Designs for Living: A Simulation Analysis of Factors Affecting Achievement and Satisfaction over the Life Cycle

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Abstract

An exploratory system dynamics model is presented that addresses the question of whether one can make conscious choices that improve both achievement and satisfaction in life and lessen the possible conflict between these two values. Monte-Carlo testing was done to identify the variety of life-cycle trajectories produced by the model, as well as the relative importance of the model's various input parameters. From this information, four hypothetical individuals were defined who differ in terms of their speed of learning from experience and the demands of their environment. These individuals were tested to see what difference five alternative life strategies might make, strategies that differ in terms of the individual's rate of positive change seeking and the ambitiousness of the individual's expectations. A number of tentative findings emerged, which may serve as hypotheses for further research.

Background and Approach

Happiness depends upon ourselves. – Aristotle (transl. Thomson 1955)

Since Aristotle, philosophers and students of the human condition have discussed how we can live lives of satisfaction and accomplishment. Satisfaction, or happiness, is a subjective descriptor of one's present condition, and people may report that they are satisfied even if they are not objectively excelling in health, wealth, or social or career advancement (Pronk et al. 2016). Accomplishment, or achievement, helps support satisfaction, but it is also a value in its own right. Indeed, some studies suggest that the meaning one derives from relating to and contributing to the world can ultimately be more important for one's health and well-being than happiness is (Smith 2013). Some people are satisfied but not accomplished, and others

accomplished but not satisfied, at least for some portions of their lives. Are most of us fated to fall short in this way, or might there be ways to increase the odds of experiencing a lifetime of both subjective happiness and objective accomplishment?

A large literature on the causes of happiness and well-being has developed over the last few decades, reflecting extensive research by psychologists and economists. Early studies suggested that as much as half of happiness is genetic, and that it does not vary much from a "set point" determined by the "Big 5" stable personality traits of extraversion, agreeableness, conscientiousness, neuroticism, and openness. For example, people with high extraversion and low neuroticism have been found to be generally more positive, less fearful, and more realistic about their opportunities (Ozer and Benet-Martinez 2005) and report greater life satisfaction (Arrindell et al. 1999). Also, people with greater conscientiousness, and thus a greater ability to formulate long-term plans and work consistently toward them, have lives of greater health and well-being (Duggan and Friedman 2014) and better job performance (Ozer and Benet-Martinez 2005). Conversely, high neuroticism, often associated with anxiety disorders and phobias, leads to "experiential avoidance" and consequently worse social and occupational functioning and a lower quality of life (Van Ameringen et al. 2003, Hayes et al. 2004).

More recent studies call set-point theory into question, finding that, although personality traits are stabilizing factors, happiness can vary substantially over the life cycle and choices and life events can make a lasting difference (Easterlin 2003, Headey et al. 2010). Choices leading to greater happiness over time include finding an optimistic romantic partner, increasing social participation and exercise, and choosing to focus on the family and altruism rather than material success (Headey et al. 2010).

Some evidence suggests that, at least in the United States, people are generally most satisfied at midlife (typically, in their 40s) when they are still in good health and have achieved stable employment, income, and romantic relationships (Easterlin 2006). Other evidence suggests, however, that satisfaction at midlife is often less than would be expected based on these objective factors, likely due to a gap between life goals and actual achievement (Blanchflower and Oswald 2008, Argyle 1999).

Midlife is not easy for many people, especially in today's knowledge society, where workers change jobs often and are expected to demonstrate a breadth of skills. Still, only 10-26% of Americans undergo a serious midlife crisis (Wethington 2000), suggesting that most people are

resilient, and that the goal-achievement gap will become severely disruptive only if one makes bad decisions in response to it (Rauch 2014). That is, most career professionals today understand that they must manage to their strengths (Drucker 1999) and move intentionally "through a set of knowable steps that creates and reveals our possible selves" (Ibarra 2004).

For all its richness, the existing research still does not answer the question of whether a tradeoff exists between satisfaction and accomplishment, and whether certain strategies might simultaneously improve both. This paper presents a new "life strategies" system dynamics model, portraying an individual's entire life cycle, intended to help answer these questions. Older SD works that explored similar issues of individual achievement and behavioral response include those by Dabiri (1978) and Homer (1985). The new model incorporates the basic idea from these older works that satisfaction comes from a comparison of actual and expected achievement, and that expectations, in turn, adjust to reflect actual achievement; this idea is in line with the concept of hedonic adaptation (Easterlin 2003). The new model also incorporates the possibility of disabling emotion, described in the previous works as paralysis or deep frustration; and related to psychological research on fear responses and behavioral avoidance (Field and Lawson 2003).

Also like the two older works, the new model can be described as exploratory. Its structure and parameters are uncertain, and its outputs are plausible but have not been rigorously compared against established empirical data—due to the lack of such data. Monte-Carlo testing was performed across the model's 21 input parameters to investigate the model's possible behaviors, and to identify the subset of parameters most responsible for the various trajectories produced. From this information, four quite different hypothetical individuals, who differ from one another only by only a few key parameters, were defined. These four synthetic individuals were tested to see what difference alternative life strategies (defined by further parameter changes) might make. Hypotheses were distilled from this testing that could form the basis for further empirical or simulation research.

