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# Health Data and AQ Profile Scores

## A Study of 1400 Fortune 50 Employees

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This study, conducted with 1400 individuals across a variety of job levels and locations within a Fortune 50 corporation, examined two issues:

- (1) Statistical relationships between AQ Profile scores and Health Questionnaire scores.

***AQ is highly predictive of health.*** For each Health question, and for the total Health Score, persons in the top score ranges on AQ (and CORE) obtained significantly higher average Health Scores than did persons in the bottom score ranges. Score averages were at least a full standard deviation higher for people in the top ranges.

- (2) Changes in AQ Profile scores as a result of taking the AQ training.

***The AQ training resulted in significant gains.*** Average AQ scores, and average scores on each CORE variable, rose significantly after the AQ training. The increase was more than a full standard deviation, which is statistically significant and is considered a large “effect size.”

### Health as a Function of AQ

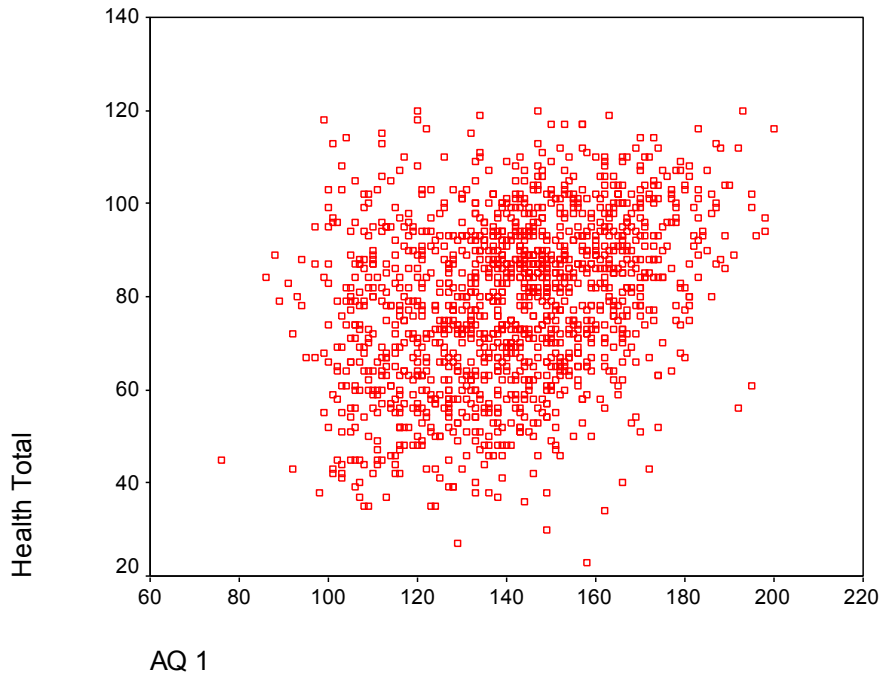
A set of 12 Health questions were answered by 1,398 persons; each who also completed the AQ Profile. The 12 self-assessment items focused on a select range of health indicators including energy, fitness, optimism, happiness, depression, exercise, and diet.

***Approach***—The Health questions were analyzed individually, and were added together to obtain a total Health Scale score.

***Reliability***—The reliability of the Health Scale was 0.91, indicating that the items were measuring very closely associated concepts. For example, if a person’s response to a question about diet was that it is “very healthy,” most likely that person also responded that their energy level was very high and they were rarely or never depressed.

*Significant Correlation*—Health Scores were highly correlated with AQ Profile scores. Results showed that all 12 Health Scores were significantly correlated with AQ and with each of its scales. Correlations with the total Health Scale ranged from 0.154 for Ownership to 0.305 for Control.

The AQ score was correlated 0.328 with the total Health Score. In the following scatterplot we can see the bulk of the points rise to the right—indicating that as AQ increases, the Total Health Score also increases.



To look further at the relationship between AQ and Health Scores, we computed the descriptive statistics for the AQ Profile and its four scales. We then determined the values of the scores at the 10<sup>th</sup> and 90<sup>th</sup> percentiles, and at the upper and lower quartiles. These values are shown in Table 1.

