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Goal Striving, Need Satisfaction, and Longitudinal Well-Being: The Self-Concordance Model

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An integrative model of the conative process, which has important ramifications for psychological need satisfaction and hence for individuals' well-being, is presented. The self-concordance of goals (i.e., their consistency with the person's developing interests and core values) plays a dual role in the model. First, those pursuing self-concordant goals put more sustained effort into achieving those goals and thus are more likely to attain them. Second, those who attain self-concordant goals reap greater well-being benefits from their attainment. Attainment-to-well-being effects are mediated by need satisfaction, i.e., daily activity-based experiences of autonomy, competence, and relatedness that accumulate during the period of striving. The model is shown to provide a satisfactory fit to 3 longitudinal data sets and to be independent of the effects of self-efficacy, implementation intentions, avoidance framing, and life skills.

It is common for individuals to set goals but fail to follow through with them. It is equally common for individuals to attain their goals but to be no happier than before. Both of these outcomes, we suggest, involve failures in the *conative process* (Emmons, 1989; Little, 1993): the motivational sequence that begins at goal inception, continues through the period in which goals are pursued and either attained or abandoned, and has important ramifications for individuals' happiness and further motivation.

In this article we present an integrated model of the conative process. The model organizes a number of related research findings (Reis, Sheldon, Gable, Roscoe, & Ryan, in press; Sheldon & Elliot, 1998; Sheldon & Kasser, 1995; Sheldon & Kasser, 1998; Sheldon, Ryan, & Reis, 1996; see also Elliot & Sheldon, 1997; Elliot & Sheldon, 1998; Elliot, Sheldon, & Church, 1997), showing that each previous article has provided information on one piece of, or subset of paths within, the proposed overarching model. The model pays particular attention to the *self-concordance* of individuals' goal-systems, that is, the degree to which stated goals express enduring interests and values. Three longitudinal studies are presented. Study 1 replicates and extends earlier findings, Study 2 provides support for important paths in the model not yet examined empirically, and Study 3 tests the entire model simultaneously while ruling out other important motivational variables as causes of the self-concordance effects.

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The Self-Concordance Model

The human capacity to set and pursue personal agendas is sometimes referred to as *conation* (Chaplin, 1985; Hershberger, 1988). Conative processes involve the proactive efforts of individuals to attain outcomes and thus meet their needs (Emmons, 1989; Little, 1993) and can be conceptually distinguished from cognitive and affective processes (Kanfer, 1989). The importance of this complex process for individuals' well-being and level of adjustment and the need to understand the process are readily apparent. Thus, the self-concordance model addresses the entire temporal sequence leading from goal adoption to goal attainment, and it also models the effects of attainment on need satisfaction and well-being. In validating the model, we focus on individuals' self-generated personal goals, because idiographic goal assessment offers an excellent, ecologically valid tool for studying conative processes (Little, 1993). We assume that all motivated individuals pursue goals, although individuals vary in the degree to which they are explicitly aware of those goals in daily life (Emmons, 1986).

Figure 1 presents the self-concordance model in its entirety. The model can be divided in parts: factors promoting goal-striving and attainment, and factors connecting goal attainment to changes in well-being. In accordance with the temporal and left-to-right direction of the model, we first focus on the goal-striving half of the sequence.

The Inception-to-Attainment Process

The Self-Concordance Model begins when people select and commit to a set of goals. Thus, the model does not address the *decision phase* identified in Gollwitzer's (1990) action phases model of goal striving, nor the accompanying *deliberative mindset* in which people ponder which goals to select. Instead, we begin at the point of goal selection, with the assumption that people's deliberations may have been flawed. That is, some individuals may have selected goals that do not represent the values and interests of their "self" well.

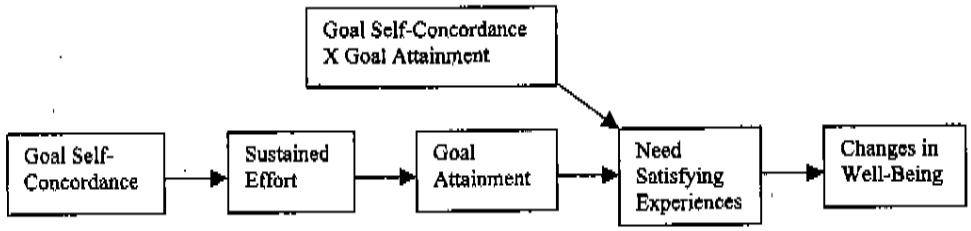

Figure 1. The self-concordance model.

Although the word *self* is used in many ways in contemporary psychology, we use it to refer to the more-or-less integrated center of agentic activity (Blasi, 1988; Deci & Ryan, 1991; Loevinger, 1976; Rogers, 1961). This subject-oriented concept of self has its historical roots in the "I" of Mead and James, the "proprium" of Allport, or the "transcendent function" of Jung, rather than in the object-oriented "Me" of Mead, the looking-glass self of Cooley, or the multifaceted self-concept studied by many contemporary social psychologists (see Deci & Ryan, 1991, for an elaboration). In this view the phenomenal self, an emergent and more-or-less-stable mental construction, has the potential to take control of the bio-cognitive machinery in such a way as to maximize organismic need satisfaction. This potential may not be realized, however, if individuals select goals that are not representative of the actual interests and values of their evolving self-system (Csikszentmihalyi, 1993). This may occur to the extent that during deliberation, people are out of touch with the holistic self-feelings (Kuhl, Goschke, & Kazen-Saad, 1994) or global system representations (Baars & McGovern, 1996) necessary to make fully informed choices. Lacking this information, they may instead choose goals dictated by others, by transient impulses or incentives, or by introjected "shoulds" or "oughts."

Figure 2 provides a diagrammatic representation of the notion that a person's goals may not represent that person's authentic interests and values (Sheldon & Elliot, 1998). This figure, based on the concepts of self-determination theory (Deci & Ryan, 1985), defines goals as self-concordant when they are pursued because of either intrinsic or identified motivation. In either case (i.e., whether a person strives because of strong interest, Sansone & Harackiewicz, 1996, or because of self-identified personal convictions, Brunstein & Gollwitzer, 1996), goals are said to be integrated with the self. Phenomenologically, this is manifested in the fact that goals pursued for such reasons tend to have an internal *perceived locus of causality* (deCharms, 1968); that is, they are felt to emanate directly from self-choices. Because the developing interests and deep-seated values that such goals express are relatively

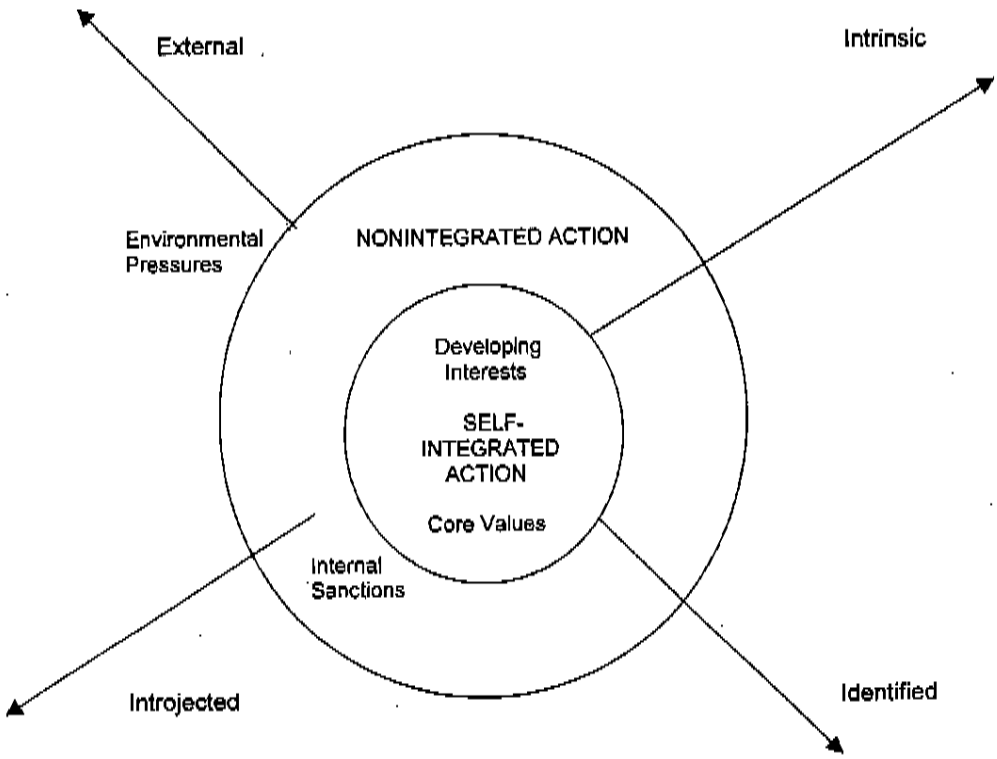

Figure 2. A diagrammatic representation of self-integrated versus nonintegrated action.

enduring facets of personality, self-concordant goals are likely to receive sustained effort over time.

In contrast, goals pursued only because of external pushes, or because of introjected sanctions characterized by anxiety and guilt, are said to emerge from a nonintegrated region of the person. Phenomenologically, the felt locus of causality for such behavior tends to be outside of the sense of self (Ryan & Connell, 1989). Another term for many such goals is *controlledness* (Deci & Ryan, 1991), in that the person pursuing them may feel himself or herself to be in the grip of forces to which he or she does not give full assent. Because external and introjected goals tend to be less representative of enduring interests and values, the volitional strength (Gollwitzer, 1990) behind them is likely to fade when obstacles are encountered.

Notable, self-concordant goals do not necessarily feel "good" nor are they necessarily self-gratifying. One might willingly pursue an objective from which one derives no experiential enjoyment if the unpleasant task is guided by mature, self-disciplined valuation. For example, the goal "check frequently to make sure my baby's diaper is clean" is not pleasant for most parents, but nevertheless it may be undertaken willingly because the parent identifies with the value of health and good hygiene. Thus, in our model the key distinction is not whether the goal is pleasurable but rather whether the person feels ownership as he or she pursues the goal.

