Perfectionism, self-worth and choice.

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Abstract
Perfectionists regularly experience problems when making decisions and, when a decision has been made, experience problems with staying committed to their choices (Mallinger, 2009). Perfectionists have unreasonably high standards, towards which they strain compulsively and unremittingly, and they measure their self-worth primarily in terms of accomplishment (Burns, 1980; Pyszczynski & Cox, 2004). Since perfectionists measure their self-worth primarily in terms of accomplishment, perfectionists can experience short-term fluctuations in self-worth stability due to self-evaluative emotional reactions to events of accomplishment (Kernis, 2005). The inability to retain choice commitment can leave perfectionists unable to observe the accomplishment that could have resulted from their choice if they had committed to it. Without the needed sense of accomplishment a perfectionist's self-worth can decrease. This makes perfectionists susceptible to anxiety, depression, eating disorders, and even suicidal ideation (Burns, 1980; Crocker, 2002; Kernis, 2005; Levine, 2012; Pyszczynski & Cox, 2004; Ramsey & Ramsey, 2002). This paper proposes the use of System Dynamics as a modelling tool to explain the interrelationship of the various mechanisms that are part of the underlying structure which causes perfectionists to often be unable to stay committed to their own choices. Furthermore, the dynamic hypothesis and the resulting behavior may help perfectionists to better understand themselves and may aid in the perfectionist's ability to retain their choice commitment.

Keywords: perfectionism, choice commitment, self-worth

Conference thread: Psychology and Human Behavior

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Introduction

Problem identification

The ability to make your own choices is often perceived as a wonderful thing. However, for perfectionists this is not always the case. Perfectionists regularly experience problems when making decisions – such as being unable to choose between several options – and, when a decision has been made, experience problems with staying committed to their choices (Mallinger, 2009). This latter issue is particularly interesting since perfectionists make as many good decisions as anyone else.

The inability to retain choice commitment by perfectionists is important to address as perfectionists have unreasonably high standards, towards which they strain compulsively and unremittingly, and they measure their self-worth primarily in terms of accomplishment (Burns, 1980; Pyszczynski & Cox, 2004). Since perfectionists measure their self-worth primarily in terms of accomplishment, perfectionists can experience short-term fluctuations in self-worth stability due to self-evaluative emotional reactions to events of accomplishment (Kernis, 2005). When perfectionists are unable to commit to their own choices, they are consequently unable to observe the accomplishment that could have resulted from their choice if they had committed to it. Without the sense of accomplishment a perfectionist's self-worth may decrease. This makes perfectionists susceptible to anxiety, depression, eating disorders, and even suicidal ideation (Burns, 1980; Crocker, 2002; Kernis, 2005; Levine, 2012; Pyszczynski & Cox, 2004; Ramsey & Ramsey, 2002).

Method and Reference Modes of Behavior

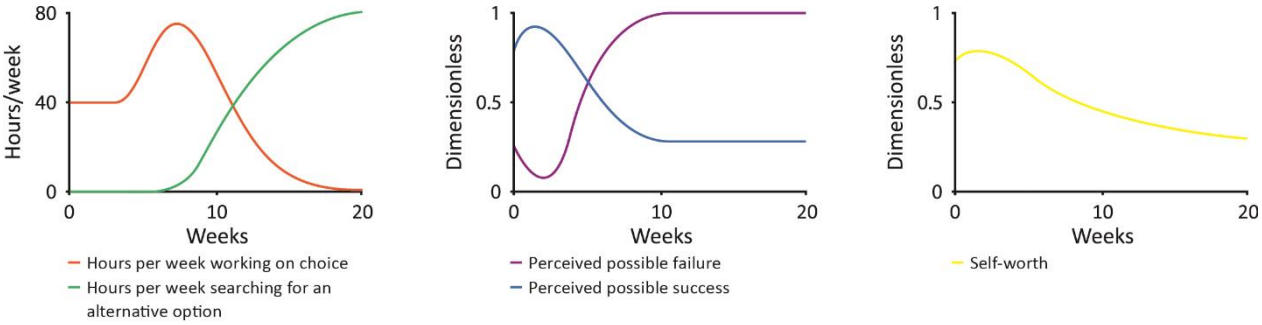
In social science literature, perfectionism and related mechanisms are often studied through the use of methods such as surveys, interviews and experiments. Results of which are statistically analyzed. This paper aims to contribute to this research by providing the use of System Dynamics modelling as a method to study the interrelationship of the various mechanisms that are part of the underlying structure which causes perfectionists to often be unable to stay committed to their own choices. Furthermore, the model itself and the behavior it produces might help perfectionists to better understand themselves and their feelings, and to stick to their choices in the future. Figure 1 shows the reference modes of behavior to which the author's personal experience (see the provided descriptive summary below) provide the necessary data.

"As a perfectionist myself, I too have often experienced problems with staying committed to my own choices. When I have just made a choice, I start out from my normal feelings of possible success and possible failure. As I start working (40 hours per week), I initially perceive an increase in possible success due to being excited about my choice ("Yay, this is going to be awesome! I can do this!"). I also perceive a decrease in possible failure because I can manage the imperfections that I come across. I consider both these things as accomplishments, and start feeling a little more worthy about myself.

The more I work on my choice however, the more imperfections I come across. I start feeling anxious and my perception that my choice will possibly fail starts increasing. Furthermore, my perception that my choice will be successful starts decreasing as I compare my successes (the fixing of the imperfections that I came across) with the amount of work that still needs to be done to avoid failure (the imperfections that I still need to fix). But, I try not to freak out. In my mind, the most logical thing to do, is to start working more. I am prepared to spend all my time on my work, since it is of the utmost importance that my choice succeeds. Otherwise, I would be a failure. Thus, I increase the hours per week I spend on my work, and decrease the hours per week I spend on leisure time. As I have less leisure time to spend with others, and I do not want them to know about my possible failure (which makes me avoid sharing my feelings), I start to feel more lonely, which makes me feel less of a worthy person.

As I am approximately working 80 hours per week, I am fixing more imperfections each week. However, the mountain of imperfections that I am discovering still increases! I start to feel that my choice is doomed. My perception of possible failure increases towards 100%, and my self-worth further decreases. This all is causing me pain, and I need a way out. In my mind, it's the choice that causes me pain, thus I start increasingly spend my time searching for an alternative option, which eats away the time I actually spend working on my choice. Eventually, as my perception of failure does not decrease, I will spend all my time searching for an alternative option, instead of actually working on my choice. I feel that my choice has failed, which to me means that I have failed, and consequently I feel worthless about myself."

Figure 1 – Reference modes of behavior for hours per week spend per activity (left), perceived possible failure and success (middle), and self-worth (right)[1].



[1] Note that the reference modes and model only encompass one made choice, and do not include that choice being changed to an alternative. In that situation the expected model behavior is oscillation since, when an alternative option is found, one would feel relieved at having found an alternative. This relief could cause the perfectionist to perceive that he can, once again, achieve his goal (by means of the changed choice). Perceived possible success will increase, and perceived possible failure will decrease. Self-worth has the opportunity to increase once more and the hours per week spend working will again be devoted to working on the choice made instead of on looking for an alternative. However, inevitably, the perfectionist will again come across a growing body of imperfections while he works on the new choice, and perceived possible failure will increase again, which consequently will cause self-worth to decrease and the hours per week spend searching for an alternative option to increase until another alternative is found. As such, for each new choice made, the behavior as described in the reference mode is expected to arise subsequently which would give oscillation (with the assumption of absence of external pressures such as deadlines).