**Table 1. Measures of Central Tendency and Dispersion Associated with AQ Profile Scores (N = 1,398)**

	AQ	Control	Ownership	Reach	Endurance
<b>Mean</b>	141.0	36.9	39.7	32.6	31.8
<b>Median</b>	142.0	37.0	42.0	32.0	32.0
<b>Std Dev</b>	21.6	7.4	9.5	6.8	7.8
<b>Minimum</b>	76.0	10.0	10.0	10.0	10.0
<b>Maximum</b>	200.0	50.0	50.0	50.0	50.0
<b>90%-ile</b>	169.0	46.0	49.0	42.0	42.0
<b>75%-ile</b>	156.0	42.0	46.0	37.0	37.0
<b>25%-ile</b>	126.0	32.0	37.0	28.0	27.0
<b>10%-ile</b>	111.0	27.0	26.0	24.0	22.0

### ***The High versus Low AQ Health Difference***

Individuals with higher AQs score significantly stronger on all health items versus those with lower AQs. Starting with the total AQ score, and scanning across the first and last rows of Table 2, it is evident that average Health Scores, even for the individual Health questions, were consistently higher for people among the top 10% than the bottom 10% on AQ. Similarly, the average Health Scores among people in the top quartile (25%) on AQ were higher than the scores among people in the bottom AQ quartile.

The difference in mean total Health Score, comparing the top and both 10% on AQ, was 18.3 points.

People in the top 10% on AQ had average total Health Scores a full standard deviation higher than the people in the lowest 10% on AQ.

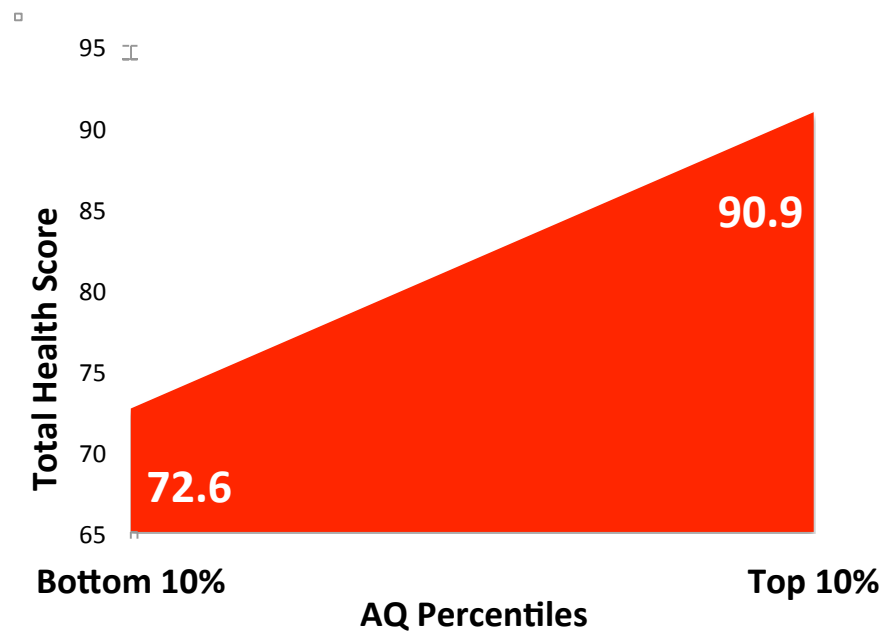
Statistically, this is a large difference.

**Table 2. Average Health Questionnaire Scores Associated with Intervals of Scores on the AQ Profile Total AQ Score**

AQ	HQ1	HQ2	HQ3	HQ4	HQ5	HQ6	HQ7
Top 10%	8.0	8.2	7.1	6.4	7.8	7.2	8.3
Top 25%	7.5	7.8	6.9	6.2	7.6	7.0	7.8
Bottom 25%	6.5	6.6	5.7	5.2	6.4	5.7	6.2
Bottom 10%	6.7	6.6	5.9	5.3	6.5	5.9	6.1

AQ	HQ8	HQ9	HQ10	HQ11	HQ12	Health Total
Top 10%	6.1	7.6	8.3	7.6	8.3	90.9
Top 25%	5.9	7.3	8.0	7.2	7.9	87.0
Bottom 25%	5.1	6.2	6.3	5.9	6.4	72.1
Bottom 10%	5.0	6.2	6.2	5.9	6.3	72.6

## Correlation of Overall Health and AQ Scores



Tables 3 – 6 display the same information for each of the AQ scales. Similar conclusions can be drawn for each CORE scale.

