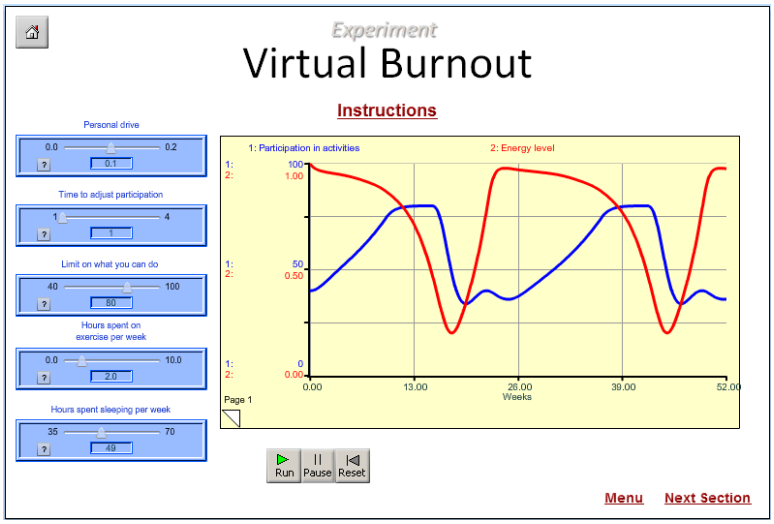
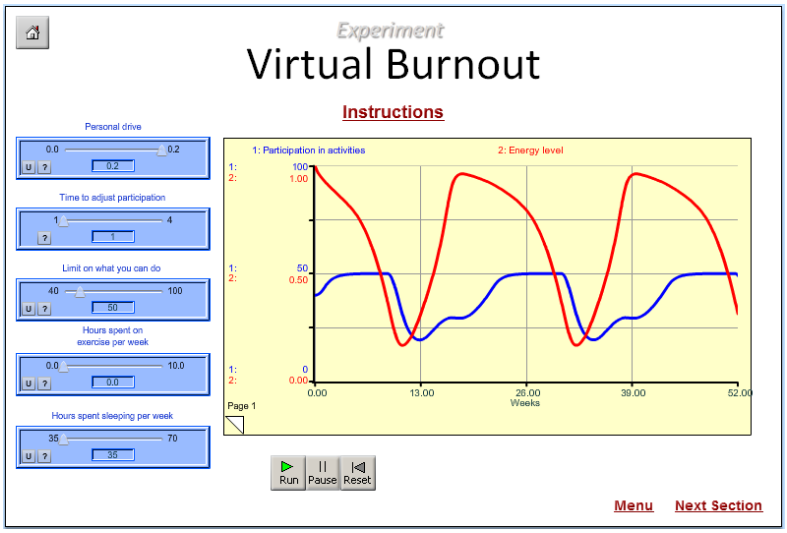
Background Information on Simulation Created for Lesson 6: The Big Squeeze: Pressure, Achievement and Burnout

by Jennifer Andersen and Anne LaVigne

in collaboration with the Creative Learning Exchange





Background Information on Simulation Created for

Lesson 6: The Big Squeeze: Pressure, Achievement and Burnout

Note: While the screen images, role-playing description and parameter settings presented in this document refer to the C-level simulation, most of the information is relevant to the B-level simulation as well.

Contents

Introduction

Burnout is a condition characterized by apathy and low energy. It is a severe reaction to stress. A typical candidate for burnout is a high-achiever, someone who is his/her own worst enemy and constantly puts pressure on himself/herself to excel in all areas of their lives. This simulation offers one hypothesis for how a typical overachiever may repeatedly drive himself/herself into periods of low activity and achievement by depleting his or her energy reserves. By showing how a person's energy level can vary over time through the effects of a busy schedule, exercise and sleep, it offers insight into how "regular" people may also experience burnout when faced with outside pressure to keep up a busy schedule.

The model presented in this simulation was created based on the experience of one system dynamics modeling practitioner as he was completing his Ph.D. degree[1]. As such, it is not intended to represent burnout in terms of physiology and/or psychology. To our knowledge, the model has not been evaluated by any mental health professional. It is simply a representation of one person's experience with burnout, and we hope that it can provide insight and spark curiosity among students.

