The Impact of Stress on the BarOn EQ-i® Reported Scores and A Proposed Model of Inquiry[1]

High Performing Systems, Inc.
Technical Report #15-5

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June 20, 2005

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Abstract

This study looked at the impact of a "normal" mindset versus a "stressed" mindset on the reported scores of the BarOn EQ-i instrument, a self-report instrument that purports to measure emotional intelligence. The results indicated that with a simple set of instructions asking respondents to assume a very stressed mindset, significant downward changes in the total emotional intelligence and all 15 subscale scores were observed. The significant main effect for mindset has numerous implications, the most obvious being that individuals should not complete the instrument while in a stressed mindset. A second implication is that the relationship between emotional intelligence and stress might be such that stress actually reduces an individual's ability to use his/her full emotional intelligence capacity. The dynamic relationship among emotional intelligence, stress and leader performance might also be visualized and predicted through the use of a catastrophe theory model.

Stress is one of the major factors leaders must contend with in today's workplace. Tangri (2003) states:

> *Stress costs American business more than $300 Billion annually in lost productivity, absenteeism, accidents, employee turnover, and medical, legal and insurance fees, and workers' compensation awards. This is more than 15 times the cost of all strikes combined. In Canada, the annual cost to business is $16 Billion, which is equivalent to 14% of total net profits. Total costs to employers for accidents and work-related ill health in the United Kingdom is £7.3 Billion.*

Stress in the workplace is not expected to become any less problematic in the near future. Leaders will continue to contend with stressful work environments.

Thompson (1983) identified stress management—the leader's ability to cope with his/her own stress as well as reduce stress in the work environment—as a core leader competency in both military and civilian organizations. Since 1988 results of the Assessment of Basic Leader Effectiveness®, a multi-rater instrument, continue to validate the role of stress management as a leader competency.

Numerous articles have been published on the influence of emotional intelligence (EI) on successful leader effectiveness (Goleman, 1995; Goleman, 1998; Cherniss, 2004). As EI and leadership research continues to accumulate, there appears to be a fairly conclusive base of support for the hypothesis that leaders with high EI tend to outperform leaders with low EI. Even so, anecdotal cases of leaders with high EI tending to derail under stress are fairly common. These special cases of high EI leadership failures raise the question of "Is EI—or at least the way we purport to measure EI—susceptible to the influence of stress?"

[1] The EQ-i is a registered trademark of Multi-Health Systems, Inc. Myers-Briggs Type Indicator and MBTI are registered trademarks of the Myers-Briggs Trust Foundation. FIRO is a registered trademark of CPP, Inc. Element B is a trademark of BCon WSA International, Inc. Assessment of Basic Leader Effectiveness is a trademark of High Performing Systems, Inc.

Stress, according to Hans Selye (1978), one of the foremost authorities on stress, is *the body's non-specific reaction to any demand made upon it.* That is, the body produces predictable physiological and behavioral responses when any exogenous or endogenous stimulus acts on it. For example, stressful situations such as winning a million dollars, getting a divorce or a promotion produce the same core physiological symptoms. Using Selye's definition of stress would result in many leadership situations having a high probability of being categorized as stressful, even for senior executives.
Based on a review of the stress and EI literature, it is reasonable to expect that some or all EI scales should show a response to stress. For example, a characteristic behavioral response to stress is withdrawal from social interaction. Thus, one would expect to see a decrease in Interpersonal Relationship scores when a leader is experiencing high levels of stress. Other examples may include lower scores on Self-Regard, Happiness and Optimism.

Slaski and Cartwright (2002) found a significant relationship between EI as measured by the EQ-i, subjective stress and performance such that managers who scored higher on the EQ-i reported less subjective stress and demonstrated better management performance. They also suggest that EI might play an important role in mitigating the impact of stress. Thus, they propose that EI training might be a means of reducing stress.