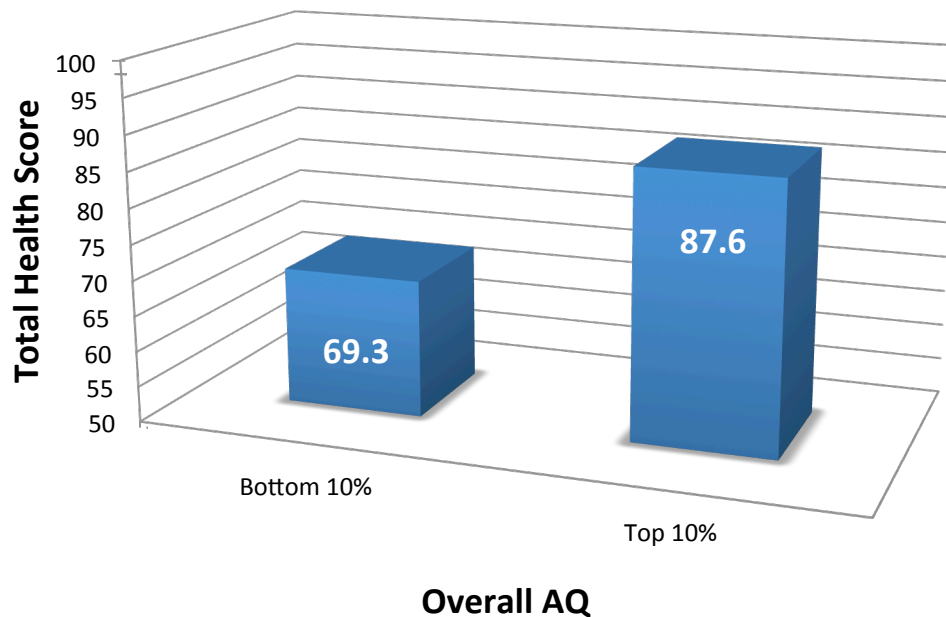
**Table 3. Average Health Scores Associated with Intervals of Scores on the AQ Profile**  
**Control Score**

Control	HQ1	HQ2	HQ3	HQ4	HQ5	HQ6	HQ7
Top 10%	7.9	7.9	6.8	6.3	7.6	7.0	7.8
Top 25%	7.6	7.7	6.8	6.2	7.5	6.9	7.6
Bottom 25%	6.3	6.4	5.7	5.3	6.3	5.7	6.2
Bottom 10%	6.0	6.1	5.7	5.3	6.1	5.7	5.8

Control	HQ8	HQ9	HQ10	HQ11	HQ12	Health Total
Top 10%	5.9	7.3	7.9	7.4	7.8	87.6
Top 25%	5.9	7.2	7.9	7.2	7.7	86.3
Bottom 25%	5.0	6.1	6.3	5.9	6.5	71.8
Bottom 10%	4.9	6.0	5.8	5.7	6.1	69.3

□

## Control vs. Health Score



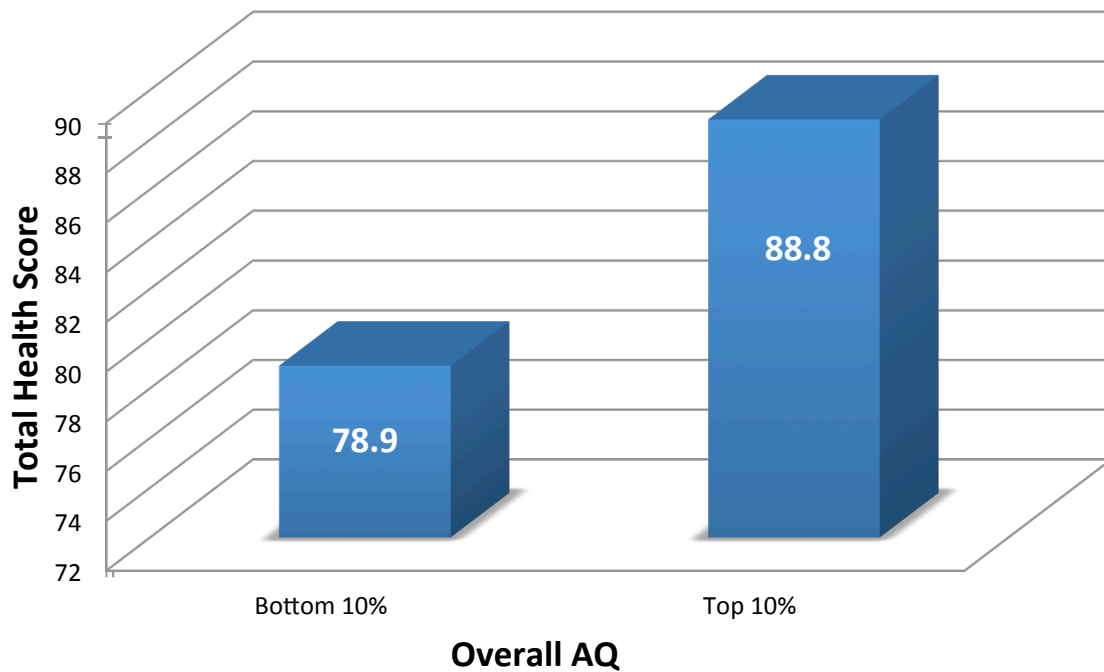
**Table 4. Average Health Scores Associated with Intervals of Scores on the AQ Profile  
Ownership Score**

