

Building A Psychological Profile of Olympic Medalists and World Champions

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Kevin Curran a first time finalist at Wimbledon a few years ago was being interviewed by a television commentator. The commentator asked Curran why it had taken someone with his talent, so many years to reach the final of a grand slam. He also wanted to know if this was the "break through" that would lead to greater things in the future. In a very honest and open way Curran responded by saying "No, it wasn't a break through." He went on to say that he had a lot of talent and once in a while would hold things together enough to make a final and/or win a tournament, but he didn't have the kind of drive and dedication that consistent winners have.

Those of us who have worked with world class athletes would intuitively agree with Curran's assessment of those champions who are consistent winners. There is something different about them and it isn't their physical talent. In fact, we often feel it's the opposite, consistent winners have a mental toughness that in many athletes seems to compensate for a relative lack of physical talent.

In spite of Kevin Curran's comments and our intuition there has been little hard evidence to show that there are indeed important psychological differences between world class athletes who win once, and those that win repeatedly. There are probably several reasons for this. First, we may have been measuring the wrong things. Second, there may not be enough variability in the athletes scores when we are looking at elite level performers. Finally, it is difficult to get a large enough number of subjects to obtain reliable results.

Purpose

The purpose of the present study was to determine the extent to which those concentration and interpersonal skills measured by The Attentional and Interpersonal Style (TAIS) Inventory, could differentiate between world champion athletes based on the number of medals or world championships they had won (Nideffer, 1976).

Subjects

We searched a TAIS data base of approximately 10,000 elite level athletes, and were able to identify 239 individuals who had won at least one Olympic Medal or world championship. These two hundred and thirty nine athletes were competing in 23 different sports. There were 171 males and 68 females. Combined, these individuals had won 113 Olympic Gold Medals, 44 Olympic Silver Medals, 73 Olympic Bronze Medals and 170 World Championships.

For purposes of this study, the subjects were divided into two groups. A multiple medal winners group (N=87) with a mean age of 26.5, that consisted of 69 males and 18 females. A single medal winners group (N=152) with mean age of 23.5, consisting of 102 males and 50 females.

TAIS

The Attentional and Interpersonal Style (TAIS) inventory is a 144 item questionnaire that measures eighteen different, performance relevant characteristics. A table listing the attentional and interpersonal characteristics measured by TAIS is appended to this paper. For the past fifteen years, TAIS has been administered to elite level athletes at Olympic training centers around the world. The purpose for administering the inventory at these centers, is use it to educate athletes about their concentration strengths and weaknesses. Information from the inventory is then used by the athletes, coaches, and sport psychologists, to develop athlete specific performance enhancement programs. This fact is important, because it minimizes defensiveness on the part of athletes and encourages very open and honest responses to the inventory.

Data Analyses

Subjects score on the various TAIS scales were converted to percentiles comparing them to a much broader population of elite athletes (Individuals who had competed at state, national, and/or international levels). The characteristics of this group of elite athletes have been described elsewhere (Nideffer, et. al., 2000).

