

# **Arizona State University Research on the Distribution of Conative Modus Operandi (MO) within Groups from the Same Classrooms, including Teachers, Students Identified as ADD/ADHD, and All Other Students**

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Teachers and students in first through twelfth grade classrooms from several public school districts, private schools, and charter schools completed Kolbe Indexes to assess their conative traits. The teachers and students in the sample represent widely diverse economic and cultural areas of a Southwestern and three Midwestern states (Arizona and Kansas, Missouri, and Oklahoma). Kolbe Indexes were completed over a two-year period.

This study compares the results of the conative assessments for teachers with the results of conative assessment for students who were identified as having Attention Deficit Disorder (ADD) and/or Attention Deficit Disorder with Hyperactivity (ADHD) in school records, and with results of conative assessments for students from the same classes who were not identified as either ADD or ADHD. It also compares the results of the two groups of students. Teachers in this study were either the lead teacher in a primary/elementary classroom, or a content-area teacher in middle grades and high school.

## **Premise**

The premise of the Center for Conative Abilities (The Center), based upon quantitative studies with smaller sample sizes, was that classroom teachers, as a group, have a *significantly different* set of conative traits than a subset of their students who have been identified as ADD and/or ADHD, and a *more similar* set of conative traits in comparison to most of the others students who were not identified as ADD/ADHD.

Since conative traits determine patterns of acting, reacting, and interacting, it was postulated that the students with conative traits similar to the teachers' conative traits would be most likely to adhere to the classroom rules and procedures. Students identified as ADD/ADHD are generally described as disruptive and resistant to following classroom rules and procedures. Therefore, it was also postulated that they would have conative traits different both from the teachers and from those students not identified as ADD/ADHD.

## **Kolbe Action Modes**

The conative traits measured on the Kolbe Indexes are categorized as four separate Action Modes, each of which deals with a separate, but equally positive, pattern of action, as follows:

- Fact Finder mode deals with the innate process for gathering information.
- Follow Thru mode deals with the innate process for organizing information.
- Quick Start mode deals with the innate process for acting on risk and uncertainties.
- Implementor mode deals with the innate process for handling space and tangibles.

Results of Kolbe Indexes identify where the respondent falls on a ten-point scale for each mode. Results at the higher end of the scale indicate the mode is used to initiate action, and mid-range results indicate levels of accommodation to the use of the mode. At the lower end of the scale, respondents react by preventing problems that could be caused by the use of the mode.

Students completed the indexes at their school sites under the direction of school personnel, the indexes were scored electronically, and the results were sent to ASU for analyses.

## **Arizona State University Analysis of the Data**

### **Methodology**

The sample consists of 554 students between the ages of 8 to 16, with 246 females and 308 males. The majority of students in the database are middle school students between the ages of 12 and 14. The students completed the Kolbe Y Index between 2004 and 2006.

The Kolbe Y Index has 26 items (See attachment). Each item has a set of four response options. Students were asked to select the response that is most like them, and the response that is least like them. The Index provides four different scores (scale 1 – 10) based on four Action Modes or modes of operation: Fact Finder, Follow Thru, Quick Start, and Implementer.

Within the sample of 554 students, 51 subjects had a diagnosis of ADD or ADHD. ASU compared Kolbe results from this group of students with the results from the remaining 503 students.

An Analysis of Variance was used by ASU to compare the conative profiles of three different groups: students with ADD, students without ADD, and teachers. The Center expected to find statistically significant differences between these three groups. The statistical results studied by ASU proved entirely consistent with this prediction.

### Distribution of Kolbe Scores of 6-10

	Teachers	Most Students	ADD/ADHD Students
Fact Finder	65.6%	47.3%	33.3%
Follow Thru	61.8%	51.1%	19.6%
Quick Start	28.1%	34.6%	58.8%
Implementor	16.7%	35.4%	47.0%

A result of 6-10 in:

- Fact Finder (FF) indicates a need to be specific, read and report details, define terms, and justify facts.
- Follow Thru (FT) indicates a need to be highly structured, act sequentially, and complete one task before starting another.
- Quick Start (QS) indicates a need to experiment, act spontaneously, and do things in new and different ways.
- Implementor (IM) indicates a need to touch, physically explore, move around, build, and deal with what is concrete rather than abstract.