Model structure

The full feedback structure of the life strategies model, without its input parameters, is presented in Figure 1. (The complete model contains fewer than 60 input and output elements.) The details of this structure will now be described, but without attempting to trace each concept and

causal relationship back to existing literature. The literature discussion above provides a good overview, and the more detailed tracing task is left as future work.

<Figure 1 goes about here>

In the model, achievement (or accomplishment) is considered broadly, combining all of the individual's contributions to the well-being of family, friends, and society at large, whether or not they are monetarily compensated. Achievement occurs in proportion to resources and vitality, and is diminished to some extent by the disruption of change seeking. Vitality starts at a value of 1 and generally declines in old age. (For the sake of convenience and so that the model may explore well into old age, the individual is assumed to live to 100 years, and each simulation run is that length.)

The stock of resources (or capabilities) combines all of the individual's productive activity skills, coping skills, social skills, and social network power. These resources become obsolete at some rate reflecting changes in society and the nature of the resources the individual has built. The development of new resources occurs as the reward for successful change seeking, and might also be called learning or skill-building or adding to one's repertoire. For example, if one tries a new software package and masters it, then knowledge of that software package becomes a new resource.

As one builds resources, one develops a better idea of what sorts of changes are likely to yield success, and hence the risk that attempted changes will fail declines to some extent. The stock of fears (or phobias), often dating back to early childhood, may worsen or grow when attempted changes fail, and may be diminished (that is, fears may ultimately be conquered) when attempted changes succeed. Fears are a problem because they lead to experiential avoidance and inhibit change seeking. Declining vitality in old age also inhibits change seeking.

The main motivator of change seeking is a sense of reduced satisfaction. Although many people seek some amount of change or novelty even when they are feeling satisfied, they will tend to pursue more significant changes when their sense of satisfaction is diminished. Satisfaction, in turn, is formulated as the ratio of actual achievement (described above) to desired achievement. A ratio of less than 1 indicates a degree of dissatisfaction.

Desired achievement is determined by considering both externally-driven expectations, described as the <u>achievement norm</u>, and the individual's own recent achievement rate. The achievement norm represents a benchmark of attainment, changing over the life cycle, for someone in the individual's lines of professional and voluntary endeavor. The norm is assumed to equal zero from birth until age 10, and then rises gradually through midlife, after which it declines during old age and returns to zero by age 100. If this norm is greater than the individual's recent achievement rate (plus, perhaps, some internal drive for further improvement), then desired achievement is set somewhere between these two values, according to a parameter describing the individual's willingness to lower expectations below the norm.

Figure 1 names several feedback loops that result from the assumed causal relationships, as follows:

1. "Successful change builds needed resources" is a balancing loop that causes more positive change seeking to occur, leading to more resources and achievement, when satisfaction has been low;

2. "Change partially disrupts current achievement" is a potential vicious cycle that could keep an individual in a constant state of counterproductive change seeking;

3. "Desired achievement is informed by actual" is a potential vicious cycle that could cause the individual to become complacent about achievement and do too little change seeking;

4. "Greater resources reduce change-related risk" is a virtuous cycle that leads to greater success from change seeking as the resource stock grows, and hence further resource building;

5. "Fear inhibits risky change" is a balancing loop in which experiential avoidance attempts to protect the individual from further failure;

6. "Successful change conquers inhibiting fears" is a potential virtuous cycle in which fears are at first slowly and then more rapidly overcome by successful change seeking; or a vicious cycle in which the build-up of fears prevents not only failure but also successful change, thereby causing loop 5 to backfire.

One may suppose that loop dominance—and what happens to achievement and satisfaction—may vary with attributes and choices of the individual, as well as the external environment faced by that individual, and may also vary at different points in the life cycle. This should become more evident with wide-ranging model testing, discussed next.

Monte-Carlo exploration of the parameter space

Monte-Carlo simulation (with random value selection simultaneously across all uncertain parameters) was performed in order to identify the variety of trajectories produced by the model, as well as the relative importance of the model's various input parameters. Table 1 presents ranges for the model's 21 parameters used in the testing, assuming uniform distributions from the Min to the Max value for each parameter. The first 11 of these parameters are standalone constants, while the 10 after that are points on four piecewise-linear X-Y functions. In the model, the four X-Y functions are formulated algebraically (expressed as the sum of multiple conditional statements), so that each point on a function is named separately as its own constant. The four functions are: (1) change seeking as a function of satisfaction; (2) risk of failed change as a function of resource level; (3) external achievement norm as a function of age; and (4) vitality as a function of age.

<Table 1 goes about here>

The minima and maxima for the 21 parameters were selected to represent a wide range of normal personality and usual circumstances, excluding the very abnormal or unusual. For example, with regard to personality, the parameter Earliest Fears was tested up to a maximum of 0.3, rather than allowing a greater value that would have led quickly to a lifetime of immobilizing phobia. With regard to circumstances, the external achievement norm was tested with values that peak at age 40 or age 60, and not before that time as would likely occur with professional athletes. Perhaps the model (or an elaboration of it) could later be used for exploring unusual psychology and circumstances, but for now the exploration has been limited to the usual range.

Two rounds of Monte-Carlo testing were performed. The first round was 200 runs, a relatively small number, so that individual tracings could be identified when all were graphed simultaneously, as shown in Figure 2. Each black line in the figure is from one of the 200 simulations, and the red line represents the mean of the 200 runs. Some observations:

<Figure 2 goes about here>

Achievement shows a wide range of possibilities, from low to high, always exhibiting a peaking pattern but with the peak occurring anywhere from age 45 to age 80.