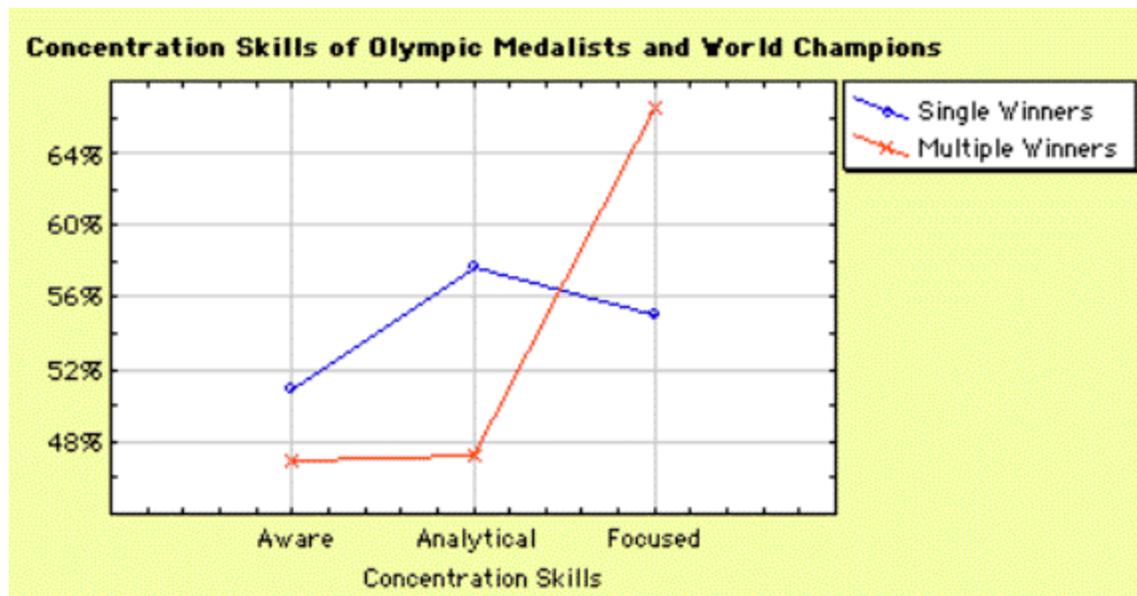
Subject's scores on TAIS scales were clustered into five groups, those measuring: 1) Concentration Skills; 2) Concentration Errors; 3) Impulsivity and speed of decision making; 4) Leadership; 5) People Orientation, and; 6) Communication Style. Analysis of variance procedures were then used to make comparisons between the two groups on the different scale clusters.

The first analysis was a 2 (groups) by 3 (concentration skills) analysis of variance. Results of this analysis are presented in Table 1, and in Figure 1.

Table 1

Effect	df	F	p-level
Groups (Single vs. Multiple)	1,237	.0460	.8300
Concentration Skills	2,474	8.4300	.0002
Groups x Concentration	2,474	7.3000	.0007

Figure 1



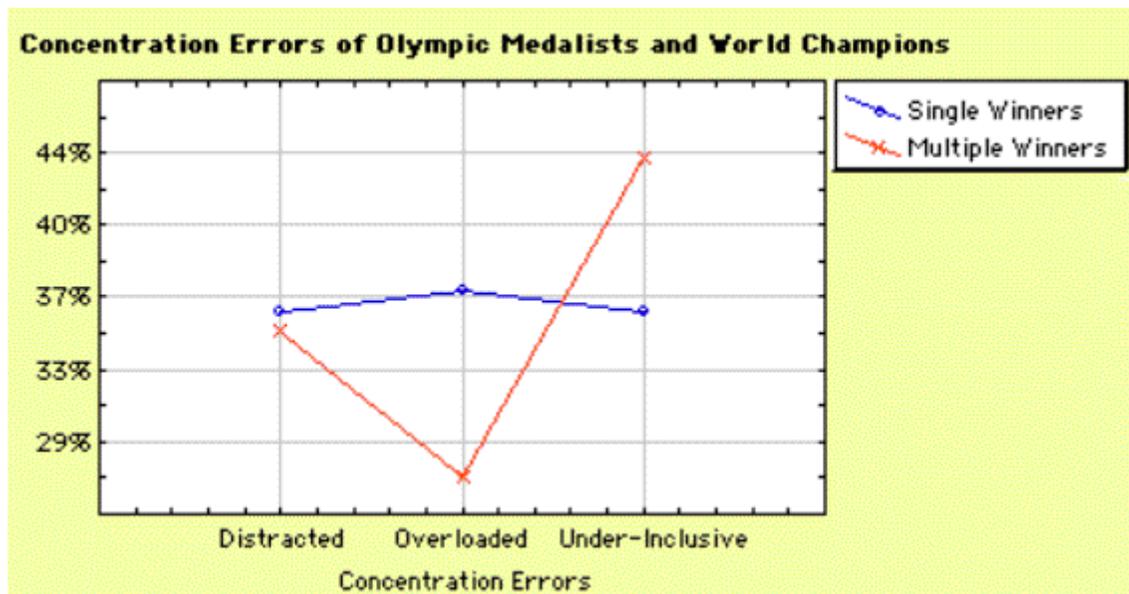
A Newman Keuls analysis of the main effect for concentration skills revealed that for these athletes, the ability to focus concentration is significantly more developed than either environmental awareness ($p=.0001$) or analytical ability ($p=.003$). The groups by concentration skills interaction shows that multiple winners are more focused than they are aware ($p=.00006$), or analytical ($p=.00006$), and more focused than single medal winners ($p=.01$). For single medal winners there were no significant differences between the three types of concentration. Interestingly, single medal winners were significantly more analytical than multiple medal winners ($p=.05$).