Overview of Model Behavior

The Default Behavior Pattern

To reveal the default behavior pattern of the model, click the "Run" button without making any changes to the slider bars (see Figure 1). There are four pages of graphs. Click the white triangle in the lower left corner of the graph to page through them. Pages 3 and 4 are comparative graphs. Each time you click the "Run" button to simulate the model, the comparative graphs will show the new run in a different color. Click the "Reset" button to clear the graphs and reset parameter values to the default settings.

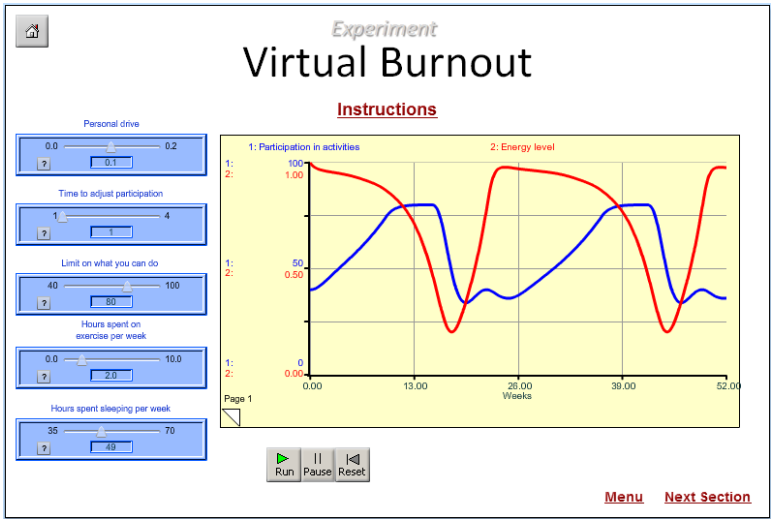


Figure 1: The default behavior of the model.

[1] Please see "Worker Burnout: A Dynamic Model with Implications for Prevention and Control," by Jack B. Homer, to read about his experience with burnout and how he translated it into a system dynamics model.

The default behavior pattern shows two cycles of burnout. “Participation in activities” rises, peaks, and falls while “Energy level” starts high, falls, and then recovers. This cycle is completed twice over the 52 weeks of the simulation. Notice that “Participation in activities” exhibits two small bumps that appear to be recoveries, before the real recovery occurs. Even before experimenting with the model, students could be asked to explain why they think these failed recoveries occur (look at “Energy level” at the time).

In the model, the amount a person can accomplish in one hour is directly proportional to his/her “Energy level.” “Energy level” can vary between 1 and 0, with 1 being full or maximum energy. This means that if “Energy level” is at a value of 0.3, a person is running on 30% of his/her maximum energy. Consequently, his/her accomplishments will be at 30% of maximum as well. This will impact “Total accomplishments” over the length of the simulation (Page 4 of the graph). Being present at an activity is not the same as doing a good job – if a person’s energy is low his/her performance is probably suffering as a result. Students should be encouraged to interpret the information presented in the graphs; when burnout is happening, participation may still be high, but energy, and therefore accomplishments, are low.

The default slider settings are intended to reflect a typical teenager lifestyle. Many (if not most) teenagers could be considered to have “some” personal drive, although it may not always manifest itself through academic performance. Either before experimenting with the model or as part of the class debrief session, students can be asked to brainstorm ideas about what slider settings would make sense for them personally. For example, what does “personal drive” mean to them, what activities they would include in the stock “Participation in activities” if the model were personalized for them, how many hours of activities would be a reasonable maximum amount (“Limit on what you can do”) and so on. The simulation and lesson are intended to stimulate reflection on their own lifestyle choices.

Speeding Up the Cycles

Being “driven” is considered by some people to be an admirable trait, even the opposite of being lazy. In an attempt to avoid burnout, some students may surmise that setting “Personal drive” higher will correct the tendency to experience burnout. This run, with “Personal drive” set to 0.2, is shown in Figure 2. The result is faster, more severe cycles. There are now three full cycles shown instead of two. Compared to the default behavior (The default setting for “Personal drive” is 0.1.), we see that both “Participation in activities” and “Energy level” reach lower levels.