Supporting this general set of assumptions, we (Sheldon & Elliot, 1998) found, in a series of within-subject studies focusing on single goals, that "not all personal goals are personal." Although the strength of controlled motivation for a goal predicted initial effort intentions regarding that goal, controlledness did not predict actual effort 2 and 4 weeks later and thus had no effect on eventual goal attainment. In contrast, the autonomy or self-concordance of goals was associated not only with initial effort intentions but also with actual effort 2 and 4 weeks later and thus with the level of goal attainment observed at the end of the study. This mediational model was tested in three studies using multiple measures of personal goals, effort, and attainment. These results are represented in Figure 1 by paths loading from goal self-concordance to sustained effort, and from sustained effort to goal attainment.

The Attainment-to-Well-Being Process

Achieving goals feels good (Emmons, 1996). In other words, there are natural satisfactions to be found in the process of exercising one's competencies to move toward desired outcomes. For example, Carver and Scheier (1990) proposed that a metamonitoring system tracks the rate of progress towards goals, outputting positive affect when progress exceeds the expected rate or standard of the system. Brunstein (1993) found support for the proposition that longitudinal goal attainment leads to changed well-being, as did Sheldon and Kasser (1998), Elliot and Sheldon (1997), and Elliot, Sheldon, and Church (1997).

However, Sheldon and Kasser (1998) reported a potentially significant moderator of this effect. Their results suggested that "not all progress is beneficial"; participants in their study whose goals were not self-integrated experienced little change in well-being, no matter how well they progressed in achieving their goals. Sheldon and Kasser (1998) assumed that this occurred because nonconcordant goals, even when attained, do not satisfy important psychological needs. In contrast, participants who pursued goals for self-concordant reasons benefited substantially from their attainment, as evidenced by their enhanced feelings of well-being at the end of the semester. Presumably, this is because their needs were well met. Finally, participants who failed to attain self-concordant goals experienced a decrement in well-being. Sheldon and Kasser suggested that this occurred because goal setbacks are particularly frustrating or disappointing when the goals represent efforts toward growth and self-expansion.

Notably, Sheldon and Kasser (1998) did not measure need satisfaction directly in their research. However, the self-concordance model (see Figure 1) does include a need-satisfaction construct. That is, in this article we make explicit assumptions about psychological needs and their functional role within the psychic economy. Because the concept of psychological need has had a long and checkered history in psychology, below we focus on the issue of how to best conceive of and measure psychological need satisfaction.

One way of conceiving of psychological needs is as acquired individual differences in social motives such as intimacy, achievement, and power (McClelland, 1985). Such motives orient individuals toward particular classes of behaviors or incentives and are said to energize behavior. However, in this research we conceive of needs as qualities of experience universally required by human beings in order to thrive. According to self-determination theory (Deci & Ryan, 1985, 1991), humans have three basic psychological needs: competence, autonomy, and relatedness. Competence refers to the feeling that one is effective and able in one's behavior, rather than ineffectual and inept (White, 1959); autonomy refers to the feeling that one's behavior is self-chosen and meaningful, as opposed to coerced and pressured (deCharms, 1968); and relatedness refers to the feeling that one is connected to or in harmony with important others, rather than alienated or marginalized (Baumeister & Leary, 1995). Deci and Ryan (1991) argued that this set provides a relatively parsimonious and comprehensive description of important psychological needs and further postulated that each type of experience in this set provides distinct "psychological nutriments" (Ryan, 1995, p. 410) that sustain well-being and continued motivation. To put the issue into a broader context, Sheldon and Ryan (1999) presented an evolutionary argument for the existence of these three needs, suggesting that those who need and thus pursue these three qualities of experience are afforded distinct adaptive and selective advantages.

Sheldon et al. (1996) and Reis et al. (in press) operationalized this concept of need satisfaction by assessing the degree to which these three different qualities of experience accompanied free-listed, time-consuming daily activities. Of course, people pursue a wide variety of different activities and behaviors. Despite this diversity, these investigators assumed that experiences of competence, autonomy, and relatedness are important underlying bases upon which any activity functions to enhance well-being. Supporting this assumption, Sheldon et al. (1996) and Reis et al. (in press) showed that all three qualities of experience help "make for a good day," i.e., all three independently predict daily positive mood, vitality, and physical health.

The self-concordance model extends Sheldon et al.'s and Reis et al.'s concurrent results by proposing that the accumulation of these three types of experiences over time leads to an increase in

longitudinal well-being. In making this proposal, we assume that individuals assess their current well-being at least in part with reference to experiences that they can recall from the relevant past (Kahneman, 1997). If they have had a relatively large number of affectively positive experiences, then they will tend to give higher ratings of well-being than before (Diener, Sandvik, & Pavot, 1990). We further assume that experiences characterized by feelings of task competence, self-agency, and interpersonal relatedness are exactly the sorts of positive experiences on which people base their judgments of current well-being, again because humans have innate needs for these three sorts of experiences (Ryan, Kuhl, & Deci, 1997).

Thus far in this section we have discussed the relationship of goal attainment to changes in well-being, the moderating role self-concordance plays in that relationship, and the relationship of need satisfaction to changes in well-being. Finally, we discuss the linkage between goal attainment, particularly self-concordant goal attainment, and need satisfaction (see Figure 1). This linkage represents the untested conceptual assumptions of Sheldon and Kasser (1998) and bridges the aforementioned personal-goal and daily need-satisfaction programs of research to create an integrated model of longitudinal well-being. To complete the bridge, we must consider concretely why self-concordant goal attainment should be associated with stronger activity-based experiences of competence, autonomy, and relatedness.

In fact, the linkage between goals and daily experience is a natural one, given that goals influence so much of our everyday behavior (Cantor & Blanton, 1996). First, as noted above, individuals with more self-concordant goals are expected to try harder and thus do better at achieving their goals, on average. Accordingly, such individuals are likely to feel more effective and competent in many of the daily activities that they engage in during the period of study. Along the way, those who pursue self-concordant goals should spend more time engaged in autonomous (i.e., freely chosen and meaningful) behavior. This is because many of their daily activities will effectively express their evolving interests and personal values. Finally, those pursuing goals for self-concordant reasons should tend to have stronger feelings of relatedness to others. Because many self-concordant goals involve helping others, the community, or both (Carver & Baird, 1998; Sheldon & Kasser, 1995), those who pursue and achieve such goals should regularly feel satisfying connections with others. Also, self-concordant persons should be better able to attain their goals without alienating others, given that they are typically more empathic (Sheldon & Kasser, 1995) and better able to communicate with others in a nondefensive and open manner (Hodgins, Koestner, & Duncan, 1996).[1]

In conclusion, it is worth emphasizing the two important roles that self-concordance plays in the proposed model. First, it enables individuals to put sustained effort into achieving their goals, helping them to better attain those goals. Second, it makes it more likely that goals, when attained, will afford the experiences of autonomy, competence, and relatedness that are essential to enhanced well-being. It is also worth noting the parallels between the current self-concordance concept and the concept of congruence offered by Rogers (1961). Rogers noted that congruence occurs in part when an individual's self-concept is aligned with who he or she is in reality, that is, when self-concept and organismic condition are in agreement with each other. We believe that personal goals are one type of self-concept, and a very important type, given that they energize and direct so much of people's behavior. To the extent that goal self-concepts do not represent or are not concordant with the true self (Sheldon, Ryan, Rawsthorne, & Ilardi, 1997), people may not be able to meet their psychological needs.

Study 1

Study 1 had three purposes. First, we sought to replicate our longitudinal finding that goal self-concordance predicts goal attainment, mediated by sustained effort (Sheldon & Elliot, 1998). However we also sought to extend those results by demonstrating the effect at the aggregate or person level of analysis rather than the single-goal level of analysis focused on in that article. Second, we sought to replicate Sheldon and Kasser's (1998) finding that time-sampled goal attainment predicts changes in well-being and their moderator variable finding that the effect of attainment on well-being depends on the self-concordance of the goals pursued. However, we extended their results by showing that they apply to broader, longer term goals (i.e., personal strivings; Emmons, 1986) as well as to the short-term goals studied by Sheldon and Kasser (i.e., personal projects; Little, 1993). Third, we sought to put both halves of the self-concordance model together for the first time, showing that the process leading from inception to effort to attainment to changes in well-being (excluding the need-satisfaction variable, which was unmeasured in Study 1) can be modeled simultaneously.

Method

Participants and Procedure

Participants were 169 students in a psychology class at the University of Rochester, 75 men and 94 women, who took part in the semester-long study in exchange for extra class credit.[2] Early in the semester participants attended a large group questionnaire session in which they were asked to list 10 personal goals that they would be pursuing during the semester. Soon after, participants came to an individual lab session where they completed measures of their well-being during the past month and rated the reasons that they would be pursuing each goal. Three times during the semester, approximately once every month, participants attended lab sessions and rated how much effort they were currently putting into each goal, and they also rated their progress in each goal.

[1] Of course, not all attained personal goals will contribute equally in providing competence, autonomy, and relatedness experiences. For example, progressing toward grade-related goals is more likely to provide competence experiences, and progressing toward interpersonal goals is more likely to provide relatedness experiences. Although these differential effects may be important, in the current studies we focus on aggregated person variables representing whole goal systems rather than on the effects of different kinds of goals.

[2] The data set used in Study 1 was also used by Elliot et al. (1997, Study 1). Although Elliot et al. used the goal-attainment variable also used in the current study, they examined different predictors and outcomes of attainment. We used the data set examined in Study 2 in a previous study (Elliot & Sheldon, 1998, Study 3), but the variables used in that study are not used in the current article. The data set examined in Study 3 of the current article has not been used elsewhere.

Measures

Personal goals. To assess personal goals, we used the *personal striving* construct (Emmons, 1986). Specifically, we asked participants to list the things that they would be "typically or characteristically trying to do in daily life" during the upcoming semester, following Emmon's (1986) procedures and instructions. Examples of participant responses include "do as well as I can academically," "avoid conflicts with others," and "keep myself in good physical condition."

To assess the self-concordance of this set of goals, we asked participants to rate their reasons for pursuing each striving in terms of each of the four reasons depicted in Figure 2: external, introjected, identified, and intrinsic. These four reasons sample a continuum of *perceived locus of causality* for behavior (Ryan & Connell, 1989), ranging from noninternalized to completely internalized. The external reason was "you pursue this striving because somebody else wants you to or because the situation demands it." The introjected reason was "you pursue this striving because you would feel ashamed, guilty, or anxious if you didn't." The identified reason was "you pursue this striving because you really believe it's an important goal to have." The intrinsic reason was "you pursue this striving because of the fun and enjoyment that it provides you." A scale ranging from 1 (*not at all for this reason*) to 9 (*completely for this reason*) was used. For each participant, a *self-concordance* variable was formed by summing the identified and intrinsic scores and subtracting the introjected and external scores ($M = 3.89$, $SD = 3.47$, $\alpha = .80$; see Williams, Grow, Freedman, Ryan, & Deci, 1996).