Ownership	HQ1	HQ2	HQ3	HQ4	HQ5	HQ6	HQ7
Top 10%	7.8	7.9	7.1	6.4	7.7	7.1	7.9
Top 25%	7.5	7.6	6.7	6.1	7.4	6.8	7.6
Bottom 25%	6.5	6.7	5.8	5.4	6.5	5.9	6.5
Bottom 10%	7.1	7.3	6.0	5.7	7.0	6.1	6.7

Ownership	HQ8	HQ9	HQ10	HQ11	HQ12	Health Total
Top 10%	6.1	7.5	7.7	7.5	8.0	88.8
Top 25%	5.8	7.2	7.7	7.1	7.7	85.1
Bottom 25%	5.1	6.2	6.6	6.1	6.6	73.8
Bottom 10%	5.5	6.6	7.1	6.6	7.0	78.9

□

## Ownership vs. Health Score



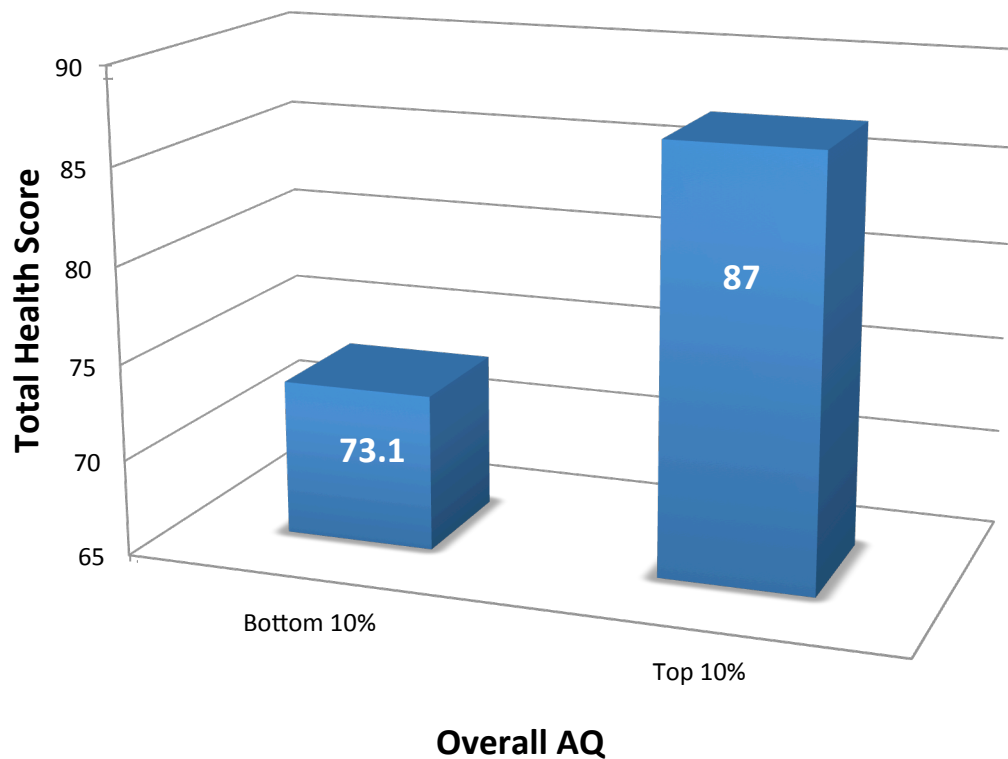
**Table 5. Average Health Scores Associated with Intervals of Scores on the AQ Profile**  
**Reach Score**