The second analysis was a 2 (groups) by 3 (concentration errors) analysis of variance. Results of this analysis are presented in Table 2, and in Figure 2.

Table 2

Effect	df	F	p-level
Groups (Single vs. Multiple)	1,237	.0390	.8426
Concentration Errors	2,474	5.9900	.0020
Groups x Errors	2,474	7.6100	.0005

Figure 2



A Newman Kuels analysis of the main effect for errors revealed that these athletes were significantly more likely to make mistakes because they were overly focused and under-inclusive than they were because they became externally distracted ($p=.03$) or internally overloaded ($p=.001$). The groups by errors interaction shown in Figure 2, suggests this finding is due largely to the scores of the multiple medal winners.

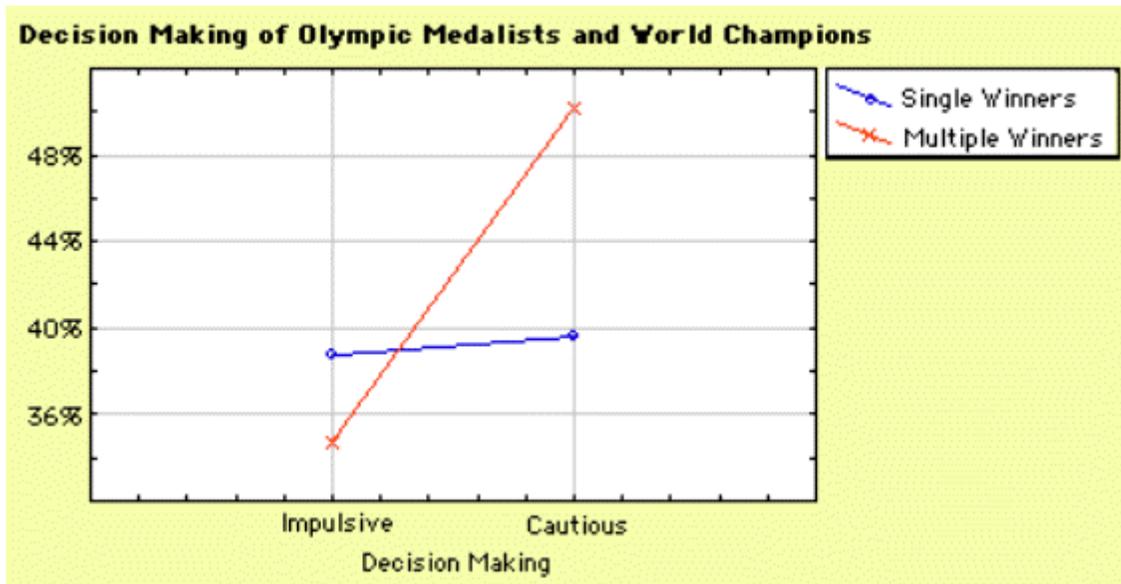
An analysis of the groups by errors interaction revealed that there were no differences in terms of the types of errors that single medal winners would make. When compared to multiple medal winners, single medal winners were much more likely to make errors due to over analyzing and becoming overloaded ($p=.02$). Multiple medal winners on the other hand were much more likely than single medal winners to make errors because they became excessively narrow or under-inclusive in their focus ($p=.03$).

The third analysis was a 2 (groups) by 2 (impulsivity and speed of decisions) analysis of variance. Results of this analysis are presented in Table 3, and in Figure 2.

Table 3

Effect	df	F	p-level
Groups (Single vs. Multiple)	1,237	.5760	.4480
Concentration Errors	2,237	6.0100	.0100
Groups x Errors	1,237	4.7400	.0300

Figure 3



Impulsiveness in this analysis is measured by the behavior control scale on TAIS. The higher an individual scores on the behavior control scale, the more likely he or she is to behave in an impulsive way, and/or to lose control over anger. As you can see, both groups score much lower on this scale than the "average" elite level athlete.