### Distribution of Kolbe Scores of 1-5

	Teachers	Most Students	ADD/ADHD Students
Fact Finder	34.4%	52.7%	66.7%
Follow Thru	38.2%	48.9%	80.4%
Quick Start	71.9%	65.4%	41.2%
Implementor	83.3%	64.6%	53.0%

A result of 1-5 in:

- FF indicates a need to generalize, give an overview, briefly summarize, and find bottom line information.
- FT indicates a need to do several things at once, keep things where they can be seen, take short cuts, go outside regular procedures.

- QS indicates a need to avoid chaos, bring stability, stick with the tried and true, and reduce uncertainty.
- IM indicates a need to avoid literal construction of model, working in three dimensions, or handling special relationships.

## Findings by ASU

Students who have the greatest distances from teachers in their conative patterns of action have a higher probability of being labeled ADD or ADHD than other students whose patterns of action are closer to that of teachers.

The group of teachers sampled had a greater need to be very orderly and are less inclined to accept interruptions than the students they teach.

- Two-thirds of the students labeled ADD/ADHD rank from 1-5 in Fact Finder, whereas two-thirds of the teachers rank from 6-10 in Fact Finder.
- Less than one out of five of the ADD/ADHD labeled students have a need for Follow Thru (ranking 6 or above) at a level comparable to that required by more than half the teachers.
- More than half of the ADD/ADHD labeled students thrive on experimentation and spontaneity, a need that is exhibited by less than 30% of teachers (as measured by score in Quick Start).
- About half of the students labeled ADD/ADHD have an inherent need for hands on learning (represented by a 6-10 score in Implementor), and less than one in five teachers show this need.
- Over half of the students who have not been labeled ADD/ADHD and teachers have a high need for Follow Thru systems (6-10 in Follow Thru), a need shared by less than one-fourth of ADD/ADHD labeled students.

The *t*-test is the most commonly used method to evaluate the differences in means between two groups. The results, summarized in Table 1 below, indicate a statistically significant difference between the two student groups in each of the four Action Modes. Students with ADD or ADHD were significantly lower in Fact Finder and Follow Thru, and were significantly higher in Quick Start and Implementor than the students who had not been labeled ADD or ADHD.

**Table 1: *t* Test Results**

Action Mode	Students with ADD or ADHD N = 51 MEAN	Non-ADD/ADHD Students (N = 503) MEAN	p value (equal variances not assumed)
<b>Fact Finder</b>	4.82	5.21	.041
<b>Follow Thru</b>	4.45	5.32	.000
<b>Quick Start</b>	5.51	4.63	.007
<b>Implementor</b>	5.39	4.84	.019

The Mann Whitney U test is the nonparametric equivalent of an independent  $t$  test, and is used for ordinal level data, or when the dependent variable is not normally distributed. Most social scientists would accept the Kolbe Y result as interval level data. However, some purists may not. We therefore elected to also provide the results of the Mann Whitney U test to evaluate the differences between the two student groups. The results, summarized below in Table 2, are consistent with the  $t$  test results. Students with ADD or ADHD were more resistant to Fact Finder and Follow Thru, and they were higher in Quick Start and Implementor than the students who had not been labeled ADD or ADHD.