An exercise developed by Schutz (1984) to demonstrate the impact of high and low self-esteem on individual performance consists of having two groups of three people each perform a work task in front of the class. The only difference in the directions between the two groups was that members of one group were told to think of a time they had very low self-esteem just prior to entering the classroom to receive their task. The second group was told to think of a time when they had very high self-esteem. The difference in task performance between the two groups was dramatic with the high self-esteem group significantly outperforming the low self-esteem group in both quality of task performance and attitude. The power of thought-induced attitude change caused by a one-sentence direction given 60 seconds prior to receiving task instructions was dramatic.

Along this same line, the mindset of an individual completing a self-report has been shown to influence how he/she responds to a questionnaire. The *Myers-Briggs Type Indicator*® (MBTI®) *Manual* (McCaulley, Quenk & Hammer, 1998) suggests that "reported" Type might be influenced by external factors:

> *Some people have trouble finding the right mind-set for answering the MBTI. The setting in which they answer the questions may influence them to report their "work self," "school self," "ideal self," or some other self that is specific to external demands* (p. 108).

Thompson and Walsh (2000) had respondents complete the MBTI instrument twice. The instrument was completed once with directions designed to create a "job" mindset (actually completed while at work). The instrument was completed a second time, on a different day, at home, with instructions designed to create a "home" mindset. The sequence of administrations was randomized within the group. The findings revealed a significant main effect for mindset. Even though the MBTI instrument appears to be relatively robust with high test-retest reliability (r =.92; McCaulley, et al., 1998), the individual's mindset has a significant influence on the outcome of the self-report. Furthermore, the mindset was created with a simple set of instructions.

Ware, Rytting and Jenkins (1994) found that when respondents were instructed to place themselves into a "stressed" mind-set and complete the MBTI instrument, their scores moved from their validated type preferences toward I, S, and T. The Ware, et al., findings suggest that self-report instruments can be easily influenced by instruction-induced "stressed" mindsets.

In a similar study, Thompson (2001) found that when people were asked to complete FIRO® Element B™ (a self-report instrument) with instructions designed to create "normal" and "stressed" mindsets, the two sets of scores were significantly different. The "stressed" mindset scores, although significantly lower in the aggregated data, were not always lower at the individual level. Some individuals did not change in the predicted direction. As a group, they showed a significant drop in desire for social interaction (to include others or be included) and desire to be open (share their own personal feelings or have others share their personal feelings with them). It could be inferred from the Element B changes and the MBTI changes described above that EI might change during stressful situations.

The EQ-i, a self-report instrument that purports to measure EI, reports a Stress Tolerance subscale test-retest reliability coefficient dropping from 0.79 at one month to 0.55 at four months (Bar-On, 2002). There is speculation around why this subscale is so low after only one month (0.79) and, particularly, why it drops to the very low 0.55 three months later. Of the fifteen subscales, Stress Tolerance appears to be the least reliable and stable. This lack of stability suggests that Stress Tolerance is susceptible to variations in the environment and/or mindset of the respondent.

The purpose of this study was to examine the impact of mindset on EI as reported by the BarOn EQ-i instrument. The studies cited above provide support for the ability to create a "stressed" mindset through instructions. There is also reason to expect that at least some of the subscales will be influenced by the mindset of the respondent resulting in lowered subscale scores. If this hypothesis is true, it may have many implications, one of which is an explanation for why some high EI leaders derail.

Method

The participants in the study were 62 (53% male and 47% female) supervisor and management level volunteers from the United States. Their ages ranged from 22 to 63. Each participant received feedback on both the "normal" and "stressed" mindset version of the EQ-i (133).

Participants completed the EQ-i twice, with 1 to 5 days between completions, using a different mindset each time. In the "normal" mindset they responded to the questions following the standard ("normal") EQ-i instructions. In the "stressed" mindset they answered the questions using the following instructions:

> *Complete the EQ-i pretending that you are very stressed, and respond to the questions the way you think you would if you were really this stressed.*
>
> *Pretend that your evil twin Skippy has totally taken over. You have passed the edge of the Crazy Threshold. Mentally visit a situation (work or personal) where you were very stressed, and then complete the EQ-i in this very stressed mindset.*

The instruments were processed online through Multi-Health Systems, Inc., publisher of the EQ-i, and the reports were provided to the researchers.

