

Preliminary Report:

A New US Air Force Study Explores the Cost-Effectiveness of Applying the Bar-On EQ-i¹

BACKGROUND

In the first known study that directly examined the relationship between emotional intelligence (EI) and occupational performance in the workplace, the *Bar-On EQ-i* scores of 1,171 US Air Force (USAF) recruiters were compared with their ability to meet annual recruitment quotas [Handley, 1997; Bar-On, 2004; Bar-On, Handley and Fund, 2006]. Logistic Regression Analysis (LRA) was initially applied to the results and generated an overall regression coefficient of .53 based on the correlation between the predictive model that emerged and the recruiters' ability to meet their annual quotas, which the USAF had set at 80% or greater. Out of the 15 *Bar-On EQ-i* subscales, the following 5 entered the model at the $\leq .05$ probability level: Assertiveness (t -ratio=4.8, $p < .01$), Happiness (t -ratio=3.7, $p < .01$), Problem Solving (t -ratio=2.9, $p < .01$), Empathy (t -ratio=2.8, $p < .01$), and Emotional Self-Awareness (t -ratio=1.9, $p = .05$).² In addition to this moderately high regression coefficient, the odds ratio was 2.7 for the model. These results demonstrated a moderately high relationship between EI and occupational performance in addition to specifically indicating that the *Bar-On EQ-i* was able to significantly identify high performance among recruiters. After one year of comparing the *Bar-On EQ-i* scores of new recruitment candidates with this particular model, the USAF increased its ability to predict successful recruiters by nearly threefold which decreased first-year attrition due to mismatches and thus reduced financial losses by approximately 92% saving the military nearly \$3,000,000. Based on those results, the US Government Accountability Office submitted a Congressional Report to the Senate Committee on Armed Services praising the USAF's use of EI screening and recommended its continued use not only in the USAF but throughout the US Armed Services [United States Government Accountability Office, 1998].

In 2007, the USAF began to explore the potential application of the *Bar-On EQ-i* to predict performance in training programs for pilots, air traffic controllers and pararescue jumpers ("PJs"). The PJ project was considered top priority for the Air Force, and they developed a detailed research design to address the challenge.

The PJ program takes nearly two years to complete and includes numerous hours of combat training, parachuting, diving, paramedical instruction as well as extensive air rescue and evacuation preparation. The total cost of completing the training is estimated at \$250,000 per trainee. The USAF's aim was to explore the possibility of applying the *Bar-On EQ-i* [Bar-On, 1997a] to identify those PJ trainees who have the best chance of successfully completing this highly specialized military course.

¹ The USAF originally discussed this new study and other projects with Dr. Reuven Bar-On in August 2007; and based on information provided by those involved, he prepared this preliminary report in August 2010. The first listing of these results appeared on the 07/21/2010 edition of the *EI Insider*.

² A brief description of what these scales assess appears in the Appendix.

METHOD

All of the 200 PJ trainees who began the 2008 course completed the *Bar-On EQ-i* (described below), and the results of those who successfully completed the program were compared with those who did not complete it. A forward stepwise DFA was then applied to examine the results, which is frequently done in establishing group membership [Tabachnick & Fidell, 2001, p. 456]. The decision to apply this type of DFA was most likely based on the fact that there is no reason to assume that any of the potential predictors would have higher priority than any other ones, which is the rationale for applying this specific analysis [Tabachnick & Fidell, 2001, p. 481].

The *Bar-On EQ-i* [Bar-On, 1997a] is a self-report measure of emotionally and socially intelligent behavior that provides an estimate of one's underlying emotional-social intelligence. A detailed description of the psychometric properties of this measure and how it was developed is found in the instrument's technical manual [Bar-On, 1997b]. Briefly, the *Bar-On EQ-i* consists of 133 items in the form of short sentences and employs a 5-point response scale with a textual format ranging from "very seldom or not true of me" (1) to "very often true of me or true of me" (5). The individual's responses render a total EQ score as well as scores on 5 composite scales that comprise a total of 15 subscales. The EI competencies and skills assessed by these scales are described in the Appendix. Raw scores are computer-generated, tabulated and converted into standard scores based on a mean of 100 and standard deviations of 15. This psychometric instrument has a built-in correction factor that automatically adjusts the scale scores based on beta weights generated by the validity indices, which is an important feature for self-report measures in that it significantly reduces response bias. The reliability and validity of the *Bar-On EQ-i* has been adequately established [see, for example, Bar-On, 1997b, 2004; Plake and Impara, 1999; Geher, 2004; Spielberger, 2004].