Dynamic Hypothesis

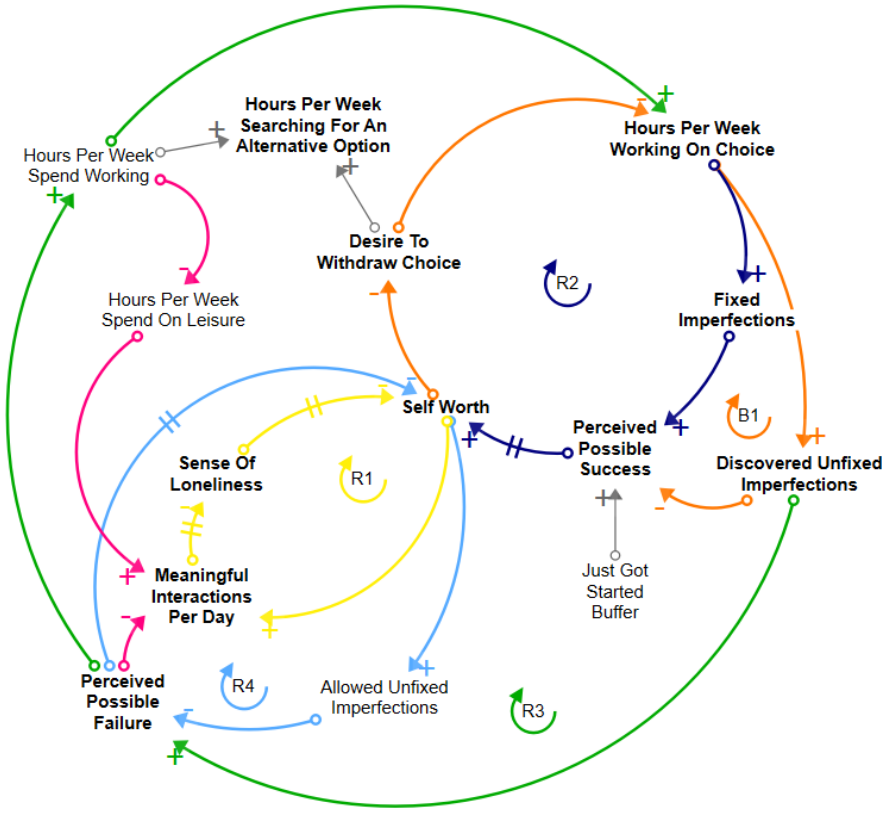
Causal loop diagram

The dynamic hypothesis, being the model accompanying this paper, explains the cause and effect relationships that evoke the observed problem behavior as shown in the reference modes. The model is based on literature review, interviews (N=7) with perfectionist (n=4) and non-perfectionists (n=3), and the author's own assumptions where needed. To provide a high-level overview of the model, Figure 2 shows a simplified causal loop diagram that summarizes the main processes responsible for the observed problem behavior.

Loop R1

According to sociometer theory, self-worth is dependent on an individual's relational value (among other things). Relational devaluation [*appreciation*] can occur when an individual feels a greater [*lesser*] sense of loneliness. This produces [*relieves*] emotional distress and, over time, negatively [*positively*] affects one's self-worth (Leary, 2005; Leary & Baumeister, 2000; Leary & Downs, 1995; Qualter & Munn, 2002; Sinclair & Lentz, 2010). As such, self-worth is influenced through a negative relation by sense of loneliness (with a delay). It is assumed that when an individual believes that he is a worthwhile [*worthless*] person, that he will pursue more [*less*] meaningful interactions (both in quantity and quality) as the individual believes he is worthy [*unworthy*] of those meaningful interactions. Thus, it is assumed that meaningful interactions are influenced through a positive relation by self-worth.

Figure 2 – Causal loop diagram summarizing the main processes responsible for the observed problem behavior.



Sense of loneliness is a subjective phenomenon that results from deficiencies in an individual's social relations (Perlman & Peplau, 1981). Therefore, it is assumed that less meaningful interactions per day can lead to these deficiencies and, over time, increase an individual's sense of loneliness. As such, sense of loneliness is influenced through a negative relation by meaningful interactions per day (with a delay). Together, these mechanisms create the reinforcing loop R1. When an individual feels worthy about himself, this loop stimulates this feeling. However, when an individual experiences a decrease in self-worth, he can get trapped in negative feelings and he will further deprive himself of the relations he actually craves (Burns, 1980).

Loop R2

Perfectionists measure their self-worth primarily in terms of accomplishment (Burns, 1980; Pyszczynski & Cox, 2004). Thus, when an individual perceives high [*low*] possible success, he will feel more [*less*] worthy about himself. As such, over time self-worth is influenced through a positive relation by perceived possible success.

People seek to protect their self-worth and thus avoid failure in domains on which their self-worth is staked (Crocker, 2002), this domain being accomplishments for perfectionists. This means that when self-worth plummets, perfectionists desire to withdraw from their choice as they perceive their choice will not bring them the accomplishment they need (Burns, 1980). Therefore, the desire to withdraw a choice is influenced through a negative relation by self-worth. It is assumed that the more one desires to withdraw their choice, the more one will spend time on searching for an alternative option. Consequently, one will spend less time working on the initial choice. As such, hours per week working on choice is assumed to be influenced through a negative relation by the desire to withdraw a choice.

When someone spends less [*more*] time working on their choice, they can fix less [*more*] imperfections than they usually can. As such, fixed imperfections is influenced through a positive relation by hours per week working on choice. The more [*less*] imperfections one fixes, the more [*less*] possible success he perceives. As such, perceived possible success is influenced through a positive relation by fixed imperfections. Together, these mechanisms create the reinforcing loop R2. When an individual feels less worthy about himself, and consequently desires to withdraw his choice and will work less hours per week on his choice, then he deprives himself of the chance to perceive more possible success which he needs to feel more worthy again. The perfectionist becomes trapped.

Loop B1

Loop B1 shares the relations between perceived possible success and self-worth, self-worth and desire to withdraw choice, and desire to withdraw choice and hours per week working on choice, with loop R2. But, instead of going through fixed imperfections, loop B1 operates through discovered unfixed imperfections. When someone spends more [*less*] time working on their choice, they will discover more [*less*] unfixed imperfections. As such, discovered unfixed imperfections is influenced through a positive relation by hours per week working on choice.

As mentioned in the reference mode, perfectionists measure their success by comparing work they have done, with work that still needs to be done in order to meet their standards (De Wit, 1988). As such, it is assumed that when discovered unfixed imperfections increase, perceived possible success will decrease. This implies that perceived possible success is influenced through a negative relation by discovered unfixed imperfections. Together, these mechanisms create the balancing loop B1.

