TraitSimulation+update.md

```
include("../src/TraitSimulation.jl")
using DataFrames, TraitSimulation
```

```
df = convert(DataFrame, rand(10,6))
names!(df, [:A, :B, :C, :D, :E, :F])
```

A	B	C	D	E
0.4933257820869694	0.8739836725086518	0.5781556567086412	0.13411863983952643	0.30376716125
0.40230119346414783	0.5666733787500011	0.6871510261988054	0.9215853800851344	0.90962252102
0.8899053655154903	0.09647328170995118	0.623114899405943	0.08660519400659727	0.15880266674
0.43479090551664124	0.6627991742690582	0.5784006898435621	0.24297453610281683	0.21490937224
0.8617670737428211	0.1904768111531845	0.4825223264952174	0.9657665868006096	0.71814653033
0.9175237947348043	0.09087254000144385	0.6015962171510085	0.7320931219503042	0.88268551348
0.10520195436570279	0.9798124633577467	0.2722336965394485	0.3053081097480914	0.39163865020
0.562779752014261	0.3511162863985213	0.11062369559289609	0.9606634940577203	0.88290513404
0.6238790308934099	0.2651779533764913	0.567448521248149	0.7515804495315923	0.20182428110
0.38528844811331453	0.5366003551865897	0.19310447368685524	0.8299717338469788	0.54081731923

```
formula = T ~ A+2B*C+log(3D*(E+0.8F))+2.0
```

```
Formula: T ~ A + (2B) * C + log((3D) * (E + 0.8F)) + 2.0
```

```
# simulate a normal response with σ=1.0
sim_model = Model(formula, IdentityLink(), NormalResponse(1.0))
simulate(sim_model, df)
```

	T
1	3.504505164086454
2	4.310869399429139
3	1.0876713317408702
4	2.3914199497591464
5	4.4325351124422445
6	2.8993251075190107
7	2.673017795010866
8	4.021456711699673

9	3.4193052423320878
10	5.17637945995563

```
# simulate a binomial response with n=100
sim_model = Model(formula, LogitLink(), BinomialResponse(100))
simulate(sim_model, df)
```

	T
1	93
2	99
3	49
4	91
5	100
6	99
7	88
8	97
9	98
10	96

```
# simulate a Poisson response
sim_model = Model(formula, LogLink(), PoissonResponse())
simulate(sim_model, df)
```

	T
1	12
2	99
3	1
4	17
5	99
6	77
7	10
8	37
9	32
10	33

```
# simulate a Bernoulli response
sim_model = Model(formula, LogitLink(), BernoulliResponse())
simulate(sim_model, df)
```

	T
1	1

2	1
3	0
4	1
5	1
6	1
7	1
8	1
9	1
10	1

```
# simulate an Exponential response
sim_model = Model(formula, InverseLink(), ExponentialResponse())
simulate(sim_model, df)
```

	T
1	0.02375534822371872
2	0.14055072607201588
3	8.876709263297036
4	0.3468466653555284
5	0.35110397796023435
6	0.30856165093118143
7	0.08373521564397778
8	0.2534106842926165
9	0.4525316281929459
10	0.026888275196969787

```
# simulate a gamma response with shape parameter 2.0
sim_model = Model(formula, InverseLink(), GammaResponse(2.0))
simulate(sim_model, df)
```

	T
1	0.34434393232264326
2	0.2890975230054341
3	14.830712722934773
4	0.9323246533111741
5	0.6516330211627606
6	0.460886898208853
7	1.2446424985637627
8	1.5788506659265176
9	0.1967905622466749

10	0.13124277622658273