During each of the three midsemester assessments we asked participants, "How hard are you trying in pursuing this striving?" They made these ratings using a scale ranging from 1 (*not at all hard*) to 9 (*very hard*). A *semester effort* variable was formed by averaging these 30 ratings ($M = 5.72$, $SD = 1.33$, $\alpha = .93$). Also during the three midsemester assessments, we asked participants, for each striving, "How well are you doing?" They made these ratings using a scale ranging from 1 (*not well at all*) to 9 (*very well*). A *semester attainment* variable was formed by averaging these 30 ratings ($M = 5.34$, $SD = 1.18$, $\alpha = .90$).

Well-being. In keeping with past research, we focused on positive mood, negative mood, and life satisfaction, which are considered to be three primary components of well-being (Diener, 1984; Diener, 1994). Specifically, we used the well-validated 20-item Positive and Negative Affect Schedule (PANAS; Watson, Tellegen, & Clark, 1988) and the 5-item Satisfaction With Life Scale (SWLS; Diener, Emmons, Larsen, & Griffin, 1985). The PANAS contains mood adjectives such as "scared," "hostile," "inspired," and "proud," and the SWLS contains statements such as "The conditions of my life have been excellent."

At the beginning of the semester (Time 1 [T1]) the PANAS was administered with the instructions "How much have you felt each of these moods during the past month?" Participants rated each adjective using a scale ranging from 1 (*not at all*) to 7 (*very frequently*). We assume that this wording yields variables midway between state and trait that are not too susceptible to momentary influences but might be expected to change over the course of a semester (Sheldon & Kasser, 1998). The SWLS was administered with similar instructions, using a scale ranging from 1 (*no agreement*) to 5 (*very much agreement*). The PANAS and SWLS were administered again at the end of the semester (3 months later; Time 2 [T2]), again with instructions to consider their moods during the past month. To reduce the well-being data, we created a set of aggregate well-being measures (Brunstein, 1993; Elliot et al., 1997). A T1 subjective well-being (SWB) variable was created by standardizing the T1 positive affect, negative affect, and life-satisfaction scores, then subtracting negative affect from the sum of positive affect and life satisfaction. We followed the same procedure to create an aggregate T2 SWB variable. Supporting the unidimensionality of these composites, principal components analyses of the T1 and T2 SWB variables revealed that in each case, a single primary factor accounted for at least 63% of the variance, consistent with the finding that a single factor underlies measures of both life satisfaction and affective well-being (Diener, 1994).

Results

Gender Differences

Gender had no main effects on any of the major study variables in Study 1. In addition, regression analyses established that it did not interact with any of the associations reported below. Therefore, gender is discussed further.

The Inception-to-Attainment Process

The first objective of Study 1 was to extend our (Sheldon & Elliot, 1998) finding that individual goals receive more effort and are better attained when they are self-concordant. Table 1 presents the correlations between all the major study variables. Self-concordance was positively correlated with both semester effort and semester attainment. In addition, semester effort was itself associated with semester attainment. We conducted regression analyses to replicate our (Sheldon & Elliot, 1998) finding that effort mediates the direct relationship between self-concordance and attainment, showing that the effect occurs for the whole goal system, not just single goals. In accordance with the conceptual criteria for mediation established by Judd and Kenny (1981; see Baron & Kenny, 1986, for further discussion), the association between the self-concordance and the semester attainment measures became nonsignificant in this analysis ($\beta = .02$, *ns*), whereas the association between semester effort and semester attainment remained highly significant ($\beta = .76$, $p < .01$). Utilization of Sobel's (1982) procedure for testing the significance of indirect, mediational relationships provided further substantiation of the hypothesized mediational process ($z = 2.93$, $p < .01$). Thus, it appears the source of the attainment advantage enjoyed by self-concordant persons lies in their tendency to be more persistent in their strivings.

The Attainment-to-Well-Being Process

The second purpose of Study 1 was to extend Sheldon and Kassers' (1998) results concerning the effects of goal attainment on longitudinal well-being, showing that the goal-attainment effects occur for personal strivings as well as personal projects. To do this, we conducted a regression in which T2 SWB was the dependent measure. We entered T1 SWB into this equation, so that change in well-being would then be predicted by other variables in

Table 1
Study 1: Correlations Between Major Study Variables

Variable	1	2	3	4	5
1. Self-concordance	—				
2. Semester effort	.24	—			
3. Semester attainment	.20	.76	—		
4. T1 SWB	.29	.34	.48	—	
5. T2 SWB	.19	.40	.57	.62	—

Note. All correlations are significant at $p \leq .05$. T1 SWB = Time 1 subjective well-being; T2 SWB = Time 2 subjective well-being.

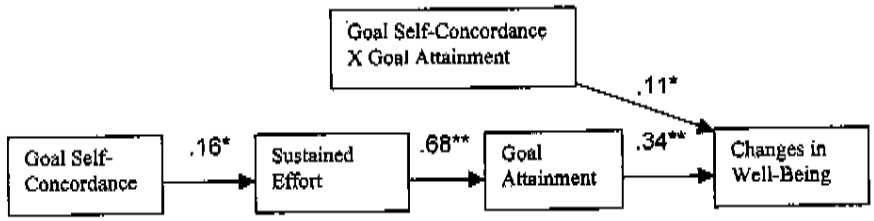

Figure 3. Study 1 structural equation model: Theoretically central paths and parameter estimates. * $p <$ .05. ** $p < .01$.

the equation (Cohen & Cohen, 1983).[3] We also entered the semester attainment and self-concordance variables (both centered) and the product of these two variables to represent their interaction. There was a main effect of semester attainment ($\beta = .34, p <$ .01), again showing that those who do well in achieving their goals experience enhanced well-being (Brunstein, 1993; Elliot et al., 1997; Sheldon & Kasser, 1998). As expected, self-concordance itself did not have a main effect. Most important, the interaction between self-concordance and semester attainment was significant ($\beta = .11, p < .05$). Consistent with the findings of Sheldon and Kasser (1998), the form of this interaction was such that the association between attainment and changes in SWB was stronger for more self-concordant participants.

Finally, we sought to put both halves of the self-concordance model together, testing all hypothesized paths simultaneously in a single structural equation model (SEM). The correlation matrix was used as input, and LISREL 8 (Jöreskog & Sörbom, 1993) generated parameter estimates based on maximum-likelihood estimation. Paths were specified as per Figure 1 (omitting the unmeasured need-satisfaction construct); a path was also specified from T1 SWB to T2 SWB, so that other paths to T2 SWB would represent the prediction of change in SWB.[4]

All hypothesized path coefficients were significant in this analysis. To evaluate the overall fit of the model, we examined the chi-square statistic. We also examined the goodness-of-fit index (GFI), the fit statistic recommended by Jöreskog and Sörbom (1993); the normed fit index (NFI), which has long been popular in the SEM literature (Tanaka, 1987); and the comparative fit index (CFI; Bentler, 1990), which can correct for the NFI's tendency to underestimate fit in small samples. By conventional criteria the model did not fit the data as well as would be desired, $\chi^2(7, N = 169) = 43.8, p < .01$, GFI = .93, NFI = .87, CFI = .88. Modification indexes suggested that paths should be included from T1 SWB to both semester effort and semester attainment. Because these paths are not inconsistent with our conceptual model, we included them to more adequately represent the data. These analyses yielded the following fit statistics: $\chi^2(5, N = 169) = 4.95$, $p > .05$, GFI = .99, NFI = .99, CFI = 1.00. These statistics indicate a satisfactory fit of the model to the data. Thus, it appears that initial SWB may itself be an important predictor of later positive outcomes, consistent with the findings of Feist, Bodner, Jacobs, Miles, and Tan (1995). The theoretically central paths from the final Study 1 model, along with their standardized parameter estimates, are presented in Figure 3.

Brief Discussion

Study 1 provides good support for the self-concordance model presented in Figure 1, except for the (unmeasured) need-satisfaction construct. In terms of past research, both our (Sheldon & Elliot, 1998) findings concerning the first half of the model and Sheldon and Kasser's (1998) findings concerning the second half of the model were replicated and extended. Furthermore, SEM analyses suggested that the two halves of the self-concordance model can be combined; that is, the entire sequence leading from goal inception to change in well-being can be represented within a single statistical model.

Study 2

In Study 2 we focused specifically on the missing piece of the model, the need-satisfaction constructs. To measure need-satisfying experiences, we used the daily activity-based methodology developed by Sheldon et al. (1996) and Reis et al. (in press). One limitation of the work conducted by Sheldon et al. (1996) and Reis et al. (in press) is that they only examined the relationship of need-congruent experiences to concurrent well-being; thus, the causal direction between need-satisfying experiences and well-being was unclear. To address this limitation, we examined the relationship between need-satisfying experiences and well-being longitudinally in Study 2. The aim of the study was to demonstrate that the accumulation of experiences of autonomy, competence, and relatedness (as measured at several times over the course of the semester) was associated with longitudinal change in well-being over that period, establishing a stronger causal argument for the importance of these three types of experiences.

In addition, we assessed participants' initial levels of need satisfaction at the beginning of the semester for two reasons. First, we intended to examine the associations of the three T1 need-satisfaction variables with T1 SWB to conceptually replicate Sheldon et al. (1996) and Reis et al.'s (in press) concurrent findings that each of these three qualities of experience uniquely predicts well-being at that time. Second, we intended to show that our cumulative need-satisfaction variables (measured over the course of the semester) predict changes in well-being even after control-

[3] Test–retest coefficients for SWB were significant and ranged from .35 to .48 across the three studies reported in this article, supporting our assumption that there is both stability and room for change in the subjective well-being constructs as measured. In the interest of brevity, these coefficients are not presented in the text.

[4] We did not not estimate latent variables in these analyses because the participants-to-parameters ratio would have been prohibitively small. Instead, we used our standard compositing procedures. Given this approach, the interaction effect could be estimated as in an ordinary multiple regression analysis, using the product of the centered variables (Wood & Erickson, 1998).

ling for T1 need satisfaction. This finding would help to show that these cumulative variables do not simply reflect a dispositional level of need satisfaction or a general response style, which does not vary over time. Instead, it would support our assumption that need satisfaction is a dynamic, ongoing process that can be affected by other variables, such as personal goals.

