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Patent Pending

**EDUCATIONAL INSTITUTION "STRESS TEST" AND
METHOD FOR THE DETERMINATION OF STUDENT ISOLATION RISK**

SUMMARY

Financial institutions are required by law to have "stress tests" to predict systemic catastrophic financial failure. However, it is not the law to have predictive "stress tests" in educational institutions to predict mass catastrophic injury to students by students.

Recent tragedies at school facilities self-evidence the need for empirical analytics for "stress testing" and risk assessment. These catastrophic events prove the need for new tools in the assessment and prediction of students who may require additional attention and support.

Currently, educational systems provide support structures that tend to occur with the subjective effort of a "guidance counselor," such as from pre-scheduled student meetings; remedial efforts that result from observed discrete events, including events of misconduct; and/or self-diagnosed inquiries. Each of these methods relies upon subjective determinations.

The following ***Educational Institution "Stress Test" and Method for the Determination of Isolation Risk*** provides an objective analytics methodology process for educational institutions to aid in the assessment of the catastrophic risk that is a function of student social isolation.

This methodology relies upon an assessment of social "reciprocity" with a analytics data engine implemented in a test that self-ratchets for context. Based upon test results, students are scored with an **"Isolation Risk Result"** (score) determined by a function of external affinity references and affinity reciprocity. The best score will be students who have the highest combination of external affinity references and reciprocity of affinity. The Isolation Risk Results taken in the aggregate at an institutional level, and when placed into the context of comparable institutions, tend to disclose how well the institution has achieved integration of individual students into a statistically healthy social network for the particular institutional context.

The methodology taught herein isolates the perception of affinity and the reality of affinity that is exposed by a "delusion of affinity." Students who are neither matched to reciprocally identified friendships nor referenced externally as a friend exposes a risk of social isolation.

No test can predict whether the most popular, unpopular or socially isolated student result will be a social threat; however, the test tends to demonstrate social delusion and isolation, which supports an empirical basis for subjective review of the data by appropriate institutional staff.

For example, a "straight-A" student who recently moved to a school district with a poor Isolation Risk Result may be assessed differently and/or corrected differently, from a long-time student with a history of misconduct and poor grades. To the extent relevant and appropriate, the results of the process provide a statistical basis to conjoin with other demographic or personal attribute information for even more meaningful risk assessment within the particular institution's context.

It must be remembered that exceptional catastrophic social events will not tend to be predicted by the analytics normal result; the goal of the risk assessment is to isolate and to expose that item of data that provides meaningful information for prediction of, and interposed corrective action prior to, a socially catastrophic event.

**EDUCATIONAL INSTITUTION "STRESS TEST" AND METHOD FOR
THE DETERMINATION OF ISOLATION RISK**

1. Variables. The methodology has certain tailorable characteristics, which depend upon the particular implementation. See Exhibit 1, hereby incorporated by this reference.
2. Exhibit 1 demonstrates, by example and not limitation, application of the Isolation Risk Test, based upon a field of 15 students, each of whom identifies five (5) "friends" in the order of preference.
3. The formulaic symbols and variables for the Isolation Risk Test are:

SL = Scope Limiter
Rc = Reference Count
Rw = Reference Weight
Rr = Reference Result
Yc = Reciprocity Count
Yw = Reciprocity Weight
Yr = Reciprocity Result
Dv = Delusion Weight Variance
Ir = Isolation Risk Result

4. The methodology is to be conducted on a closed field of participants. Each of the participants will identify that number of "best friends" up to and including the number identified by the Scope Limiter (SL), which is five (5) in Exhibit 1, but could be more or less depending upon the context. The method could be available online using pre-populated fields of names or could be rendered using physical media or an otherwise manner that elicits controlled responses.