Satisfaction shows a narrow range of high satisfaction during young childhood, followed by a large range (anywhere from deep despondency to continued childlike elation) during adolescence, then somewhat narrower again during adulthood and into old age, with most of the simulated adults showing some degree of dissatisfaction. Satisfaction does not change dramatically for most individuals throughout adulthood, though long trajectories of decline or increase are possible. The average trajectory shows a slight trough around age 40, rising gradually to a plateau during age 65-75, and then declining through old age.

Change seeking is often greatest during adolescence, but can also be high during early adulthood and until age 40, after which it usually declines through about age 70, and then stabilizes at a low level. Recall that most individuals experience a decline in vitality after age 60, and the model assumes that change seeking declines with declining vitality.

Fear tends to be fairly stable over the life cycle, the average rising a bit during adolescence and early adulthood and remaining flat thereafter. Some individuals, however, who start at a relatively low level of fear, can ultimately extinguish all fears; while other individuals who start at a higher level of fear, may become more and more fearful throughout adulthood. These divergent patterns reflect reinforcing Loop 6 seen in Figure 1 and described above.

The second round of Monte-Carlo testing was 1,000 runs, from which results were extracted and then analyzed through multivariate linear regression to determine which of the uncertain input parameters contributed most to explaining variations in lifetime-average values of achievement, satisfaction, change seeking, and fear. Most of the parameters were highly significant in a statistical sense, meaning that they did contribute to some extent. But certain parameters were standouts, as follows:

Resource obsolescence, and gain per max successful change (#1 and #2 in Table 1): An individual whose skills remain current for a long time (#1), or who learns quickly and effectively from experience (#2), tends to be more accomplished and satisfied, feels less need for change, and tends to have less fear.

Willingness to lower expectations when achievement falls short (#6): An individual who is more willing to lower expectations below the external norm will tend to be more satisfied, but will feel less need for change and will achieve less.

Earliest fears (#9): An individual who starts with a low level of fear tends to stay low in fear and ends up more accomplished and satisfied. Such an individual also feels less need for change overall, even though the lack of fear allows the person to change readily when change is needed.

Change seeking parameters (#12, #13): An individual more prone to seek positive change, especially when dissatisfied (#12), will end up more satisfied and with greater achievement.

Achievement norm parameters (#17, #18, #19): An individual facing more demanding circumstances will tend to be less satisfied and seek more change, but accomplish more.

The findings of the Monte-Carlo testing are useful for understanding the model's patterns and general tendencies. But an analysis of life strategies also requires a more focused and deterministic approach, considering specific possible cases and strategic combinations. Such an analysis is discussed next.

Testing four cases under a baseline strategy

Table 2 presents four synthetic cases and five strategies as defined by specific parameter settings. The four cases represent the elements of a 2x2 matrix in which one dimension is the individual's speed of learning from experience (parameter #2 in Table 1), and the other dimension is the demand of external circumstances as reflected by the achievement norm at ages 40 (#17) and 60 (#18). Figure 3 shows the results of simulating the four cases (SL: slower/lower; SH: slower/higher; FL: faster/lower; FH: faster/higher) with all of the model's other parameters in Table 1 set at their mean values, described in Table 2 as the baseline strategy (c0d0). The simulated baseline trajectories seen in Figure 3 differ markedly for the four cases:

<Table 2 goes about here>

<Figure 3 goes about here>

Achievement is consistently higher for faster learners and for individuals in more demanding circumstances. But those in more demanding circumstances experience a more rapid decline in

achievement after age 60 than those in less demanding circumstances do, because achievement in older age becomes more a matter of internal expectations than external ones.

Satisfaction is consistently higher for faster learners throughout the life cycle, but is generally lower for individuals in more demanding circumstances, especially in midlife. The plateauing of external demands between ages 40 and 60 (see Table 1), combined with the continuous building of resources, allows satisfaction to climb after age 40 in all four cases. For the faster learner, satisfaction starts to decline again after age 60 as vitality starts to wane. For the slower learner, satisfaction continues rising until older age (75 or 80), as the individual is finally able to catch up with external expectations.

Change seeking is consistently higher for slower learners throughout the life cycle, and is also higher for those in more demanding circumstances. These differences are particularly wide from ages 20 to 60, after which there is a general convergence toward a relatively low rate of change seeking.

Fear does not vary as widely as the other variables do (note the y-axis range of 0.1 to 0.3), but consistent patterns are still seen. Slower learners are more susceptible to a rise in fear, because they build resources more slowly and are therefore less able to reduce the risk of failure from attempted change (see Loop 4 in Figure 1). Also, perhaps unexpectedly, individuals in a less demanding environment become more fearful after midlife than do individuals in a more demanding environment. This is related to the effects of change seeking on fear. As noted above, change seeking is more frequent for those in more demanding circumstances. By age 40 or 50, enough resources have been built to suppress the risk of failure and make change seeking a more predictably successful experience, capable of conquering old fears (see Loop 6). Individuals in more demanding circumstances are thus in a better position to conquer old fears after midlife, because they do more positive change seeking, most of it successful.