Method

Participants and Procedure

Participants were 152 students in a psychology class at the University of Rochester, 56 men and 96 women, who took part in the semester-long study for extra course credit. At the beginning of the semester participants completed an in-class questionnaire, rating their well-being (i.e., positive and negative mood and life satisfaction) during the past few days. They also rated the extent to which they were having experiences of competence, autonomy, and relatedness in their daily lives at that time. Three times during the ensuing semester (approximately once every month) they came to a laboratory to complete a questionnaire assessing their experiences of competence, autonomy, and relatedness during the past 24 hr. At the end of the semester participants completed an in-class questionnaire, again rating their well-being during the past few days.

Measures

Baseline need satisfaction. During the initial assessment participants were asked to rate "the extent to which you are having each of these three types of experience in your life, at present." A scale ranging from 1 (*very little*) to 7 (*very much*) scale was used. The three items were based on the conceptual definitions of the needs for competence, autonomy, and relatedness offered by Deci and Ryan (1991). The competence item was "feeling generally competent and able in what I attempt," the autonomy item was "feeling generally autonomous and choiceful in what I do," and the relatedness item was "feeling generally related and connected to the people I spend time with." These ratings constituted our *T1 competence* ($M = 5.30$, $SD = 1.28$), *T1 autonomy* ($M = 5.26$, $SD = 1.29$), and *T1 relatedness* ($M = 5.35$, $SD = 1.38$) variables.

Semester need satisfaction. To sample the quality of participants' ongoing experiences during the semester, we asked questions about the 24-hr period preceding each of the three lab sessions using the methodologies developed by Sheldon et al. (1996) and Reis et al. (in press). Specifically, participants free listed the three activities they had spent the most time performing during the preceding 24 hr, excluding eating or sleeping (Sheldon et al., 1996). Participants rated how competent they felt doing each activity, using a scale ranging from 1 (*not at all competent*) to 7 (*very competent*). In addition, they rated why they did each activity in terms of four reasons for acting: external, introjected, identified, and intrinsic.[3] These ratings were made using a scale ranging from 1 (*not at all for this reason*) to 7 (*very much for this reason*). In addition, participants free listed their three most time-consuming social contacts during the previous 24 hr (Reis et al., 1998). For each of these three contacts they were asked, "To what extent did you feel related and connected to the person(s) you were interacting with?" Ratings were made using a scale ranging from 1 (*not at all*) to 7 (*very much*).

We computed a *semester competence* variable by averaging the 9 (3 activities × 3 assessments) activity-based competence ratings ($M = 5.89$, $SD = .72$, $\alpha = .69$). In addition, we created a *semester autonomy* variable by averaging the external, introjected, identified, and intrinsic ratings across the nine listed activities, then subtracting the external and introjected ratings from the identified and intrinsic ratings ($M = 4.29$, $SD = 1.63$, $\alpha = .77$), and a *semester relatedness* variable by averaging the nine relatedness ratings ($M = 5.49$, $SD = .87$, $\alpha = .70$).

Well-being. To assess mood we again used the PANAS (Watson et al., 1988). To assess life-satisfaction, we used the two-item scale introduced by Brunstein (1993). At the beginning of the semester (T1) we asked participants to complete all questions with reference to the past few days. At the end of the semester (T2) we again asked participants to complete the PANAS and life-satisfaction measures with reference to the past few days. As in Study 1, we summarized the well-being data by creating two aggregates (Brunstein, 1993; Elliot et al., 1997). That is, a T1 SWB variable was computed by standardizing the T1 positive affect, negative affect, and life-satisfaction variables, then subtracting the negative affect score from the sum of the positive affect and life-satisfaction scores. A T2 SWB variable was computed in the same way, using the end-of-semester ratings. Supporting the unidimensionality of these composites, principal components analyses of the T1 and T2 SWB variables revealed that in each case, a single factor accounted for at least 57% of the variance.

Results

Gender Differences

First, we examined the main effects of gender on all major study variables. Two gender differences were found: Women were lower than men in T1 competence ($M = 5.13$ vs. $M = 5.60$, $t = 2.23$, $p < .05$), and women were higher than men in semester relatedness ($M = 5.61$ vs. $M = 5.27$, $t = 2.23$, $p < .05$). Gender did not interact with any major study findings below. Because of the general lack of gender effects across the three studies in this article, we did not remove or control for the two mean differences found in Study 2.

Associations Between T1 Need Satisfaction and T1 SWB

Table 2 presents the correlations between all of the major study variables. To conceptually replicate the findings of Sheldon et al. (1996) and Reis et al. (in press), we first examined the concurrent associations of the T1 need-satisfaction variables with the T1 SWB variable. As can be seen in Table 2, all three T1 need-satisfaction variables showed strong and significant bivariate correlations with T1 SWB. We then conducted a simultaneous regression to see whether each of the three variables contributed unique variance in the prediction of concurrent (T1) well-being. In this analysis, all three need-satisfaction variables were significant (for T1 competence, $\beta = .29$, $p < .01$; for T1 autonomy, $\beta = .16$, $p < .05$; and for T1 relatedness, $\beta = .34$, $p < .05$), indicating that each quality of experience contributes uniquely to ratings of concurrent well-being.

Predicting Change in SWB From T1 to T2

Next, we tested our primary study hypothesis that the three semester-long or cumulative need-satisfaction constructs would predict longitudinal well-being. Specifically, we examined the simultaneous associations of the three cumulative need-satisfaction constructs with change in well-being. To do this we

[3] Notably, the perceived locus of causality methodology used here to assess activity-based feelings of autonomy is the same method used in Study 1 to assess goal self-concordance. The perceived locus of causality methodology (Ryan & Connell, 1989) offers a versatile way of assessing the degree to which motivated behavior is self-integrated and may be applied at multiple levels of analysis ranging from very concrete to very global (Vallerand, 1997).

Table 2
Study 2: Correlations Between Major Study Variables

Variable	1	2	3	4	5	6	7	8
1. T1 competence	—							
2. T1 autonomy	.59	—						
3. T1 relatedness	.36	.34	—					
4. Semester competence	.28	.27	.27	—				
5. Semester autonomy	.18	.23	.37	.41	—			
6. Semester relatedness	.04	.10	.37	.40	.39	—		
7. T1 SWB	.51	.46	.51	.42	.37	.38	—	
8. T2 SWB	.31	.32	.34	.46	.47	.45	.59	—

Note. Correlations of .17 or more are significant at $p = .05$. Correlations of .22 or more are significant at $p = .01$. T1 = Time 1; T1 SWB = Time 1 subjective well-being; T2 SWB = Time 2 subjective well-being.

conducted a regression analysis in which all three variables were entered together along with T1 SWB as predictors of T2 SWB. All three need-satisfaction variables were found to have significant effects (for semester competence, $\beta = .15$, $p < .05$; for semester autonomy $\beta = .21$, $p < .05$; for semester relatedness, $\beta = .16$, $p < .05$). Thus, each quality of experience was found to contribute uniquely to enhanced longitudinal SWB.

To assure that the cumulative need-satisfaction-to-enhanced-SWB effects do not simply reflect the influence of a temporally stable trait or dispositional variable, we repeated the above simultaneous regression, also entering the three T1 need-satisfaction variables into the equation. In this analysis, the Time 1 need-satisfaction variables were not significantly associated with changes in well-being, which was expectable given that these variables do not represent what occurs during the period between well-being assessments. More important, the beta coefficients for the three need-satisfaction variables were almost the same in these analyses.

Finally, we sought to combine all of the Study 2 findings using SEM procedures. The model we tested was consistent with the model presented in Figure 1. However, because Study 2 was designed to examine need-satisfaction processes in greater detail, the model included constructs that are not part of the formal model (specifically, T1 need satisfaction). To simplify the analyses, we computed T1 and semester need-satisfaction composites; that is, we summed the T1 competence, autonomy, and relatedness scores and also summed the semester competence, autonomy, and relatedness scores. In the structural model, T1 need satisfaction was specified as a predictor of T1 SWB. This path represents our replication of Sheldon et al.'s (1996) and Reis et al.'s (in press) concurrent results and reflects their causal assumptions. In turn, T1 SWB was specified as a predictor of T2 SWB. This path represents the test–retest relationship for SWB. Finally, semester need satisfaction was specified as a predictor of T2 SWB. This path represents our primary finding that the accumulation of positive experiences during the semester predicts change in SWB.

All parameter estimates for the model were significant. However, $\chi^2(2, N = 152) = 11.02$, $p < .01$, indicating a less than satisfactory fit. Modification indexes suggested adding a path from T1 SWB to semester need satisfaction. Thus, once again, it appears that initial SWB may have its own positive influences on later outcomes (Feist et al., 1995). Because this path is not inconsistent with our conceptual model, we included it to more adequately represent the data. In this revised model, $\chi^2(2, N = 152) = 2.83$, $p > .05$. GFI, NFI, and CFI were .99, .99, and 1.00, respectively, indicating a good fit of the model to the data. The final Study 2 model, with all standardized parameter estimates, is presented in Figure 4.

Brief Discussion

Study 2 replicated the findings of Sheldon et al. (1996) and Reis et al. (in press) that activity-based experiences of competence, autonomy, and relatedness each uniquely predict concurrent well-being. More important, Study 2 also provides the first support for an important facet of the self-concordance model, namely, the idea that the accumulation of daily experiences of competence, autonomy, and relatedness over a period of time promotes enhanced well-being (see Figure 1). Finally, the fact that the cumulative need satisfaction to enhanced well-being effects were unchanged when T1 need satisfaction was in the equation helps rule out the possibility that the effects are simply an artifact of an unvarying

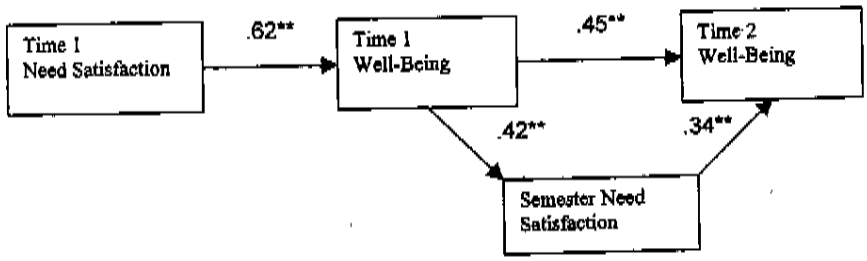

Figure 4. Study 2 structural equation model: Theoretically central paths and parameter estimates. ** $p < .01$.

disposition to feel and report strong experiences of the types we have specified. In other words, Study 2 helps to establish that need satisfaction is a dynamic variable that might well change when (or if) a person adopts a more self-representative goal system. Thus, Study 2 finishes laying the groundwork for Study 3, which tests the entire self-concordance model simultaneously.