Cautiousness in this analysis is measured by the obsessiveness scale on TAIS which is really a measure of speed of decision making. The higher an individual scores on the cautiousness or speed of decision making scale, the more he or she is concerned about avoiding mistakes. Hence, the more likely the person is to emphasize accuracy over speed when making decisions and/or performing.

The main effect for groups indicated that these athletes were more cautious and careful than they were impulsive ($p=.01$). A Newman Kuels analysis of the groups by decision making interaction indicated that multiple medal winners were more cautious and more concerned about avoiding mistakes than single medal winners ($p=.005$).

The fourth analysis was a 2 (groups) by 3 (leadership) analysis of variance. Results of this analysis are presented in Table 4.

Table 4

Effect	df	F	p-level
Groups (Single vs. Multiple)	1,237	.0010	.9670
Leadership (CON, SES, P/O)	2,474	2.8800	.0500
Groups x Leadership	2,474	.2280	.2280

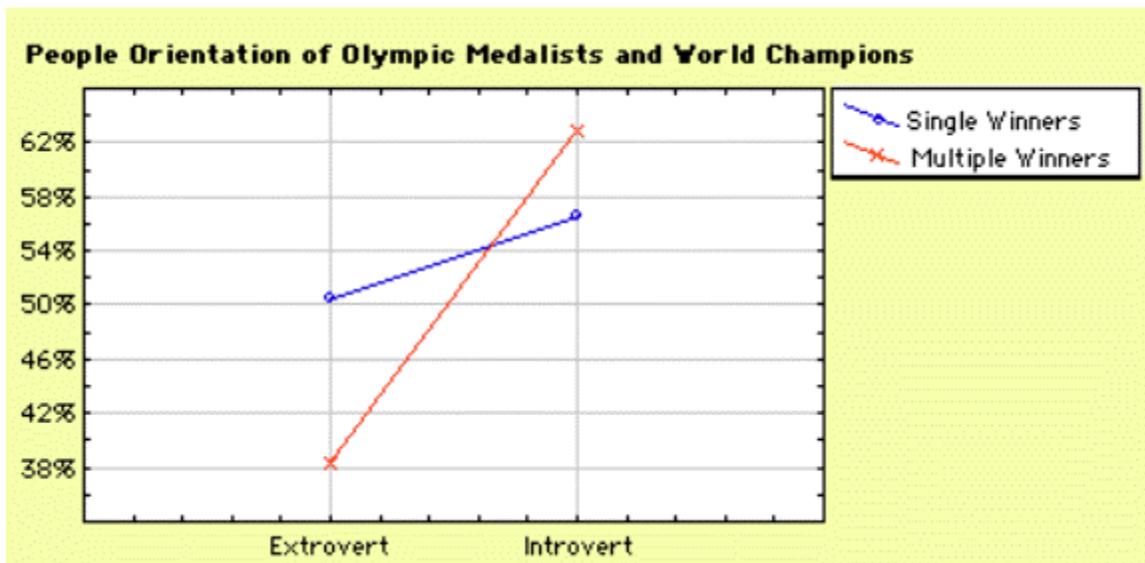
The three TAIS scales that make up the leadership group include the scales measuring need for control (CON), self-confidence/self-esteem (SES), and competitiveness (P/O). There were no significant differences between the two groups on any of these measures. A Newman Kuels analysis of the main effect for leadership revealed that these athletes scored significantly higher ($p=.01$) on the competitiveness scale (65%), than they did on the control scale (60%). The difference between scores on the control scale and scores on the self-esteem scale (63%) approached, but did not reach significance ($p=.09$).

The fifth analysis was a 2 (groups) by 2 (people orientation) analysis of variance. Results of this analysis are presented in Table 5, and Figure 4.

Table 5

Effect	df	F	p-level
Groups (Single vs. Multiple)	1,237	.9430	.33200
People Orientation (EXT, INT)	1,237	15.8800	.00008
Groups x People	1,237	5.8600	.01000

Figure 4



The main effect for people orientation revealed that these athletes were significantly more introverted than extroverted ($p=.00008$). A Newman Kuels analysis of the groups by people orientation interaction revealed that multiple medal winners were more introverted than they were extroverted ($p=.00004$), and less extroverted than single medal winners

(p=.02).