RESULTS

In the present USAF study, a forward stepwise DFA generated an overall regression coefficient of .45 demonstrating that EI has a significant impact on performance among PJ trainees and is capable of predicting who will be expected to successfully complete this course. This coefficient was based a Canonical analysis of the correlation between the regression model and its ability to predict those who completed the training and those who did not. In essence, this procedure establishes the predictive ability of the regression model that emerged. Five (5) of the 15 EQ-i subscales significantly entered into the regression model (determined by a probability level set at $\leq .05$). This particular model is comprised of the following EI predictors: Self-Regard, Reality Testing, Flexibility, Optimism and Happiness. According to the Bar-On conceptual model of emotional intelligence [Bar-On, 1997b, 2000, 2006], this means that those who (i) have good self-awareness and understand their weaknesses as well as their strengths, (ii) can effectively validate their feelings and keep things in correct perspective, (iii) are flexible and adaptive, and (iv) are optimistic and (v) positive are the ones who have the best chance of successfully completing this extremely demanding course. This model accounts for 20% of the variance in predicting who will complete the course. Additionally, the accuracy level of this model is 75% according to the classification matrix that was generated by the analysis. This means that it is expected to be very accurate in predicting those who will successfully complete the PJ course in the future.

At the time this preliminary report was being written, the exact values for Lambda, F-to-enter/-remove, Tolerance and probability levels for each of the discriminant functions were not available. It is expected that this information will be described in detail when the USAF publishes their findings. However, in light of the fact that the three primary goals of stepwise DFA are to determine (a) the overall dimension of discrimination in the form of a regression coefficient, (b) the precise composition of the model based on a description of the predictors it includes and (c) the adequacy of classification used to predict group membership for new cases [Tabachnick & Fidell, 2001, pp. 456-516], the interim findings summarized here adequately provide an overview of the key findings before the USAF publishes more detailed results.

DISCUSSION

The results from the current study confirm a growing body of research findings indicating that EI significantly impacts occupational performance [see, for example, Druskat, Sala and Mount, 2006] as well as confirm the predictive validity of the *Bar-On EQ-i*. By applying the EI model that emerged, the USAF estimates that it will save approximately \$190,000,000³ by significantly reducing mismatches and selecting the right people for the course. Furthermore, this is an additional indication that the *Bar-On EQ-i* is capable of cost-effectively being applied in what Reuven Bar-On has referred to as *Star Performer Profiling*TM, which he has pioneered and used in organizations worldwide since 1997. To date, there are a number of additional examples that empirically demonstrate that this is probably the most cost-effective way of applying emotional intelligence for hiring, training and promoting high performers (those who drive organizational effectiveness and productivity). As such, this approach has saved or generated hundreds of millions of dollars over the years for a number of organizations around the world⁴.

The findings presented in this preliminary report will most likely be published within the coming months by the USAF.

³ This figure was obtained by multiplying the total cost per trainee to complete the PJ course (\$250,000) by 75% of those trainees who are routinely admitted but do not complete the course (i.e., mismatches) over a number of years.

⁴ For more information on *Star Performer Profiling*TM and how it has been cost-effectively applied in other projects, contact Dr. Bar-On (Reuven@ReuvenBarOn.org).

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APPENDIX

The Bar-On EQ-i Scales and What They Assess

Bar-On EQ-i Scales	The EI Competencies and Skills Assessed by Each Scale
Intrapersonal	Self-awareness and self-expression:
Self-Regard	<i>To accurately perceive, understand and accept oneself.</i>
Emotional Self-Awareness	<i>To be aware of and understand one's emotions.</i>
Assertiveness	<i>To effectively and constructively express one's emotions and oneself.</i>
Independence	<i>To be self-reliant and free of emotional dependency on others.</i>
Self-Actualization	<i>To strive to achieve personal goals and actualize one's potential.</i>
Interpersonal	Social awareness and interpersonal relationship:
Empathy	<i>To be aware of and understand how others feel.</i>
Social Responsibility	<i>To identify with one's social group and cooperate with others.</i>
Interpersonal Relationship	<i>To establish mutually satisfying relationships and relate well with others.</i>
Stress Management	Emotional management and regulation:
Stress Tolerance	<i>To effectively and constructively manage emotions.</i>
Impulse Control	<i>To effectively and constructively control emotions.</i>
Adaptability	Change management:
Reality-Testing	<i>To objectively validate one's feelings and thinking with external reality.</i>
Flexibility	<i>To adapt and adjust one's feelings and thinking to new situations.</i>
Problem-Solving	<i>To effectively solve problems of a personal and interpersonal nature.</i>
General Mood	Self-motivation:
Optimism	<i>To be positive and look at the brighter side of life.</i>
Happiness	<i>To feel content with oneself, others and life in general.</i>