Study 3

The design of Study 3 was similar to that of Study 1, except that need-satisfaction variables, as well as goal variables, were assessed throughout the course of the semester. To measure the two types of construct as independently as possible, goal variables and need-satisfaction variables were never assessed at the same point in time. Furthermore, goals and needs were measured in different settings (i.e., at home or in class), and, of course, the referents for the assessments were also very different (i.e., broad semester goals vs. time-consuming activities in the past 24 hr).

The first (preliminary) objective of Study 3 was to replicate all earlier findings, including the new paths established in Study 2. As a second objective, to demonstrate that need-satisfaction constructs can add importantly to our understanding of how goal attainment influences well-being, we used regression procedures to test whether need satisfaction mediates between goal attainment and increased well-being (Judd & Kenny, 1981). Such mediational analyses, which focus on the second half of the self-concordance model, directly parallel analyses focusing on the first half of the model, in which effort is examined as a mediator between self-concordance and attainment. Most important, we used SEM procedures to simultaneously test the entire self-concordance model (see Figure 1).

To put the model to a second kind of test, we incorporated four other goal-related constructs into the study. Specifically, we examined the effects of having high efficacy beliefs (Bandura, 1989), having many implementation intentions (Gollwitzer & Brandstatter, 1997), having few goals framed in avoidance terms (Elliot & Sheldon, 1997), and having strong life skills (Sheldon & Kasser, 1998) on effort and attainment. By demonstrating that the linkages proposed by the self-concordance model remain intact even after the effects of these other important constructs are partialed out, we hoped to show that the self-concordance model was not reducible to these other constructs.

Method

Participants and Procedure

Participants were 73 students in a psychology class at the University of Rochester, 21 men and 52 women, who took part in the semester-long study for extra course credit. Early in the semester participants completed an initial take-home packet in which they identified and rated six personal projects that they would be pursuing during the semester. In this packet, they also completed the life-skills measure and rated their well-being during the past few days. At eight points during the semester, approximately once every 10 days in class, participants free listed three time-consuming activities they had engaged in during the past 24 hr. They then rated the degree of competence, autonomy, and relatedness they felt when doing those activities (Reis et al., 1998; Sheldon et al., 1996). Participants completed a second and third take-home packet (one halfway through the semester and one near the end of the semester) in which they rated their effort and attainment regarding their projects since the last packet. In the third packet participants also rated their well-being during the past few days.

Measures

Personal goals. For Study 3 we chose the *personal project* construct (Little, 1993), whose time frame is particularly well-suited for a semester-long study (Sheldon & Kasser, 1998). The initial goal assessment occurred in a take-home questionnaire packet, and projects were defined as "goals that we think about, plan for, carry out, and sometimes (though not always) complete or succeed at." Examples of actual projects listed by participants include "get a 3.8 this semester," "go to the gym four times a week," and "stop procrastinating."

After listing projects, participants next made a number of ratings. First, they rated each project on each of the four reasons designed to assess self-concordance (external, introjected, identified, and intrinsic) using a scale ranging from 1 (*not at all for this reason*) to 9 (*completely because of this reason*). A self-concordance variable was computed in the same way as in Study 1: by averaging the intrinsic and identified ratings and subtracting the averaged external and introjected ratings (M = 3.89, SD = 4.22, α = .72). We also asked participants, "How well do you expect to do in each goal?" They answered using a scale ranging from 1 (*not at all well*) to 7 (*very well*), and we derived an *expected efficacy* variable by averaging the six responses (M = 5.12, SD = 0.88, α = .68). In addition, we asked participants to indicate whether they had already committed themselves to a certain time and place for initiating some specific action toward each project. For each participant we computed an *implementation intentions* variable (Gollwitzer & Brandstatter, 1997) by counting the number of "yes" responses (M = 3.59, SD = 1.67, α = .59). Also, we coded each participant's projects for avoidance (Elliot & Sheldon, 1997, 1998). An *avoidance goals* variable was derived by counting the number of avoidance goals listed (M = 0.85, SD = 0.96).

To measure participants' behavioral competencies, we used the 10-item life-skills measure (Sheldon & Kasser, 1998; Elliot et al., 1997). This scale contains items such as "I can play different roles as situations require" and "I can delay gratification when necessary." Participants completed the measure using a scale ranging from 1 (*much less than average*) to 5 (*average*) to 9 (*much more than average*). The measure has two correlated factors, social skills and self-regulatory skills, and for each participant we computed an aggregate *life-skills* variable (Elliot et al., 1997) by summing the 10 ratings (M = 60.07, SD = 10.47, α = .79).

In the second and third take-home packets, participants were asked to rate how hard they had tried to complete each project since they completed the last packet, using a scale ranging from 1 (*not at all hard*) to 7 (*very hard*). A *semester effort* variable was computed by averaging the 12 ratings (M = 4.32, SD = 0.96, α = .75). In addition, in both packets participants rated how effective they had felt in each project since they completed the last packet, using a scale ranging from 1 (*not at all*) to 7 (*very much*). A *semester attainment* variable was computed by averaging the 12 ratings (M = 4.10, SD = 1.07, α = .79).

Semester need satisfaction. To sample the quality of participants' ongoing experiences during the semester, we again used the daily activity-based methodology of Sheldon et al. (1996) and Reis et al. (in press). In each of the eight in-class questionnaire sessions, participants first listed the three most time-consuming activities, apart from eating and sleeping, that they had engaged in during the past 24 hr. For each activity, they rated how competent and able they felt, using a scale ranging from 1 (*not at all competent*) to 7 (*very competent*). A *semester competence* variable was computed by averaging the 24 ratings (3 activities × 8 assessments).[6] In

[6] Some participants did not do all eight of these assessments. We included in the final sample only those participants who had completed at least six of the eight short questionnaires.

addition, participants rated why they did each activity in terms of the four perceived locus of causality dimensions: external, introjected, identified, and intrinsic. A semester autonomy variable was computed as before: by averaging then summing the identified and intrinsic ratings, then subtracting the averaged external and introjected ratings. Finally, participants also listed the three most time-consuming social interactions they had engaged in during the previous 24 hr. Then, for each interaction, they rated how related and connected they felt with the person(s) they interacted with. A *semester relatedness* variable was computed by averaging the resulting ratings. As in Study 2, we computed an aggregate *semester need-satisfaction* variable by averaging the competence, autonomy, and relatedness variables together to simplify later analyses. Principal components analysis of this composite revealed a single factor that accounted for 60% of the variance.

Well-being. In Study 3 we used the PANAS (Watson et al., 1988) and the SWLS (Diener et al., 1985) to measure mood and life satisfaction. In the first questionnaire packet, participants completed the PANAS items with reference to the past few days, using a scale ranging from 1 (*not at all*) to 7 (*frequently*). The SWLS was given with the same instructions, and participants rated their agreement with each statement using a scale ranging from 1 (*no agreement*) to 7 (*very much agreement*). T1 positive affect, negative affect, and life-satisfaction variables were computed from these ratings. In the third questionnaire packet, participants again completed these three scales with reference to the past few days. T2 positive affect, negative affect, and life-satisfaction variables were computed from these ratings. To summarize the well-being data, we computed aggregate T1 SWB and T2 SWB variables by standardizing the three scores within each time and subtracting the negative affect score from the sum of the positive affect and life-satisfaction scores. As in Studies 1 and 2, principal components analysis revealed a single factor that accounted for at least 57% of the variance in each composite.

Results

Gender Differences

Preliminary analyses revealed no main or interactive effects of gender on any major study variables in Study 3. Therefore, we do not discuss gender further.

The Inception-to-Attainment Process

The first objective of Study 3 was to replicate the finding that self-concordance promotes goal attainment, mediated by effort (Sheldon & Elliot, 1998). Table 3 presents the correlations between all of the major study variables. As can be seen in this table, self-concordance was positively correlated with both semester effort and semester attainment. Furthermore, semester effort was itself associated with semester attainment. To again test our (Sheldon & Elliot, 1998) mediational model, we regressed semester attainment on semester effort and self-concordance simultaneously (Judd & Kenny, 1981). In this analysis, semester effort was significant ($\beta = .72, p < .01$) and self-concordance was not ($\beta = .08$, $p > .05$). Sobel's (1982) procedure for testing the significance of indirect, mediational relationships provided further substantiation of the hypothesized mediational process ($z = 3.12, p < .01$), again supporting our assumption that the source of the attainment advantage enjoyed by persons with self-concordant goals lies in the sustained effort they invest in their goals.

Table 3
Study 3: Correlations Between Major Study Variables

Variable	1	2	3	4	5	6
1. Self-concordance	—					
2. Semester effort	.34	—				
3. Semester attainment	.33	.75	—			
4. Semester need satisfaction	.36	.45	.49	—		
5. T1 SWB	.29	.25	.36	.48	—	
6. T2 SWB	.39	.42	.46	.53	.62	—

Note. All correlations are significant at $p \geq .05$. T1 SWB = Time 1 subjective well-being; T2 SWB = Time 2 subjective well-being.

The Attainment-to-Well-Being Process

A second objective of Study 3 was to replicate the finding that attaining goals leads to changes in well-being and the further finding that the self-concordance of goals moderates this effect (Sheldon & Kasser, 1998). To do this, we conducted a regression analysis in which T2 SWB was the dependent measure. Entered into the equation were T1 SWB (to focus the analysis on change in SWB), self-concordance, semester attainment (all centered), and the product of the latter two variables (to represent their interaction). Semester attainment was found to be a significant predictor of T2 SWB ($\beta = .28, p < .01$). In addition, self-concordance manifested its own (unpredicted) main effect ($\beta = .19, p < .05$). Most important, the interaction term contributed additional variance ($\beta = .23, p = .01$). Thus, the mere fact of goal attainment was again associated with enhanced well-being, as found by Sheldon and Kasser (1998) and in Study 1; also, the association between goal-attainment and changes in well-being was even stronger when the person's goals were more self-concordant.

