Affective Responses to Autobiographical Memories and Their Relationship to Long-Term Goals

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ABSTRACT It was hypothesized that affective responses to memories could be predicted from a memory's relevance to the attainment or nonattainment of an individual's long-term goals In Study 1, 30 subjects received 15 goals, based upon Murray's (1938) needs, as cues to retrieve memories They rated both affective responses to memories and the relevance of the memories to the attainment of the cuing goal On average, affective responses were significantly correlated with the relevance of the memories to goal attainment In Study 2, 62 subjects retrieved 20 memories from four different content categories and rated the relevance of each memory to the attainment of all 15 goals Factor analysis yielded three goal factors—avoidance, self-gratification, and academic accomplishment Depending upon the memory content (family, friends, school, or activities), memories varied in how much the affect they evoked was related to the attainment of particular goals Goals played a differentiated role in subjects' current affect about past events

The study of how affect influences memory has a long history in psychology Since the turn of the century, investigators have focused on the question of whether the affective quality or affective intensity of a memory influences its recall (Dutta & Kanungo, 1975, Gilbert, 1938, McGeoch & Irion, 1952, Meltzer, 1930, Rapaport, 1942, Robinson,

1980) This article asks a different question about affect and memory, one growing out of an increasing interest in motivated cognition and personality (Showers & Cantor, 1985, Pervin, 1989) What components of personality interact with memory to evoke an emotional response to a specific recollection long after the recalled event has occurred? More specifically, is there a connection between one's affective response to a memory and *motivational* considerations, such as the memory's relevance to the attainment or nonattainment of one's current long-term goals?

Affect and Goals

In studying links among memory, affect, and personality, the concept of a goal may serve as a unifying principle While historically, goal-based theories have held a place in personality research (Allport, 1961, Murray, 1938, Tolman, 1932), there has been a recent resurgence of interest in goals, both in personality (Emmons, 1986, 1989, Pervin, 1983, 1985, 1989, Read & Miller, 1989) and affect (Dyer, 1983, Roseman, 1984, Weiner, 1985) Similarly, researchers in memory and artificial intelligence have identified goals as important to inferential strategies in memory retrieval (Reiser, 1983, Reiser, Black, & Kalamarides, 1986, Schank, 1982)

To explore the question of why some memories produce more intense affective responses than others for an individual, one might note that memories are often about outcomes of desired goals The affect that accompanies these memories might then be related to the attainment or nonattainment of goals That affects associated with events would be related to how that event contributed to an individual's goal attainment is a fundamental proposition held by Abelson (1983), deRivera (1978), Dyer (1983), Ortony, Clore, and Collins (1988), Roseman (1985), and Weiner (1985) Affective states may be differentiated through knowledge of an individual's goals in a given situation, their attainment or nonattainment, and the mechanics of these outcomes (e g , did others help or hinder the attainment of the goals?)

Roseman (1984) has performed the most extensive test of this goal-based theory of affect He varied the motivational states and situational outcomes, among other variables, of characters in scenarios read by subjects The results demonstrated subjects' differential understanding of the characters' affective states depending upon the particular interactions of the active goals and outcomes depicted in the scenarios Using

similar stories to vary attributions subjects might make about characters, Weiner and colleagues (Weiner, 1982, Weiner, 1985, Weiner, Russell, & Lerman, 1979) have also obtained a systematic differentiation of affective states based upon goals and outcomes From a different perspective, Higgins and his associates (Higgins, 1987, Strauman & Higgins, 1987) have shown that attainment or nonattainment of ideal outcomes will predict both subjective and *physiological* affective responses

Building upon these findings, the affective quality of an autobiographical memory may be, in part, a function of its relationship to an individual's attainment or nonattainment of a desired goal or goals More precisely, some of the variance in an individual's affective response to a memory could be predicted from its relevance to the status of an individual's *current* desired goals Robinson (1980), Holmes (1970), and Dutta and Kanungo (1975) have all demonstrated that a memory may change in its affective intensity over time Holmes's work especially makes the important observation that the affective intensity associated with a memory is a function of its meaning for the individual at recall, not encoding A memory may lose or gain affective intensity depending on its connection to an individual's present goals rather than to goals originally served by the remembered behaviors

Goals In exploring affective links between memory and personality, there are two main reasons why one should take goals as a starting point, as opposed to more traditional constructs of needs or motives (e g , McAdams, 1982) First, goals may be articulated by subjects on a conscious level It seems more efficient to investigate accessible links between personality and recalled events in an effort to account for as much variance as possible, before one resorts to inferences about links based on unconscious processes To use McClelland's (1985) distinction between motives (as unconscious needs) and incentives (or values) as conscious phenomena, goals would fit the latter category Second, considering the interest in goals displayed by both affect theorists and memory researchers, a goal-based personality theory has the potential to be integrated more firmly into general psychology than personality theories that emphasize unconscious processes

If one focuses on the goals an individual holds, what type of goals might be examined? Personality researchers (Emmons, 1986, 1989, Murray, 1938; Pervin, 1983, 1985, 1989) have tended to study a more or less stable, hierarchically organized set of lifetime goals that pre-

occupies much of an individual's fantasies, plans, and actual behavior (Pervin, 1983, p 23) Emmons has chosen to call these goals "personal strivings" and suggests that they may vary in their concreteness and context specificity For example, a personal striving may range from the more general "trying to make others happy" to the more specific "trying to make my girl/boyfriend happy" (Emmons, 1986)