**Table 2: Mann Whitney U Results**

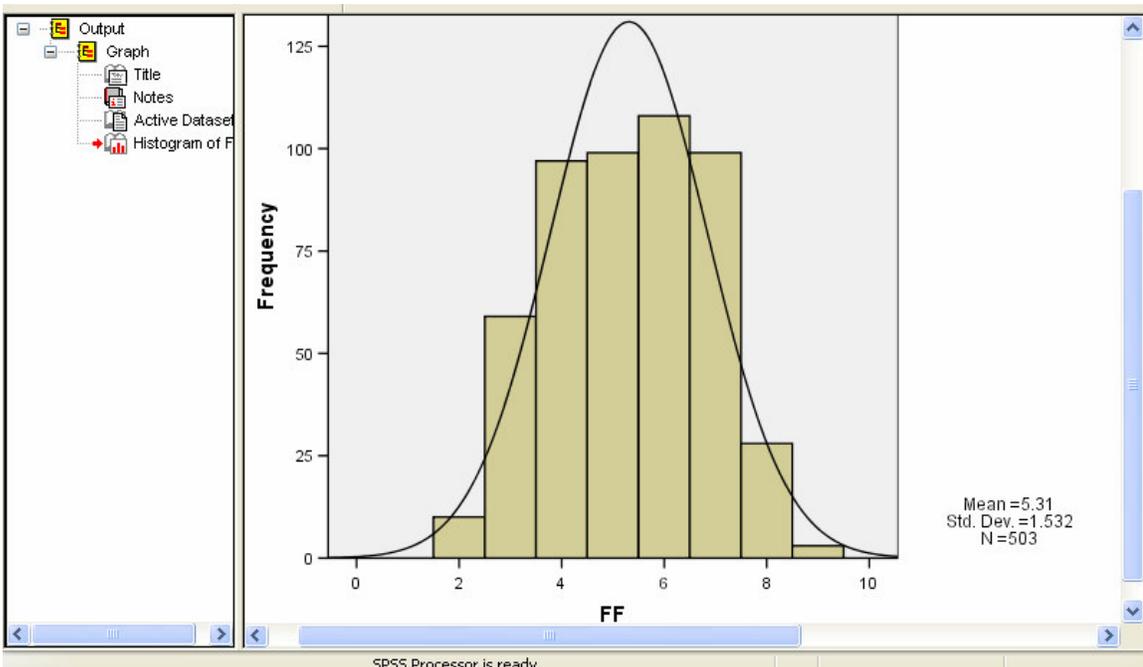
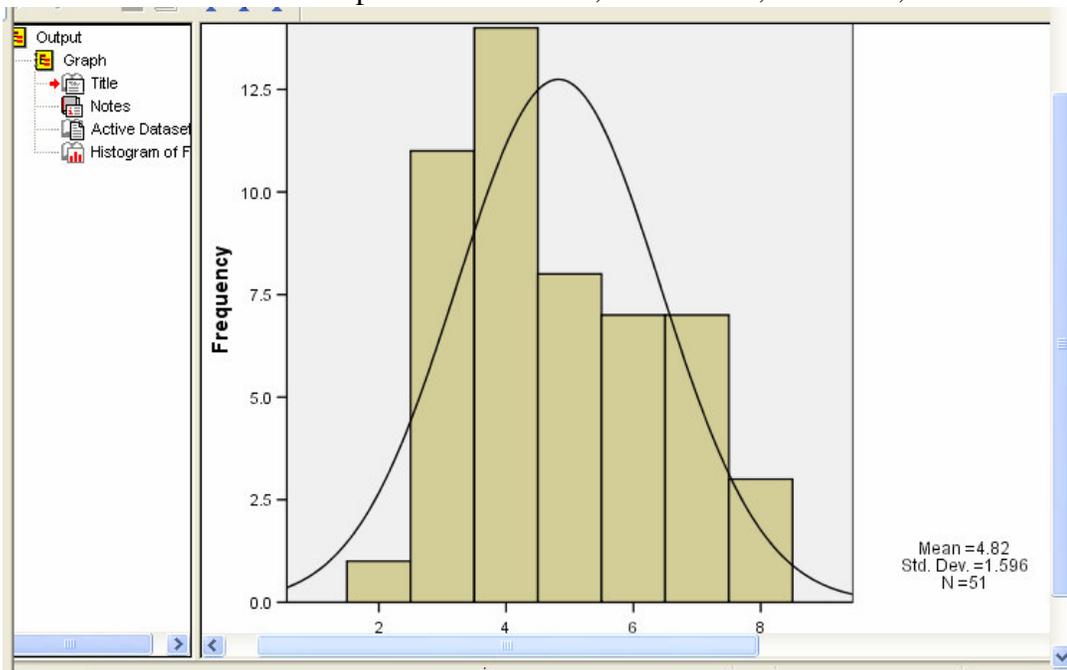
<b>Action Mode</b>	<b>Students with ADD or ADHD (N = 51) MEAN RANK</b>	<b>Non-ADD/ADHD Students (N = 503) MEAN RANK</b>	<b>p value</b>
<b>Fact Finder</b>	231.04	282.21	.027
<b>Follow Thru</b>	202.07	285.15	.000
<b>Quick Start</b>	335.30	271.62	.006
<b>Implementor</b>	325.11	272.67	.023

These findings suggest that students with a diagnosis of ADD or ADHD differ significantly from those without an ADD or ADHD diagnosis in their natural approaches to creative problem solving. The histograms below provide a vivid visual comparison of the differences between the two groups of students.