5. Exhibit 1 demonstrates, by example and not limitation, application of the Reference Count (Rc) and Reference Weight (Rw) and the multiplied product thereof, Reference Result (Rr). Rc is the number of times that the subject person is referenced as a friend (*i.e.* affinity) by another person in the tested field group. Rc tests for "popularity" without regard to reciprocity. In other words, for example, irrespective of Quentin Quarterback's affinity to others, others believe that they have affinity with Quentin Quarterback. This criterion discloses if Quentin Quarterback is likeable (popular) whether or not he likes the same people as like him. Rw is the weighting that is given to each such Rc reference. In effect of the overall test, Rw is a weighting relative to Yc/Yw.
6. Exhibit 1 demonstrates, by example and not limitation, application of Reciprocity Count (Yc) and Reciprocity Weight (Yw) and the multiplied product thereof, Reciprocity Result (Yr). Yc is the number of times that the subject person's responses are mutual; that is, the number of times that, for example, the persons Quentin Quarterback identifies as friends have also mutually identified him as a friend. Yc tests for "bonding" and implies popularity (Rc) of one on a per-mutual basis. Yw is the relative weight attributed to each Yc. The weighting of Yw is effectively relative to Rw. That is, the weight of how many Rc's should be equal to the weight of one Yc. In Exhibit 1, the relative weighting is 1 to 5, demonstrated with Rw being one (1) per Rc and Yw being twenty-five (25) per Yc, implying that one "bonded" affinity (which implies one Rc) is equal to five more basic "popularity" Rc's.
7. Delusion Weight Variance is not demonstrated in Exhibit 1, but is a factor of the existence of, or relative positioning of, one subject's reference to another. For example, if Quentin Quarterback identifies Debrah Debater as his first-ranked (best) friend No. 1, and she does not identify him at all or she identifies him as friend No. 5, there is some delusion implied by the deviation in ranking. That deviation can be assessed as part of the Isolation Risk Result (Ir).
8. The conclusion of the test is the Ir sum of Rr plus Yr. The three elements of data, Rr, Yr and Ir, provide the three crucial elements of risk assessment. The 3-element core framework of financial reporting is $A - L = C$ (Assets - Liability = Capital/Owner's Equity). For Isolation Risk Assessment the core 3-element framework is $Rr + Yr = Ir$ (Reference Result + Reciprocity Result = Isolation Risk Result).
9. On an institutional basis, the collection of the data implies how well the institution is relatively performing. For example, the various statistical data, such as standard deviation, median and average all provide meaningful data of social integration on an institution basis. In Exhibit 1, the standard deviation demonstrates a large disparity between the best result and worst result, which implies that students are at risk of isolation and may require some intervention. It is anticipated that "best practices" standards will be developed for implementation.