Since the studies presented here examined a subject's goals and memories within the same experimental session, there was the distinct risk that self-generated goals (in the manner of personal strivings) and spontaneously recalled memories would be confounded in content Piloting confirmed this problem and subsequently a list of long-term goals, resembling more general types of personal strivings and based upon Murray's psychogenic needs (Murray, 1938), was used These goals were then evaluated by subjects for their desirability and relevance to self-generated memories Unlike goals specific to a given situation (Showers & Cantor, 1985, Weiner, 1985), or "life tasks" tied to a developmental period (Cantor & Kihlstrom, 1985, Cantor, Norem, Brower, Niedenthal, & Langston, 1987), these long-term goals were meant to be perceived by subjects as ideals that were important now and were likely to remain important in the future While these goals may be objects of one's ongoing thoughts, they need not be as close to consciousness as Klinger's (1978) concept of "current concerns" would imply Since subjects were encouraged to recall memories of diverse incidents and time periods, and a critical variable was the relevance of memories to goal attainment, it was important that there be maximal opportunity for goals to overlap with memory content

Attainment of the goals listed in the study could evoke different emotional meanings, i e , goals can promote positive feeling states or aid one to avoid negative feeling states (Atkinson, 1983, p 103) In addition, one person's desired goal may be another person's most feared outcome, each goal is desirable only in the "eye of the beholder "

Goal attainment Subjects in Studies 1 and 2 rated the relevance of memories to the attainment or nonattainment of long-term goals Goal attainment was defined as the relevance of the remembered event to the advancement or frustration of the goal under consideration Subjects' own judgments of their memories' relevance to their goals were preferred over experimenter inferences about the memories' relevance to less conscious needs, as assessed by a personality inventory (e g , the Jackson Personality Research Form or the Edwards Personal Preference

Schedule) In this way, subjects' own interpretations of their memories' meanings were preserved

Autobiographical memories Citing Schachtel's (1947) definition of any voluntarily recalled part of one's life and Tulving's (1972, 1983) focus on clearly identified "episodes" from one's memory, Robinson (1976, 1986) has provided a more precise definition of autobiographical memory In his view, autobiographical memory refers only to the recall of events in which a person has directly participated, as opposed to incidents in others' lives known only through observation or instruction (Robinson, 1976, p 578) Thus recalling facts about a public figure or historical event would not be considered an autobiographical memory

The present investigations followed Robinson's (1976) definition of autobiographical memory The most common method for eliciting these memories can be traced back to Galton's (1911) association experiments and has been used more recently by Crovitz and Schiffman (1974), Fitzgerald (1980, 1981), Robinson (1976, 1980), and Rubin (1982, Rubin, Wetzler, & Nebes, 1986) These experiments consist of providing subjects with a verbal cue (usually a single word) that serves as the springboard for any kind of autobiographical memory the subject retrieves The technique yields memories of diverse content and temporal remoteness (Robinson, 1976, p 580) Once subjects retrieved their memories, they rated them for their *current* affective responses in recalling them

Reciprocal hypothesis As discussed earlier, an affective link was posited between autobiographical memories and long-term goals More specifically, it was hypothesized that the affective quality of an autobiographical memory could be predicted from its relationship to the attainment or nonattainment of an individual's current long-term goals In the studies that follow, the reciprocal hypothesis should also be kept in mind The desirability of one's current goals may be predicted from, and in fact shaped by, one's affect about past attainment or nonattainment of these goals

Study 1
METHOD

Subjects

Thirty graduate and undergraduate students (16 males, 14 females) at Yale University were recruited through either the introductory psychology subject

pool or through posters on campus locations Subjects received credit in fulfillment of their psychology course requirements or payment if they were not enrolled in the course Subjects' ages ranged from 17 to 29

Measures

To give subjects a sense of the enduring and long-term nature of the goals provided in the study, the goals were referred to as "Life Goals " Subjects received a Life Goal Sentences Sheet, Life Goal Rating Sheet, Memory Content Sheet, and Memory Rating Sheet

Life Goal Sentences Sheet The Life Goal Sentences Sheet is composed of 15 sentences that express 16 of the 20 Murray (1938) need complexes (see Table 1) The need upon which each sentence is based may be found in parentheses after the sentence (although it was not listed on the sheet subjects received) One sentence, "I would like to live as sensual and erotic a life as possible" represents a combination of two needs, the need for sex and the need for sentience [1] The 16 goals were translated into sentences based closely on sample questionnaire sentences used by Murray's laboratory (Murray 1938, pp 176–242) The Edwards Personal Preference Schedule (1959) was also consulted for wording choices The sentences represent an attempt to cast each need in its most favorable light, in the hopes of preventing subjects from consciously editing their actual goals

Life Goal Rating Sheet This measure asked subjects to rate each of the 15 goals for how desirable it was to their own lives Subjects used a -10 to $+10$ scale of *goal desirability,* where -10 meant the goal was extremely undesirable, 0 that the goal was neither desirable nor undesirable, and $+10$ that the goal was extremely desirable

Memory Content Sheet Subjects numbered a blank sheet of paper 1 to 15 and recorded 15 different autobiographical memories, each cued by a Life Goal Sentence Subjects recorded enough information to be able to recognize the memory for later reference

The time period of the remembered events for these college students was set at prior to high school graduation Reiser (1983, p 102) has pointed out that

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1 The four major needs that were not assessed were (*a*) need for counteraction, (*b*) need for rejectance, (*c*) need for defendance, and (*d*) need for succorance The first three were judged inappropriate because they seem to involve more characterological reactions to situations rather than organized sets of actions pursued for a desired goal The last need, succorance, conveys a message of excessive dependence that would be an unlikely conscious goal for most college students who had begun to separate from parental ties