Results

The first step in the data analysis was to create the basic statistics for each group. Tables 1 and 2 show these statistics.

	N	Mean	Min	Max	SD
TEI	62	101.1	75.0	117.0	9.4
SR	62	100.9	69.0	121.0	12.3
ES	62	98.7	69.0	124.0	12.4
AS	62	101.9	52.0	126.0	13.0
IN	62	103.9	69.0	126.0	12.4
SA	62	101.4	66.0	121.0	12.2
EM	62	96.5	62.0	123.0	16.0
RE	62	99.4	72.0	122.0	11.8
IR	62	95.0	70.0	120.0	12.6
ST	62	103.9	62.0	126.0	11.8
IC	62	102.6	78.0	122.0	10.6
RT	62	102.9	76.0	122.0	10.5
FL	62	101.3	62.0	127.0	12.8
PS	62	101.9	78.0	130.0	11.0
OP	62	100.4	72.0	119.0	10.7
HA	62	100.2	65.0	117.0	11.2
IN	60	4.1	0.0	12.0	2.4
PI	60	110.9	82.0	141.0	13.7
NI	60	96.1	87.0	126.0	9.8

Table 1
Normal Means

	N	Mean	Min	Max	SD
S TEI	62	80.6	10.0	111.0	22.5
S SR	62	88.9	51.0	116.0	16.9
S ES	62	91.8	38.0	125.0	18.5
S AS	62	92.2	39.0	123.0	19.0
S IN	62	95.1	32.0	126.0	20.3
S SA	62	82.3	18.0	117.0	21.0
S EM	62	81.5	9.0	116.0	22.0
S RE	62	82.5	5.0	124.0	22.6
S IR	62	79.1	30.0	114.0	17.3
S ST	62	89.1	45.0	123.0	19.1
S IC	62	91.2	48.0	124.0	16.7
S RT	62	90.7	21.0	128.0	21.5
S FL	62	85.8	35.0	123.0	18.4
S PS	62	86.7	29.0	122.0	20.6
S OP	62	83.6	19.0	118.0	20.9
S HA	62	79.2	31.0	113.0	19.4
SIN	60	4.9	1.0	10.0	2.3
SPI	60	105.2	79.0	141.0	15.2
SNI	60	108.6	87.0	186.0	22.9

Table 2
Stressed Means

Table 1 shows that the "normal" group was slightly above average on eleven of the fifteen subscales and the average standard deviation (SD) was 12.4. The instrument's SD is 15. The Inconsistency Score average was 4.1 with a range of 0 to 12. The Positive Impression average score was 110.9 with a range of 82 to 141. The Negative Impression average score was 96.1 with a range of 87 to 126.

Table 2 shows that the "stressed" group was below average on all fifteen subscales. The average SD was 20 compared to the instrument's SD of 15. The SD range is significantly higher than the "normal" group. The Inconsistency Score average was 4.9 with a range of 1 to 10, which is similar to the "normal" group. The Positive Impression average score was 105.2 with a range of 79 to 141. The Negative Impression average score was 108.6 with a range of 87 to 186. The Negative Impression range is considerably higher than the "normal" group.

T-tests performed on the subscale means indicated that the change from a "normal" to a "stressed" mindset was statistically significant for each subscale. Figure 1 shows these changes graphically.