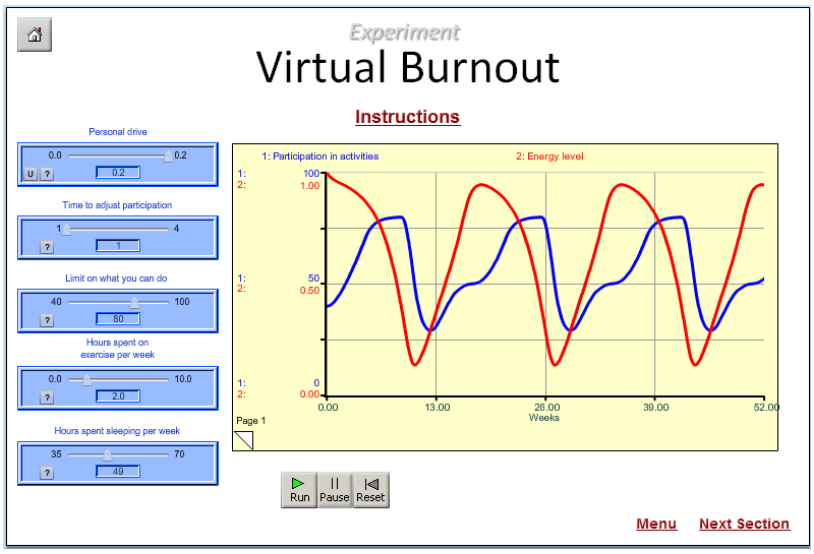


Figure 2: The behavior created by changing the slider for "Personal drive" to 0.2.

Clearly, this result is not ideal. You can help students understand what is happening in the simulation model by examining all the graphs. Notice how steeply "Participation in activities" rises in this run compared to the default run. "Energy level" also falls much more steeply in response to the explosion of activities.

If this run has been generated without clicking the "Reset" button, Pages 3 and 4 will now show both runs plotted together using a different color for each. In Figure 3 below, "Pressure to do more" (Page 3 of the graph) shows a more dramatic increase in run 2 (when "Personal drive" is highest) compared to run 1. "Pressure to do more" is based on "Satisfaction with accomplishments." When satisfaction is falling, pressure builds within the person to make up for his/her perceived lack of accomplishment. Setting "Personal drive" higher worsens this situation, and the person ends up crashing harder and more often. The end result is that "Total accomplishments" are lower when "Personal drive" is set higher, and performance over the year suffers as a whole. (This can be seen on Page 4 of the graph, but is not shown here.) Students should be encouraged to look at all the graphs, because together they tell the story of how different settings in the sliders produce changes in the model outcome.

Note that students may find out very quickly that setting "Personal drive" to 0 eliminates the cycles. They've found "the answer" to avoiding burnout – just have no drive! Never strive in life, and you'll be fine!

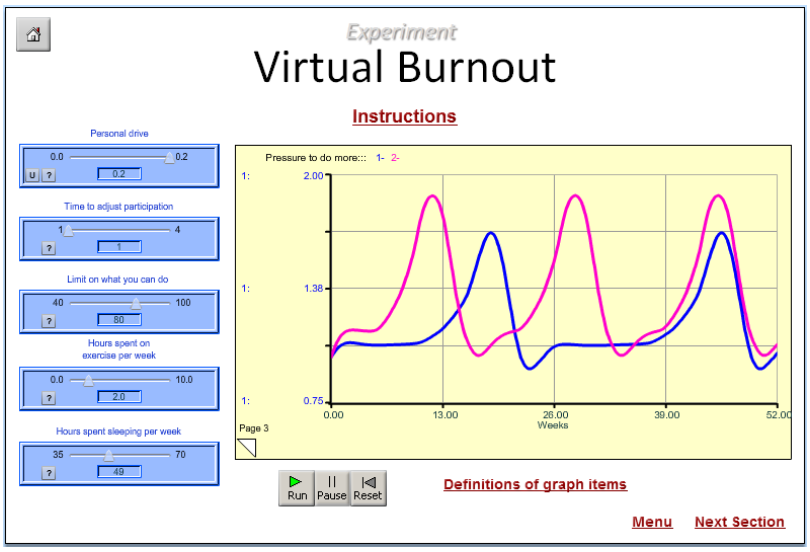


Figure 3: "Pressure to do more" when "Personal drive" is set to the highest level.