Table 1
Life Goal Sentences

1	I would like to be a leader and sway others to my opinion (n Dominance)
2	I would like to create a lasting and notable accomplishment (n Achievement)
3	I would like to be watched and marvelled at by others (n Exhibition)
4	I would like to have a life of amusement filled with sports, games, parties, dances, and films (n Play)
5	I would like to have good and loving friendships and relationships (n Affiliation)
6	I would like to help and take care of others, showing gentleness whenever I can (n Nurturance)
7	I would like to dedicate my life to the search for truth by the application of reason (n Understanding)
8	I would like to honor the needs and wishes of my mother and father (n Deference)
9	I would like to leave the common path and blaze a new path for myself (n Autonomy)
10	I would like to live as sensual and erotic a life as possible (n Sentience and Sex)
11	I would like to be able to accept my fate in life and not quarrel with destiny (n Abasement)
12	I would like to be a forceful person that lets no one get in my way or stop me from doing what I want (n Aggression)
13	I would like to avoid any kind of physical pain or danger (n Harmavoidance)
14	I would like to see my life orderly, organized, and balanced (n Order)
15	I would like to avoid failure and not attempt things I don't do well (n Inferiority Avoidance)

unless one specifies a particular time period for recollections, subjects tend to provide their most recent memories For the present purposes, the relationship of current goals to more recent memories would be much less interesting than the link of current goals to memories of events in a more distant past Finally, the importance of recall of a specific event and not a memory composed of blended incidents was especially emphasized

Memory Rating Sheet After retrieving the 15 memories and approximating their age when these events occurred, subjects used the Memory Rating Sheet to make affective judgments about the memories Subjects rated their *affective response* to each memory on a −10 to +10 scale for how they currently

felt about the experience, that is, they rated how positively or negatively they felt *now* in recalling the memory Subjects' initial moods at the time of the experiment were not measured

After finishing the memory affect ratings, subjects returned to their Memory Content Sheet and rated all 15 memories for their relevance to the attainment or nonattainment of the goals that cued them The *goal attainment* ratings ranged from −10 for remembered events highly interfering with goal attainment to +10 for remembered events highly conducive to goal attainment

Procedure

Subjects signed up to take part in an experiment on "personality and memory" They underwent the procedures in groups of three to five in a quiet seminar room The study session lasted approximately 45 minutes Subjects filled out consent forms and then reviewed the list of Life Goal Sentences placed in front of them Half of the subjects received the Life Goal Sentences in one order and half in the reverse order After subjects read over the list of goals, they used the Life Goal Rating Sheet to indicate how much they desired each goal

Subjects then were instructed to perform a memory task where they would find one memory for each sentence on the Life Goal Sentences Sheet They were told to use each sentence as a cue to find a specific event from their lives It was not necessary that the memory be linked to the goal sentence that inspired it Memories could be as important or trivial as they desired Subjects jotted down a phrase to describe the memory They then rated each memory for their affective response on the Memory Rating Sheet

When subjects finished the memory task, they rated each memory for goal attainment by asking themselves how relevant this remembered event was to the attainment or nonattainment of the goal that prompted its recall For example, a memory of "winning a spelling bee" would be highly relevant to the successful attainment of the goal "to achieve a notable accomplishment in my life" It might receive a goal attainment score of +9 or +10 A memory of "not getting chosen for All-state orchestra" would be highly relevant to the nonattainment of the goal, its goal attainment score might be a −9 or −10 Finally, a memory of "sitting on my lawn watching clouds roll by" might be considered relevant to neither the success nor the failure of the goal of accomplishment It then might receive a score of about 0 for goal attainment The experimenter explained to subjects that the relevance of the memory to the goal should be considered independently from how desirable one found the goal A memory could be highly relevant to the attainment or nonattainment of a goal even if the goal itself was not at all desirable

Upon completion of the study, the experimenter checked for subjects' intuitions and knowledge concerning the experiment's main hypotheses Subjects mostly believed that the experiment was intended to tell something about their

own personalities (i e , what kind of people they were) They hypothesized that the study would use the information collected about their memories to predict which goals they found important No subject guessed that a main purpose of the study was to examine how the emotional valence of a remembered event is linked to the attainment or nonattainment of a valued goal

RESULTS AND DISCUSSION

Overview of Data Analysis

The relationship of affective response to a memory to goal desirability and goal attainment was examined For each of these variables, goal by goal correlations across the 30 subjects for each of the 15 goals were calculated As a prelude to examining these correlations, effects of order and gender on all three variables were evaluated A two-way multivariate analysis of variance (MANOVA) for order and gender revealed no significant difference for the dependent variables of affective response, goal desirability, and goal attainment

Means for the three variables Means for the 15 goal desirability ratings and the associated memories' affective response and goal attainment ratings are shown in Table 2 The first 8 goals were high in desirability and also cued memories that evoked mean positive affective responses Similarly, 10 of the 15 goals cued memories that on average concerned goal attainment as opposed to goal nonattainment This positivity bias in memory is a repeated finding in the literature (see Linton, 1986, Matlin & Stang, 1978, Singer & Salovey, 1988) It is possible that variation in goal desirability might affect the correlation between affective response to a memory and goal attainment That is, memories about the attainment of goals that are not desired or are desired minimally might evoke little or no positive affective responses in subjects In fact, a memory about the attainment of a highly undesired goal might produce a strong negative response in subjects It would be expected then that Goals 1 through 8 should produce the strongest relationship between their attainment in memories and subjects' affective responses

Goal by goal correlations The correlations of affective response to each memory with goal desirability and goal attainment may be found in Table 3 [2] When examined goal by goal (across the 30 subjects), the

2 Correlations across the 15 goals within each subject for goal attainment and affective response were also calculated The mean correlation across the 30 subjects' correla-

Table 2
Means and Standard Deviations of Goal Desirability (GD),
Affective Response (AR), and Goal Attainment (GA)

