PeopleKeys 4D
Predictive Hiring Data
Statistical Validation Study
[PhD]

4D

DISC
TEAMS
VALUES
BAI

PeopleKeys®

<div align="center">

Predictive Hiring Data [PhD]
International Statistical Analysis Report
Larry R. Price, Ph.D.
Bradley Smith, Ph.D.
Sanford Kulkin, Ph.D.

</div>

Overview

The goal of this project was to conduct analyses on international data collected in order to provide information on the correlation of assessment results which will aid in the proper selection of candidates to a specific set of job requirements. The scope of the data analysis was on the DISC (4 scales), TEAMS (5 scales), Workplace Values (4 scales), and the Behavioral Attitudes Index (6 scales). The goal was to explore the relationships among these scales in a large sample of international individuals (N=9,765). The four assessments are used in conjunction within a 4 Dimensions of Behavioral (4D) Traits Profile. Composite scores (i.e. index or total scores over items) for each of the 19 scales were included in the data file for analysis. The sample consisted of 9,765 individuals representing 33 countries. The sample composition is heterogeneous and comprised of individuals from a variety of disciplines (e.g., sales, management, healthcare, educational, and other various occupational settings). Correlational Analysis, Multidimensional Scaling, and Path Analysis were employed to meet the goal of this project.

The study revealed very interesting relationships of DISC values and how certain styles were inversely correlated or polar opposites (as widely observed and believed to be related). An example of this is the inverse (opposite) relationship of the "D" to "S" style and "I" to "C." This same methodology was further used to analyze these unique relationships of the additional 4D traits for predicting performance across an international hiring spectrum.

The Style(s) Overview of the 4D (DISC, TEAMS, Workplace Values, BAI or I-SPEAK)

DISC

The following observable behaviors are inherent to each style below. As an introduction to some of the terminology:

D = Dominance, drive. A "D" individual is decisive, determined, and great in competition or challenges, and responds assertively to confrontation. They are solution oriented and sometimes seem impatient. "Ds" are outgoing, task oriented, and individualistic.

I = Influential, inspiring, interesting. An "I" is optimistic and outgoing. These individuals act very much "in the moment," and are very spontaneous. They are sometimes poor time managers as they put people and relationships ahead of tasks. They typically like to be in the spotlight and excel in relationship-building and making social connections.

S = Steady, steadfast. The "S" is family oriented, and very relational to those closest to them. They like to be "hands on" and like to make decisions as a team. They are the person who sticks with something

through the good and bad rather than make an abrupt change. An "S" can possibly be slower to accept change, and can be passive aggressive when challenged.

C = Compliant, cautious, calculating. The "C" is very precise, and likes facts and tasks. They do not prefer to mingle socially unless they are comfortable in the environment. This is a more introverted style and analytic "Cs" are great at looking at things in a very realistic way, but can be seen as a pessimist by the "D" and "I" styles. They see themselves as realists.

T.E.A.M.S.

The following is a brief description of the 5 different T.E.A.M.S. thinking styles, or roles individuals gravitate toward:

T= Theorist. The new idea person of the group. They are great at brainstorming and creating new ideas, etc. Spontaneous, they would rather come up with the idea than complete the task. Theorists are typically well suited at marketing or careers where spontaneous creativity is a must.

E = Executor. A person who likes to do the steps of the process. They like to finish what they start. They are logical thinkers and doers. They would rather not come up with the idea or strategy, but will carry out the necessary functions of the job once a direction is determined.

A = Analyzer. They like to refine and improve upon things. Analyzers will go back and determine what works or what does not and how to improve on any flaws or errors. They like quality control. Many accountants, programmers, and researches tend to like this type of role in a team setting.

M = Manager, maintainer, monitor. They will oversee all aspects of a project or office, etc. They are not as focused at growing, just maintaining and not losing any ground. The Maintainer is typically a combination of all other styles, while not being high in any of the other basic TEAMS styles.

S = Strategist. They like to advance things and move projects ahead. Strategists overcome challenges well. They like to use prior success and knowledge in providing a solid plan to move ahead. They like to move things quickly ahead.

Workplace Values (or Common Bonds)

Workplace Values are a critical piece in the work environment and can be the most difficult to deal with if there is a mismatch. The following gives a brief description to each of the 4 styles:

L = Loyalty. The Loyalist likes traditions and established routines and relationships. A Loyalist may be slow to change and will stick with a bad working relationship or situation longer than other styles. There is a very good retention rate of employees of this style.

E = Equality. This is not a measure of equality as it pertains to race, color, religion, culture, sexual orientation, etc. This has to do with equality of pay, responsibilities, etc. Someone with high Workplace Equality will treat everyone the same regardless of what the actual production results are. Example – They might say, "If we all work here 10 years in the same position then we should all be paid the same

even if some are better producers than others." They can get caught up in "causes" rather than being productive. They make great care givers or medical workers where all patients need treated the same.

P = Personal Freedom. They live in the moment and like to do things their own way. They can be non-conforming. They are sometimes hard to manage, but they are usually great in establishing new sales territories or work outside the box.