## FACT FINDER HISTOGRAMS

The sample of ADD/ADHD students (n=51) is skewed toward the 1-5 end of the scale, while the non ADD/ADHD (n=503) group of students is fairly normally distributed. In fact, 67% of the students in the ADD/ADHD group scored between 1 – 5, while 53% of the non ADD/ADHD group had a score between 1 and 5.

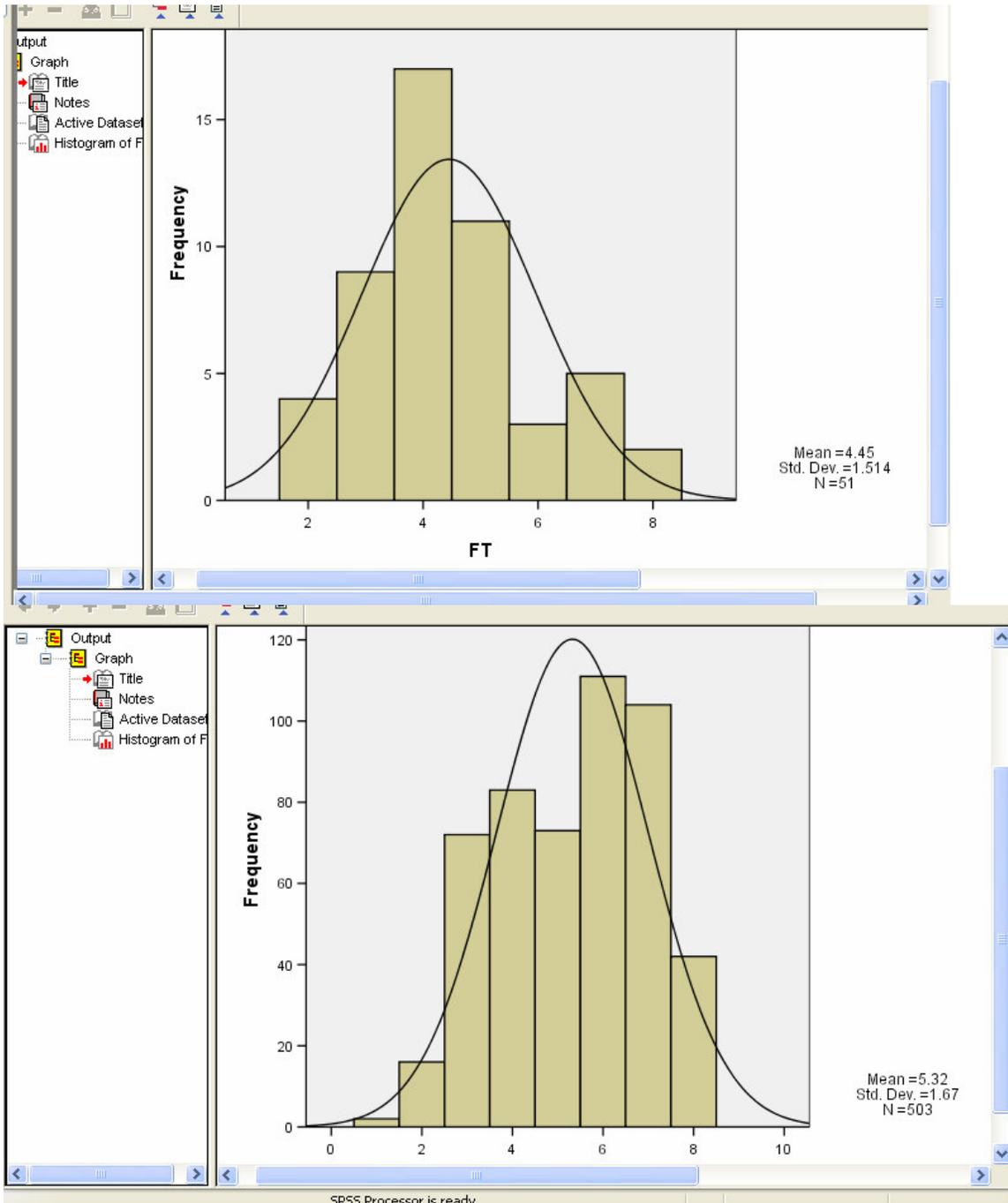
ADD/ADHD Group	Mean = 4.82, Median = 4, Mode = 4, SD = 1.6
Non ADD/ADHD Group	Mean = 5.31, Median = 5, Mode = 6, SD = 1.5