		GD		AR		GA	
		Mean	SD	Mean	SD	Mean	SD
1	Relationships	9 23	(1 61)	3 90	(6 29)	5 33	(5 96)
2	Help others	6 17	(3 53)	3 37	(5 28)	4 90	(4 19)
3	Accomplishment	5 83	(3 74)	5 50	(3 95)	3 63	(4 89)
4	Blaze new path	4 80	(3 90)	5 63	(3 46)	4 17	(4 51)
5	Leader	3 07	(3 68)	3 33	(4 52)	3 90	(4 68)
6	Amusement	2 67	(4 64)	4 10	(4 71)	2 87	(4 91)
7	Truth	2 60	(4 39)	3 97	(3 67)	3 23	(4 55)
8	To be admired	2 37	(5 17)	5 23	(4 44)	5 77	(4 42)
9	Orderly life	1 63	(4 85)	0 43	(5 81)	−0 77	(6 18)
10	Honor parents	1 57	(4 62)	0 20	(6 13)	−0 33	(6 67)
11	Erotic life	1 40	(5 65)	3 80	(5 32)	3 90	(5 05)
12	Avoid pain	1 17	(5 41)	−0 27	(5 74)	−3 83	(6 25)
13	Avoid failure	−1 23	(5 62)	0 00	(5 45)	−1 47	(6 43)
14	Be forceful	−1 87	(6 20)	−0 03	(6 52)	2 67	(5 49)
15	Accept fate	−2 43	(5 70)	−0 62	(5 94)	−0 66	(6 56)
Mean		2 47		2 57		2 22	

Note $N = 30$

mean correlation of goal desirability and goal attainment was 35 over
the 15 goals (sign test for number of positive correlations, $p < 001$),
indicating that for goals, as a whole, more desirable goals cued memo-
ries more relevant to goal attainment

Goal desirability correlated with affective response at a mean r of
18 (sign test not significant), though individual goals did show strong
relationships (Table 3)

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tions, reconverted from z transformations, was 51, significant at $p < 01$ This finding
means that for a given subject, the more positively he/she felt about a memory, the more
likely it was that the memory was relevant to the attainment of a long-term goal While
variation in individuals' manner of relating goals to memories is of interest, this study
chose to look at the more general mechanism of how affective responses to memo-
ries across subjects are correlated with different kinds of goals and their attainment or
nonattainment

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Table 3
Memory and Goal Correlations, across Subjects, Goal by Goal

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		Affective response correlated with	
		Goal desirability	Goal attainment
1	Relationships	15	71
2	Help others	26	44
3	Accomplishment	58	62
4	Blaze new path	51	63
5	Leader	48	59
6	Amusement	22	47
7	Truth	31	14
8	To be admired	23	68
9	Orderly life	− 30	− 05
10	Honor parents	01	25
11	Erotic life	45	53
12	Avoid pain	− 67	00
13	Avoid failure	− 16	03
14	Be forceful	46	48
15	Accept fate	− 01	13
Mean		18	41

Note $N = 30$ $− 36 > rs > 36$ are significant at $p < 05$ $(df = 28)$

Concerning the predicted relationship between affective response to the memory and the memory's relevance to goal attainment, Table 3 shows that the mean correlation for affective response and goal attainment was significant ($r = 41$, sign test, $p < 01$) The more relevant the subjects' memories were to the attainment of the goals that cued them, the more positive their affective responses to those memories were This was particularly true for the goals of "Loving relationships" and "To be admired," though 9 of 15 affective response–goal attainment correlations were significant Looking only at the most desired goals (1 through 8), the mean correlation was 54

It is clear that the relationship between affective response to the memory and goal attainment became more unpredictable as the goal cuing the memory was less positively valued overall The one notable exception here is the goal of "Be forceful and let no one get in my way," which is rated undesirable ($m = −1 87$), yet produced a positive corre-

lation between affective response and goal attainment Examination of its mean goal attainment indicates subjects on average found memories relevant to the attainment of this goal more than other goals close to its ranking in desirability (compare its goal attainment score to Goals 12 through 15) It is possible that for reasons of social desirability subjects did not endorse the goal very highly Yet in recalling memories pertaining to this goal, they actually took pleasure in retrieving episodes of assertive and forceful behavior

Regressing affective response to the memory on goal desirability and goal attainment The above raw correlations suggested that subjects' affective responses to a memory were significantly related to goal attainment or nonattainment They also showed one other reliable relationship— how much a person desired a goal was correlated with how relevant a memory was to the attainment or nonattainment of that goal (goal desirability–goal attainment) This result leads to two related questions (*a*) For strongly desired goals, would small variations in goal desirability affect the relationship between attainment of the goal and the affective response to the memory? (*b*) Controlling for variations in the desirability of less attractive goals (9 through 15), would a relationship between goal attainment and the affective response to the memory emerge? Both these questions address the issue of whether the crucial link to the affective quality of the memory is simply one's attainment or nonattainment of a goal in the memory or whether the degree of desirability of the goal will also play a role To examine these issues further, affective response to the memory was regressed on goal desirability and goal attainment The results are displayed in Table 4

Of the eight most desired goals, seven showed significant relationships between goal attainment in the memory and the affective response to the memory, independent of the degree of goal desirability It is interesting to note that the one nonsignificant goal of the eight was "I would like to dedicate my life to the search for truth by the application of reason " It is possible that the attainment or nonattainment of this mind-oriented goal was not connected to strong emotional responses in either direction for subjects (its standard deviation for affective response was 14th out of 15) Two other goals, "Erotic life" and "Be forceful," that were ranked lower in desirability still produced significant relationships between goal attainment and affective response It is possible that subjects' hypothesized reluctance to endorse a goal like "Be forceful" also carried over to the goal "I would like to live as sensual and erotic a life

Table 4
Multiple Regressions Predicting Affective Response from
Goal Desirability and Goal Attainment

| | Beta weights | | | |
Goal	Goal desirability	Goal attainment	R^2	$F(2, 27)$
1 Relationships		71****	50	13 50****
2 Help others		42*	20	3 30*
3 Accomplishment	46***	52***	59	19 55****
4 Blaze new path	34*	52***	50	13 66****
5 Leader		47*	38	8 41**
6 Amusement		47*	22	3 87*
7 Truth				1 43
8 To be admired		66****	46	11 51***
9 Orderly life				1 41
10 Honor parents				1 30
11 Erotic life		43*	37	7 80**
12 Avoid pain	− 68****		46	11 41***
13 Avoid failure				0 45
14 Be forceful	35*	39*	35	7 18**
15 Accept fate				0 24