Recall that Sheldon and Kasser (1998) proposed that concordant goal attainment leads to need-satisfying experiences. To examine this untested link in the self-concordance model, we regressed the semester need-satisfaction variable on semester attainment, self-concordance (both variables centered), and a product term representing the interaction of these two variables. In this analysis, semester attainment was a significant predictor of semester need satisfaction ($\beta = .46, p < .01$), as was self-concordance ($\beta = .24$, $p < .05$). Most important, the interaction was also significant ($\beta = .24, p < .05$), indicating that those who attained more self-concordant goals indeed had more need-satisfying experiences during the semester. Finally, we again examined the link between need satisfaction and enhanced well-being by regressing T2 SWB on T1 SWB and semester need satisfaction. As in Study 2, semester need satisfaction was a significant predictor of enhanced SWB ($\beta = .30, p < .01$). Together, these two analyses nicely support our supposition that goal attainment, especially concordant goal attainment, leads to an accumulation of positive experiences that in turn lead to enhanced judgments of general well-being.

Next, we conducted a mediation analysis in order to test our premise that accumulated short-term experiences of autonomy, competence, and relatedness are the concrete means by which goal attainment influences well-being. Specifically, we regressed T2 SWB on T1 SWB, semester attainment, and need satisfaction simultaneously, again following the procedures of Judd and Kenny (1981). In this analysis, need satisfaction was significant ($\beta = .22$, $p < .05$) and semester attainment was marginally significant ($\beta = .19, p = .056$). Although the attainment effect was not eliminated, Sobel's (1982) procedure for testing the reliability of indirect,

mediational relationships yielded a significant coefficient ($z = 1.98$, $p < .05$), indicating partial mediation. Notably, however, it appears that goal attainment has effects upon well-being that are not reducible to the accumulation of small positive experiences that progress engenders.

Structural Equation Modeling

The preceding analyses established all of the component parts of the self-concordance model. Next, we used SEM procedures to validate the entire model simultaneously, specifying paths as in Figure 1. A path was also specified from T1 SWB to T2 SWB, so that other paths to T2 SWB would be predicting change in SWB. In addition, on the basis of the precedents established in Studies 1 and 2, we specified paths leading from T1 SWB to semester effort, semester attainment, and semester need satisfaction.

Figure 5 presents parameter estimates for the theoretically central paths. As can be seen, all of the hypothesized paths were significant; $\chi^2(9, N = 73) = 20.3$, $p > .01$, and the GFI, NFI, and CFI values of .93, .89, and .93 indicated that the model provided an adequate fit to the data (Tanaka, 1987). To perhaps improve model fit and to further investigate the aforementioned possibility that goal attainment has positive effects upon SWB that are not reducible to experiential need satisfaction, we ran the analysis again, specifying a direct path from semester attainment to enhanced SWB. This path was marginally significant ($\beta = .19$, $p < .07$), and chi-square for this alternative, nested model was 16.7, yielding a chi-square change statistic (with 1 degree of freedom) of 3.7 ($p = .06$). Finally, the overall fit of the amended model was somewhat improved (GFI, NFI, and CFI = .94, .91, and .95, respectively). Thus, again it appears that goal attainment has direct positive effects on well-being that are are not mediated by need satisfaction. This point is discussed below.

Examining Other Important Goal Variables

Recall that we also assessed several other important goal-related variables in Study 3. Specifically, we measured participants' expected efficacy, the number of implementation intentions they had, the number of avoidance goals they had, and their life skills. The purpose of including these variables in the study was to show that the self-concordance-to-semester-effort effects are not reducible to the effects of these other motivational constructs.

First, we examined the correlations of the four alternative motivational variables with semester effort. Those with stronger expectancies tried harder during the semester ($r = .44$, $p < .01$), as did those with stronger life skills ($r = .47$, $p < .01$), those with more implementation intentions ($r = .28$, $p < .05$), and those with fewer avoidance goals ($r = .25$, $p < .05$). Second, we included each of the four variables, in turn, in the primary SEM, specifying paths from the variable to semester effort. The path from self-concordance to sustained effort remained significant in all four of these alternative models. Furthermore, all of the other paths specified by the self-concordance model (see Figure 5) remained significant in these alternate models. This indicates that the self-concordance model is essentially orthogonal to these other concepts of motivation. Parenthetically, efficacy expectations, implementation intentions, and life skills each had their own significant effects upon sustained effort in these analyses; avoidance goals did not.

Brief Discussion

Study 3 replicated findings from previous research and from Studies 1 and 2. More important, it bridged the goal-attainment and need-satisfaction programs of research by examining the effects of goal outcomes on the quality of participants' daily experiences. To summarize, those who selected self-concordant goals were found to be more likely to invest sustained effort into those goals. Sustained effort, in turn, was associated with greater goal-attainment, goal attainment was associated with presumed need-satisfying experiences, self-concordance moderated the association between goal attainment and need satisfaction, and, finally, need-satisfying experiences were associated with changes in well-being. SEM procedures again demonstrated that the two halves of the conceptual model could be combined within a single statistical model. Notably, however, it appears that permitting a direct path between goal attainment and changes in well-being may somewhat better represent the observed data; that is, the self-concordance model may require some modification.

General Discussion

Summary of Results

The present research integrates several new findings and a substantial assortment of other recent findings (Reis et al., in press; Sheldon & Elliot, 1998; Sheldon & Kasser, 1995, 1998; Sheldon et al., 1996; see also Elliot & Sheldon, 1997; Elliot & Sheldon, 1998; Elliot et al., 1997) into a single conceptual and causal model. The three studies reported herein provide good support for the entire self-concordance model, demonstrating that it can encompass a substantial range of important processes and outcomes.

Supporting the first half of the model, Study 1 replicated and

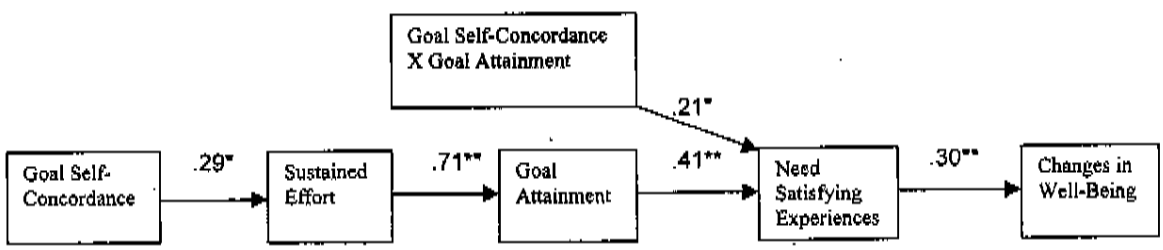

Figure 5. Study 3 structural equation model: Theoretically central paths and parameter estimates. * $p < .05$. ** $p < .01$.

extended our (Sheldon & Elliot, 1998) finding that individuals do better at self-concordant goals because they put more sustained effort into such goals. To recap our previous conclusion, "not all personal goals are personal"; that is, goals that do not represent the interests and values of the true self may not receive sustained energization (Gollwitzer, 1990), despite the person's initially strong effort intentions (Sheldon & Elliot, 1998). Supporting the second half of the model, Study 1 also replicated Sheldon and Kassers' (1998) finding that attaining self-concordant goals leads to the largest degree of enhanced well-being. To recap their conclusion, "not all progress is beneficial"; that is, attaining goals that do not express one's deeper interests and values may leave one not much better off, in terms of mood and life satisfaction, than before. Furthermore, SEM procedures showed that the entire model, except the (unmeasured) need-satisfaction construct, could be fit to a single data set. The absence of need satisfaction in Study 1 is significant, however, because need satisfaction is assumed to be an important cause of well-being outcomes.

Thus, Study 2 focused explicitly on need-satisfaction constructs, showing that the accumulation of activity-based experiences of competence, autonomy, and relatedness over a period of time predicts enhanced well-being at the end of that time—an important but formerly untested assumption of the self-concordance model (see Figure 1). Study 2's longitudinal findings thus extend the concurrent results of Sheldon et al. (1996) and Reis et al. (in press) and offer solid support for Deci and Ryan's (1991) postulate that experiences of competence, autonomy, and relatedness are the psychological nutriments necessary for enhanced well-being and psychological development (Ryan, 1995).

Finally, Study 3 bridged the personal goal and activity-based need-satisfaction programs of research by testing the entire model simultaneously. First, all earlier results were replicated. Going beyond past findings and supporting the conceptual assumptions of Sheldon and Kasser (1995, 1998), Study 3 demonstrated that those who are progressing well in their goals during a period of time are accumulating activity-based experiences of competence, autonomy, and relatedness during that time, more so when their goals are self-concordant. Most important, SEM procedures showed that the entire self-concordance model fit the data rather well despite the model's complexity. Supplemental analyses revealed that all paths in the model held even after controlling for the effects of efficacy expectancies, implementation intentions, avoidance framing, and life skills. Although these other constructs appear to have their own effects upon the conative process, the effects of self-concordance were not empirically reducible to any of them.

Notably, Study 3's mediational and supplementary SEM results suggest that the self-concordance model may require modification, specifically to include a direct path leading from goal attainment to enhanced well-being. In other words, it appears that attaining personal goals may have beneficial effects that go beyond the daily positive experiences engendered by such progress. One way of understanding this involves the distinction between bottom-up and top-down influences on well-being (Diener, 1984). Bottom-up theories assume that well-being emerges from the sum of many specific positive experiences. In contrast, top-down theories propose that global dispositions or attitudes color people's interpretation of their daily experiences and thus affect well-being directly. The activity-based experiences that we have labeled *need-satisfying* in this article well exemplify a bottom-up influence on well-being (Diener, 1984). In addition to promoting such experiences, goal attainment may also provide a broader, top-down influence on well-being by positively influencing participants' general self-efficacy, positive life circumstances, approval from others, or a combination of these. For example, a student who succeeds in increasing her grade point average may boost her academic self-esteem, open up many new avenues and possibilities for herself, and earn new respect from peers, professors, and parents, all of which may directly influence her global assessment of her own SWB. Given that top-down and bottom-up measures have been shown to have equivalent and simultaneous predictive validity in past research (Brief, Butcher, George, & Link, 1993; Feist et al., 1995), it is perhaps not surprising that both accumulated positive daily experiences and judgments of personal goal-attainment have independent influences on well-being. However, further research will be needed to replicate and extend these results.