Loop R3

Loop R3 shares the positive relation between hours per week working on choice and discovered unfixed imperfections with loop B1. Perfectionists often overreact to imperfections as they fear failure (Burns, 1980). The more [*less*] imperfections they discover, the more [*less*] they perceive possible failure. As such, perceived possible failure is influenced through a positive relation by discovered unfixed imperfections.

Perfectionists are prepared to drive themselves through stressful conditions when they perceive possible failure in order to ensure their performance meets their standards (Ramsey & Ramsey, 2002). They will deny themselves leisure periods by working more. As such, hours per week spend working is influenced through a positive relation by perceived possible failure. The more [*less*] hours per week are spend on working, the more [*less*] hours per week one will work on their choice (or on searching for an alternative option). As such, hours per week working on choice is influenced through a positive relation by hours per week spend working. Together, these mechanisms create the reinforcing loop R3. The more one perceives failure, the more one will work, and consequently the more one discovers imperfections, which leads to more perceived possible failure the next time round.

Loop R4

Perfectionists measure their self-worth primarily in terms of accomplishment (Burns, 1980; Pyszczynski & Cox, 2004). Thus, when an individual perceives high [*low*] possible failure, he will feel less [*more*] worthy about himself. As such, over time self-worth is influenced through a negative relation by perceived possible failure. When a perfectionist's self-worth decreases, he concludes that he 'must do better'. Perfectionists will then increase their,

already high, standards by allowing less imperfections (Burns, 1980; Pyszczynski & Cox, 2004; Ramsey & Ramsey, 2002). As such, allowed unfixed imperfections is influenced through a positive relation by self-worth. The less imperfections are allowed, the harder it becomes to meet a perfectionist's standards and failure is imminent. As such, perceived possible failure is influenced through a negative relation by allowed unfixed imperfections. Together, these mechanisms create the reinforcing loop R4, where perceived possible failure leads to a higher perceived possible failure the next time round.

Model boundary

This model is applicable to moderate decision making (such as 'what research method to use for a study', or 'selecting the theme for a project'). This model is not applicable to lifechanging decisions (such as 'moving to a different country') or insignificant decisions (such as 'what to eat for dinner'). This model explains the mechanisms that cause the dynamic behavior which unfolds after a choice has been made (working on the choice thus means 'working on the specific chosen project'). It is assumed that all discovered imperfections can be fixed. Furthermore it is assumed that an individual will keep searching for a better option when he desires to withdraw the choice made (in reality, if you cannot find a better option, you might pick up the work on your initial choice again). Furthermore, as explained in note[1] below Figure 1, this model only encompasses one choice. An individual actually changing his choice is not embedded in the model boundary (as such, the model does not produce the oscillations that one would expect to see in that case).

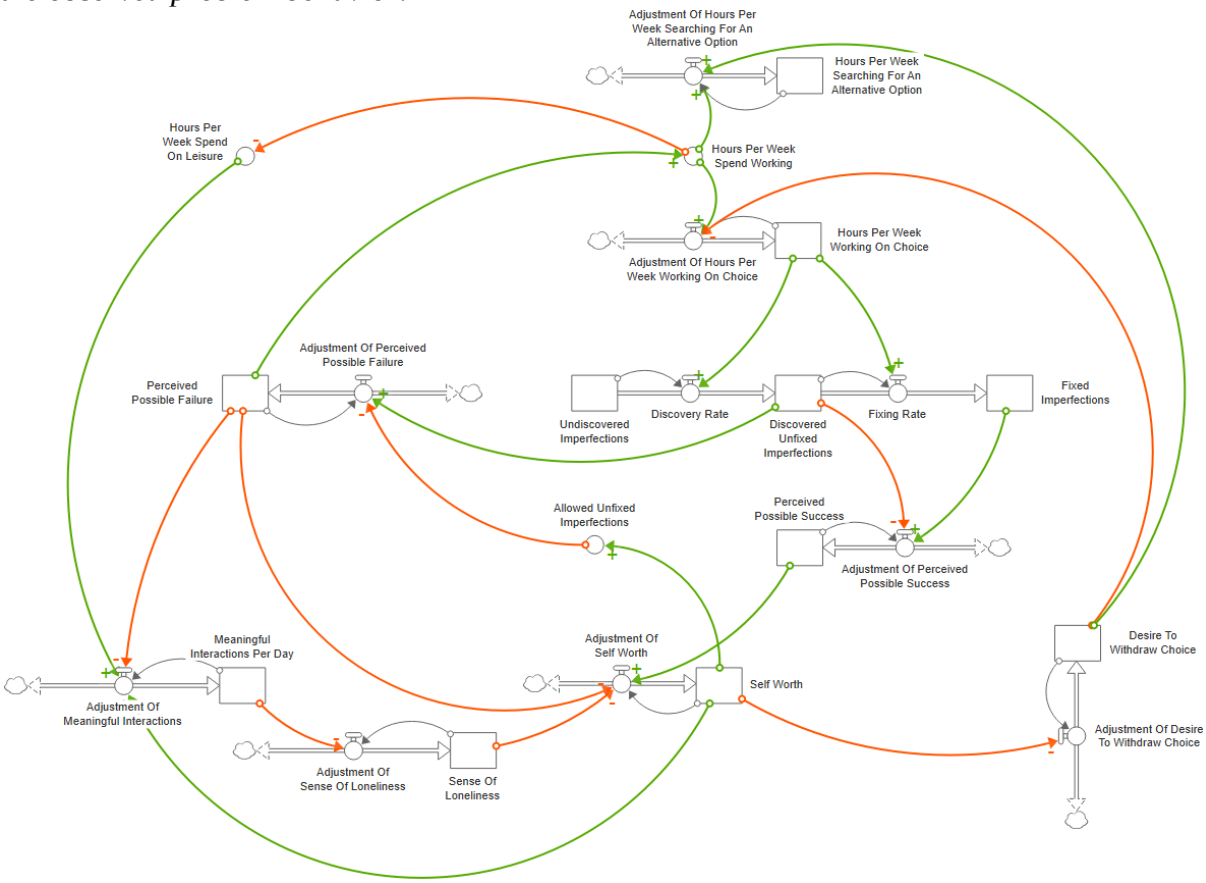
Model Validation

During the modeling process the guidelines set out by Barlas (1996) and Sterman (2000) were followed to gain confidence in the model structure, and in extent the simulation results. Furthermore, preferred model reporting requirements as described by Rahmandad and Sterman (2012) were adhered to. General results of the validation tests are described below. Further details are given in the provided supplementary materials. The following validation tests are performed: structure confirmation test, parameter confirmation test, dimensional consistency test, direct extreme conditions test, partial model testing, integration error test, indirect extreme conditions test, behavior reproduction test, and behavior sensitivity test.

Structure tests

The model structure and parameters used in this model are based on literature review, interviews (N=7) with perfectionist (n=4) and non-perfectionists (n=3), and the author's own assumptions when stated. The entire model and its documentation (with sources) can be found in the provided supplementary materials. However, a simplified stock and flow diagram is shown in Figure 3. The structure corresponds with existing knowledge about the real-world system. Each equation is dimensionally consistent without the use of dummy variables to force dimensional consistency. As a result of a direct extreme conditions test, two equations had to be adjusted so their resulting behavior would not contradict the real world system. After adjusting the equations, the resulting behaviors made sense and represent what would logically happen in the real world, even when its inputs take on extreme values. Furthermore, all sectors were subjected to partial model testing. With constant inputs from other sectors, each sector showed behavior as was expected and represents their own real-world subsystem.

