, 1991). That is, besides fueling a more sustained quantity of effort, autonomy may also provide for higher-quality effort. Thus, another task for future research will be to assess the flexibility and appropriateness of the plans, strategies, and actions taken toward personal goals, as a function of the autonomy and/or controlledness of those goals.

Finally, it is also worth commenting on the Goal Attainment Scaling methodology employed in Study 3. Our purposes in using this technique were to confirm the validity of conventional Likert-type ratings of attainment and to obtain more objective and convincing evidence for our substantive hypotheses. These purposes were achieved. It should be acknowledged that the GAS methodology is not completely objective, because participants themselves are largely responsible for indicating, at the end of the study, which outcomes have been attained. Despite this, we believe that the methodology may offer the most objective means available for assessing performance in open-ended, self-generated personal goals, given the remarkable diversity and frequent abstraction of these self-regulatory forms.

Because of the substantial time and training it requires, however, investigators may be reticent to use the GAS methodology in their research. Indeed, it appears they may not need to, given the convergence in the results employing the GAS and the Likert-type ratings of attainment. Specifically, the Study 3 results involving the GAS measure were of the same pattern and magnitude as the results in Studies 1 and 2, there was a high correlation between the GAS attainment variable and participants' Likert-type ratings of attainment in Study 3, and results involving the two measures were essentially identical. We believe that the GAS method can be most useful when investigators wish to assess attainment using multiple convergent measurement strategies, and/or when they want participants to understand as clearly as possible what their goals really entail. The latter suggests an interesting hypothesis: that participants who undergo the GAS procedure might better attain their goals than

participants who do not, because the procedure makes the goal representations more concrete and specific, easier to regulate, and thus more attainable (Locke & Latham, 1990). In other words, the GAS procedure itself might be used as an independent variable in subsequent research.

Several limitations of the current study are noteworthy. First, effects tended to be small, with correlations in the .20 range. Although it is likely that some attenuation of effects occurred because constructs were measured with single items, it is also likely that autonomy is just one of many influences on goal attainment. Alternative influences might include goal-relevant behavioral skills (Sheldon & Kasser, *in press*), strategies (Cantor & Langston, 1989), the level of abstraction (Emmons, 1992) of goals, whether goals are framed in approach or avoidance language (Elliot & Sheldon, 1997), and the extent to which a person's social context supports goals (Ruehlman & Wolchik, 1988). Further research is necessary to simultaneously consider these alternative influences on attainment. Another limitation concerns direction of causality. Although structural equation and mediational analyses indicated that our data were consistent with our causal hypotheses, experimental methodologies are of course required to demonstrate causality unambiguously.

We conclude by repeating our premise that "not all personal goals are personal." The current results indicate that people are most likely to be effective when they pursue goals that either engage their natural interests or express their authentic personal values. Although Locke and Latham (1990) have argued that people usually are quite willing to accept goals proffered by supervisors and authority figures, our results indicate that goals may not be fully accepted even when they are completely self-generated. In sum, goal researchers and proponents of goal-setting programs may be well advised to give greater attention to the issue of the congruence of conscious goals with organismic needs (Kuhl & Fuhrman, *in press*; Sheldon & Kasser, 1995, *in press*).

NOTES

1. In contemporary psychology, the self is typically conceived of as a system or structure of self-concepts (Harter, 1983; Markus & Wurf, 1987), rather than as an experiencing agent or center of activity. Stated differently, most research on the self focuses on the various "me's" or objects of self-awareness, rather than the "I" or subject of awareness (Mead, 1934), perhaps because the "I" is more difficult to conceptualize and measure (Kihlstrom & Klein, 1994). This article is concerned with the latter definition of self, and we believe the "perceived locus of causality" methodology employed herein appropriately operationalizes this subjective or agentic concept of self. Goals undertaken for more intrinsic or identified (*i.e.*, autonomous) reasons, we assume, are goals more in harmony with the "I."

2. The data set examined in Study 1 was used by Sheldon and Kasser (1995, Study 2) to address a different set of research questions. Similarly, a portion of the data examined in Study 2 were employed by Elliot

and Sheldon (1997) to examine conceptually distinct issues. The Study 3 data were collected specifically for the present research.

3. Some participants gave the same rating for all 10 strivings on some measures. Rather than eliminating such strivings from consideration, we assumed that a participant might legitimately feel the same way toward all of his or her 10 strivings on a particular dimension. Thus, we assigned a value of zero (the sample mean) to each of these participants' 10 strivings on that dimension. We note that none of the results presented in this article differed when analyses were conducted using only those individuals who had variability on every goal dimension.

4. Readers are invited to contact Ken Sheldon for further information regarding the nuances of the GAS procedure implemented.

5. Although the GAS procedure might be viewed as providing only an ordinal scale, Cardillo and Smith (1994) argue that goal attainment ratings can be treated as interval-level data. Given this and the symmetric distribution of GAS attainment scores observed, we chose to use Pearson product-moment correlation and linear multiple regression procedures to analyze the GAS attainment data.

6. Prior to conducting this test, we averaged the early effort and later effort variables. This was done to derive an estimate of the total amount of effort invested in each goal during the period of the study.

7. Only one difference emerged between the GAS attainment and the rated attainment models. In the GAS model, the early effort to GAS attainment path no longer attained significance, $\beta = .05$, $p > .30$, whereas in the rated attainment model, this path remained significant, $\beta = .11$, $p < .05$.

8. Expected Competence also was significant in both analyses; neither Initial Commitment nor the Expected Competence \times Initial Commitment interaction attained significance.

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