In real life, things aren't so clear-cut. It is probably true that people who literally have no drive in any area of their lives are unlikely to experience burnout. However, an assumption built into this model is that "go-getters"—those with "some" or "lots" of personal drive—are free to increase their participation AND decrease it when needed (when their energy is depleted). It shows how people can create their own cycles of burnout without the external influence of others (parents, employer). Ask your students if they can picture situations where the pressure does come from outside and a person isn't able to adjust his or her schedule to accommodate their low energy. (Some examples are people working a lot just to make ends meet, or someone taking care of an elderly or ill loved one.) Could these people also experience burnout?

Slowing Down the Cycles

The default value for the slider "Time to adjust participation" is 1 week. This means that on average, schedule adjustments can be made on a week-by-week basis. When energy drops, a person can cut back on participation without worrying about commitments. This is not always realistic (for example, a person may be exhausted but their soccer season runs for 4 more weeks). This slider allows experimentation with longer timeframes for adjusting participation. In the run shown in Figure 4, the slider has been set to 2 weeks instead of 1. To generate this graph, click the "Reset" button, then click "Run" to generate the default behavior pattern. Next, change the slider for "Time to adjust participation" to 2 and click "Run" again.

The result is that fewer cycles occur in the timeframe of the simulation. Because "Energy level" is dropping at the end of the 52 weeks, we can assume that there is a second burnout episode coming, even though we can't see it fully. This is an interesting run because it shows that the fundamental cause of burnout is not being addressed. It takes longer to add and subtract activities from the schedule, but the shapes of the lines are still essentially the same.

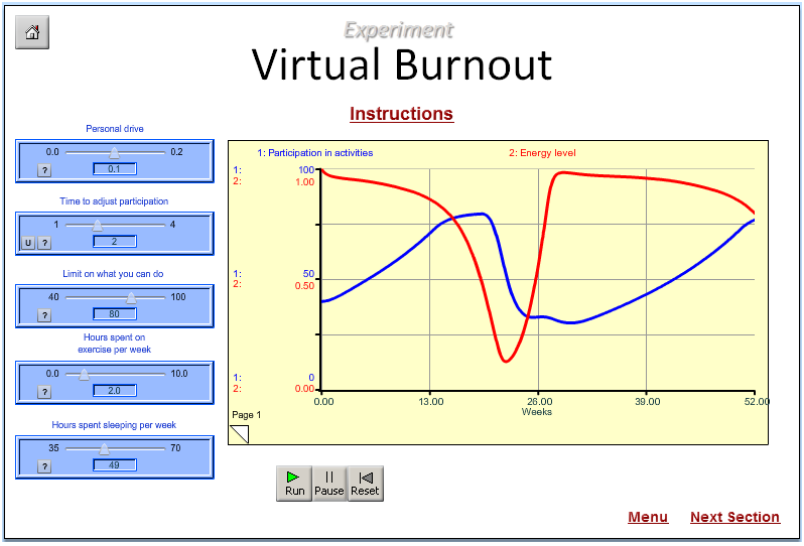


Figure 4: Changing "Time to adjust participation" from 1 week to 2 weeks slows the cycles.

Further, the larger delay in ramping up and scaling back a person's schedule can lead to a greater feeling of pressure, as seen in Figure 5, below. The model assumes that people compare what they've been able to accomplish with what they wanted to accomplish over a particular timeframe. When their performance falls short of their own expectations, they feel dissatisfied. They also feel pressure to compensate by adding to their workload. In the model, this is represented by increased "Participation in activities." That may mean that a week of poor performance on the soccer field or in the classroom gets followed up by more hours practicing soccer or studying. The difficulty is that more hours being exacted on an already tired body or mind often hurts performance. The stage is then set for a person to push himself/herself until energy gives out, and they crash. This dynamic describes burnout in general, so lengthening the time needed to adjust the schedule prolongs the time to the crash but does not prevent it from happening. Instead, the crash is more severe, but occurs less often.