Implications of the Model

We believe that the proposed model and the longitudinal, personal, goal-based methodology used to test it offer a flexible and powerful framework for studying fundamental questions in the field of motivation. The model is comprehensive enough to accommodate a wide variety of variables and processes, providing an overarching context in which many different constructs and hypotheses can be compared. The model may be especially useful because it addresses a dimension of conation that has received little attention: time. Most extant models of action or self-regulation are vertical (i.e., specifying hierarchical relations between various constructs or levels of analysis) rather than horizontal (i.e., specifying sequential relationships among variables measured over time; Gollwitzer, 1990). We suggest that the horizontal time dimension and the potential for causal modeling supplied by the analysis of change is very important for future research progress. Of course, causality cannot be established with certainty in correlational data. However, because the questions addressed by the self-concordance model would be difficult, if not impossible, to study in the experimental laboratory, we believe that prospective designs of the sort used herein provide the next best thing to experimental studies, especially when an appropriate range of alternative variables and explanations are considered.

How does the current model compare with Gollwitzer's (1990) action phases model? Although the two models cover similar territory, there are important differences. The action phases model starts sooner in the conative process by focusing explicitly on deliberative processes. It also ends sooner by not considering the broader personal implications of goal-attainment outcomes, such as changes in well-being. The two models are different in another way, in that the self-concordance model attempts to specify a factor that promotes positive outcomes (i.e., the consistency of goals with values and interests), whereas the action phases model attempts to specify different phases or stages in the life of a goal. Finally, Gollwitzer and his colleagues have focused their empirical efforts primarily on the contrast between cognitive processes occurring before versus after goal inception rather than attempting to predict a sequence of outcomes over time, as the current studies do.

It is also worthwhile to briefly consider the fit of the current

model with the results and theorizing of Omodei and Wearing (1990), who also used the personal-project methodology (Little, 1993) to illuminate the relationship between need satisfaction and well-being. Omodei and Wearing made a sharp distinction between need satisfaction (which is based on the rewards that accrue after one attains goals or end states) and involvement (experiences of flow or absorption that are pleasurable and rewarding for their own sake). Their cross-sectional study showed that both factors contributed to predicting concurrent well-being. Although we agree with Omodei and Wearing that goal attainment promotes need satisfaction (see Figure 1), our model conceives of satisfaction somewhat differently. Whereas Omodei and Wearing argue that need satisfaction and experiential involvement are distinct constructs, we believe that they are nearly inseparable. That is, psychological need satisfaction is largely a matter of being fully engaged and involved in one's daily life, thereby deriving and enjoying many positive experiences; personal-goal pursuit is one important way of creating such involvement. As another theoretical difference, we do not assume that need satisfaction will occur when any goal is attained, as do Omodei and Wearing (1990); instead, we show that need satisfaction is most likely to occur when self-concordant goals are attained.

One potentially important contribution of the self-concordance model is that it makes and tests explicit assumptions about the nature of need satisfaction and about the effects of need satisfaction on well-being. The concept of psychological need has had a long and contentious history in psychology, and there is a good deal of confusion about what it means. In the current research we construed needs as involving "experiential inputs," the accumulation of which translates into judgments of increased well-being (Ryan, 1995). This proposed mechanism is consistent with Diener et al.'s (1990) finding that being able to recall many affectively positive experiences leads people to give increased judgments of well-being. We suggest (and our data support) that competence, autonomy, and relatedness are precisely the sorts of positive experiences on which people make these judgments. Of course, the supposition that each of these types of experience is important to humans (Deci & Ryan, 1991) is hardly novel; many theories have emphasized the importance of such experiences, although naming them in somewhat different ways. We also note that our perspective does not preclude there being acquired or hereditary individual differences in needs for competence, autonomy, and relatedness. We suspect that such individual differences both influence the types of experience that a person has and also moderate the effect of different types of experience upon well-being. However, we would contend that the main effects of competence, autonomy, and relatedness continue to apply, in addition to any moderator relationships found (Reis et al., in press). However, individual differences are an important topic for future research.

The self-concordance model builds from and complements self-determination theory (Deci & Ryan, 1985, 1991). Self-determination theory was originally developed as a social psychological account of the effects of coercive contextual forces upon intrinsic motivation. In the last decade, the theory has expanded to address fundamental personality processes. In this emerging view, acquiring phenomenal ownership of action is a crucial developmental and self-regulatory task. The self-concordance model extends self-determination theory by addressing individuals' proactive and self-generated initiatives for life-improvement and self-expansion, not just their responses to situational or domain-specific forces. Our research suggests that even though all personal goals are self-determined in one sense (in that the person freely creates and lists them during the initial assessment), this does not mean that they all belong to the self in a deeper sense (Ryan, Sheldon, Kasser, & Deci, 1996; Sheldon & Elliot, 1998).[7] The self-concordance model also extends self-determination theory in another way: by providing a detailed longitudinal account of one means by which self-determination influences well-being.

Future Applications of the Model

Notably, researchers need not use or test the entire self-concordance model in every study; either inception-to-attainment processes or attainment-to-well-being processes might be focused on separately. For example, the current studies showed that effort is an extremely important variable for goal attainment. Goal effort can be very difficult to sustain, as any maker of New Year's resolutions knows (Sheldon & Elliot, 1998). In Study 3, sustained effort was predictable from self-concordance, efficacy expectations, implementation intentions, life skills, and avoidance framing. However, sustained effort was not fully determined by these variables, and other factors could also be explored. Such factors might include volitional competence (i.e., motivational maintenance skills; Kuhl, 1986), the difficulty or specificity of goals (Locke & Latham, 1990), the level of abstraction of goals (Emmons, 1992), or the social support or material support enjoyed by the goal striver (Ruehlman & Wolchik, 1988).

Regarding the second half of the model, future research could seek other predictors of enhanced well-being besides goal attainment. For example, positive changes in a person's life circumstances, changes in his or her objective health status, development of new relationships or interests, or the experience of dealing successfully with severe stress or trauma might all be hypothesized to lead to enhanced well-being. These variables may or may not be represented within participants' personal goal systems and may or may not have their effect on well-being by means of activity-based experiences of competence, autonomy, and relatedness. Future research could also examine other moderators of the attainment-to-well-being relationship besides self-concordance. For example, it appears that seeking self-concordant goals entails a risk, in that one may experience reduced well-being if one fails to attain such goals (Sheldon and Kasser, 1998). One potentially important question is, what coping skills or supports might prevent a self-concordant person from experiencing decreased well-being if that person fails to achieve his or her goals?

Limitations of the Research

One interesting limitation of the current studies is that we did not address the issue of goal content. A person might pursue

[7] The variable referred to in the present research as goal self-concordance has been referred to as *goal self-determination* in some prior research (Sheldon & Kasser, 1995, 1998). We have chosen the term goal self-concordance in this article to reflect the notion that self-generated personal goals are entities with substantial functional autonomy (Allport, 1961), which may or may not accord with the person's self-avowed values and interests.

manifestly evil goals for self-concordant reasons. For example, one could imagine that Ted Kaczynski (the Unabomber) identified with, and even enjoyed, his goal of killing selected persons using mail bombs. Does the fact that he succeeded for so long at goals that matched his interests and values mean that he experienced long-term growth and increases in well-being during this period? Our belief is that there are several ways that the conative system can go wrong. One way, the focus of this article, is when the individual does not succeed in selecting goals consistent with his or her values and interests. However, another way is when an individual does succeed in selecting value- and interest-consistent goals, but those values and interests are distorted or skewed (Kasser & Ryan, 1993, 1996). Although such a person may devote sustained effort to achieving the goals and may derive substantial gratification from attaining them, we suspect that further examination will reveal profound difficulties and a failure to achieve deeper need satisfaction. For example, Ted Kaczynski was gradually reduced to a very low-functioning state, one in which relatedness needs were almost completely ignored. In sum, the evidence suggests that in most cases, goals pursued for self-concordant reasons will also be goals with benign or prosocial content (Carver & Baird, 1998). Nevertheless, the Kaczynski example illustrates that a complete model of optimal goal functioning will need to address not only the why of striving, but also the what of striving (Sheldon & Kasser, 1995). Other limitations of the current research include the fact that only college students were sampled, only a few measures of well-being were used, and only semester-long periods of time were studied.

Conclusion

We conclude by again observing that "not all personal goals are personal," and "not all progress is beneficial." Goals are unique cognitive structures, in that they are invested with motivational energy and have a substantial degree of functional autonomy (Allport, 1961). However, to the extent that goals do not represent or tap authentic self-based values and interests, the infusion of goals with energy may be distressingly temporary. Even when the person succeeds in following through with a nonintegrated goal, he or she may find that the rewards are transient or unsatisfactory. To return to Rogers's (1961) notion of congruence between self-concepts and deeper experience, personal goals may be viewed as special self-concepts that may or may not accurately represent the actual condition of the organism in which they arise. This implies a developmental struggle in which individuals must learn to distinguish between their own native desires and interests and the alien injunctions that readily become infiltrated into the self (Kuhl & Kazen, 1994). The dilemma is that such infiltration is also the means by which individuals internalize the values of their culture (Deci & Ryan, 1991), a necessary and often healthy process. Thus, the distinction between goals that are truly one's own and goals that are alien is indeed subtle and shifting. Nevertheless, along with Rogers (1961), we believe that individuals have innate developmental trends and propensities that may be given voice by an organismic valuing process occurring within them. This voice can be very difficult to hear, but the current research suggests that the ability to hear it is of crucial importance for the pursuit of happiness.

References

Allport, G. (1961). *Pattern and growth in personality.* New York: Holt, Rinehart & Winston.

Baars, B. J., & McGovern, K. (1996). Cognitive views of consciousness: What are the facts? How can we explain them? In M. Velmans (Ed.), *The science of consciousness: Psychological, neurophyiological, and clinical reviews* (pp. 63–95). London: Routledge.

Bandura, A. (1989). Self-regulation of motivation and action through internal standards and goal systems. In L. Pervin (Ed.), *Goal concepts in personality and social psychology* (pp. 19–85). Hillsdale, NJ: Erlbaum.

Baron, R. M., & Kenny, D. A. (1986). The moderator–mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology, 51,* 1173–1182.

Baumeister, R. F., & Leary, M. R. (1995). The need to belong: Desire for interpersonal attachments as a fundamental human motivation. *Psychological Bulletin, 117,* 497–529.

Bentler, P. (1990). Comparative fit indexes in structural models. *Psychological Bulletin, 107,* 238–246.