Reach	HQ1	HQ2	HQ3	HQ4	HQ5	HQ6	HQ7
Top 10%	7.6	8.1	6.7	6.1	7.6	6.9	7.9
Top 25%	7.3	7.6	6.6	6.1	7.4	6.7	7.5
Bottom 25%	6.9	6.7	6.0	5.4	6.7	6.0	6.4
Bottom 10%	6.7	6.7	5.9	5.3	6.6	5.8	6.2

Reach	HQ8	HQ9	HQ10	HQ11	HQ12	Health Total
Top 10%	5.8	7.2	8.0	7.3	7.9	87.0
Top 25%	5.7	7.1	7.7	7.0	7.6	84.3
Bottom 25%	5.1	6.4	6.6	6.2	6.7	75.2
Bottom 10%	4.9	6.3	6.2	5.9	6.5	73.1

□

## Reach vs. Health Score



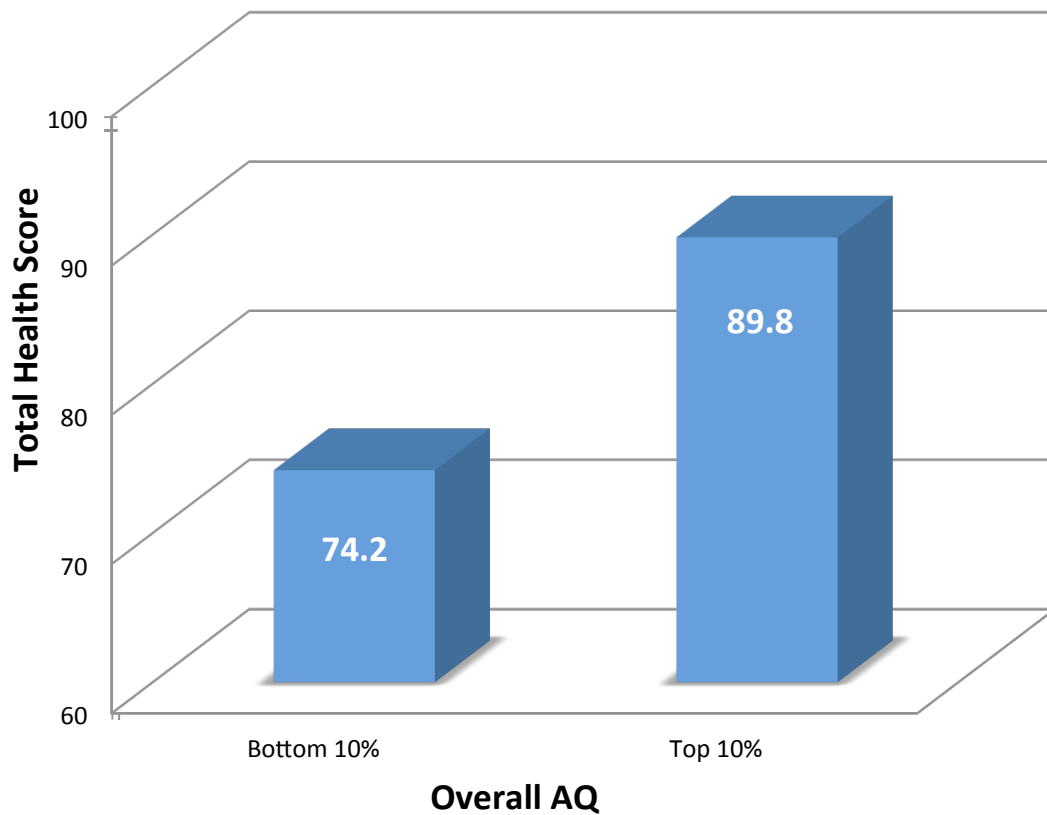
**Table 6. Average Health Scores Associated with Intervals of Scores on the AQ Profile**  
**Endurance Score**