Testing a sequence of five strategies across the four cases

The five strategies in Table 2 differ with respect to two types of lifelong behavioral choices that can (according to the Monte-Carlo analysis) have significant impact on outcomes, namely the change-seeking response ("c") and the adjustment over time of desired achievement ("d"). In this sequence, parameter changes are layered in one at a time, making it possible to see their combined effects. The first strategy is the baseline (c0d0). The second (c1d0) is "seek more

change when dissatisfied", corresponding to an increase in parameter #12 from 0.6 to 0.8. The third (c2d0) layers in "seek more change even when satisfied", corresponding to an increase in parameter #13 from 0.05 to 0.1. The fourth (c2d1) adds "don't expect steady achievement gains" (c2d1), corresponding to a decrease in parameter #5 (*internal drive to increase achievement*) from 0.05 to 0. Finally, the fifth (c2d2) adds "pay less attention to external norms", corresponding to an increase in parameter #6 (*willingness to lower expectations when achievement falls short of external norm*) from 0.5 to 0.75. Note that change seeking is greatest in c2d0 and least in c0d0, while expectations are least ambitious in c2d2.

Figure 4 shows variations in achievement under the five strategies, for each of the four cases, while Figure 5 shows corresponding variations in satisfaction. Some clear patterns are apparent, as follows:

<Figure 4 goes about here>

<Figure 5 goes about here>

a. With regard to <u>achievement</u>, the c2d0 strategy (most change seeking) is best throughout the life cycle across all four cases, and the c2d2 strategy (least ambition) is the worst.

b. For the slower learner (cases SL and SH), the individual may achieve nearly as much under c2d1 (less internal drive but still quite attentive to external norms) as under c2d0. This result reflects the fact that expectations for the slow learner are dominated by external norms rather than internally-based ones throughout life, so that backing off on the internally-based drive for achievement makes little difference.

c. For the faster learner (cases FL and FH), there is also little advantage of c2d0 over c2d1 prior to midlife, because external norms dominate internal ones during young adulthood. But after age 40 and through age 80, it becomes increasingly advantageous for the faster learner's achievement to have more internally-based drive (c2d0).

d. With regard to <u>satisfaction</u>, the c2d2 strategy (least ambition) is usually best or tied for best throughout the lifecycle across all four cases, and the c0d0 strategy (least change seeking) is usually worst or tied for worst. The next best strategy for satisfaction after c2d2 is c2d1 (less internal drive), which is generally tied with c2d2 after age 60.

e. The beneficial impact of reduced ambition on satisfaction is most apparent in the SH case (slower learner/higher demand), and least apparent in the FL case (faster learner/lower demand). It is also most apparent prior to age 60 regardless of case.

f. Regardless of case or strategy, the lowest points of satisfaction during the life cycle generally occur during early adolescence (ages 12-14), at midlife around age 40, and during later old age.

g. The slow learner (SL or SH) will be prone to deep dissatisfaction (e.g., a satisfaction level of less than 0.75) during adolescence regardless of strategy, and a slow learner facing a high demand environment (SH) is at risk of deep dissatisfaction through all of adulthood until older age.

h. In the SL case, deep dissatisfaction during early adulthood and midlife through age 40 can be avoided by seeking greater positive change (any of the strategies other than c0d0), without a need for reducing one's ambition. In the more difficult SH case, deep dissatisfaction during early adulthood and midlife through age 60 can be avoided only by combining greater change seeking with less ambition, and specifically less attentiveness to external norms (c2d2).

Discussion

This paper presents an exploratory SD model that addresses the question of whether one can make conscious choices that improve both achievement and satisfaction in life and lessen the possible conflict between these two values. The model interrelates, through feedback structure, the concepts of achievement, resources, expectations, satisfaction, change seeking, and fear over the life cycle. Model testing was done to explore the trajectories of these variables, as well as strategies for improvement. Many intriguing findings resulted, the most important of which may be summarized as follows:

1. Achievement may be low or high, but typically peaks in late midlife;

2. Most people spend adulthood in a relatively stable state of mild dissatisfaction, their happiness often rising somewhat after midlife to a peak during age 65-75 and declining after that;

3. A more demanding environment, with higher expectations for achievement, tends to produce more accomplishment but less satisfaction;

4. A greater willingness to lower expectations when achievement falls short (that is, less ambition) tends to produce more satisfaction but less accomplishment;

5. Certain factors can raise both achievement and satisfaction, including faster learning from experience, and a greater propensity to seek positive change[1];

6. Slower learners in a highly demanding environment face a dilemma, because they may only find adequate satisfaction by lowering their ambition, even though that compromises their achievement;

7. Faster learners who wish to boost their post-midlife satisfaction may, in addition to seeking more positive change, reduce their internally-based drive to succeed, but this strategy trades away some post-midlife achievement.

These tentative findings emerge from a model that admittedly has a relatively low level of evidence (Homer 2014) due to uncertainties about its structure and behavior. In terms of structure, the existing research literature provided a guide to model development, but no attempt to empirically support each of the model's assumptions has yet been made. In terms of behavior, the literature is rich on the subject of satisfaction over the life cycle, and the model seems to capture much of what has been described, but there has been no attempt yet to verify each of the behavioral findings presented above.

Such verification may not be easy. Most research on achievement and satisfaction has emphasized either fixed personality traits, such as conscientiousness, or particular categories of life choices, such as romantic and social attachments and altruistic contributions. Little attention seems to have been paid so far by researchers to the more contingent factors emphasized here—namely, how much change a person seeks in response to dissatisfaction, and how actual performance affects an individual's expectations—and their dynamic effects over the life cycle.