Figure 3 – Simplified stock and flow diagram summarizing the main structure responsible for the observed problem behavior.



Behavior tests

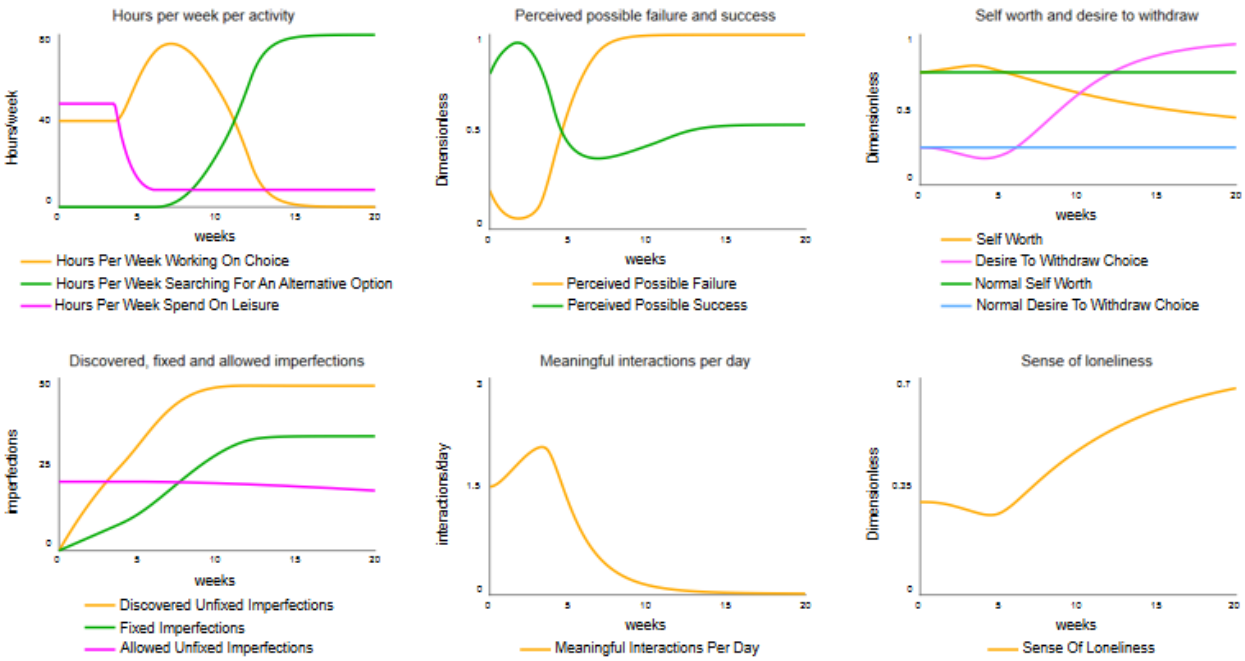
Euler integration is selected as integration method. When switching between integration methods, no change in behavior was observed. An appropriate time step is chosen so that the model behavior does not change when reducing the time step and does not ask for unreasonable computational power. The model matches the behavior of the reference modes and will be discussed later in this paper. As a result of indirect extreme conditions tests, some model structure was added and accordingly equations were adjusted. The model now produces plausible behavior under extreme conditions for the right reasons. Most parameters and table functions were not, or only slightly, numerically sensitive to changes in model inputs. The parameters (Discovery Fraction, Normal Amount Of Imperfections Fixed Per Week – Perfectionist, Allowed Weeks' Worth Of Unfixed Imperfections In Backlog, and Time To Adjust Self Worth) and table functions (Effect Of Desire To Withdraw Choice On Fraction Of Work Spend On Searching For An Alternative Option, and Effect Of Self Worth On Desire To Withdraw) that were sensitive to changes in model inputs were also expected to be sensitive to changes in model input. This builds confidence in the model. Furthermore, there were two parameters (Normal Perceived Possible Failure – Perfectionist, and Weight Of Loneliness For Self Worth) that were expected to be sensitive to changes in model input, but which appeared not to be sensitive (or only slightly numerically). For further discussion and results of the sensitivity analysis, please refer to the provided supplementary materials.

Simulation Results

Baseline scenario

The graphs in Figure 4 show the simulation results of the baseline scenario that is meant to reproduce the problem behavior regarding choice commitment of perfectionists. Of special interest are 1) the stocks Hours Per Week Working On Choice and Hours Per Week Searching For An Alternative Option in combination with Hours Per Week Spend On Leisure, 2) the stocks Perceived Possible Failure and Perceived Possible Success, 3) the stock Self Worth and the Desire To Withdraw Choice, 4) the stocks Discovered Unfixed Imperfections, Fixed Imperfections, and Allowed Unfixed Imperfections, 5) the stock Meaningful Interactions Per Day, and 6) the stock Sense Of Loneliness. The simulation reproduces the reference modes of behavior quite accurately (comparison of the top graphs in Figure 4 with the reference modes in Figure 1). In general the perfectionist starts working normal hours. Initially he perceives lower possible failure and higher possible success as he is excited about his choice and can still manage to deal with the imperfections he comes across. As such, self-worth increases a little too. But as the perfectionist comes across more imperfections, his perceived possible failure increases and his perceived possible success decreases. As an overreaction, the perfectionist will start working more hours per week and decreases his leisure time. The decrease in leisure time causes the meaningful interactions the perfectionist has each day to drop, which in turn causes sense of loneliness to increase. Over time, the perfectionist keeps discovering imperfections and his perceived possible failure increases. This causes, together with the decreasing perceived possible success and increasing sense of loneliness, the perfectionist's self-worth to decrease. The perfectionist starts to desire a way out of this painful situation and will increasingly spend more time searching for an alternative option. As such, hours per week working on choice decreases. Eventually, the perfectionist spends all his time searching for an alternative choice, which inhibits perceived possible failure and success to change, and his self-worth has decreased significantly. In the remainder of this section the behavior caused by the model structure will be explained in more detail.