## FOLLOW THRU HISTOGRAMS

Eighty percent of the ADD/ADHD group scored between 1 and 5 in the Follow Thru mode, while only 49% of the non ADD/ADHD (n=503) group scored between 1 and 5.

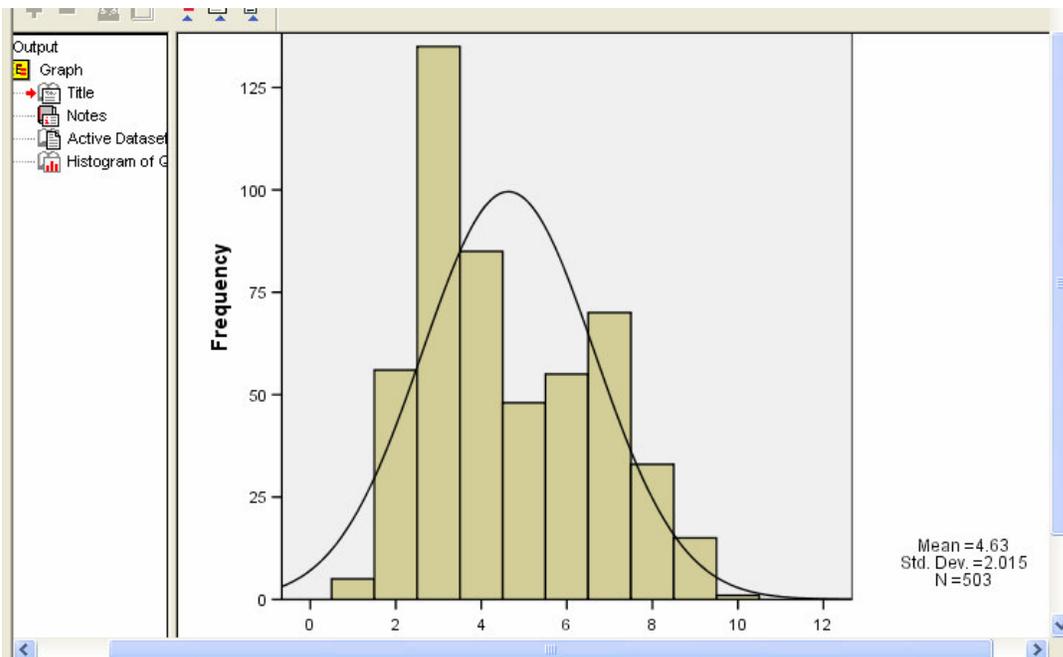
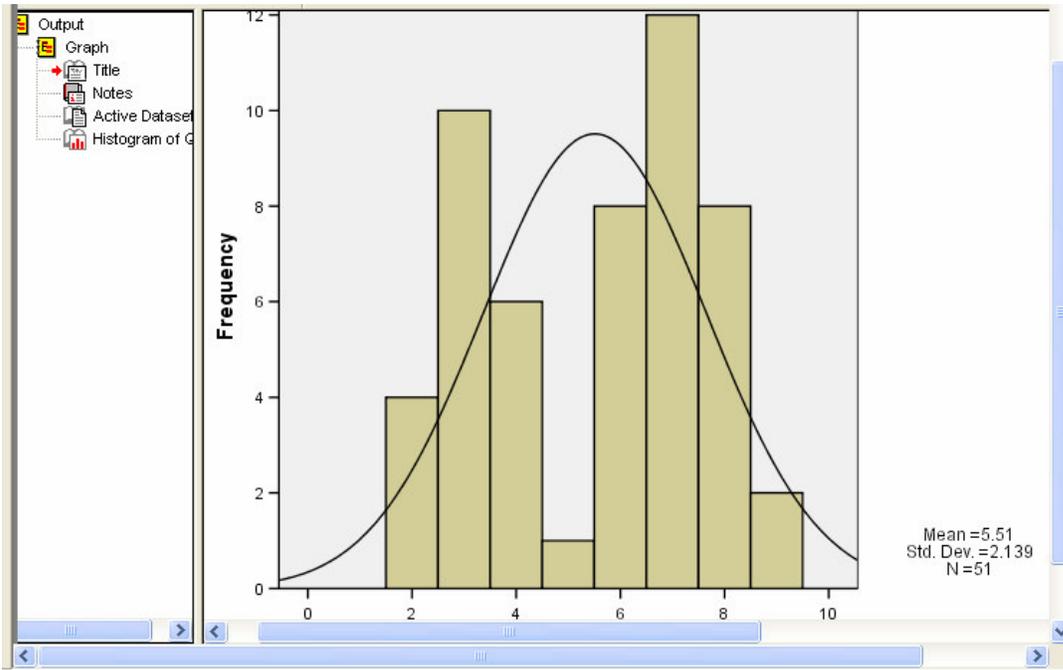
ADD/ADHD Group	Mean = 4.45, Median = 4, Mode = 4, SD = 1.5
Non ADD/ADHD Group	Mean = 5.32, Median = 6, Mode = 6, SD = 1.7