Note Nonsignificant β weights and R^2 values are not reported
*$p < 05$
**$p < 01$
***$p < 001$
****$p < 0001$

as possible " Examination of subjects' mean affective response to this memory shows much more positive memories were cued to this goal than to goals similar in ranked desirability (see Goals 9 through 15) "Erotic life" inspired memories that evoked a mean affective response of 3 80, no other goal of Goals 9 through 15 had a mean above 0 50 for affective response

Turning to the relationship of goal desirability and affective response to the memory, independent of the memory's relationship to goal attainment, three positive significant effects were found ("Accomplishment," "Blaze new path," and "Be forceful") The more that individuals de-

sired these goals, the more positive their memories were likely to be, regardless of whether their memories were about attaining or not attaining these goals Examination of the subjects' written descriptions of memories evoked by these goals revealed a pride in the pursuit of these goals, even if the outcome did not lead to success The *effort* to make an accomplishment, be original, or assertive, *independent of the outcome*, seemed to create positive feelings in subjects who desired these goals

Another unexpected but strong finding was the significant negative relationship between the desirability of the goal, "Avoid pain" and subjects' affective responses to memories cued by the goal (β weight $= -68, p < 0001$) The more that subjects wanted to avoid pain or physical danger, the more negative their memories concerning this goal were On the other hand, the more subjects disliked this goal, the more positive their memories were, once again regardless of the outcome of the goal Table 5 looks at this effect more closely, dividing subjects into those who endorsed the goal and those who did not A chi square analysis comparing subjects who desired to avoid pain and subjects who did not for number of positive versus negative memories was significant ($\chi^2 = 9\ 71, N = 20, df = 1, p < 01$) Subjects who endorsed avoiding pain remembered events when they had failed to avoid pain or danger Subjects who rejected the goal of avoiding pain or danger remembered positive events when they had exposed themselves to danger or pain and triumphed Whether subjects remember events in order to justify their current stance toward avoiding pain, or whether these memories are the formative elements of that current stance (or both) remains an open and intriguing question

Methodological concerns Subjects rated their affect about memories before they were asked about the relevance of their memories to the goals that had cued them, so it is likely that subjects rated the affective quality of their memories based upon judgments of feeling, rather than through conscious calculation of the memory's relevance to the attainment or nonattainment of the cuing goal However, it is possible that subjects decided that if an affective response to a memory were positively toned, then the memory should be rated relevant to the attainment of a goal (regardless of the goal's desirability) Questioning the subjects did not reveal this conscious tactic, yet it might have occurred in a subtle or automatic fashion Still, the correlations for different goals are varied enough, and none are so large, that one would infer a consistent strategy had been employed

Memories Cued by the Goal "Avoid Pain or Danger"

Subjects who desired the goal		Subjects who rejected the goal	
1	Getting lost in Kennedy Airport	1	Backpacking in Grand
2	Breaking elbow in camp		Canyon
3	Stress fracture from running	2	After a football game,
	Not able to compete		the pain, bruises, like
4	Taught to box, never again		trophies
5	Being chased by police	3	Riding horse, jumping
6	Did not jump off a very high		fences without reins or
	wall into a very small pool		stirrups, hands over eyes
	of water	4	Rock climbing at Tahoe,
7	Afraid to ride horse named		got hurt, but lots of fun
	Colora	5	When Mom didn't let me go
8	Car accident when I cracked head		hang gliding
9	Getting asthma at desert camp	6	How good I felt after I
	in Kenya		crossed a dangerous river
10	Afraid to go parasailing		in Outward Bound
11	Walking backward, hitting head	7	Hurting back in 4th
	on hydrant		grade
12	Injuring ankle and producing a	8	Having wisdom teeth out
	stubborn hemophiliac bleed		
13	When boy beat me up when I was		
	seventeen, left a lot of scars		
14	Climbing Debbie's tree to read		

Note Five subjects gave a neutral rating to this goal, three had memories that were uninterpretable

Study 2

To create more separation between goal and memory ratings, Study 2 did not employ goal cues for memory retrieval The use of goal cues in Study 1 may have created a biased or at least narrow memory task Perhaps goal cues artificially increased retrieval of events perceived as relevant to goal attainment

In Study 2, subjects were asked to relate each of their memories to more than one goal Subjects' consideration of the desirability of a whole range of goals when evaluating their memories might raise the magnitude of correlations found between memory and goal ratings in Study 1 When subjects rated the relevance of the memory to the attainment of only one goal, they implicitly left variance unaccounted for

that might be explained by the memory's relationship to the attainment or nonattainment of other goals

Finally, one might hypothesize that the 15 goals could be reduced to a few basic motivational dimensions Factor analysis was employed in Study 2 to help shed light on this question

In order to obtain memories independent of goal cues, subjects received four broad categories from which to generate their memories—family, friends and relationships, school, and activities (part-time jobs, athletics, hobbies, etc) These categories were chosen on the basis of earlier work that examined uncued recall of life experiences by college students Salovey and Singer (1989) found that more than 80% of memories solicited from an undergraduate sample in a mood induction study fell within these four categories Cantor and Kihlstrom (1985) found similar categories to emerge in their work on "life tasks" and Emmons (1986) guided subjects to select their personal strivings from the domains of work and school, home and family, social relationships, and leisure/recreation It was expected that memories related to these general categories would cover a cross-section of affective experience over a wide time period

In order to separate memory recall even further from goal-rating tasks, subjects always performed the memory retrieval task before they received their list of goals They then rated each memory for its relevance to every goal Pervin's (1983) work provided a basic method that would allow subjects to consider the relevance of memories to the attainment of all goals presented Pervin had subjects generate familiar interpersonal situations and rate each situation for its relevance to each of 38 goals In the present study, subjects generated 20 memories from before college and rated each memory for its relevance to 15 goals

Since goals were not paired directly with memories, Study 2 did not address directly the relationship of goal desirability to affective response to the memories The main focus was still the basic hypothesis that current affective response to memories would be linked to the memories' relevance to the attainment or nonattainment of goals It was also hypothesized that the content category of the memory (e g , family or school) might produce differential relationships to varieties of goals For example, positive affect about school memories might be correlated more highly to the attainment of accomplishment goals than to the attainment of loving relationships