Endurance	HQ1	HQ2	HQ3	HQ4	HQ5	HQ6	HQ7
Top 10%	7.7	8.3	6.9	6.2	7.7	7.1	8.3
Top 25%	7.4	7.6	6.6	6.1	7.4	6.8	7.6
Bottom 25%	6.7	6.6	5.8	5.3	6.5	5.8	6.2
Bottom 10%	6.9	6.6	5.8	5.4	6.7	5.8	6.2

Endurance	HQ8	HQ9	HQ10	HQ11	HQ12	Health Total
Top 10%	5.9	7.4	8.3	7.6	8.4	89.8
Top 25%	5.7	7.1	7.9	7.1	7.7	85.0
Bottom 25%	5.0	6.3	6.3	6.1	6.5	73.2
Bottom 10%	5.0	6.5	6.4	6.2	6.6	74.2

□

## Endurance vs. Health Score



## Changes in AQ Profile Scores

*Significant Improvement in AQ, Post AQ Training*—A total of 789 persons completed the AQ Profile before and after completing the AQ Training. Prior to training, the average AQ score was 141.5. After the training the average was 166.1.

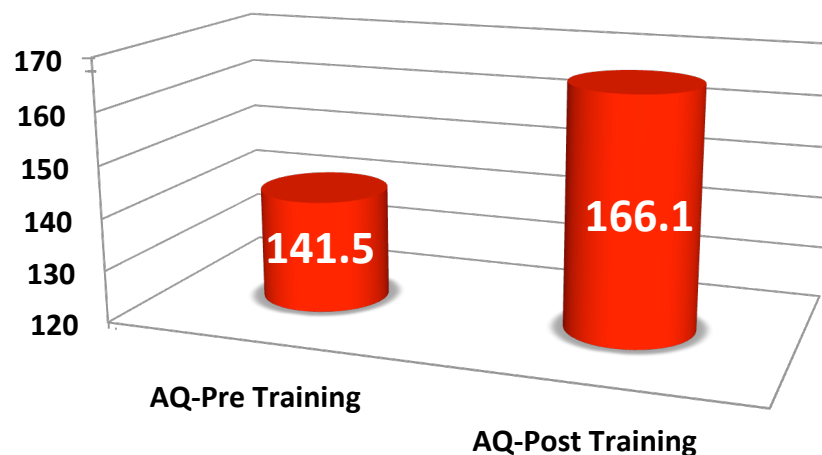
*Large AQ Effect*—Table 7 shows that, on average, scores rose 24.7 points on AQ. This increase is more than a full standard deviation; it is an improvement that is not only statistically significant but a “large effect.”<sup>1</sup>

*CORE Improvement*—Likewise, all CORE mean CORE scores increased more than one standard deviation. The Ownership score increased almost 3 standard deviations, suggesting that the training most dramatically improved skills described as “Ownership.”

**Table 7. Change in AQ Profile Scores after Training  
(N = 789)**

	AQ	Control	Ownership	Reach	Endurance
<b>Mean Change</b>	+24.7	+6.5	+3.6	+7.1	+7.5
<b>SD of Change</b>	23.1	7.6	10.1	8.2	9.3
<b>Min. Change</b>	-68	-27	-40	-29	-34
<b>Max. Change</b>	+107	+37	+40	+35	+40

### Improvement in Overall AQ After Completing the Online Program



<sup>1</sup> Based on Cohen's *d* as a measure of effect size.



Paul G. Stoltz, Ph.D  
Founder and Chief Executive Officer

Dr. Paul G. Stoltz is considered the world's pre-eminent thought leader on the science of Mindset. He is author of four international bestselling books on the subject—printed in 14 languages—was voted by *HR Magazine* as “One of the Top 10 most influential global thinkers,” and by *Executive Excellence* as “One of the 100 Most Influential Thinkers of Our Time.” Dr. Stoltz guest lectures for the Harvard Business School Executive Education program. HBS incorporates Dr. Stoltz's AQ theory and methods into its prestigious executive development and MBA programs. Dr. Stoltz has been a featured blogger and author for the *Harvard Business Review*. Today, AQ—or Adversity Quotient—is the most widely adopted method of its kind in the world, currently in use by industry-leading companies and many governments across the globe. As a highly sought-after thought leader, presenter, and teacher, Dr. Stoltz combines inspiration and humor with application and substance, delivering a compelling and practical message to audiences of 10 to 10,000 people.



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