J = Justice. They like win-win situations and can easily synthesize to changing environments or situations. They like to correct wrongs and promote the right solutions. They hate situations where things are not equating to personal performances. This style is almost an inverse of the equality value.

BAI – Behavioral Attitudes Index (I-SPEAK)

I = Inner Awareness. A passion for looking at a higher cause or calling in life. A high I/A can be very religious or just very inner aware and into yoga or personal growth. They seek deeper truth and balance in life.

S = Social/Humanitarian. They are moved by the passion of caring for the needs of others.

P = Political. They are wanting of power, position, or the ability to influence the direction of others.

E = Economic. They are business-minded and cognizant of return on investment (roi) and how to make the best deals.

A = Artistic. They have a flare or passion for arts, music, or individual expression in some way.

K = Knowledge. They want to learn, gain insights, and gather information into whatever interests them in life.

Challenges and Prior Assumptions

The research and data analysis took data from 9,765 international test subjects where a job position was also known. As indicated in Appendix A, research and development of the instruments took years, and in some cases, decades. PeopleKeys® and The Institute for Motivational Living® (IML) both spend enormous amounts of time and resources on providing accurate and applicable tools for hiring (both legal and being highly predictive). There are certain combinations of styles which come up quite regularly. There are also very rare styles or combinations that come up only once in 5,000 and even rarer combinations which are one in 10,000 or more. As companies put together job descriptions and new position requirements, the question often arises, "Can I find someone with diversely different skills to be a good match for my new opening?" The question is both YES and NO depending on what those requirements are. This is where the study becomes not only validation of the instruments, but knowing the correlation (or inverse) we can also predict the likelihood of finding an "ideal" candidate or not.

An example where a match is quite common: A company might be looking to hire someone who is very detail and process-oriented. They want this person to execute and perform daily tasks and routines, which might occupy 90% of their time. They want someone who is loyal with a high possibility of retention, and also someone who will work with customers to find acceptable solutions. Lastly, they

want someone who learns quickly and is very bottom-line minded so they understand the economics of an inside sales and customer service position.

This particular style is easy to identify and is quite a common behavioral makeup of individuals. In DISC you would most likely be looking for an S/C or C/S combination, which is roughly 80% of all people. This style is very often a high Executor/Analyzer with Loyalty (high retention). We now just need to look for candidates with strong Economic or Knowledge in their BAI. This is assuming all other aspects of the hiring process are reviewed, including experience, education, reference, background checks, and interviews. The assessments analyze more of the predictive performance of the individual and provides insights equivalent to knowing someone after approximately 6 months on the job.

Let's take a case with very narrow matching. A company wants a very assertive driver (D) or (D/I). However they must follow a very rigid schedule and maintain compliance at all times. Additionally, they need to be very people-oriented and friendly to workers they manage, and maintain a high degree of equality among all people as this is a union shop. They also want someone creative who can work alongside the marketing department. While this description doesn't sound impossible, the fact is it will be unlikely to find an exact match of the "D" style, with high Loyalty and Equality, being an Executor and high Social/Humanitarian with a secondary Artistic style. This is a 1 in 10,000 combination.

This is part of the interesting side of the study where we can still find a match that is a 90% or better by understanding which styles commonly are found together and those which are inversely correlated.

There are also factors which can be substituted. An example, a high C/S/I style often has the same attributes as a "D," without being a true "D."

PeopleKeys® and IML® have developed working benchmarks for over 10,000 international positions in the last 25 years and have been a leader in predictable work traits for success. This study confirmed many observable factors in employee selection that were believed to be strong "paired" behaviors, but now it is statistically proven.

Correlational Analysis

Correlational analysis serves as a fundamental precursor to more sophisticated analyses of data where understanding patterns of relationships are of interest. Prior to analysis, data for all scales were evaluated for linearity, normality, missing points, and anomalies. Results of data screening revealed that all data met the assumptions of linearity and normality with no missing values. Subsequently, analysis proceeded using Pearson correlational analyses. In this project, correlation analysis revealed patterns of association and disassociation among the 19 scales for the sample of 9,765 individuals. Appendix D, Table 1 highlights the highest and most statistically significant coefficients among the 19 scales (dark shading). Cells with light shading include coefficients with no relationship among the 19 scales (e.g., at or near a value of zero). Non-shaded cells include values that are small and inconsequential from a practical perspective. For example, correlation coefficients with small values (e.g., < |.35|), include mostly "noise" or "lack of relationship" between scales. Another useful way to understand the association between two scales based on a correlation coefficient is to square the correlation and interpret this value as a "proportion." For example, two scales display a correlation of .30, this value when squared yields .09 (or 9%). Therefore, the two variables only share 9% of *anything* in common.

Interpretation using the square of the correlation is a fundamental part of any regression analysis, but is also useful in interpretation of correlation matrices.