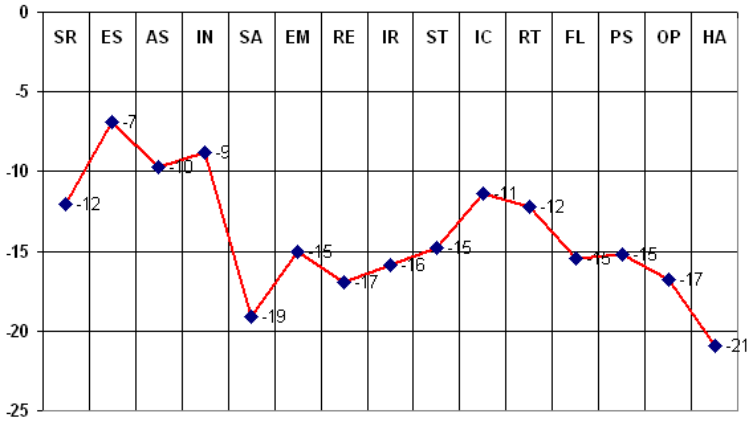

Figure 1
EQ-i Subscale Changes from Normal to Stressed Mindset

The most dramatic change occurred with Happiness (-21), followed by Self-Actualization (-19), Optimism (-17), Social Responsibility (-17), Interpersonal Relationship (-16), Empathy (-15), Stress Tolerance (-15), Flexibility (-15) and Problem Solving (-15). The smallest changes occurred with Emotional Self-Awareness (-7), followed by Independence (-9) and Assertiveness (-10) subscales.

Inter-scale correlations (Tables 3-4) were generated for the 15 EQ-i subscales and the Total Emotional Intelligence score. Inter-scale correlations in the "stressed" mindset increased dramatically. The "normal" mindset had 50 pairs (out of 104) that were not significantly correlated. The "stressed" mindset had only two pairs (Impulse Control—Self-Regard and Impulse Control-Assertiveness) that were not correlated.

	TEI	SR	ES	AS	IN	SA	EM	RE	IR	ST	IC	RT	FL	PS	OP
SR	**0.71**														
ES	**0.67**	**0.31**													
AS	**0.55**	**0.45**	**0.35**												
IN	**0.56**	**0.43**	0.17	**0.70**											
SA	**0.71**	**0.59**	**0.53**	**0.44**	**0.35**										
EM	0.19	-0.21	**0.31**	-0.11	-0.23	0.11									
RE	0.24	-0.10	**0.27**	-0.08	-0.14	0.15	**0.81**								
IR	**0.48**	0.19	**0.55**	0.12	-0.02	**0.40**	**0.46**	**0.52**							
ST	**0.69**	**0.58**	**0.30**	**0.45**	**0.57**	**0.38**	-0.10	-0.10	0.04						
IC	**0.26**	-0.02	0.11	-0.18	0.12	-0.06	0.19	0.06	-0.16	**0.29**					
RT	**0.66**	**0.39**	**0.46**	0.20	**0.32**	**0.27**	-0.03	0.05	0.18	**0.50**	**0.27**				
FL	**0.66**	**0.45**	**0.29**	**0.34**	**0.44**	**0.31**	0.06	0.08	**0.26**	**0.42**	**0.29**	**0.35**			
PS	**0.58**	0.25	**0.43**	0.17	0.24	**0.42**	0.16	0.07	0.08	**0.45**	**0.28**	**0.48**	**0.26**		
OP	**0.79**	**0.69**	**0.46**	**0.43**	**0.53**	**0.57**	0.00	0.11	0.21	**0.72**	0.16	**0.54**	**0.50**	**0.50**	
HA	**0.48**	**0.55**	0.17	0.16	0.04	**0.52**	-0.10	0.03	**0.43**	0.16	-0.17	0.21	**0.33**	0.05	**0.31**

Table 3
EQ-i Inter-scale Correlations—Normal Mindset
(Bold/Red correlations are statistically significant at p *<.05)*

