

### **Model 1, Self-fulfilling Prophecy**

Student\_Performance(t) = Student\_Performance(t - dt) + (change\_in\_student\_perform) \* dt

INIT Student\_Performance = 55

INFLOWS:

change\_in\_student\_perform = performance\_gap/time\_to\_change\_perform

performance\_gap = Teacher\_expectation - Student\_Performance

Teacher\_expectation = 40

time\_to\_change\_perform = 4

### **Model 2, Self-fulfilling Prophecy: Reciprocal Relationships**

Student\_Performance(t) = Student\_Performance(t - dt) + (change\_in\_student\_perform) \* dt

INIT Student\_Performance = 65

INFLOWS:

change\_in\_student\_perform = gap\_in\_performance/time\_to\_change\_perform

Teacher\_Expectations(t) = Teacher\_Expectations(t - dt) + (change\_in\_teacher\_expect) \* dt

INIT Teacher\_Expectations = 40

INFLOWS:

change\_in\_teacher\_expect = gap\_in\_expectation\*perseverance\_effect

gap\_in\_expectation = Student\_Performance - Teacher\_Expectations

gap\_in\_performance = Teacher\_Expectations - Student\_Performance

perseverance\_effect = .25 {fraction/month}

time\_to\_change\_perform = 4

### **Simple Extended Contact Model**

Cum\_Time\_Spent\_with\_Target\_Group(t) = Cum\_Time\_Spent\_with\_Target\_Group(t - dt) + (spending\_time\_with\_target\_group) \* dt

INIT Cum\_Time\_Spent\_with\_Target\_Group = 0

INFLOWS:

spending\_time\_with\_target\_group =

baseline\_spending\_time\_with\_target\_group\*ef\_friendship\_on\_spending\_time\_together

Degree\_Of\_Friendship(t) = Degree\_Of\_Friendship(t - dt) + (making\_friends - decline\_in\_friendship) \* dt

INIT Degree\_Of\_Friendship = 20

INFLOWS:

making\_friends = friendship\_units\_per\_hour\*spending\_time\_with\_target\_group  
OUTFLOWS:

decine\_in\_friendship = Degree\_Of\_Friendship/time\_to\_lose\_friendship

baseline\_spending\_time\_with\_target\_group = 4

friendship\_units\_per\_hour = 1

time\_to\_lose\_friendship = 8.3

ef\_friendship\_on\_spending\_time\_together = GRAPH(Degree\_Of\_Friendship)  
(0.00, 1.00), (10.0, 1.03), (20.0, 1.12), (30.0, 1.19), (40.0, 1.31), (50.0, 1.58), (60.0, 2.08),  
(70.0, 2.66), (80.0, 2.89), (90.0, 2.96), (100, 3.00)

### **Contact Burnout: Fatigue Model**

Contact\_Burnout(t) = Contact\_Burnout(t - dt) + (burning\_out -  
recuperating\_from\_burnout) \* dt

INIT Contact\_Burnout = 0

INFLOWS:

burning\_out = burnout\_hour\*spending\_time\_with\_target\_group

OUTFLOWS:recuperating\_from\_burnout = Contact\_Burnout/time\_to\_dissapate\_burnout

Cum\_Time\_Spent\_with\_Target\_Group(t) = Cum\_Time\_Spent\_with\_Target\_Group(t -  
dt) + (spending\_time\_with\_target\_group) \* dt

INIT Cum\_Time\_Spent\_with\_Target\_Group = 0

INFLOWS:

spending\_time\_with\_target\_group =

baseline\_spending\_time\_with\_target\_group\*ef\_friendship\_on\_spending\_time\_together\*e  
f\_of\_burnout\_on\_spending\_time\_with\_other\_group

Degree\_Of\_Friendship(t) = Degree\_Of\_Friendship(t - dt) + (making\_friends -  
decine\_in\_friendship) \* dt

INIT Degree\_Of\_Friendship = 20

INFLOWS:

making\_friends = friendship\_units\_per\_hour\*spending\_time\_with\_target\_group