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[1]Wide-ranging experience and effective lifelong learning are central tenets of the "progressive education" movement, over a century old now, which largely emerged from the writings of the philosopher John Dewey (1897, 1910). They are also at the heart of the "critical thinking" movement of recent decades, which emphasizes higher-level cognitive skills that may be applied to any subject domain (Halpern 1985). Consider this passage from Dewey (1897): "With the advent of democracy and modern industrial conditions, it is impossible to foretell definitely just what civilization will be twenty years from now. Hence it is impossible to prepare the child for any precise set of conditions. To prepare him for the future life means to give him command of himself; it means so to train him that he will have the full and ready use of all his capacities; that his eye and ear and hand may be tools to command, this judgment may be capable of grasping the conditions under which it has to work, and the executive forces be trained to act economically and efficiently."

For now, the results of the model must stand as hypotheses that can be addressed by future research. This is often the role played by exploratory dynamic models: not as tools for providing firm answers, but rather for better defining useful research agendas.

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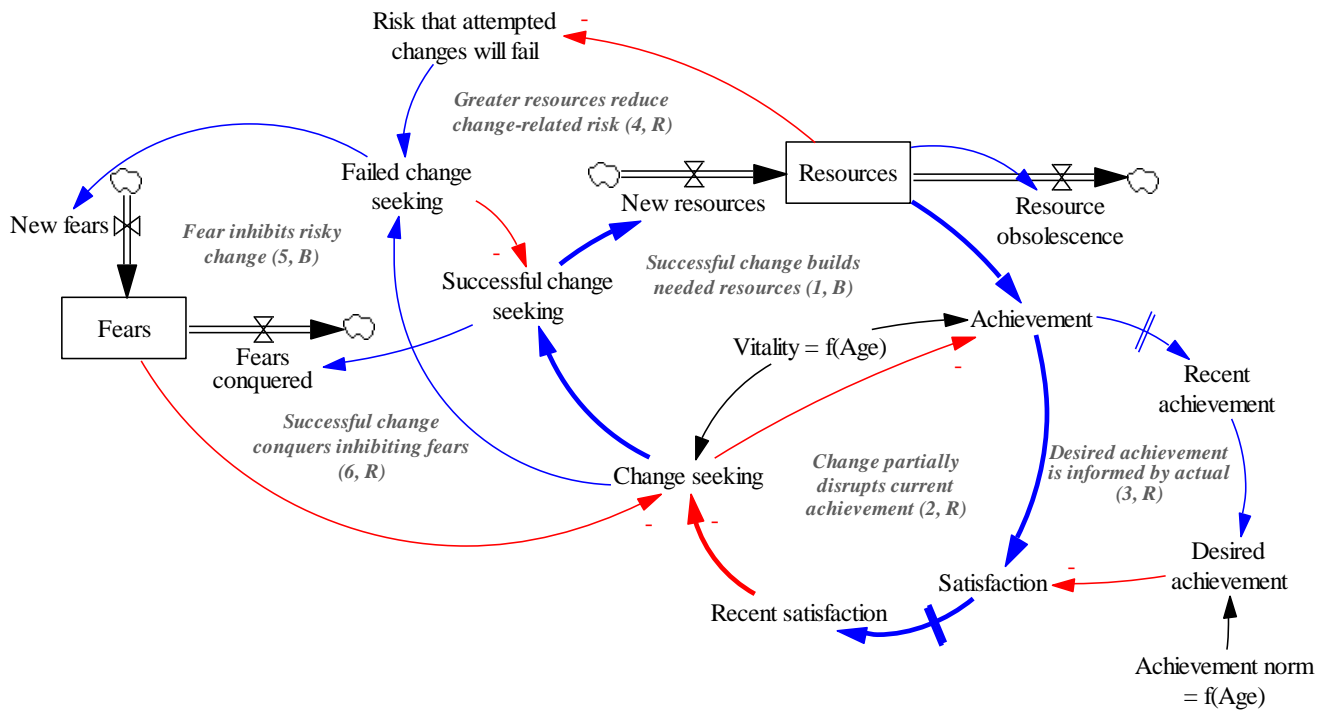Wethington E. 2000. Expecting stress: Americans and the "midlife crisis". *Motivation and Emotion* 24(2):85-103.

Figure 1. Life strategies model structure

Table 1. Parameter ranges for Monte Carlo testing (uniform distributions)