METHOD

Subjects

Sixty-two subjects (30 males, 32 females) at Yale University were recruited through the introductory psychology subject pool Subjects' age ranged from 17 to 22 years

Design

Subjects generated 20 memories, five from each of four broad categories of their lives (family, friends and relationships, school, and activities) Subjects received a list of 15 goals in one of two orders (the same lists as Study 1) Goal presentation order and subject gender were examined as between-subject factors

Measures

Affective response, goal desirability, and goal attainment were all rated using the same scales as in Study 1

Procedure

Subjects first received the Memory Content Sheet with the four memory categories with room for five memories in each category They were told the same instructions regarding the characteristics, time period, and specificity of the memory as in Study 1 After writing down their 20 memories, subjects rated each memory for its current affective response

Subjects then reviewed the life goal sentences and rated each goal for its desirability to them After completing the goal ratings, subjects received the Goal Attainment packet Subjects placed their Memory Content Sheet and their Life Goal Sentences alongside each other (neither of these sheets contained their earlier numerical ratings) Subjects wrote in the number of each memory on the Goal Attainment Sheet and then recorded how relevant the memory was to the attainment or nonattainment of each of the 15 goals, working horizontally across the Goal Attainment Sheet Each memory had its own Goal Attainment Sheet as a precaution against response sets that might have developed if the ratings were viewed all at once in a matrix Subjects worked through all 20 sheets in the packet and completed the 300 ratings in approximately 25 to 30 minutes The entire experiment lasted 2 hours and subjects received the same debriefing as in Study 1

RESULTS AND DISCUSSION

Overview of Data Analysis

As in Study 1, no order or gender effects were found for ratings of goal desirability, affective response, or goal attainment Study 2 once again examined the correlations of affective response to a memory with goal attainment ratings for that memory across the 62 subjects For simplicity, the affective response ratings for the five memories within each Memory Content category were averaged before comparison In addition, a factor analysis on the 15 goals' desirability ratings was performed to reduce the number of variables to be examined and to distinguish underlying dimensions for the goals

Comparison of Memory and Goal Ratings in Study 1 and Study 2

Table 6 presents the means for goal desirability and goal attainment for the 15 goals Subjects were generally similar in ratings of the goals compared to the Study 1 sample A Spearman rank order correlation of the rankings of the 15 goals in Study 1 and Study 2 yielded a *rho* = 78, $p <$ 001 Subjects in Study 2 did show higher rankings than in Study 1 for the goals of "Orderly life," "Honor parents," and "To be admired," while the goals of "Be a leader," "Search for truth," and "Blaze new path" were all ranked lower [3]

The similarity of goal desirability ratings between studies was also reflected in subjects' overall use of positive, negative, and neutral ratings Out of 930 goal desirability ratings (15 goals × 62 subjects), 660 (71%) were positive, 204 (22%) were negative, and 66 (7%) were neutral These ratings compare to 65%, 22%, and 13% positive, negative, and neutral, respectively, in Study 1

Affective response ratings were also quite similar between the two studies Out of 1,240 affective response ratings in Study 2, 740 memories (59%) generated positive responses, 319 memories (26%) negative

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3 One possible explanation for this pattern is that subjects in Study 2 were run in the early fall Since most subjects came from the introductory psychology pool, the early fall group consisted largely of students who acted early to fulfill their experiment requirements In contrast, the late spring group consisted of students who had waited until the end of the semester to obtain their credits The pattern of life goal desirability ratings for the two groups appears to reflect this stylistic difference in approaches to the introductory psychology requirement

Table 6
Means of Goal Desirability and Goal Attainment Study 2

Goal	Goal desirability		Goal attainment	
	Mean	SD	Mean	SD
1 Relationships	9 21	(1 36)	2 47	(2 00)
2 Accomplishment	6 69	(3 47)	1 45	(1 43)
3 Help others	5 79	(3 91)	1 05	(1 47)
4 Orderly life	5 47	(4 15)	0 25	(1 62)
5 Honor parents	4 40	(4 69)	0 92	(1 58)
6 To be admired	4 24	(4 37)	1 92	(1 43)
7 Blaze new path	3 84	(4 81)	1 30	(1 14)
8 Amusement	3 34	(4 48)	2 05	(1 99)
9 Erotic life	2 45	(5 45)	0 80	(1 24)
10 Leader	2 27	(5 34)	1 00	(1 41)
11 Avoid pain	1 82	(4 94)	−0 71	(1 55)
12 Truth	1 55	(5 04)	0 37	(0 77)
13 Be forceful	−0 21	(5 33)	0 83	(1 56)
14 Avoid failure	−1 23	(5 96)	−0 85	(1 50)
15 Accept fate	−2 10	(6 10)	−0 20	(1 82)
Mean	3 17	(4 63)	0 84	(1 50)

Note n for goal attainment is 59 for Goals 1 through 15, except Goal 14 where $n = 58$
Smaller n s are due to missing data Goal attainment means are based on the mean goal
attainment across the 20 memories for each goal for each subject

responses, and 181 memories (15%) neutral responses These ratings
compared to 60%, 23%, and 17% positive, negative, and neutral, re-
spectively, in Study 1 Fifty-one of 62 subjects (82%) had more positive
than negative memories in Study 2 compared to 25 of 30 subjects (83%)
in Study 1