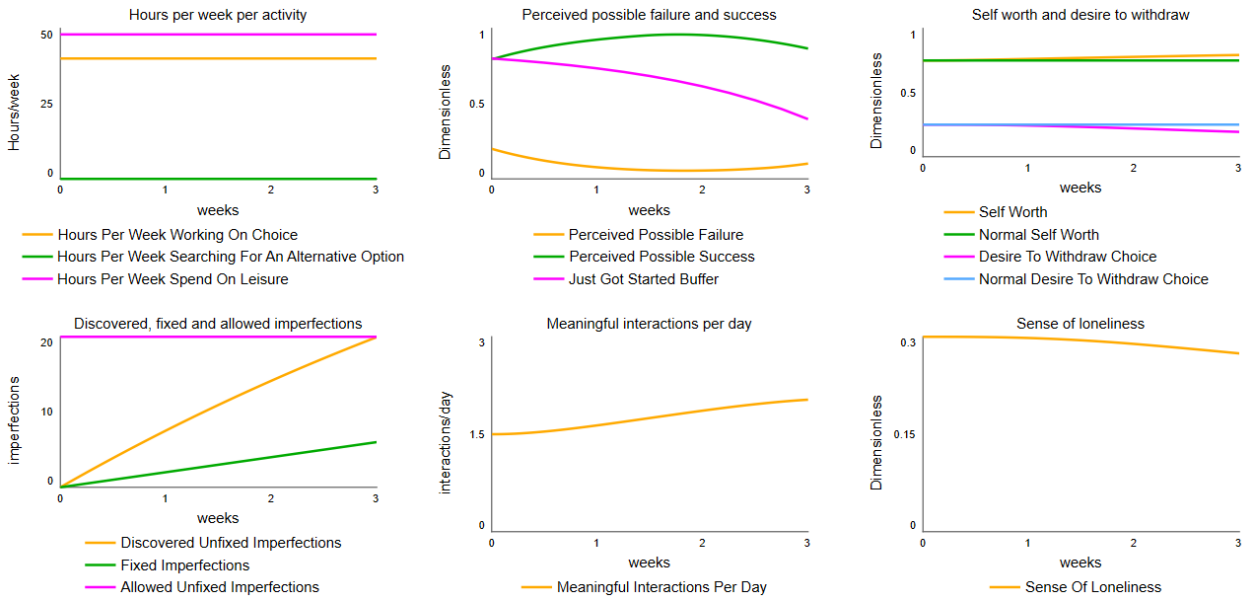
Figure 4 – Baseline model behavior for weeks 0 to 20.



Weeks 0 to 3

Figure 5 shows the simulation results for weeks 0 to 3. At the very start, via a minor balancing loop, the stock undiscovered imperfections (see Figure 3) gets depleted as the perfectionist works on his choice for a normal 40 hours per week and the perfectionist discovers imperfections. As the number of imperfections is smaller than allowed, his perceived possible failure will decrease. Simultaneously his perceived possible success will increase due to the just got started buffer which excites him about his choice. The lowered perceived possible failure causes the meaningful interactions per day to increase a little. Consequently this decreases sense of loneliness with some delay which, together with the lower perceived possible failure and higher perceived possible success, increases self-worth a little with some delay. The major loop R1 is in play and does not trap the perfectionist in a destructive behavior pattern. At week 3 the discovered unfixed imperfections have reached the allowed unfixed imperfections and from there on, the dynamics will get more interesting as more major loops come into play.

Figure 5 – Baseline model behavior for weeks 0 to 3.

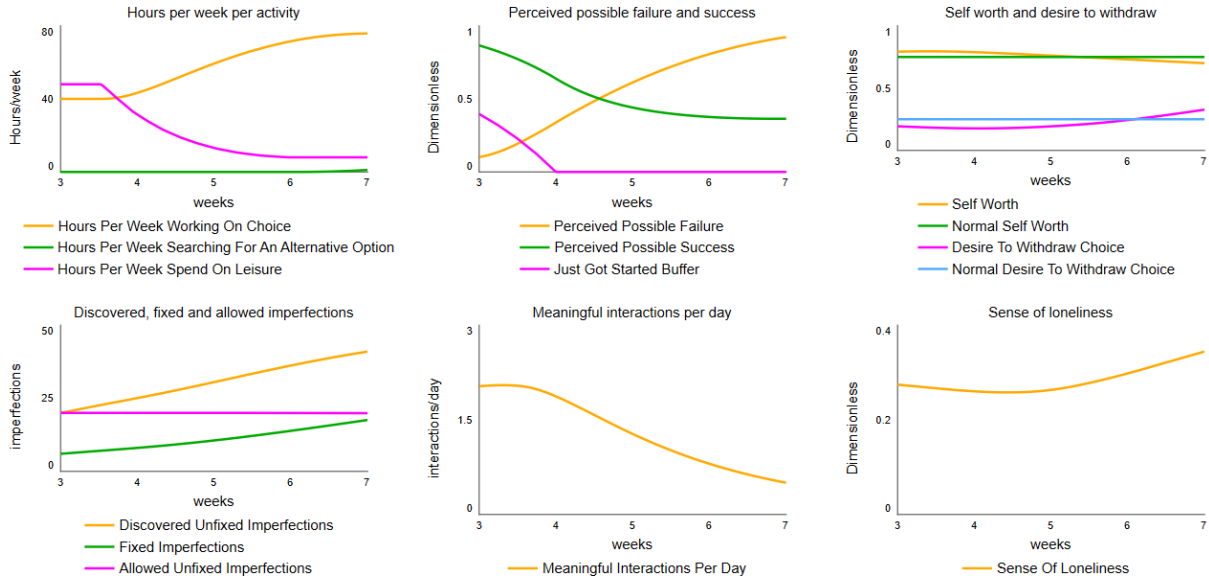


Weeks 3 to 7

Figure 6 shows the simulation results for weeks 3 to 7. Between approximately weeks 3 and 3.5, as perceived possible failure increases due to discovered unfixed imperfections passing the allowed threshold and as perceived possible success decreases due to the decreasing effect of the just got started buffer and the effect of fixed imperfections (as the fixed imperfections are lower relative to discovered imperfections), both [the perceived possible failure and success] are still respectively lower (for perceived possible failure) and respectively higher (for perceived possible success) than their normal value. The system is still in a good place due to loop R1, and also due to the normal work hours and lower desire to withdraw choice which are not part of loop R1. At approximately week 3.5 perceived possible failure and success pass their normal values for the worse and the system responds to this feedback. Between weeks 3.5 and 7 perceived possible failure will increase towards the dimensionless value of approximately 1 as the perfectionist overreacts to the discovered imperfections being higher than allowed. As perceived possible failure increases the hours per week spend working will increase towards approximately 80 hours per week through loop R3 and consequently, hours per week spend on leisure decreases dramatically. As hours per week spend on leisure decreases and perceived possible failure increases, meaningful interactions

per day will drop and the R1 loop takes a turn for the worse. As meaningful interactions per day decreases, sense of loneliness - through a delay - stops its decrease and starts increasing. Through the increasing sense of loneliness, R1 will now aid the parts of loop R4, R2 and B1 that are already working to decrease self-worth with a delay. Where self-worth was previously causing desire to withdraw choice to decrease, at approximately week 5.5, as self-worth crosses its normal value, it will cause desire to withdraw choice to increase. At approximately week 6, desire to withdraw choice will cross its normal value and the perfectionist's commitment to his choice will start to waver.

Figure 6 – Baseline model behavior for weeks 3 to 7 [also note differences in y-axis' between Figures 5 and 6].