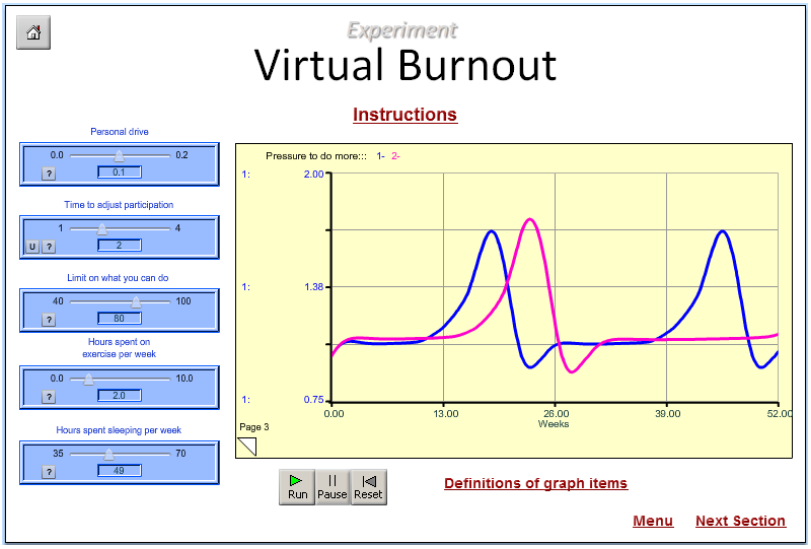


Figure 5: When a person can't immediately change their schedule, pressure builds!

Stabilizing the Cycles

The sliders for “Limit on what you can do,” “Hours spent on exercise per week” and “Hours spent sleeping per week” all factor into stabilizing the burnout cycles of people with “some” or “lots” of drive (“Personal drive” set to 0.1 or 0.2, respectively). As shown earlier, a person with “no” drive (“Personal drive” set to 0.0) will not experience burnout, so stabilization is not an issue in that case.

These sliders can be changed individually or together to settings that eliminate the burnout cycles. It’s important for students to understand how and why the cycles have been affected, both in the cases where the cycles are less severe and in the cases where the cycles have been eliminated completely. For example, lowering the “Limit on what you can do” from 80 hours per week to 60 produces the result shown in Figure 6. (Click “Reset” to clear the previous runs, then click “Run” to generate the default behavior, and then make the change to the slider.)

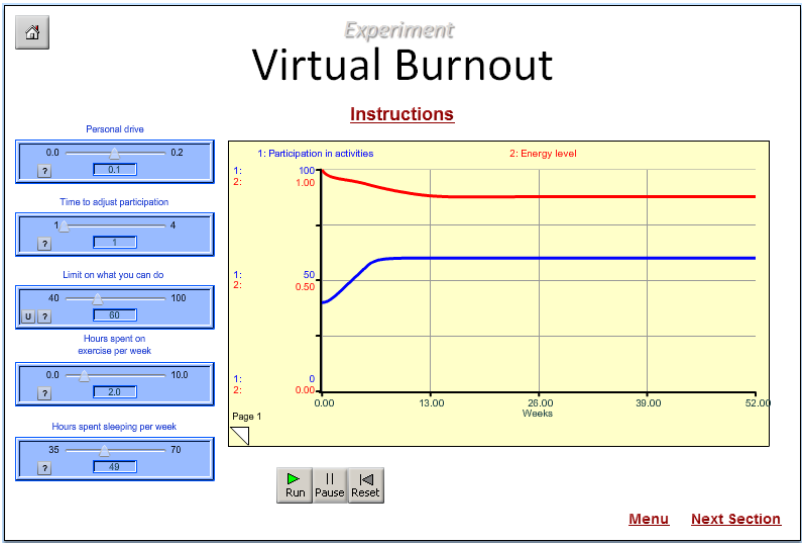


Figure 6: The burnout cycles are eliminated when a limit on participation is imposed.