## QUICK START HISTOGRAMS

Fifty-nine percent of the ADD/ADHD group scored between 6 and 10 in Quick Start; while, only 35% of the non ADD/ADHD group scored over 6.

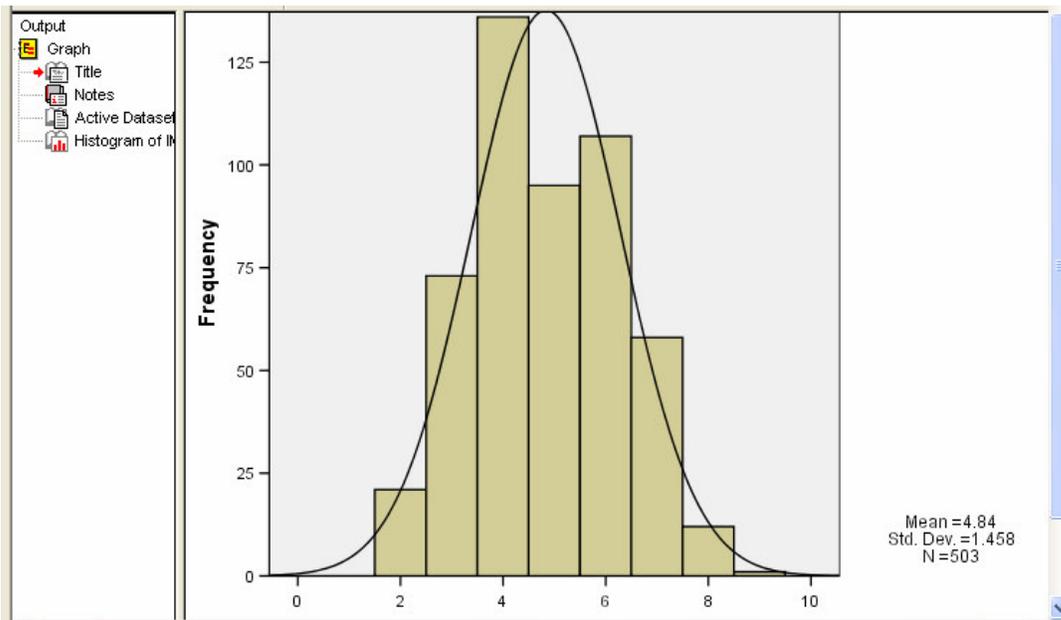
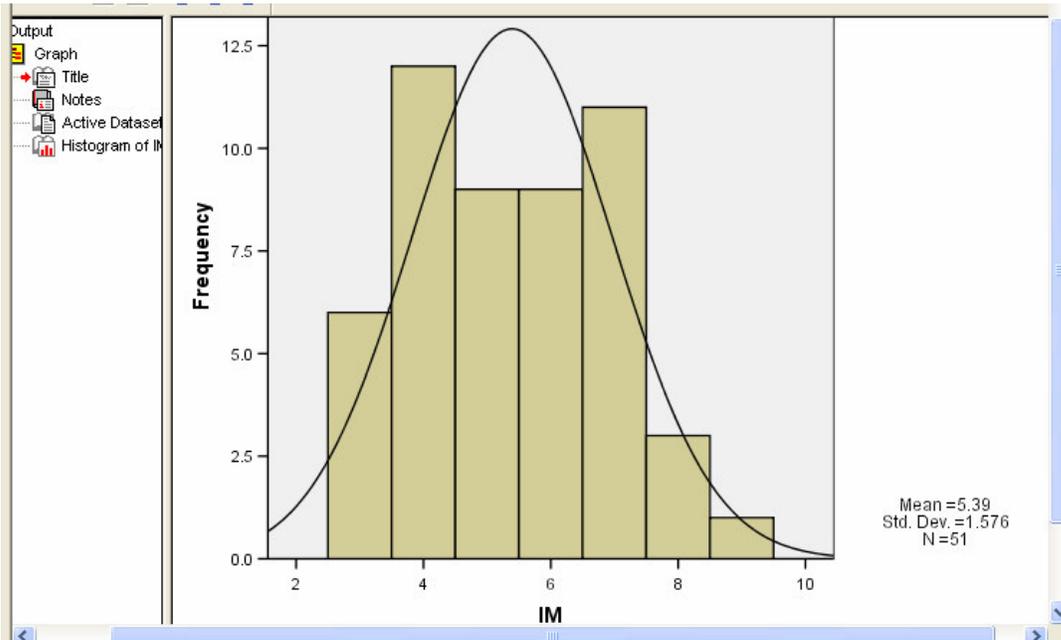
ADD/ADHD Group	Mean = 5.51, Median = 6, Mode = 7, SD = 2.1
Non ADD/ADHD Group	Mean = 4.63 Median = 4, Mode = 3, SD = 2.0