OUTFLOWS:

decine\_in\_friendship = Degree\_Of\_Friendship/time\_to\_lose\_liking\_of\_target\_persons

baseline\_spending\_time\_with\_target\_group = 4

burnout\_hour = 1.2

friendship\_units\_per\_hour = 1.2

time\_to\_dissapate\_burnout = 9

time\_to\_lose\_liking\_of\_target\_persons = 8.3

ef\_friendship\_on\_spending\_time\_together = GRAPH(Degree\_Of\_Friendship)  
(0.00, 1.00), (10.0, 1.03), (20.0, 1.12), (30.0, 1.19), (40.0, 1.31), (50.0, 1.58), (60.0, 2.08),  
(70.0, 2.66), (80.0, 2.89), (90.0, 2.96), (100, 3.00)

ef\_of\_burnout\_on\_spending\_time\_with\_other\_group = GRAPH(Contact\_Burnout)  
(0.00, 1.00), (10.0, 1.00), (20.0, 1.00), (30.0, 1.00), (40.0, 1.00), (50.0, 0.975), (60.0,  
0.915), (70.0, 0.375), (80.0, 0.165), (90.0, 0.075), (100, 0.06)

### Contact Burnout: Mood Variation

Contact\_Burnout(t) = Contact\_Burnout(t - dt) + (burning\_out -  
recuperating\_from\_burnout) \* dt

INIT Contact\_Burnout = 0

INFLOWS:

burning\_out = Burnout\_units\_per\_hour \* spending\_time\_with\_target\_group

OUTFLOWS:

recuperating\_from\_burnout = Contact\_Burnout/time\_to\_dissapate\_burnout

Cum\_Time\_Spent\_withTarget\_Group(t) = Cum\_Time\_Spent\_withTarget\_Group(t - dt) +  
(spending\_time\_with\_target\_group) \* dt

INIT Cum\_Time\_Spent\_withTarget\_Group = 0

INFLOWS:

spending\_time\_with\_target\_group =

baseline\_spending\_time\_with\_target\_group \* ef\_of\_friendship\_on\_spending\_time\_together

Degree\_Of\_Friendship(t) = Degree\_Of\_Friendship(t - dt) +  
(getting\_to\_like\_target\_group - losing\_friendship) \* dt

INIT Degree\_Of\_Friendship = 20

INFLOWS:

getting\_to\_like\_target\_group =

friendship\_units\_per\_hour \* spending\_time\_with\_target\_group

OUTFLOWS:

losing\_friendship =

(Degree\_Of\_Friendship/time\_to\_lose\_friendship) \* ef\_of\_burnout\_on\_losing\_friendship:\_  
Bad\_Mood

baseline\_spending\_time\_with\_target\_group = 4

Burnout\_units\_per\_hour = 1

friendship\_units\_per\_hour = 2

time\_to\_dissapate\_burnout = 9

time\_to\_lose\_friendship = 8.3

ef\_of\_burnout\_on\_losing\_friendship:\_Bad\_Mood = GRAPH(Contact\_Burnout)  
(0.00, 1.00), (10.0, 1.00), (20.0, 1.00), (30.0, 1.00), (40.0, 1.20), (50.0, 2.48), (60.0, 2.65),  
(70.0, 2.79), (80.0, 2.92), (90.0, 2.96), (100, 3.00)

ef\_of\_friendship\_on\_spending\_time\_together = GRAPH(Degree\_Of\_Friendship)  
(0.00, 1.00), (10.0, 1.03), (20.0, 1.12), (30.0, 1.19), (40.0, 1.31), (50.0, 1.58), (60.0, 2.08),  
(70.0, 2.66), (80.0, 2.89), (90.0, 2.96), (100, 3.00)

### **Additional run: Alternative setting of ef\_of\_burnout\_on\_losing\_friendship**

ef\_of\_burnout\_on\_losing\_friendship:\_Bad\_Mood = GRAPH(Contact\_Burnout)  
(0.00, 1.00), (10.0, 1.00), (20.0, 1.00), (30.0, 1.00), (40.0, 1.10), (50.0, 1.17), (60.0, 1.56),  
(70.0, 1.56), (80.0, 1.59), (90.0, 1.59), (100, 1.59)

### **Extended Contact Model: Combination of fatigue and mood**

Contact\_Burnout(t) = Contact\_Burnout(t - dt) + (burning\_out -  
recuperating\_from\_burnout) \* dt