This result indicates that fighting the impulse to “do more” by setting an absolute limit on “Participation in activities” avoids burnout cycles. In real life, some companies in high-pressure industries do set limits on how many hours their employees are allowed to work. They also mandate that vacation time is used each year. The reasoning is that burned-out employees are more costly than beneficial to the long-term health of the company (costly in terms of lost productivity while drawing a salary, and in hiring and training replacements for the ones who leave or are fired.)

An interesting tradeoff to such a limit is shown in Figure 7. Notice how “Satisfaction with accomplishments,” while not at a low level overall, can never improve. The person is stuck with a feeling that their accomplishments are lower than what they would like to accomplish (and believe they can accomplish).

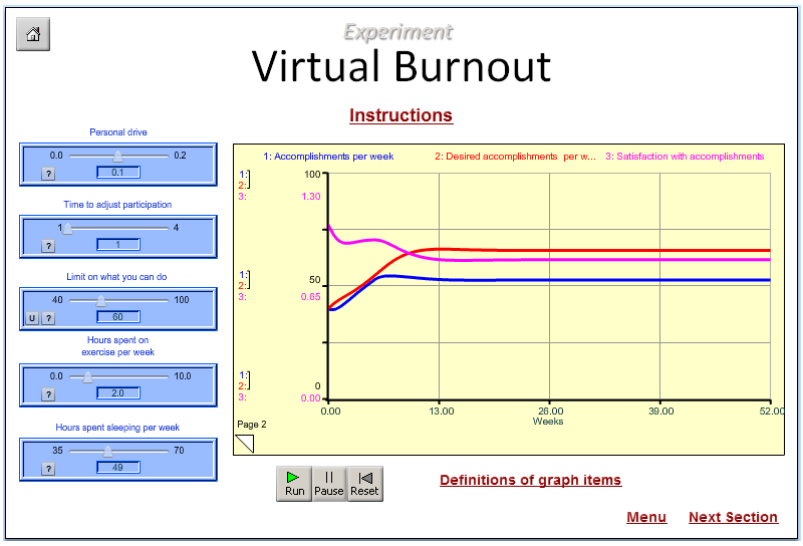


Figure 7: Setting a limit on participation may mean accepting chronic dissatisfaction.

In a similar manner, improving a person's exercise and sleep habits may help him/her cope with a busy schedule, even to the point of eliminating the burnout cycles. However, as long as there is at least "some" drive in the person, he/she may never be truly satisfied. Experiment with these sliders and see if "Desired accomplishments per week" mostly stays above "Accomplishments per week." Ask your students if they think this is good or bad. Is it human nature to want to strive for "more" and "better" in their lives? Could this be a cultural trait, more prevalent in some cultures than others? This simulation model can help generate some interesting discussion around the topics of work, success and progress in different societies.

Can a "Light" Schedule Lead to Burnout?

Finally, you may find it interesting to ask your students if they think a person with a relatively "light" schedule could still experience burnout. An illuminating simulation run can be generated by setting "Personal drive" to 0.2, "Limit on what you can do" to 50, "Hours spent on exercise per week" to 0 and "Hours spent sleeping per week" to 35 (see Figure 8).