	S TEI	S SR	S ES	S AS	S IN	S SA	S EM	S RE	S IR	S ST	S IC	S RT	S FL	S PS	S OP
S SR	**0.77**														
S ES	**0.75**	**0.47**													
S AS	**0.73**	**0.64**	**0.57**												
S IN	**0.76**	**0.63**	**0.45**	**0.70**											
S SA	**0.82**	**0.78**	**0.56**	**0.63**	**0.65**										
S EM	**0.79**	**0.40**	**0.64**	**0.48**	**0.50**	**0.58**									
S RE	**0.77**	**0.38**	**0.60**	**0.46**	**0.44**	**0.62**	**0.92**								
S IR	**0.82**	**0.51**	**0.64**	**0.50**	**0.52**	**0.67**	**0.81**	**0.81**							
S ST	**0.87**	**0.75**	**0.57**	**0.63**	**0.72**	**0.70**	**0.53**	**0.53**	**0.61**						
S IC	**0.57**	0.25	**0.41**	0.16	**0.35**	**0.28**	**0.54**	**0.45**	**0.47**	**0.50**					
S RT	**0.91**	**0.68**	**0.74**	**0.60**	**0.63**	**0.68**	**0.73**	**0.71**	**0.71**	**0.76**	**0.54**				
S FL	**0.82**	**0.60**	**0.56**	**0.58**	**0.69**	**0.63**	**0.64**	**0.60**	**0.70**	**0.72**	**0.51**	**0.66**			
S PS	**0.81**	**0.51**	**0.71**	**0.57**	**0.51**	**0.55**	**0.62**	**0.60**	**0.59**	**0.75**	**0.59**	**0.75**	**0.63**		
S OP	**0.93**	**0.82**	**0.68**	**0.74**	**0.75**	**0.82**	**0.66**	**0.64**	**0.69**	**0.87**	**0.41**	**0.81**	**0.72**	**0.74**	
S HA	**0.78**	**0.74**	**0.36**	**0.53**	**0.50**	**0.76**	**0.47**	**0.53**	**0.69**	**0.73**	**0.36**	**0.64**	**0.60**	**0.52**	**0.75**

Table 4
EQ-i Inter-scale Correlations—Stressed Mindset
(Bold/Red correlations are statistically significant at p *<.05)*

A "stressed" mindset seems to bring about stronger inter-scale relationships.

Conclusion

The findings suggest that a "stressed" mindset, even one induced by simple instructions to recall an earlier time when very stressed, results in a significant lowering of self-report subscale scores on the EQ-i and purportedly EI. The changes with the "stressed" mindset were in the direction predicted and were consistent with changes on other self-report instruments. This has implications for researchers, practitioners and respondents when using the EQ-i.

When administering and interpreting the EQ-i, practitioners must be aware of the initial instructions and mindset of the respondent when completing the instrument. Particular caution should be taken when interpreting the EQ-i of a respondent who:

- Has had a recent traumatic event, e.g., divorce, death in the family, lost job, etc.
- Perceives that the results of the EQ-i will determine getting hired for a job or getting a promotion.
- Is mentally or physically tired when completing the instrument.
- Is anxious about being "assessed."

Ask questions to help determine the mindset of the respondent when he/she completed the instrument.

Self-Awareness demonstrated the least change of all the EQ-i subscales. One explanation of this might be that the respondents in this study knew they were under stress and, consequently, had and maintained this awareness while completing the instrument. More research is needed in this area.

The results of this study show no relationship between a "stressed" mindset and inconsistency scores. The respondent may appear (on paper) to be a person with a normal level of stress who has low EQ-i scores.

In a study of CEOs, Stein (2002) found that the average scores of CEOs were well above the general population average on overall EI and the five EQ-i subscales of Independence, Assertiveness, Optimism, Self-Actualization and Self-Regard. Within this group of CEOs, Stein created a superstar group based on business performance data. A regression analysis revealed that the superstars' performance was predicted by Empathy, Self-Regard and Assertiveness. One key to success might be starting out in a leadership position with high EI—high enough not to be overcome by the stress of the job.