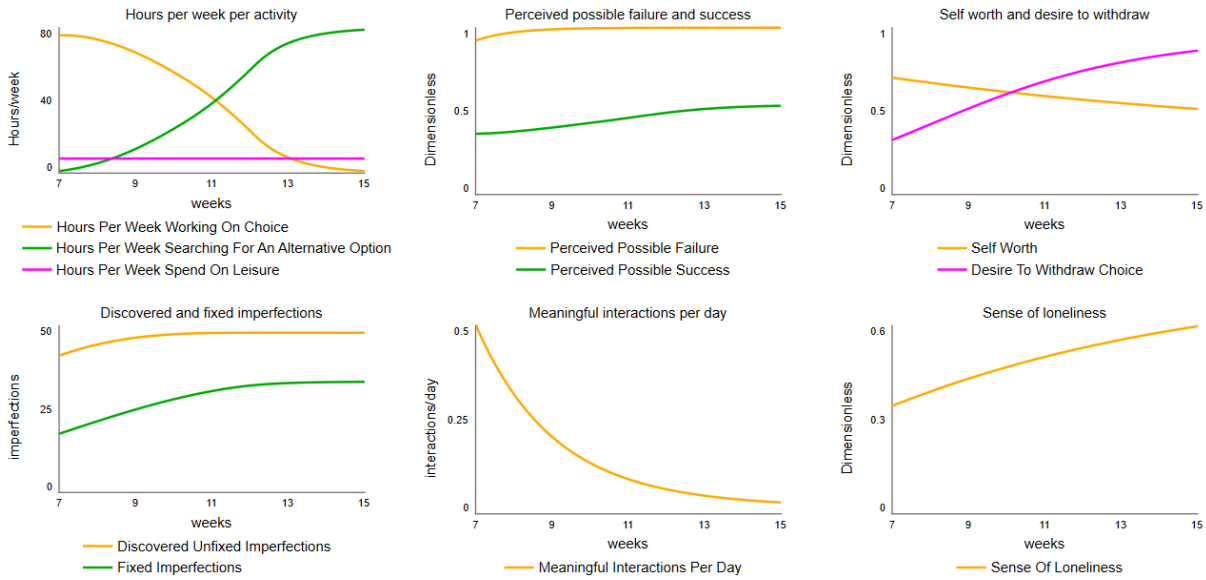


Weeks 7 to 15

Figure 7 shows the simulation results for weeks 7 to 15. As perceived possible failure has already caused the perfectionist to work approximately the maximum of 80 hours per week, the hours per week working on choice is forced to decrease due to loops R2 and B1 when desire to withdraw choice passes its normal value and now works to increase the hours per week spend searching for an alternative option from week 7 onwards. Between weeks 7 and 15, the hours per week spend searching for an alternative option increases from 0 hours per week to approximately 80 hours per week (first it increases increasingly, then it increases decreasingly). As such, hours per week working on choice decreases from approximately 80 hours per week to approximately 0 hours per week between weeks 7 and 15 (first it decreases increasingly, then it decreases decreasingly). The change in distribution of working hours is an important development in the behavior as perceived possible success has only just started to rise a little. Perceived possible success increases because the effect of fixed imperfections on perceived possible success becomes less diminutive as more imperfections are being fixed. However, as loop R2 now works against the perfectionist, and the hours per week working on choice decreases, the fixing of imperfections will be inhibited (the perfectionist is trapped by loop R2). As such, the perfectionist deprives himself of fixing more imperfections and by doing so deprives himself of perceiving more possible success for the choice that he has made. Furthermore, as the hours per week working on choice decrease, the perceived possible failure will be inhibited too. This might seem like a good thing, but it actually is not. If perceived possible failure was not inhibited, at some point, there must come a tipping point when less imperfections are being discovered compared to being fixed. That would cause the

stock of discovered imperfections to decrease and consequently perceived possible failure to decrease and perceived possible success to increase. Now, that is not the case and as both perceived possible success and failure are being inhibited by the mechanisms causing hours per week working on choice to decrease. Perceived possible failure and success will start to settle in equilibrium at approximately week 13 (where the equilibrium value of perceived possible failure is approximately a dimensionless value of 1). As perceived possible failure is much higher than its normal value (and it will stay there) and as hours per week spend on leisure is constant at a low value of approximately 8 hours per week due to hours per week spend working being 80 hours per week (and it will stay there), the meaningful interactions that the perfectionist has each day further decrease. Consequently, through R1 sense of loneliness keeps increasing, and self-worth keeps decreasing. The R1 loop will now trap the perfectionist too. As self-worth decreases, the allowed unfixed imperfections will decrease a little as the perfectionist is being hard on himself thinking "*I must do better*". This makes it increasingly hard to meet the standards of the perfectionist, further trapping him in loop R4. As self-worth decreases further, the desire to withdraw choice increases towards a maximum dimensionless value of 1.

Figure 7 – Baseline model behavior for weeks 7 to 15 [also note differences in y-axis' between Figures 6 and 7].

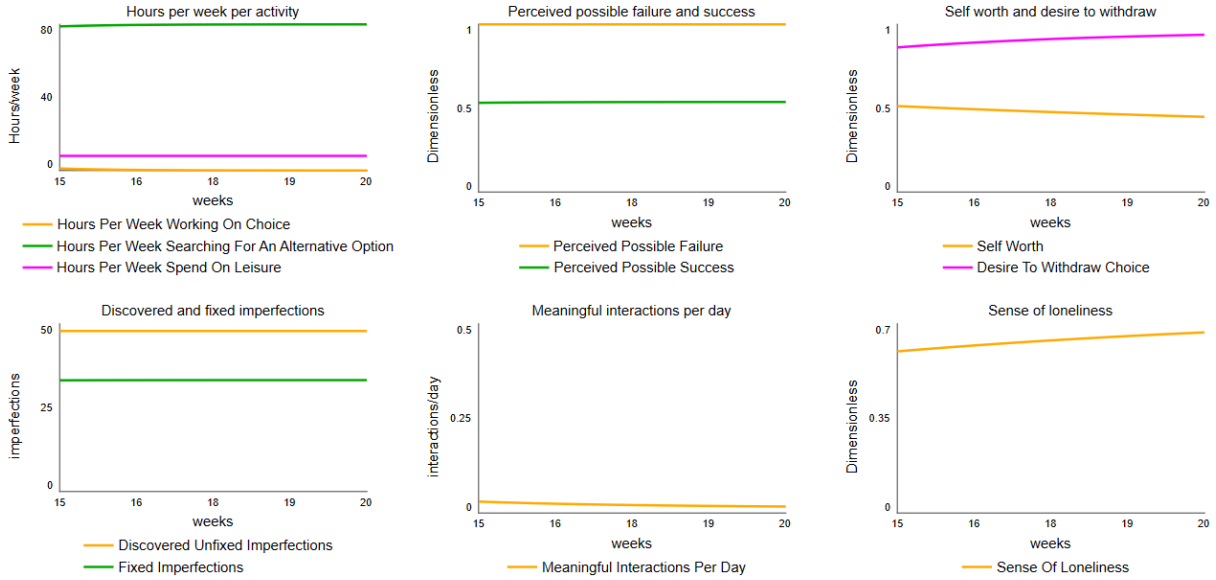


Weeks 15 to 20

Figure 8 shows the simulation results for weeks 15 to 20. Hours per week searching for an alternative option equilibrates at a maximum of 80 hours per week. Consequently, hours per week spend on leisure equilibrates at approximately 8 hours per week and hours per week working on choice equilibrates at 0 hours per week. As hours per week working on choice equilibrates at 0 hours per week, loops R2, R3 and B1 will be nullified. When the perfectionist no longer works on his choice, and thus will not discover new imperfections or fix already discovered imperfections, the discovered unfixed imperfections will not change and equilibrates at approximately 50 imperfections and fixed imperfections will not change and equilibrates at approximately 33 imperfections. As the discovered unfixed imperfections and fixed imperfections have equilibrated, perceived possible failure and perceived possible success will not be able to get out of their equilibrium states. As such, both will still influence self-worth, but changes in self-worth will be completely due to R1 which now solely dominates the system as a major loop. The perfectionist is relatively lonely (compared to

normal), feels relatively worthless about himself (compared to normal) and desires to withdraw his choice, which leads him to spend all his time searching for an alternative option. The perfectionist has been unable to retain his choice commitment.