The sixth and final analysis was a 2 (groups) by 3 (communication styles) analysis of variance. Results of this analysis are presented in Table 6.

Table 6

Effect	df	F	p-level
Groups (Single vs. Multiple)	1,237	.0240	.8750
Communication Style	2,474	2.3600	.0900
Groups x Communication Style	2,474	.7740	.4610

Communication style in this analysis is measure by three scales. These include the intellectual expressiveness scale (IEX), the scale measuring expression of anger and criticism (NAE), and the scale measuring the expression of support and affection (PAE). As you can see from Table 6, neither the main effects nor the interaction reached significance. In comparison to the elite level normative population, the average scores on the communication style scales for the 239 athletes in this study were 56% on IEX, 49% on NAE, and 54% on PAE.

Discussion

Results of this study provide strong support for the belief that there are significant psychological differences between those Olympic medalists and world champions who are consistent winners, and those who win only once. We feel strongly that the entire pattern of results shows both the skill sets champions need, and highlights the sacrifices they have to make to be consistent winners.

Looking first at the results of the attentional analysis, as we would have expected multiple medal winners were more highly focused than single medal winners. Their attention to detail and willingness to engage in the same behaviors again and again (NAR), combined with their concern about avoiding errors and perfecting their skills (OBS) undoubtedly contribute to their repeated success and to their ability to perform under highly competitive conditions.

Looking at the types of mistakes these two groups make we can see that there is a "down side" to being as focused and dedicated as multiple medal winners are. When they make mistakes it's because they become too focused, failing to make adjustments (RED). It is important to note that higher scores on the under-inclusion (RED scale will occur when an athlete recognizes that his or her personal commitment to sport is causing poor performance in other areas (e.g., the failure to respond to the needs of a significant other). It may be that some of the elevation we are seeing in this scale is a reflection of the social and interpersonal sacrifices that world class athletes have to make. This would be

consistent with some of the other findings.

Nideffer et. al. (2000), reported that introversion increased and extroversion decreased with increasing age for elite level athletes. That finding suggested that continuing success at an elite level requires athletes to spend more time alone, and/or to limit their social activities. Dan O'Brian, the Olympic gold medalist in the decathlon made the following statement at the 1999 meeting of the Association for the Advancement of Applied Sport Psychology (AAASP) in Banff: "I no longer have friends who aren't as committed to my training as I am and/or who don't believe I will win the gold medal again." The finding that multiple medal winners are more introverted and less extroverted than single medal winners adds additional evidence to the need for athletes to be willing to make significant sacrifices to be successful.

The fact that multiple medal winners make fewer mistakes than single medal winners because of over analyzing, or over thinking is important. It's conceivable that their ability to focus helps them shut off some of the analysis that goes on for others. It's also conceivable that they are simply less analytical, and therefore less likely to become overloaded by their own thoughts. This interpretation would be consistent with the fact that multiple medal winners scored significantly lower on the TAIS scale measuring analytical thinking (BIT), than single medal winners.

In summary, our results indicate that there is such a thing as a world champions profile. When we compare world champions, both single and multiple medal winners (and especially multiple medal winners) to other elite level athletes and to the general population. They are much more capable of narrowing their focus of concentration to attend to details and to develop and perfect their skills and abilities. They are less likely to make mistakes of all types, but are especially those mistakes due to external and/or internal distractions.

World champions are more willing to take responsibility and assume a leadership role (CON), more confident (SES), and more physically competitive (P/O). Elite athletes as a group, when compared to the general population tend to be somewhat more extroverted and slightly less introverted. The higher the level of performance of the elite athlete, however, the smaller these differences become. When world champions are compared to other elite athletes, they tend to be more introverted and less extroverted.

From a developmental perspective, these findings are important. There are a great many extremely talented athletes who have difficulty staying focused, either because they are overly analytical, or because they are too socially oriented, failing to make some of the sacrifices necessary to fully capitalize on their physical talents. It is conceivable that the early identification of potential problems could be used to help athletes either develop their own skills, and/or to organize their competitive environments so that they help them stay focused and committed.

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