## IMPLEMENTER HISTOGRAMS

Forty-seven percent of the ADD/ADHD group scored between 6 and 10 in the Implementer mode, while only 35% of the non ADD/ADHD group scored over 6.

ADD/ADHD Group	Mean = 5.39, Median = 5 Mode = 4, SD = 1.6
Non ADD/ADHD Group	Mean = 4.84 Median = 5, Mode = 4, SD = 1.5



## Conclusions by the Center for Conative Abilities

Students in the study who had been identified as ADD and/or ADHD have significantly different natural ways of taking action (conative traits or *modus operandi*) than their classroom teachers. Most of them are less detail-oriented than their teachers, and are unlikely to follow the systems created by their teachers. As a group, they are also more prone to need to move around physically, handle objects, and multi-task than are their teachers.

These students who have been labeled ADD/ADHD are more likely to vary from their teachers in these ways than are their fellow students. Even though the teachers have a high incidence of needing to be precise and structured, and to deal less with uncertainties and tangibles, the majority of the students in their classrooms are more moderate or accommodating in these conatively driven actions.

Based upon practical analysis of the implications of this information, and extensive experience in working with individual students who have been identified ADD/ADHD, The Center for Conative Abilities and other collaborators in *Project: Go Ahead* believe that some students may have been identified as having a problem that has been given the ADD/ADHD label, when they may actually have conative strengths or methods of operation that are causing conflicts between their way of naturally taking action and the way most of their teachers need them to take action.

Conative traits are innate and unchanging. Therefore, to attempt to make either teachers or some of their students change the way they initiate, accommodate, or prevent problems would cause them stress without achieving the desired result. The Center has found it useful to offer students constructive alternatives, or “tricks” for dealing with the realities of most classroom structures. The student who is labeled ADD/ADHD, and who is likely to be singled out for not adhering to the dominate MO of his or her teachers, can be encouraged to succeed through self-managing behaviors so he or she is able to act, react, and interact according to his or her MO without interfering with the needs of teachers and other students.