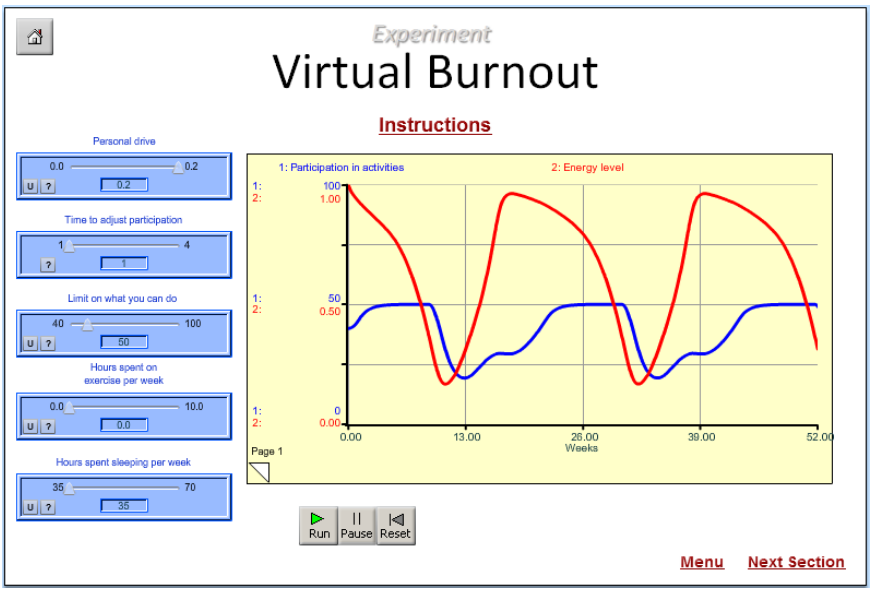


Figure 8: An unhealthy lifestyle coupled with a high drive can lead to burnout!

This result shows students that burnout is not simply about the number of hours a person works or participates in various activities. In this situation, the schedule is relatively light – limited to only 50 hours per week. Together with poor exercise and sleep habits, however, plus an "overachiever" drive, this person couldn't handle the physical and mental stresses being inflicted. Energy still plummets and even such a "light" schedule can't be maintained. From this dire situation, adjusting exercise and sleep levels shows that better choices in these areas provide the means to cope and even increase participation without returning to burnout cycles.

Model Structure and Assumptions

A portion of the model structure is presented in Figure 9. This screen is accessed in the section of the simulation entitled "Explore the Model: Model as Hypothesis." Click "Tour the Model Structure" for Parts 1 and 2 and use the spacebar to toggle through the presentation of the structure.

Notice that there are no outside influences that drive the burnout cycles. The green variables are parameters that are set on the Control Panel of the simulation. The remaining variables are defined internally, based on relationships indicated by the red arrows. The variable "Satisfaction with accomplishments" is colored purple to indicate that it is repeated in two places to avoid stretching a link across the diagram. Click on the link titled "Tour the Loops" (located under the two links: "Tour the Model Structure – Part 1" and "Tour the Model Structure – Part 2") to read more about the feedback loops embedded in the model structure.

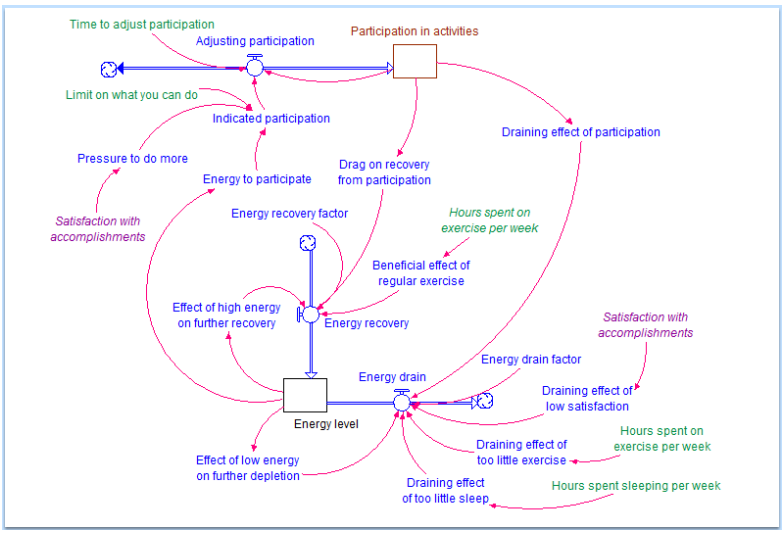


Figure 9: A portion of the model structure shown in the "Tour the Model Structure – Part 1" link.

Limitations of the Model

The simulation model featured in this lesson is closely based on a model developed by a system dynamics practitioner who experienced burnout cycles while attaining his Ph.D. degree. As such, it is not presented as an accurate depiction of burnout from either physiological or psychological perspectives.

The original model featured the levels of "Hours worked per week" and "Energy level." Because the model author could set his own schedule, he was able to decrease his hours worked in response to feelings of low energy. To make this model more accessible to students, the idea of "Participation in activities" was substituted for hours worked. "Participation in activities" can mean almost anything—time spent in school, at work, babysitting a sibling, etc. It is an aggregate measure that was deliberately kept vague to appeal to the widest possible audience.