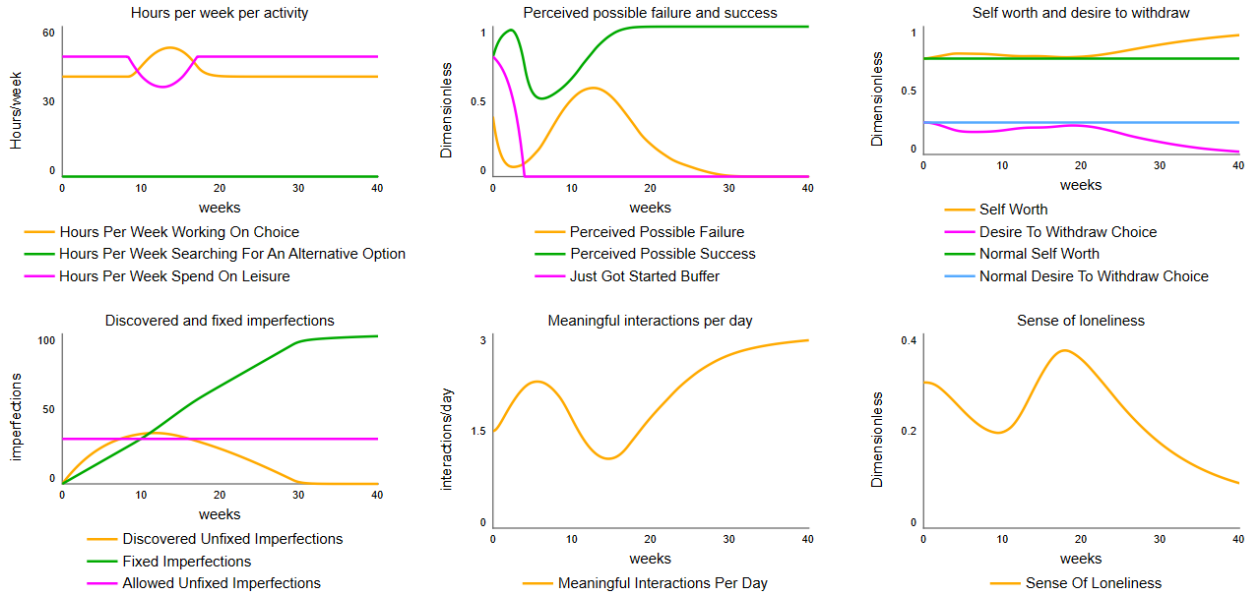
Figure 8 – Baseline model behavior for weeks 15 to 20 [also note differences in y-axis' between Figures 7 and 8].



Non-perfectionist scenario

The graphs in Figure 9 show the simulation results for the non-perfectionist scenario. In this scenario the time horizon is extended to 40 weeks in order to more clearly see the dynamic behavior that unfolds. In general the non-perfectionist starts working normal hours. Initially he perceives lower possible failure and higher possible success as he is excited about his choice and can easily manage to deal with the imperfections he comes across. As such, self-worth increases a little (here the assumption is made that non-perfectionists' self-worth also depends in some measure on accomplishment, but not as much as for perfectionists). After approximately 3 weeks the non-perfectionist experiences an increase in perceived possible failure, but as this value does not reach his normal value until approximately week 8, the non-perfectionist does not act on it. At week 8 the discovered unfixed imperfections reach the threshold of allowed unfixed imperfections. This is a little unnerving for the non-perfectionist and he also decides to work a little more to fix the imperfections. A big difference is the maximum amount of hours the non-perfectionist will work more. For the non-perfectionist it increases to only a little over 50 hours per week (where for the perfectionist this was 80 hours per week). As such, leisure time is not decreased as much (meaningful interactions do decrease a little below the normal value of 1.5 interactions per day, and thus sense of loneliness increases a little over its normal dimensionless value of 0.3). The non-perfectionist manages to relatively quickly fix imperfections (as the non-perfectionist does not have to fix an imperfection until it is 'perfect', since a 'good enough' fix is fine for the non-perfectionist) so that the discovered unfixed imperfections decreases below its threshold again. As such, the non-perfectionist decreases his hours per week working and increases his leisure time around week 17. After that it is pretty much smooth sailing for the non-perfectionist. Perceived possible failure decreases while perceived possible success increases towards 1. Also, the meaningful interactions per day increase, which make the non-perfectionist feel less lonely and consequently more of a worthy person. The non-perfectionist furthermore has not desired to withdraw his choice more than normal and has been able to retain his choice commitment.

Figure 9 – Non-perfectionist model behavior, with extended time horizon to 40 weeks.