INIT Contact\_Burnout = 0

INFLOWS:

burning\_out = Burnout\_units\_per\_hour\*spending\_time\_with\_target\_group

OUTFLOWS:

recuperating\_from\_burnout = Contact\_Burnout/time\_to\_dissapate\_burnout

Cum\_Time\_Spent\_with\_Target\_Group(t) = Cum\_Time\_Spent\_with\_Target\_Group(t -  
dt) + (spending\_time\_with\_target\_group) \* dt

INIT Cum\_Time\_Spent\_with\_Target\_Group = 0

INFLOWS:

spending\_time\_with\_target\_group =

baseline\_spending\_time\_with\_target\_group\*ef\_friendship\_on\_spending\_time\_together\*  
ef\_of\_burnout\_on\_spending\_time\_with\_target\_group

Degree\_Of\_Friendship(t) = Degree\_Of\_Friendship(t - dt) + (making\_friends -  
loss\_of\_friendship) \* dt

INIT Degree\_Of\_Friendship = 20

INFLOWS:

making\_friends = friendship\_units\_per\_hour\*spending\_time\_with\_target\_group

OUTFLOWS:

loss\_of\_friendship =

(Degree\_Of\_Friendship/time\_to\_lose\_friendship)\*ef\_burnout\_on\_loss\_of\_friendship:\_B  
ad\_Mood

baseline\_spending\_time\_with\_target\_group = 4

Burnout\_units\_per\_hour = 1

friendship\_units\_per\_hour = 1.8

time\_to\_dissapate\_burnout = 9

time\_to\_lose\_friendship = 9

ef\_burnout\_on\_loss\_of\_friendship:\_Bad\_Mood = GRAPH(Contact\_Burnout)  
(0.00, 1.00), (10.0, 1.00), (20.0, 1.00), (30.0, 1.02), (40.0, 1.20), (50.0, 2.48), (60.0, 2.65),  
(70.0, 2.79), (80.0, 2.92), (90.0, 2.96), (100, 3.00)

ef\_friendship\_on\_spending\_time\_together = GRAPH(Degree\_Of\_Friendship)  
(0.00, 1.00), (10.0, 1.03), (20.0, 1.12), (30.0, 1.19), (40.0, 1.31), (50.0, 1.58), (60.0, 2.08),  
(70.0, 2.66), (80.0, 2.89), (90.0, 2.96), (100, 3.00)

ef\_of\_burnout\_on\_spending\_time\_with\_target\_people = GRAPH(Contact\_Burnout)  
(0.00, 1.00), (10.0, 1.00), (20.0, 1.00), (30.0, 1.00), (40.0, 1.00), (50.0, 0.975), (60.0,  
0.915), (70.0, 0.885), (80.0, 0.87), (90.0, 0.075), (100, 0.06)

### **Model of Dynamics of the Fundamental Attribution Error**

Perceived\_Consistency(t) = Perceived\_Consistency(t - dt) +  
(change\_in\_perceived\_consistency) \* dt

INIT Perceived\_Consistency = 100

INFLOWS:

change\_in\_perceived\_consistency = gap\_in\_consistency/time\_to\_perceive\_consistency

Perceived\_Internal\_Strength\_of\_Target\_by\_Observer(t) =  
Perceived\_Internal\_Strength\_of\_Target\_by\_Observer(t - dt) +  
(changing\_perceived\_internal\_strength) \* dt

INIT Perceived\_Internal\_Strength\_of\_Target\_by\_Observer = 90

INFLOWS:

changing\_perceived\_internal\_strength =

gap\_in\_perceiving\_internal\_attribution/time\_to\_change\_perceived\_internal\_strength

gap\_in\_consistency = targets\_consistency\_level - Perceived\_Consistency

gap\_in\_perceiving\_internal\_attribution = target\_actual\_strength\_of\_internal\_attribution -  
Perceived\_Internal\_Strength\_of\_Target\_by\_Observer

targets\_consistency\_level = 15

target\_actual\_strength\_of\_internal\_attribution = 15

time\_to\_perceive\_consistency = 7

time\_to\_change\_perceived\_internal\_strength = GRAPH(Perceived\_Consistency)  
(0.00, 2.50), (10.0, 4.00), (20.0, 7.00), (30.0, 26.0), (40.0, 120), (50.0, 156), (60.0, 178),  
(70.0, 195), (80.0, 200), (90.0, 200), (100, 200)