Teenagers (and younger students) often juggle very busy schedules. They spend the equivalent of a full-time job in school and doing homework (when counting travel time) and may participate in any number of scheduled and unscheduled activities during evenings and weekends. Even their social lives, despite being relatively "unscheduled" (in the sense of being varied and voluntary), can add pressure. They may push themselves to be present at a social activity just to keep up with their peers and not miss out on anything. If they are identifying with the model on a personal level, they may point out that they are unable to miss school for extended periods of time ("Participation in activities" dropping to 20 hours per week, for example.). This is a valid observation, but the model is a generic picture of the tradeoffs between activity level and energy. It does not represent what a real person's week-to-week schedule may look like over time when experiencing burnout. It is one general hypothesis of how a person's internal drive can cause him/her to experience repeated bouts of burnout. There are other explanations for burnout that may also be valid.

Talking Points – Linking the Simulation to Real Life

Some useful questions for discussion with students include the following:

- Have you ever felt "burned out" in regard to a particular activity? You may have wondered why an activity that used to be fun suddenly didn't seem that great anymore. At the time, did you think of your disinterest as boredom? Did you take a break or leave the activity entirely? Was there anything in this simulation that you could relate to your example?
- Have you ever felt disinterested in the world around you, or have you known anyone who has? Was there anything in this simulation that you could relate to your own experience? What was the same? What was different?
- Are overachievers the only people likely to experience burnout? The model shows one hypothesis of how burnout can occur and how a person may experience repeated bouts of burnout if he/she doesn't make changes to his/her life. Besides being a driven person (workaholic or overachiever), what other situations could lead to burnout in "typical" people? [For example, anything that disrupts a person's schedule or adds stress to their lives over a long period of time – job pressure, working to finish a degree, death in the family, birth of a child, caring for an aging parent, etc.] Remember the three categories of typical causes presented in the simulation – work-related causes, lifestyle causes and personality traits.
- What would you consider to be more important to preventing burnout – making changes to one's schedule (doing less) or trying to control one's expectations of what can be accomplished (expecting less)? What advice would you give to someone with a busy schedule who can't lower the number of hours he/she must spend on a demanding schedule? The model shows how the level of participation in activities changes over time according to one's energy level. But what if a person can't decrease his/her hours? [They could offer advice for helping them to recover their energy, for example.]
- What advice would you give to someone who seems to be causing his/her own burnout by constantly striving to do more? [They could offer an explanation to help them understand their own role in causing burnout.]
- Do you think individuals from one country are more likely than individuals from another country to experience burnout? What examples and evidence can you use to justify your answer?
- What other factors not included in the model could be at work to create burnout? [For example, diet, time spent commuting to work, time spent indoors and not in natural surroundings, type of work a person does, etc.]

The Cause of the Problem is Within the System

The overall goal of the Oscillation curriculum is to teach a principle of complex systems: The cause of the problem is within the system. Socioeconomic systems that oscillate are often not recognized as oscillating due to their intrinsic structure. Explanations often point to outside influences that are themselves oscillating, or to a particular combination of outside factors believed to "drive" the oscillation. Yet a physical system such as a spring (presented in Lesson 1) oscillates because it is made to do so. It does not oscillate because a hand or other external force continually pushes it in an up-and-

down or back-and-forth motion. A spring gets set into motion with a push or a pull, and it oscillates due to its own structure.

Many people will experience burnout at some point in their lives, and it may be caused by something temporary in nature, such as a particularly heavy workload that then abates as things return to normal. This model considers a repeated pattern of burnout that is caused by a person's internal nature. These people are often known as "overachievers" or "workaholics." They are driven by nature and can experience burnout with no outside influence pushing them to do more.

Understanding such a situation is the first step in determining how to change the behavior pattern. A person who is naturally driven may always remain so, but he/she can also restructure his/her life in such a way that burnout is less likely. Understanding the underlying causes of the cycles is the first step to producing a more healthy behavior pattern. Other lessons in this series illustrate these ideas using oscillating systems in physics (Spring-mass system), biology (Predator-prey cycles) and economics (Commodity cycles).