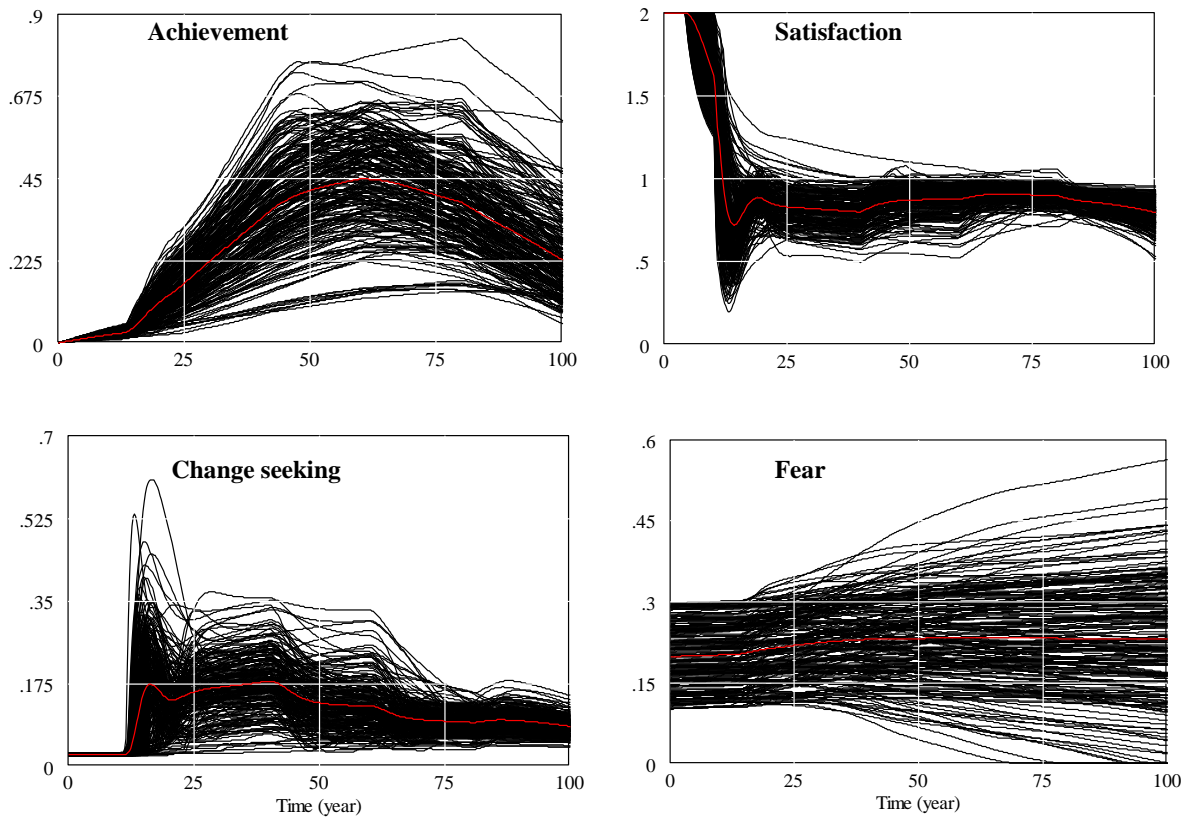|	Parameter (constant or X-Y lookup point)	Mean	Min	Max
1	Resource obsolescence rate (1/year)	0.03	0.01	0.05
2	Resource gain per max successful change (1/year)	0.2	0.1	0.3
3	Achievement disruption from max change-seeking	0.3	0.1	0.5
4	Time to perceive lasting changes in achievement (years)	5	3	7
5	Internal drive to increase achievement	0.05	0	0.1
6	Willingness to lower expectations when achievement falls short of external norm	0.5	0	1
7	Time to respond to dissatisfaction by seeking change (years)	2	1	3
8	Change-seeking inhibition from max fear	0.9	0.8	1
9	Earliest fears	0.2	0.1	0.3
10	Conquered fears per successful change	0.025	0.01	0.04
11	New fears per failed change	0.05	0.03	0.07
	Change seeking when satisfaction is at…			
12	0.4	0.6	0.4	0.8
13	1	0.05	0.03	0.07
	1.4 or greater	0.03		
	Risk of failed change when resources are at…			
14	0	0.5	0.4	0.6
15	0.5 or greater	0.3	0.2	0.4
	External achievement norm at age…			
	0-10	0		
16	20	0.2	0.1	0.3
17	40	0.6	0.4	0.8
18	60	0.6	0.4	0.8
19	80	0.3	0.2	0.4
	100	0		
	Vitality at age…			
	0-60	1		
20	80	0.85	0.7	1
21	100	0.5	0.3	0.7

**Figure 2. Simulated trajectories from Monte Carlo testing (200 runs; red=mean):
Achievement, satisfaction, change seeking, and fear**

Table 2. Definition of four cases and five strategies

		Parameter value			
Case *parameter number*:	#2	#17	#18		
SL: slower learner, lower external demand	0.1	0.4	0.4		
SH: slower learner, higher external demand	0.1	0.8	0.8		
FL: faster learner, lower external demand	0.3	0.4	0.4		
FH: faster learner, higher external demand	0.3	0.8	0.8		
Strategy *parameter number*:	#12	#13	#5	#6	
c0d0: baseline	0.6	0.05	0.05	0.5	
c1d0: seek more change when dissatisfied	0.8	"	"	"	
c2d0: ...and seek more change even when satisfied	"	0.1	"	"	
c2d1: ...and don't expect steady achievement gains	"	"	0	"	
c2d2: ...and pay less attention to external norms	"	"	"	0.75	

*Parameters (see Table 1) modified for cases and strategies:

#2: Resource gain per successful change

#17: External achievement norm at age 40

#18: External achievement norm at age 60

#12: Change seeking when satisfaction is at 0.4

#13: Change seeking when satisfaction is at 1

#5: Internal drive to increase achievement

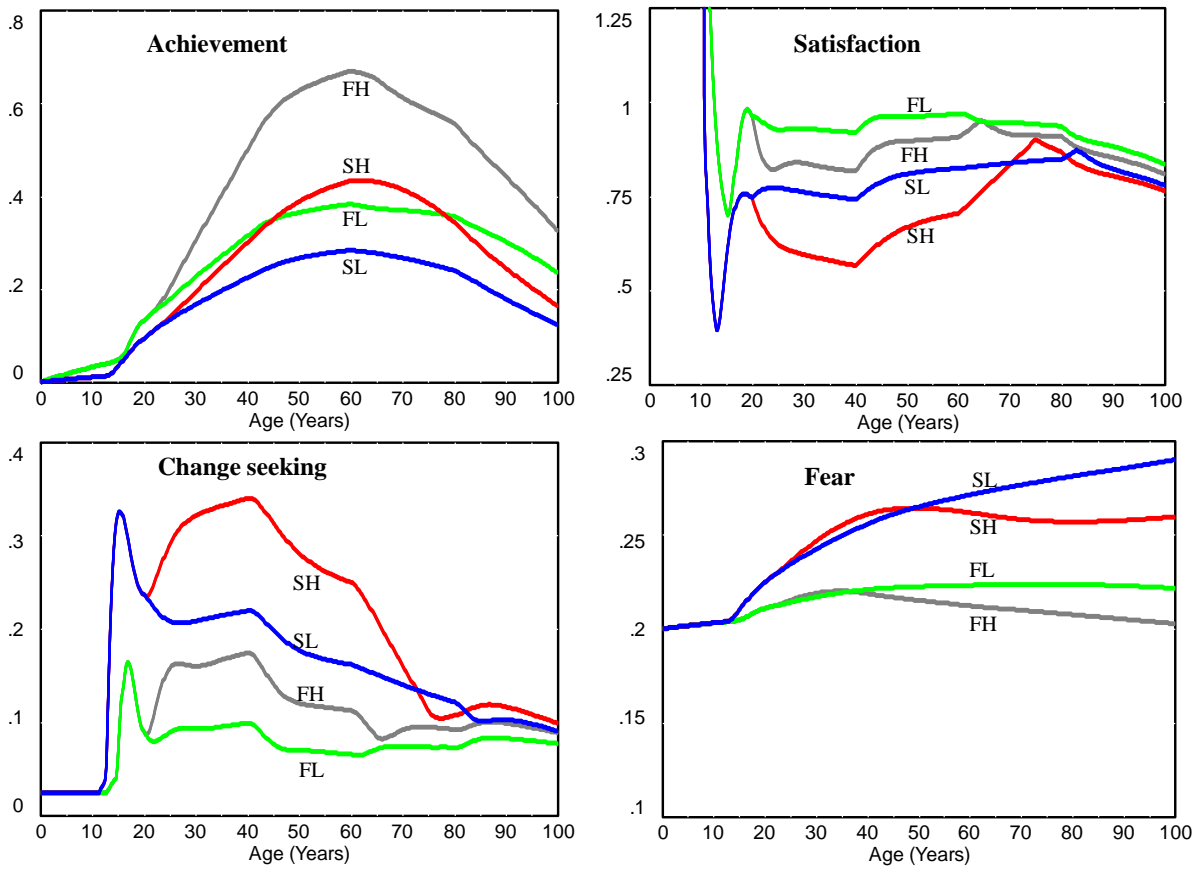#6: Willingness to lower expectations when achievement falls short of external norm

Figure 3. Simulated trajectories for the four cases under the baseline strategy (c0d0): Achievement, satisfaction, change seeking, and fear
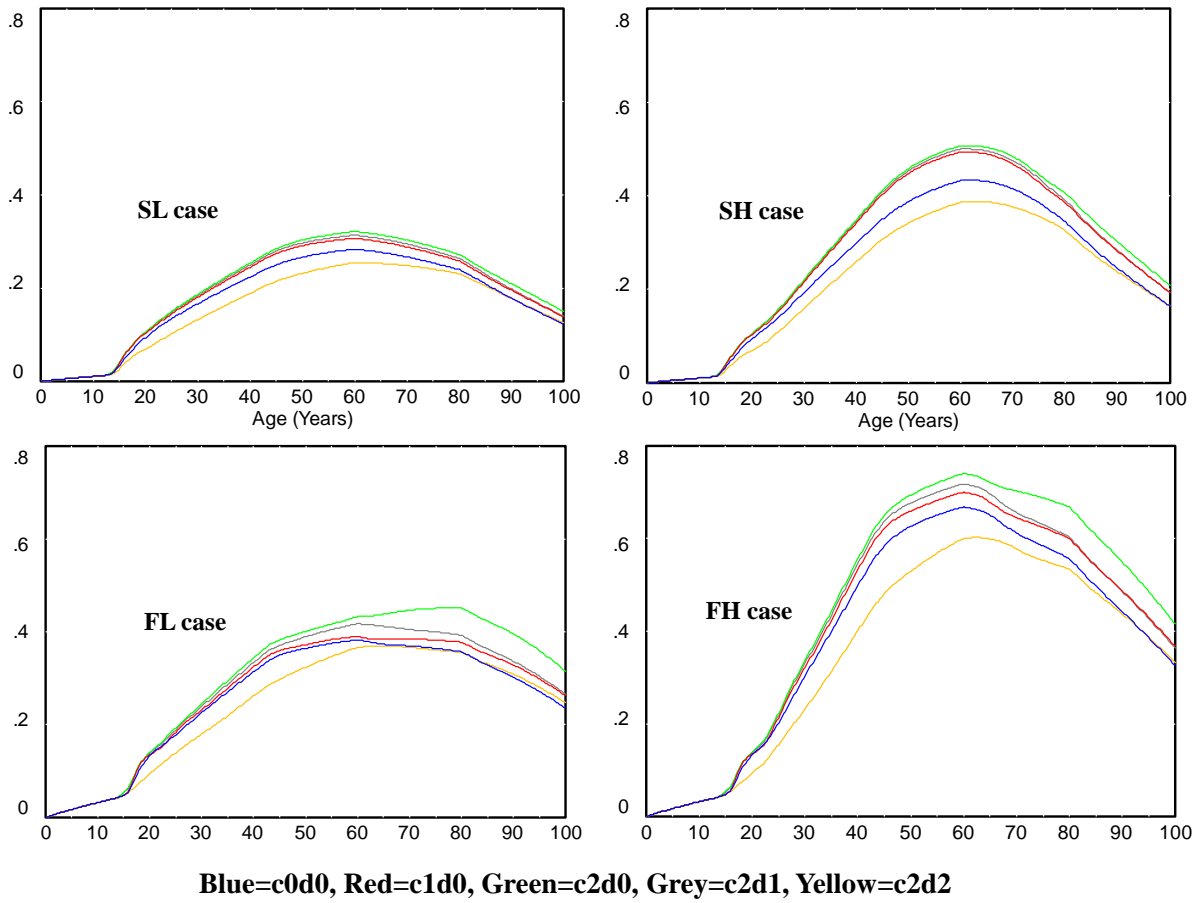
Blue=c0d0, Red=c1d0, Green=c2d0, Grey=c2d1, Yellow=c2d2