Orme and Germond (2002) outlined a relationship between emotional intelligence and change management. They found that the EQ-i subscales of Reality Testing, Problem Solving, Social Responsibility, Interpersonal Relationship, Emotional Self-Awareness, Flexibility and Impulse Control are key factors in successful change management. Combining their findings with the current study could lead to the possibility of a reinforcing loop. For example, if the leader finds change stressful, his/her EI might be lowered—especially on the key factors found by Orme and Germond—resulting in lowered leader performance, which then results in greater stress, and so on. This is an interesting possibility for future study.

High levels of stress not only reduce the individual's ability to function well, but also may reduce his/her ability to operate at his/her potential EI level, or to minimize EI degradation. That is, each person may have an individual EI "set point" (for total EI and sub-dimensions) that describes a person-specific, instinctual EI ability. A pre-wired or pre-dispositional set point is being suggested. The individual operates from this set point on a daily basis under normal levels of stress. As his/her stress level increases, he/she begins to move away from his/her set point. If the set point level of EI and his/her level of stress reach a critical point, Goleman's (1995) emotional hijacking (a sudden, catastrophic change in behavior) takes place. These occurrences might be explained using catastrophe theory (Zeeman, 1977).

The results of this study add support to this line of reasoning and suggest a relationship between stress and EI such that if stress reaches a very high level, the result is a significant or catastrophic change in EI. Given the EI and leader performance data cited above, it might be reasonable to infer that a catastrophic change in EI would also result in a catastrophic change in leader effectiveness (Figure 2).

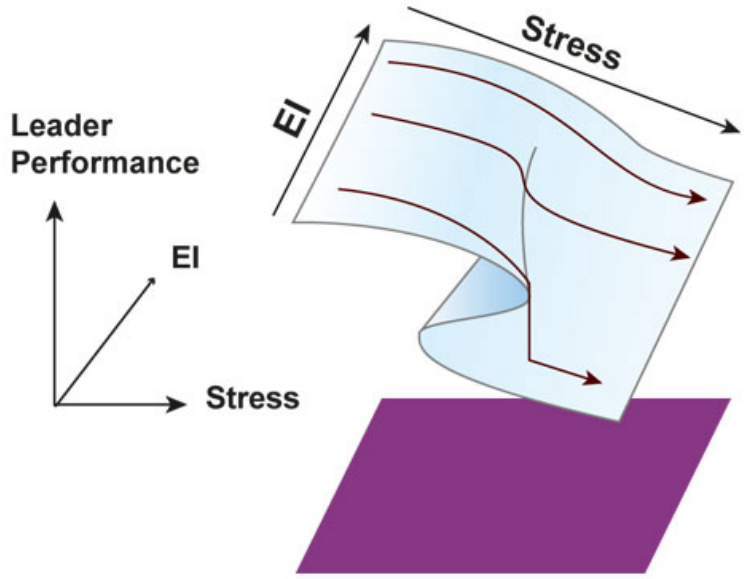

Figure 2
A 3-Dimension Behavioral Surface of Leader Effectiveness, EI and Stress

Catastrophe theory serves as not only a topological tool for visualizing the relationship of these three variables (EI, stress and leader effectiveness), but also as an analytical tool for determining the level of EI required by leaders to function effectively under differing levels of stress. Perhaps such a model could add insight into leadership failures such as Enron, WorldCom and others.

This model suggests that rather than EI moderating stress, the actual relationship may be that high stress levels constrain EI. As stress levels increase, our ability to use EI effectively may actually decrease. With the right combination of EI and stress, a catastrophic change will occur, resulting in emotional hijacking.

The author acknowledges the problems of generalization from a small data set and recognizes the need for further study in the area of EI, stress and leader effectiveness. Future research might also include an additional group of "moderately stressed" respondents for comparison to the "normal" and "stressed" groups.

Further research is needed to explore in more detail the efficacy of catastrophe theory as a tool for explaining and predicting leader effectiveness as a result of EI and stress.

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