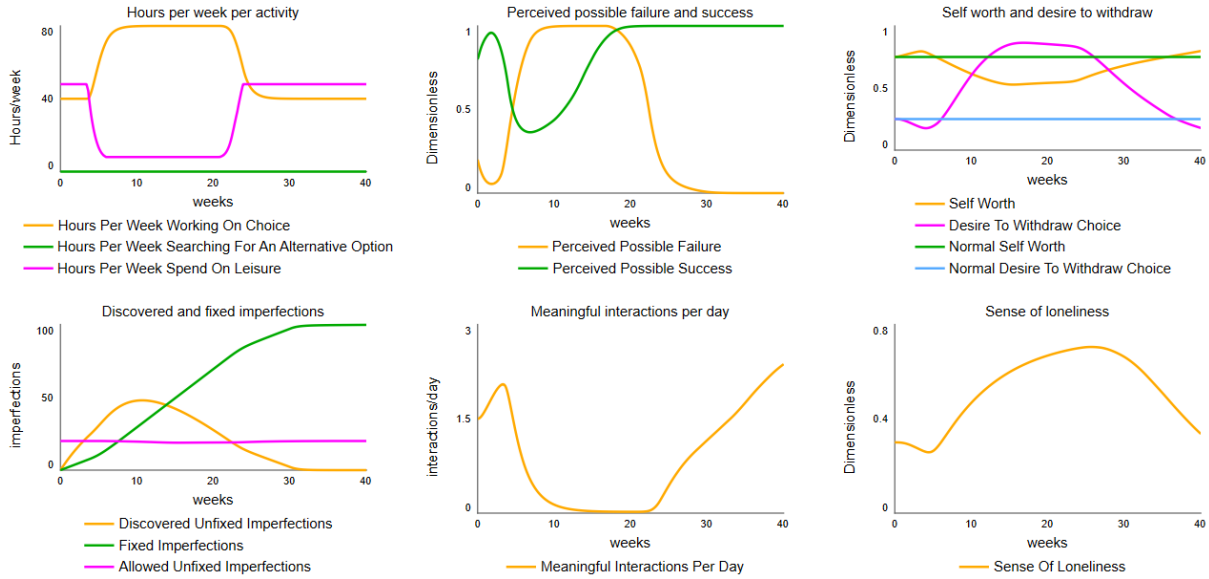


Stick with choice scenario

The graphs in Figure 10 show the simulation results for the stick with choice scenario. In this scenario the time horizon is extended to 40 weeks in order to more clearly see the dynamic behavior that unfolds. In general the perfectionist starts working normal hours. Initially he perceives lower possible failure and higher possible success as he is excited about his choice and can manage to deal with the imperfections he comes across. As such, self-worth increases a little. After approximately 2 weeks the perfectionist experiences an increase in perceived possible failure, but as this value does not reach his normal value until approximately week 3, the perfectionist does not act on it. At week 3 the discovered unfixed imperfections reach the threshold of allowed unfixed imperfections. The perfectionist overreacts and starts drastically working more hours each week to fix the imperfections. The maximum hours the perfectionist works is 80 hours per week. As such, leisure time decreases drastically. This causes the meaningful interactions per day to drop, and thus sense of loneliness to increase. The perfectionist discovers more and more imperfections. This makes him perceive high possible failure and low possible success. Together with the increasing sense of loneliness, the self-worth of the perfectionist decreases. As the self-worth decreases, the perfectionists increasingly desires to withdraw his choice. However, in this scenario, no matter how much the perfectionist desires to withdraw his choice, he will not spend time searching for an alternative option. Instead he keeps working on his choice, and thus retains his choice commitment. This is a though time for the perfectionist, in which he has to work hard with little feeling of accomplishment. However, at approximately week 11 the fixing rate becomes higher than the discovery rate, which means that the perfectionist fixes more imperfections each week compared to the amount of new imperfections he discovers each week. This allows the mountain of discovered unfixed imperfections to decrease, and for the perceived possible success to increase. The perfectionist will feel conflicted for a while. He perceives increasing possible success the more imperfections he fixes and the backlog of imperfections decreases. But on the other hand, the number of discovered unfixed imperfections is still greater than what the perfectionist allows, which in his mind can only mean that he will fail, and thus perceived possible failure will not yet decrease. At approximately week 18 the discovered unfixed imperfections have decreased enough (under twice the amount of allowed unfixed imperfections) so that the perfectionist is able to see some light at the end of the tunnel. This

causes the perfectionist to lighten up and not overreact as much as before. As such, the effect of the discovered unfixed imperfections on the perceived possible failure decreases. This in turn causes the perceived possible failure to decrease as well. At approximately week 22 the backlog of unfixed imperfections has been cleared enough so that it no longer exceeds its threshold of allowed unfixed imperfections. The perceived possible failure has now decreased enough so that it is no longer necessary for the perfectionist to work 80 hours per week. As such, he decreases the hours per week working on choice and increases the hours per week spend on leisure. This causes the meaningful interactions per day to increase again, and the sense of loneliness to decrease (with a delay). This will aid the perceived possible success in increasing self-worth, which in turn causes the desire to withdraw choice to decrease. Eventually the perfectionist will have managed to fix all imperfections, perceives no failure and high success. But most important, the perfectionist was able to retain his choice commitment and would feel like a worthwhile person in the end.

Figure 10 – Stick with choice model behavior, with extended time horizon to 40 weeks.



Discussion

The variables that are sensitive in this system, and normally would be identified as leverage points (or limitations), all encompass the high standards that perfectionists have in one way or another. As perfectionists have deep rooted beliefs that their accomplishments – through which they measure their own self-worth – are only achieved because they adhere to their own high standards, it will be very difficult for perfectionists to lower their standards. Perfectionists are often aware of the negative consequences their perfectionistic tendencies can have on their well-being, and might even agree that lowering one's standards and threating oneself with more compassion will probably increase their overall well-being (Burns, 1980). Nevertheless, perfectionists are often unable to lower their standards as they feel that they need their high standards in order to live a worthwhile life.

With that being said, this paper and the developed model can still help perfectionists with choice commitment. Firstly, the visualization of their own destructive behavior can motivate perfectionists to commit to their choice instead of looking for alternative options. Secondly, the stick with choice scenario – which allows perfectionists to keep all their perfectionistic

tendencies (so they would not have to lower their standards, and can choose to work 80 hours per week in order to fix everything according to these standards) – shows perfectionists that even though it might be rough sometimes and they desire an alternative option, eventually their choice can work out all right. Knowing that their choice eventually can work out all right, might give perfectionists some confidence in their choice and, more importantly, themselves. This can help them reflect on the situation that they are in when they start to perceive an increase in possible failure, and might prevent self-worth to decrease as much as it otherwise would have.

Limitations and future recommendations

This paper and accompanying model strive to represent psychological processes in relation to perfectionism. As accurately measuring psychological processes is difficult, the interview data on which some parameter values are based have to be considered as limitations. As the model behavior is not or barely numerically sensitive to changes in these parameter values, this is a limitation that is considered to be acceptable. A more pressing limitation is that the model currently does not include exhaustion. In the model as it is, perfectionists can work 80 hours per week for weeks on end. Perfectionists may be prepared to drive themselves through stressful conditions when they perceive possible failure in order to ensure their performance meets their standards (Ramsey & Ramsey, 2002), and perfectionists might find this a good solution rationally, however in reality their body and mind will burn out eventually. To closer represent reality, exhaustion processes should be added endogenously to the model structure.

Another valuable addition to the model would be a structure that encompasses a person actually changing his choice when the desire to withdraw the current choice is high and an alternative option (which seems “better” than the current choice) is discovered. As previously described, changing one’s choice is expected to create oscillations in the model behavior.

Other interesting future explorations can revolve around behavioral differences that might exist for decisions of moderate importance (as explored in this paper and accompanying model), compared to decisions of low and high importance, or with regard to different time horizons. Furthermore, the current work encompasses only choices in which the (non-)perfectionist is the sole stakeholder. Extending the model to encompass choices simultaneously involving multiple stakeholders (such as group work for a project at a level of moderate importance, or the choice of a business partner on a level of high importance) would be interesting. Lastly, the current work focusses on the dynamics after a choice has already been made. However, System Dynamics can also be used as a modelling tool to capture a realistic structure of how perfectionists make decisions before committing to them (in a higher or lesser degree), and of how this decision process feeds back to choice commitment.

Finally, it should be noted that perceived possible success and perceived possible failure are not dependent on one another in the current model, even though these mechanisms are conceptually related. As such, some people might not recognize themselves in the model. However, based on the held interviews (n=4) and my own experience, perfectionists can be in situations where they perceive both high [*low*] possible success and failure for their choice simultaneously. Therefore, the concepts of perceived possible success and perceived possible failure are not necessarily dependent on each other, and, as such, they are modelled accordingly.

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