Figure 4. Achievement trajectory as affected by strategy for the four cases

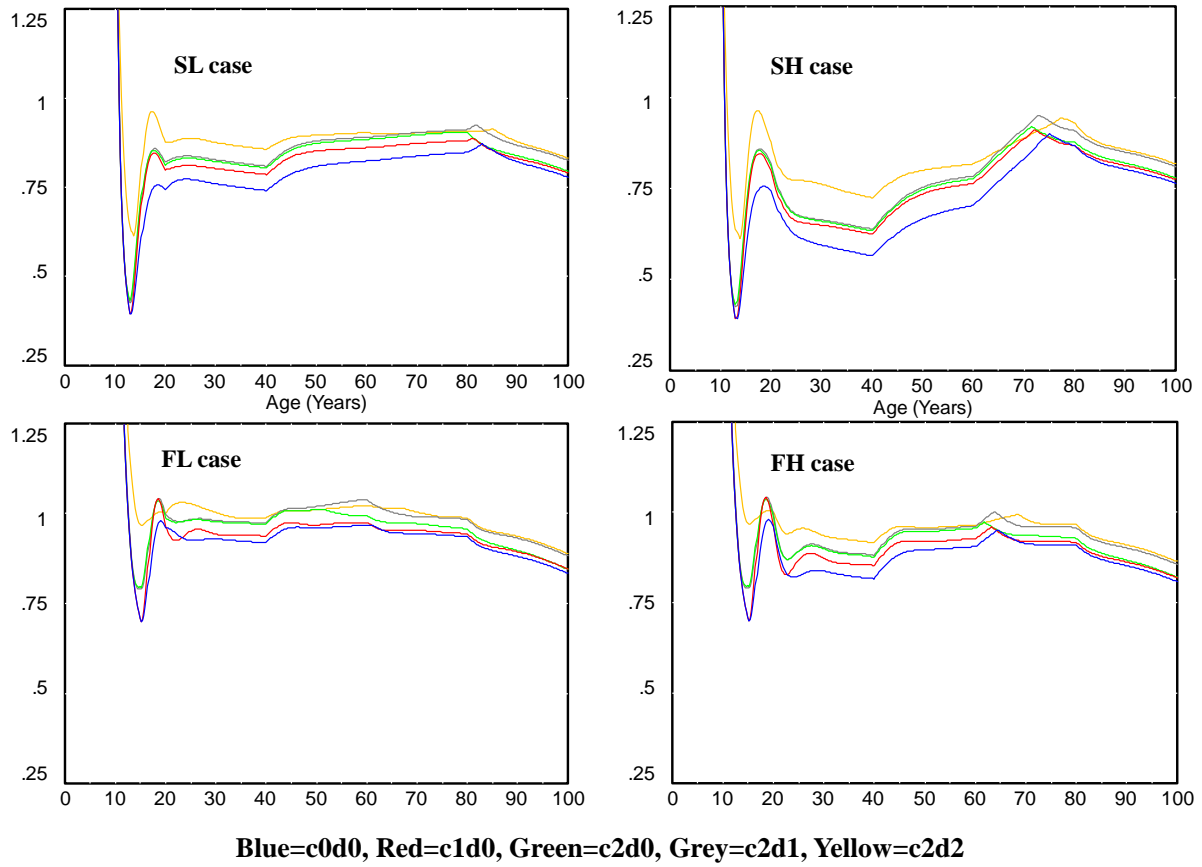**Blue=c0d0, Red=c1d0, Green=c2d0, Grey=c2d1, Yellow=c2d2**

Figure 5. Satisfaction trajectory as affected by strategy for the four cases