Blasi, A. (1988). Identity and the development of the self. In D. K. Lapsley and F. C. Power (Eds.), *Self, ego, and identity: Integrative approaches* (pp. 226–242). New York: Springer-Verlag.

Brief, A. P., Butcher, A. H., George, J. M., & Link, K. E. (1993). Integrating bottom-up and top-down theories of subjective well-being: The case of health. *Journal of Personality and Social Psychology, 64,* 646–653.

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

Brunstein, J., & Gollwitzer, P. M. (1996). Effects of failure on subsequent performance: The importance of self-defining goals. *Journal of Personality and Social Psychology, 70,* 395–407.

Cantor, N., & Blanton, H. (1996). Effortful pursuit of personal goals in daily life. In P. M. Gollwitzer & J. A. Bargh (Eds.), *The psychology of action: Linking cognition and motivation to behavior* (pp. 338–359). New York: Guilford Press.

Carver, C. S., & Baird, E. (1998). The American dream revisited: Is it what you want or why you want it that matters? *Psychological Science, 9,* 289–292.

Carver, C., & Scheier, M. (1990). Origins and function of positive and negative affect: A control-process view. *Psychological Review, 97,* 19–35.

Chaplin, J. P. (1985). *Dictionary of psychology.* New York: Dell.

Cohen, J., & Cohen, P. (1983). *Applied multiple regression/correlation analysis for the behavioral sciences.* Hillsdale, NJ: Erlbaum.

Csikszentmihalyi, M. (1993). *The evolving self: A psychology for the third millenium.* New York: HarperCollins.

deCharms, R. (1968). *Personal causation: The internal affective determinants of behavior.* New York: Academic Press.

Deci, E. L., & Ryan, R. M. (1985). *Intrinsic motivation and self-determination in human behavior.* New York: Plenum.

Deci, E. L., & Ryan, R. M. (1991). A motivational approach to self: Integration in personality. In R. Dienstbier (Ed.), *Nebraska Symposium on Motivation: Vol. 38. Perspectives on motivation* (pp. 237–288). Lincoln: University of Nebraska Press.

Diener, E. (1984). Subjective well-being. *Psychological Bulletin, 95,* 542–575.

Diener, E. (1994). Assessing subjective well-being: Progress and opportunities. *Social Indicators Research, 31,* 103–157.

Diener, E., Emmons, R. A., Larsen, R. J., & Griffin, S. (1985). The Satisfaction With Life Scale. *Journal of Personality Assessment, 49,* 71–75.

Diener, E., Sandvik, E., & Pavot, W. (1990). Happiness is the frequency, not the intensity, of positive versus negative affect. In F. Strack, M.

Argyle, and N. Schwarz (Eds.), *Subjective well-being: An interdisciplinary perspective* (pp. 119–139). New York: Pergamon Press.

Elliot, A. J., & Sheldon, K. M. (1997). Avoidance achievement motivation: A personal goals analysis. *Journal of Personality and Social Psychology, 3,* 171–185.

Elliot, A. J., & Sheldon, K. M. (1998). Avoidance personal goals and the personality–illness relationship. *Journal of Personality and Social Psychology, 75,* 1282–1299.

Elliot, A. J., Sheldon, K. M., & Church, M. (1997). Avoidance personal goals and subjective well-being. *Personality and Social Psychology Bulletin, 23,* 915–927.

Emmons, R. A. (1986). Personal strivings: An approach to personality and subjective well-being. *Journal of Personality and Social Psychology, 51,* 1058–1068.

Emmons, R. A. (1989). The personal striving approach to personality. In L. A. Pervin (Ed.), *Goal concepts in personality and social psychology* (pp. 87–126). Hillsdale, NJ: Erlbaum.

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

Emmons, R. A. (1996). Striving and feeling: Personal goals and subjective well-being. In P. M. Gollwitzer & J. A. Bargh (Eds.), *The psychology of action: Linking cognition and motivation to behavior* (pp. 313–337). New York: Guilford Press.

Feist, G. J., Bodner, T. E., Jacobs, J. F., Miles, M., & Tan, V. (1995). Integrating top-down and bottom-up structural models of subjective well-being: A longitudinal investigation. *Journal of Personality and Social Psychology, 68,* 138–150.

Gollwitzer, P. M. (1990). Action phases and mind-sets. In E. T. Higgins & R. M. Sorrentino (Eds.), *Handbook of motivation and cognition* (Vol. 2, pp. 53–92). New York: Guilford Press.

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

Hershberger, W. A. (1988). Psychology as a conative science. *American Psychologist, 43,* 823–824.

Hodgins, H., Koestner, R., & Duncan, N. (1996). On the compatibility of autonomy and relatedness. *Personality and Social Psychology Bulletin, 22,* 227–237.

Jöreskog, K. G., & Sörbom, D. (1993). *LISREL 8: Users reference guide.* Chicago: Scientific Software International.

Judd, C., & Kenny, C. (1981). Process analysis: Estimating mediation in treatment evaluations. *Evaluation Review, 5,* 602–619.

Kahneman, D. (1997, May). *The cognition of well-being.* Keynote address at the annual convention of the American Psychological Society, Washington, DC.

Kanfer, R. (1989). Conative processes, dispositions, and behavior: Connecting the dots within and across paradigms. In R. Kanfer, P. L. Ackerman, & R. Cudeck (Eds.), *Abilities, motivation, and methodology: The Minnesota Symposium on Learning and Individual Differences* (pp. 375–388). Hillsdale, NJ: Erlbaum.

Kasser, T., & Ryan, R. M. (1993). A dark side of the American dream: Correlates of financial success as a central life aspiration. *Journal of Personality and Social Psychology, 65,* 410–422.

Kasser, T., & Ryan, R. M. (1996). Further examining the American dream: Well-being correlates of intrinsic and extrinsic goals. *Personality and Social Psychology Bulletin, 22,* 281–288.

Kuhl, J. (1986). Action control: The maintenance of motivational states. In J. Kuhl & J. Beckmann (Eds.), *Action control: From cognition to behavior* (pp. 101–128). New York: Springer.

Kuhl, J., Goschke, T., & Kazen-Saad, M. (1994). A theory of self-regulation: Personality, assessment, and experimental analysis. In J. Kuhl & J. Beckmann (Eds.), *Volition and personality: Action versus state orientation* (pp. 93–124). Göttingen, Germany: Hogrefe & Huber.

Kuhl, J., & Kazen, M. (1994). Self-discrimination and memory: State orientation and false self-ascription of assigned activities. *Journal of Personality and Social Psychology, 66,* 1103–1115.

Little, B. R. (1993). Personal projects and the distributed self: Aspects of a conative psychology. In J. M. Suls (Ed.), *The self in social perspective: Psychological perspectives on the self* (Vol. 4, pp. 157–185). Hillsdale, NJ: Erlbaum.

Locke, E. A., & Latham, G. P. (1990). *A theory of goal setting and task performance.* Englewood Cliffs, NJ: Prentice Hall.

Loevinger, J. (1976). *Ego development.* San Francisco: Jossey-Bass.

McClelland, D. (1985). *Human motivation.* Glennville, IL: Scott, Foresman.

Omodei, M. M., & Wearing, A. J. (1990). Need satisfaction and involvement in personal projects: Toward an integrative model of subjective well-being. *Journal of Personality and Social Psychology, 59,* 762–769.

Reis, H. T., Sheldon, K. M., Gable, S. L., Roscoe, R., & Ryan, R. (in press). Daily well-being: The role of autonomy, competence, and relatedness. *Personality and Social Psychology Bulletin.*

Rogers, C. (1961). *On becoming a person.* Boston: Houghton Mifflin.

Ruehlman, L. S., & Wolchik, S. A. (1988). Personal goals and interpersonal support and hindrance as factors in psychological distress and well-being. *Journal of Personality and Social Psychology, 55,* 293–301.

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

Ryan, R. M., & Connell, J. P. (1989). Perceived locus of causality and internalization: Examining reasons for acting in two domains. *Journal of Personality and Social Psychology, 57,* 749–761.

Ryan, R. M., Kuhl, J., & Deci, E. L. (1997). Nature and autonomy: An organizational view of social and neurobiological aspects of self-regulation in behavior and development. *Development and Psychopathology, 9,* 701–728.

Ryan, R. M., Sheldon, K. M., Kasser, T., & Deci, E. L. (1996). All goals were 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.

Sansone, C., & Harackiewicz, J. (1996). "I don't feel like it": The function of interest in self-regulation. In L. L. Martin & A. Tesser (Eds.), *Striving and feeling: Interactions among goals, affect, and self-regulation* (pp. 203–228). Mahwah, NJ: Erlbaum.

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., & 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,* 546–557.

Sheldon, K. M., & Ryan, R. M. (1999). *Needs for competence, autonomy, and relatedness: An evolutionary perspective.* Manuscript in preparation.

Sheldon, K. M., Ryan, R. M., Rawsthorne, L. J., & Ilardi, B. (1997). Trait self and true self: Cross-role variation in the Big-Five traits and its relations with psychological authenticity and subjective well-being. *Journal of Personality and Social Psychology, 73,* 1380–1393.

Sheldon, K. M., Ryan, R. M., & Reis, H. (1996). What makes for a good day? Competence and autonomy in the day and in the person. *Personality and Social Psychology Bulletin, 22,* 1270–1279.

Sobel, M. (1982). Asymptotic confidence intervals for indirect effects in structural equation models. In S. Leinhart (Ed.), *Sociological methodology* (pp. 290–312). San Francisco: Jossey-Bass.

Tanaka, J. (1987). "How big is big enough?" Sample size and goodness of

fit in structural equation models with latent variables. *Child Development, 58,* 134–146.

Vallerand, R. (1997). Toward a hierarchical model of intrinsic and extrinsic motivation. In M. Zanna (Ed.). *Advances in experimental social psychology* (pp. 271–360). New York: Academic Press.

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

White, R. W. (1959). Motivation reconsidered: The concept of competence. *Psychological Review, 66,* 297–333.

Williams, G. C., Grow, V. M., Freedman, Z. R., Ryan, R. M., & Deci, E. L. (1996). Motivational predictors of weight loss and weight-loss maintenance. *Journal of Personality and Social Psychology, 70,* 115–126.

Wood, P. K., & Erickson, D. J. (1998). A note on the estimation of polynomial and interactive effects in latent variables. In R. E. Schumacker and G. A. Marcoulides (Eds.), *Interaction and nonlinear effects in structural equation modeling.* Mahwah, NJ: Erlbaum.

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