When one looks at the overall use of goal attainment ratings for
each of the 20 memories for each of the 15 goals for all 62 subjects
(20 × 15 × 62 = 18,600 ratings [less 46, for missing data = 18,554]),
there were 6,171 ratings of goal attainment (33%), 3,369 ratings of
goal nonattainment (18%), and 9,014 ratings of no relationship to goal
attainment or nonattainment (49%) Since each memory was rated for
its relevance to the attainment of all 15 goals, the high percentage of no

relevance ratings is not surprising Study 1 memories cued directly by the goal sentences were more likely to be related to the specific cuing goal, only 6% of these memories were not relevant to the attainment or nonattainment of the cuing goal An additional effect of looking at attainment or nonattainment of only the cuing goal may have been to inflate the number of memories about goal attainment compared to non-attainment In Study 1, 67% of the memories involved goal attainment and 27% goal nonattainment (compared to 33% and 18% in Study 2) Consideration of the memory's relevance to 15 diverse goals reduced the incidence of goal attainment considerably

Finally, goal desirability also correlated across subjects with mean goal attainment significantly, mean $r = 33$ (sign test, $p < 05$), compared to a 35 relationship in Study 1 In both studies then, the more desirable a goal, the more relevant the memory was to the attainment of that goal, the less desirable a goal, the more relevant a memory was to the nonattainment of that goal Overall, Studies 1 and 2 appeared to have yielded memory and goal ratings that are roughly comparable despite their use of different memory cuing strategies

Factor Analysis of the 15 Goals

A principal axis factor analysis was performed on the goal desirability ratings, using a varimax rotation to derive orthogonal factors Squared multiple correlations were used as prior estimates of communality Factors with eigenvalues greater than 1 were retained Table 7 displays the highest loading items on the three factors, only those items loading 30 on one and only one factor have their weights listed

Factor 1 had an eigenvalue of 2 40 and accounted for 42% of common variance, Factor 2, 1 65 and 29%, and Factor 3, 1 11 and 19% Factor 1, loading on "Orderly life," "Avoid pain," "Avoid failure," and "Honor parents," might be characterized as an *avoidance* factor Factor 2, loading on "To be admired," "Be forceful," "Amusement," and "Erotic life," might be considered a *self-gratification* factor Factor 3, on which only two goals loaded ("Accomplishment" and "Search for truth"), appears to convey rational or *academic accomplishment* This overall factor analysis closely resembles one conducted on goal ratings of undergraduates by Wicker, Lambert, Richardson, and Kahler (1984)

The goals belonging to each of the three factors with eigenvalues greater than one were summed and averaged to create three new indices

Goal	Factor 1 Avoidance	Factor 2 Self-gratification	Factor 3 Academic achievement
1 Relationships			
2 Accomplishment			67
3 Help others			
4 Orderly life	67		
5 Honor parents	48		
6 To be admired		51	
7 Blaze new path			
8 Life of amusement		47	
9 Erotic life		37	
10 Leader			
11 Avoid pain	62		
12 Truth			65
13 Be forceful		50	
14 Avoid failure	61		
15 Accept fate			

Note $N = 62$ Only weights $> |30|$ on one and only factor depicted Total variance explained = 90% Factor 1 = 42%, Factor 2 = 29% Factor 3 = 19%

In addition, the single goal, "Loving relationships," though loading only on a fourth factor with an eigenvalue less than one, was added to subsequent analyses due to its obvious importance as the goal most highly desired by subjects "Loving relationships" had a mean goal desirability of 9 21, "Academic accomplishment" of 4 12, "Avoidance" of 2 66, and "Self-gratification" of 2 46

The goal attainment ratings for each of these four indices were then correlated with mean affective response ratings for memories from the four memory content categories (family, friends and relationships, school, and activities) Goal attainment ratings were now based upon the summed goal attainment ratings for the goals that formed each of the three new goal factors, as well as for "Loving relationships " For example, correlations of affective response ratings to goal attainment ratings for academic accomplishment would take into account each

Table 8

Correlation of Affective Response to Averaged Memories with
Goal Attainment Ratings for the Three Long-Term Goal Factors
and the Goal of "Relationships" Study 2

	Affective responses to memories about			
	Family	Friends	School	Activities
Goal attainment of				
1 Relationships	46	79	47	41
2 Accomplishment	03	11	58	57
3 Self-gratification	35	55	56	63
4 Avoidance	22	13	23	31

Note $N = 60$–62 $- 24 > rs > 24$ are significant at $p < 05$ or better Mean affective
responses to the five memories in each category were as follows (-10 to $+10$ scale)
Family = 1 93, friends = 2 07, school = 2 05, and activities = 3 19

memory's relevance to the attainment of the goals, "Accomplishment"
and "Search for truth," but not to the attainment of any other goals
In this way, one can see the differential relationship of memories from
different content categories to four different goal domains These cor-
relations between the four goal indices and the four memory content
categories are presented in Table 8 Table 8 also displays the mean
affective response ratings for memories from each content category [4]

The overall pattern of correlations between goal attainment and
affective response to memories replicates the results of Study 1 The
attainment or nonattainment of desired goals in memories is linked to
subjects' current affective responses to their memories (11 out of 16 pos-
sible correlations are significant) Yet Study 2 raises the possibility that
context specificity may also exist in the relationship between affective
responses to memories and goal attainment For example, attainment or
nonattainment of academic accomplishment shows little relationship to
subjects' affective responses to memories about family or friends, but
is highly correlated to memories about school or activities ($rs = 03$,
11, 58, and 57, respectively) There is a similar, though nonsignifi-
cant, finding for self-gratification goals Attainment or nonattainment of

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4 Correlations of affective response and summed goal attainment across the 20 memo-
ries for each subject were also examined The mean correlation, reconverted from
z score transformations, was 56, significant at $p < 01$ This finding replicated the
within-subject correlations from Study 1

self-gratification appears to be more related to how subjects feel about memories of personal activities (hobbies, athletics, part-time jobs) than it is to feelings about family memories ($r = 63$ vs 35)

