

Identifying GPA Bias Against Student's Striving Instincts

Introduction

The Basics

This document will describe the analysis between the results of the Kolbe A™ Index (Kolbe A) (a precursor to the Student Aptitude™ Quiz (SAQ)) and school-reported data such as GPA, and absences, at a Kansas high school. The goal of this study was to identify potential bias against certain Kolbe A Index result types by determining if GPA and absence information had significant differences for different results.

Background

The Kolbe A Index identifies the individual's natural volitional methods, which are determined by the conative part of the mind. This functionality is distinct from the cognitive and affective aspects. Cognition refers to the conscious intellectual activity of the brain and is often measured through various tests designed to determine intelligence level. One's intelligence level changes through-out life, based on a myriad of factors such as age and recency to education. Affect refers to the experiencing of feelings, emotions, and moods. Again, this changes through-out life, even hour to hour, depending on various internal and external factors. Conation, from the Latin conat-, meaning "to endeavor, or to try", refers to one's natural way of taking action. Unlike cognition and affect, conation remains constant through-out one's life, as validated by test-retest studies, with some results spanning over 30 years. The Kolbe A Index is a validated assessment designed to measure one's conative profile. Further, it is important to understand that no individual's result as measured by the Index is better or worse than any other. Every innate method of taking action is equally powerful in creative problem solving. For these reasons, conative bias is an issue of great importance – it is a bias against the natural, innate abilities of a person.

Purpose

The main goal of this study was to identify the trends of potential conative bias in education. Do students with certain innate abilities have higher grades than students with a different set of innate

abilities? For this reason, much of the analysis is built upon dividing our sample of students into different groups, with each group representing a particular aspect of an innate ability. These innate abilities are discussed in more depth below, in the definitions section. After grouping, GPAs can be looked at and compared across the sub-samples. This lends itself to identifying any potential patterns that show an indication of conative bias towards a particular group. Evidence of statistically significant bias to the detriment of students with a particular conative strength would indicate a possible systemic unfairness to students with that profile and an area ripe for school improvement.

Definitions and Methods

Design

The steps of the study took place with high school students over the course of one school year. Students took the Kolbe A without previous knowledge of the full scope of the program or theory behind possible results, to ensure no bias was present. Then, information regarding the student's semester GPA and absence count was collected and analyzed – this data was not self-reported and came from the school itself.

Definitions

Kolbe A Index: The Kolbe A Index is an assessment that identifies one's natural striving methods in each of four conative Action Modes®. Each respondent is given a score on a 1-10 scale in each of the modes. As a note, there is no "perfect score" – this is not a merit-based assessment, and every possible result represents the unique way its user takes action. The four conative Action Modes® are:

- Fact Finder (FF) – how one gathers information
- Follow Thru (FT) – how one stores and sorts
- Quick Start (QS) – how one deals with uncertainty and risk
- Implementor (IM) – how one handles space and tangibles

Additionally, the 1-10 scale for each mode is broken into three Zones of Operation. Thus, an example score would consist of 4 numbers (one for each mode), and each of those numbers would place the respondent in a specific Zone for that mode. These Zones are used heavily in the overall analysis to create disjoint sub samples of the data. The three Zones are:

- CounterAct Zone: this is a mode score between 1 and 3. This indicates an ability to resist in the mode as needed.
- ReAct Zone: this is a mode score between 4 and 6. This indicates an ability to accommodate in the mode as needed.
- Initiate Action Zone: this is a mode score between 7 and 10. This indicates an ability to insist in the mode as needed.

As a note, today, in educational settings, the Kolbe A has been replaced with the Student Aptitude Quiz (SAQ). The two assessments are built upon the same conative foundation, but the SAQ was finely tuned to be used specifically for students and validated against the Kolbe A.

Methods

Multiple analysis methods were deployed to gain insight from the collected data. A primary method to identify trends was the splicing of the overall sample into sub-samples based on a respondent's Zone placement in a given Action Mode. For instance, when looking to analyze the potential impacts one's FF score has on their GPA, the sample was split into three subsamples: CounterAct FF, ReAct FF, and Initiate FF.

Another method used was the correlation coefficient. This was used between multiple pairings of data sets, including Action Mode scores and GPAs.

Analysis

Kolbe A vs GPA

Several data subsets were created to identify correlative trends between the Kolbe A and GPAs. Each involved splicing the overall sample by choosing an Action Mode and splitting it into its three Zones.

	Fact Finder		Follow Thru		Quick Start		Implementor	
	Average GPA	n	Average GPA	n	Average GPA	n	Average GPA	n
CounterAct	2.89	13	3.15	21	3.53	17	3.49	16
ReAct	3.31	40	3.17	30	3.36	32	3.23	36
Initiate Action	3.51	16	3.60	18	2.93	20	3.18	17

Table 1

Table 1 shows the average GPA for students in each of the 12 Kolbe Strengths. It is seen that while average GPA trends upward as one moves from CounterAct to Initiate Action Zones in Fact Finder or Follow Thru, the exact opposite pattern is shown for Quick Start and Implementor. The n sizes confirm that the 12 Strengths are following a relatively typical distribution pattern, ensuring validity of the findings. The CounterAct FF strength and Initiate Action QS strength held the worst two average GPAs, while the Initiate FT strength and CounterAct QS strength held the highest two average GPAs.

Fact Finder	Follow Thru	Quick Start	Implementor
r = .295	r = 0.290	r = -.366	r = -.144

n=69
Table 2

Table 2 shows the Pearson correlation coefficients between each mode score and GPA. Both FF and FT indicated a positive correlation, while QS and IM indicated a negative correlation. This indicates that as FF and FT scores go up, GPAs tend to go up as well, while the inverse is true for QS and IM.

Kolbe A vs Absences

The same data splicing was done to look at potential absence trends by Zones.

	Follow Thru		Quick Start	
	Average Absences	n	Average Absences	n
CounterAct	2.10	21	1.85	17
ReAct	2.57	30	2.16	32
Initiate Action	1.61	18	2.48	20

Table 3

While not as clearly apparent as the trends displayed in Table 1, Table 3 shows that as a student's QS score increases, they are more likely to miss more days. Initiating Qs missed 54% more days than Initiating FTs. Lastly, similarly to how Initiating FT and CounterAct QS were the subgroups with the highest GPAs in Table 1, they are also the subgroups with the lowest average absences.

Conclusions

The data above shows clear patterns that a bias exists towards certain Kolbe A Index scores, specifically, those placing in the Initiating Zone for Quick Start and Implementor, and the CounterAct Zone for Fact Finder and Follow Thru. This is backed up by the correlation coefficients seen in Table 2, and the fact that of the 12 Kolbe Strengths, these four possess four of the five lowest average GPAs. Additionally, the same trend is seen in absence data, as CounterAct Follow Thrus and Initiating Quick Starts are among the highest average absence counts.

Extensive research has shown that Initiation in each of the four Action Modes is spread equally across a general population, and that pattern is seen in the data here as well, with all Initiating modes between 16 and 20 students. Research has also shown that feeling forced into a conative framework that goes against who you are causes high levels of stress, often leading to diminished performance and self-efficacy. With the trends seen here for GPA, this may indicate that the educational environment puts stress on those who Initiate in Quick Start and Implementor, and CounterAct in Fact Finder and Follow Thru – creating a conative bias that adversely impacts those students solely due to their natural strengths.