EXHIBIT 1

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		Scope Limiter	SL	5			Reciprocity Weight	Yw	25		
		Reference Weight	Rw	5			Reciprocity Count	Yc			
		Reference Count	Rc								
ID	Name	Reference	ID	Rank	Yc	ID	Name	Reference	ID	Rank	Yc
1	Quentin Quarterback	Fred Fullback	2	1	1	2	Fred Fullback	Charlene Choir	7	1	1
		Hank Halfback	3	2	1			Quentin Quarterback	1	2	
		George Guard	4	3	1			Ted Tackle	6	3	1
		Roger Receiver	5	4	1			Roger Receiver	5	4	
		Ted Tackle	6	5	1			Sam Soccer	8	5	
ID	Name	Reference	ID	Rank	Rc	ID	Name	Reference	ID	Rank	Rc
3	Hank Halfback	Ted Tackle	6	1		4	George Guard	Quentin Quarterback	1	1	1
		Sam Soccer	8	2	Fred Fullback			2	2		
		Betty Basketball	9	3	Roger Receiver			5	3		
		Quentin Quarterback	1	4	1			Ted Tackle	6	4	
		Adele Artist	11	5	Sam Soccer			8	5		
ID	Name	Reference	ID	Rank		ID	Name	Reference	ID	Rank	
5	Roger Receiver	Ted Tackle	6	1	1	6	Ted Tackle	Quentin Quarterback	1	1	1
		Sam Soccer	8	2	1			Fred Fullback	2	2	1
		Betty Basketball	9	3	Roger Receiver			5	3	1	
		Quentin Quarterback	1	4	1			Charlene Choir	7	4	
		Adele Artist	11	5	Sam Soccor			8	5	1	
ID	Name	Reference	ID	Rank		ID	Name	Reference	ID	Rank	
7	Charlene Choir	Fred Fullback	2	1	1	8	Sam Soccer	Sally Singer	12	1	
		Sally Singer	12	2	Paul President			14	2		
		Sara Singer	13	3	Roger Receiver			5	3	1	
		Paula President	14	4	Ted Tackle			6	4	1	
		Debrah Debate	15	5	Quentin Quarterback			1	5		
ID	Name	Reference	ID	Rank		ID	Name	Reference	ID	Rank	
9	Betty Basketball	Charlene Choir	2	1		10	Curt Curler	Sally Singer	12	1	
		Quentin Quarterback	1	2	Paula President			14	2		
		Sara Singer	13	3	1			Roger Receiver	5	3	
		Paula President	14	4	Ted Tackle			6	4		
		Debrah Debate	15	5	Quentin Quarterback			1	5		
ID	Name	Reference	ID	Rank		ID	Name	Reference	ID	Rank	
11	Adele Artist	Fred Fullback	2	1		12	Sally Singer	Sara Singer	13	1	1
		Quentin Quarterback	1	2	Paula Presdient			14	2	1	
		Sara Singer	13	3	Roger Receiver			5	3		
		Paula President	14	4	1			Ted Tackle	6	4	
		Debrah Debate	15	5	Quentin Quarterback			1	5		
ID	Name	Reference	ID	Rank		ID	Name	Reference	ID	Rank	
13	Sara Singer	Fred Fullback	2	1		14	Paula President	Sally Singer	12	1	
		Quentin Quarterback	1	2	Quentin Quarterback			1	2		
		Sally Singer	12	3	1			Roger Receiver	5	3	
		Paula President	14	4	Ted Tackle			6	4		
		Debra Debate	15	5	1			Adele Artist	11	5	
ID	Name	Reference	ID	Rank							
15	Debrah Debate	Quentin Quarterback	2	1							
		Sally Singer	12	2							
		Sara Singer	13	3	1						
		Paula President	14	4							
		Ted Tackle	6	5							

Minimum	0
Maximum	185
Average	68.33
Median	45
Std. Dev.	50.10

Name	ID	Rc	Rw	Yc	Yw	lr (Rw+Yw)
Quentin Quarterback	1	12	60	5	125	185
Fred Fullback	2	8	40	2	50	90
Hank Halfback	3	1	5	1	25	30
George Guard	4	1	5	1	25	30
Roger Receiver	5	8	40	3	75	115
Ted Tackle	6	10	50	4	100	150
Charlene Choir	7	2	10	1	25	35
Sam Soccer	8	5	25	2	50	75
Betty Basketball	9	2	10	1	25	35
Curt Curler	10	0	0	0	0	0
Adele Artist	11	3	15	1	25	40
Sally Singer	12	6	30	2	50	80
Sara Singer	13	5	25	2	50	75
Paula President	14	8	40	0	0	40
Debrah Debate	15	4	20	1	25	45
checksum		75	375	26	650	1025

Sorted

Name	ID	Rc	Rw	Yc	Yw	Rw+Yw
Quentin Quarterback	1	12	60	5	125	185
Ted Tackle	6	10	50	4	100	150
Roger Receiver	5	8	40	3	75	115
Fred Fullback	2	8	40	2	50	90
Sally Singer	12	6	30	2	50	80
Sam Soccer	8	5	25	2	50	75
Sara Singer	13	5	25	2	50	75
Debrah Debate	15	4	20	1	25	45 Median
Adele Artist	11	3	15	1	25	40
Paula President	14	8	40	0	0	40
Charlene Choir	7	2	10	1	25	35
Betty Basketball	9	2	10	1	25	35
Hank Halfback	3	1	5	1	25	30
George Guard	4	1	5	1	25	30
Curt Curler	10	0	0	0	0	0
checksum		75	375	26	650	1025