Finally, the relationship of avoidance goals to the memories appeared somewhat weaker than for other goals These goals may be less strongly desired and therefore the connection between their attainment and a clear affective response may be more problematic Yet the mean desirability for the avoidance goals was only third among the four goal indices and was considerably higher than in Study 1 Alternatively, there may be different emotional meanings attached to the attainment or nonattainment of an avoidance goal, compared to other goals To avoid something that one strongly wants to avoid may not produce the same affective response as gaining something that is strongly desired Yet both cases are examples of goal attainment The current study does not directly explore these issues, yet Ortony et al (1988) have written extensively about the difference between avoiding an undesirable outcome (i e , "relief," p 121) and achieving a desired outcome (i e , "joy," pp 86–87)

GENERAL DISCUSSION

The two studies presented here represent an effort to bring a goal-based perspective on personality and affect to the realm of autobiographical memory Using two different methods, each study demonstrated that subjects' affective responses to memories could be predicted, in part, from the relevance of these memories to goal attainment or nonattainment An important feature of Study 2 was its use of memory content categories Using composite memories for family, friends, school, and activities, a selective relationship of memories to goals emerged Positive memories were not automatically rated relevant to the attainment of goals Instead, subjects found memories of different content domains relevant to the attainment of some goals and not to others

Some of this match between goals and content categories was probably due to demand characteristics Subjects knew which content categories had cued memories and may have assigned higher relevance ratings to goals whose content matched a memory category Yet there would be no reason why this matching of content would necessarily extend to a congruence between goal *attainment* and the affective quality of the memory Further, if this matching had been a widespread strategy, one would expect the correlations to be much higher than they were For

example, the goal of "Honor parents" showed a goal attainment correlation with affective response to activities memories ($r = 48$) that was no different than for family memories ($r = 39$) A simple matching strategy would not predict this result

It is possible that these variations in memories' relationships to goals indicate genuine differences in the saliency of goals depending upon the content category of a memory These shifts in saliency may have influenced how much affect individuals felt regarding a particular goal's attainment or nonattainment for a recalled event

This hypothesis raises an important question about the design of the present studies and the meaning of the long-term or "life goals " If goals vary in their saliency (and by implication in their desirability) in different situational contexts, how did subjects arrive at their ratings of their goals' desirability? One might suggest two possibilities Subjects either averaged across the domains to come up with a mean desirability for each goal, or they sought the most characteristic context for that goal and then asked themselves how much the goal mattered in this context

Either method speaks to the limitations of using one constant value for a goal's desirability as a correlate across different memory content domains Ideally, one would have had subjects rate the overall desirability of the goals, but then also ask them to rate the desirability of these same goals in different content domains If these ratings differed, one would need to control for these differences in considering the relationship of goal attainment or nonattainment to the subject's affective response to the memory Attention to this question would capture the shifts in goal saliency that might take place when individuals turn their memory to a particular content area of their lives

To predict why an individual responds affectively to some memories and not to others, one first may need to learn what his/her overall goal hierarchy is and then determine the saliency of these different goals in different memory content domains (see Mischel & Peake, 1983) Alternatively, one could employ a repeated sampling technique over several weeks or months to obtain an aggregated estimate of the subject's stable goals (Epstein, 1983) Finally, given the college student sample used in this study, one would still expect evolution of these so-called "life goals," even after contextual and temporal stability were established

Another important question is whether the relationship between goals and memories in the studies presented might be increased if subjects were to select their own goals for consideration (perhaps in a separate experimental session from the one in which their memories were gen-

erated) While Murray's (1938) list seemed a useful starting point, a measure that elicited self-generated goals from subjects might invoke more affective involvement and produce higher correlations between affective responses to memories and goal attainment The strategy of encouraging subjects to generate an idiographic list of goals has been employed quite successfully by Emmons (Emmons, 1986, Emmons & King, 1988) and could easily be adapted to the present concerns Asking subjects to generate their own goals would also eliminate the problem of some goals actually being rated undesirable The mental gymnastics for subjects of thinking about a memory involving "not getting what you don't want" contributes more complication to this research than is necessary at this point

An additional methodological consideration (and a theoretical one as well) involves how the degree of a goal's desirability affects the relationship between a memory's relevance to goal attainment and the affective response to the memory As shown by these studies, individuals vary in how much they want even their *desired* goals Intuitively, if, above all other goals, a subject desires to accomplish something significant, then attainment of this goal should predict stronger positive affect than attainment of another goal that is slightly less desired (e g , a life of amusement) It is possible that the weighting of how relevant a memory is to the attainment of a goal by the degree to which one desires that goal could improve the prediction of affective response to that memory

The relationship of affective responses to memories to goal attainment or nonattainment emphasizes the motivational role that memory plays in personality The relevance of a memory to the attainment or nonattainment of one's salient goals may inform an individual about possibilities of future goal attainment At the same time, just as the affect with the original event may have helped to shape one's goals, the affective experience evoked by the memory may reinforce one's current attitude toward the particular goal or goals, thereby motivating one to sustain or abandon efforts at goal attainment

This view of memory's relationship to goals might help explain the positive correlation between the desirability of goals and memories' relevance to the attainment of these goals Individuals may selectively recall memories relevant to the attainment of desired goals as a means of self-encouragement in pursuit of their desired goals This type of selective recall may play a part in building self-efficacy (Bandura & Cervone, 1983, p 1027)

On the other hand, individuals who desire avoidance of pain or fail-

ure may take a different approach to memory recall Rather than recall
memories about times they succeeded in avoiding risky or injurious
situations, they tend to retrieve memories concerned with accidents, in-
juries, and frightening experiences The negative affect associated with
these memories may also serve a reinforcing function—to confirm them
in their choice to avoid risk or challenge Strong repetitive reinforce-
ment of this kind may underlie some aspects of phobic behaviors

Overall, the present studies suggest that a relationship exists between
an individual's affective response to a memory and the relevance of
that memory to the attainment or nonattainment of specific long-term
goals for an individual These findings, though still initial steps, build
upon recent reviews in the emotion and memory literature that empha-
size the motivational aspects of memory (Isen, 1985, Singer & Salovey,
1988) Future studies that more directly address the functional role that
affective memories play in personality through their relationship to an
individual's goal hierarchy are very much needed

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