Table 2. List of scales with highest relationships

Strong Positive		Trait Correlation	Strong Inverse (Opposite)	
Dominance	Theorist		Dominance	Executor
Dominance	Strategist		Dominance	Equality
Dominance	Personal Freedom		Dominance	Social Humanitarian
Influence	Theorist		Influence	Compliance
			Influence	Executor
Steadiness	Executor		Steadiness	Personal Freedom
Steadiness	Social Humanitarian		Steadiness	Dominance
			Steadiness	Theorist
			Steadiness	Strategist
Compliance	Loyalty		Compliance	Theorist
Compliance	Executor			
Theorist	Personal Freedom		Theorist	Maintainer
			Theorist	Executor
Executor	Loyalty		Executor	Strategist
			Executor	Personal Freedom
			Loyalty	Personal Freedom
Personal Freedom	Economic		Personal Freedom	Social Humanitarian
			Economic	Inner Awareness
			Economic	Social Humanitarian
			Political	Artistic
			Inner Awareness	Knowledge

In the chart above, it is clear to see there are more strongly inverse correlations to traits than there are positive. This is by design. The assessments were designed with some crossover or overlapping attributes, but in large were designed to measure different aspects of behavior. The strong inverse

correlation is significant in predicting certain behaviors for success because the likelihood a candidate would show both attributes strongly is not high. This helps in determining predictability and also in setting realistic, achievable hiring benchmarks.

Partial list of those traits showing a more moderate correlation

Moderate Positive		Trait Correlation	Moderate Inverse (Opposite)	
Dominance	Economic		Dominance	Compliance
Dominance	Political		Dominance	Maintainer
Influence	Personal Freedom		Influence	Analyzer
Steadiness	Equality		Steadiness	Political
Steadiness	Loyalty		Steadiness	Economic
Compliance	Analyzer		Compliance	Personal Freedom
Loyalty	Social Humanitarian		Loyalty	Justice
			Theorist	Analyzer
			Analyzer	Strategist

**Predictability of Traits Matching Job Benchmarks**

PeopleKeys®, through patent pending technologies, has built algorithms and databases with over a million unique users to further analyze job fit and match. The same predictability of success has also been applied to the classroom and education. An Eastern University study showed a direct correlation of students staying in school (college retention) and also a positive effect on GPA where students were paired with professors and study partners which had significantly similar traits. This is true in many applications, even the role of a sales person and a buyer. Buyers tend to buy from sales people with similar styles and traits to their own styles. However, by understanding behavioral patterns and being able to adapt to your buyer's style could make you equally successful as someone who naturally shares the same styles. (Baylor University Study with KW).

Multidimensional Scaling

Multidimensional scaling (MDS) refers to a set of methods used to obtain spatial representations of the proximities (similarities) among entities. For example, "entities" represent items, observations, brands, scales, objects, or products. Here MDS is used to estimate the relative proximity between scales in the overall sample. The goal being to use the information regarding relative proximity to create a map of approximate dimensionality such that distances in the map closely correspond to the proximities used

to create it. Visualization of the scales in standard geometric space provides additional clarity of the similarity among the scales. Relationships among 19 scales derived from MDS are provide in Figure 1.

Figure 1. Multidimensional Map of 19 Scales

Scales
Common Space
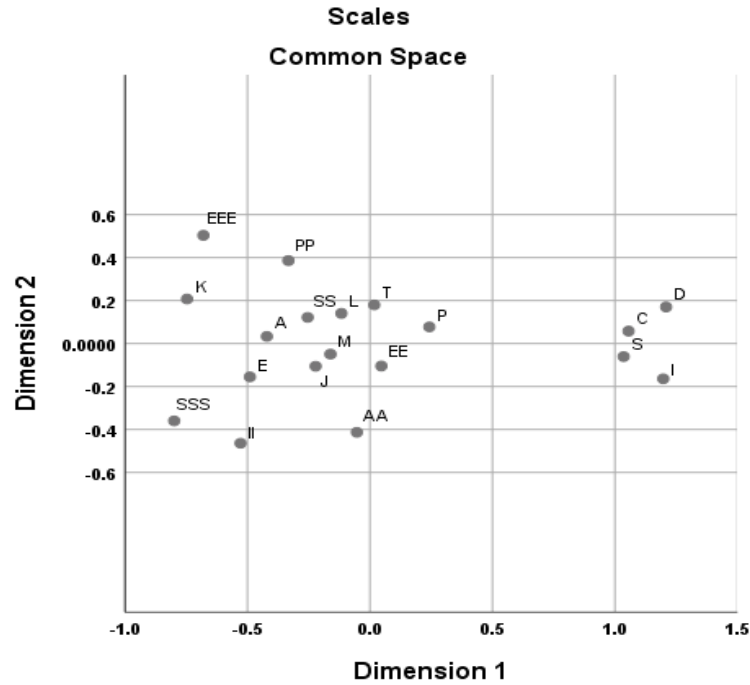
Legend: SSS=Social Humanitarian; E=Executor; K=Knowledge; II=Inner Awareness; A=Analyzer; SS=Strategist; PP=Political; EE=Equality; J=Justice; D=Dominance; I=Influence; S=Steadiness; C=Compliance; T=Theorist; M=Manager; L=Loyalty; P=Personal Freedom; EEE=Economic; AA=Artistic.

Points represent Euclidean distance graphed in standardized (correlation) metric.

Path Analysis (Exploratory Causal Model) of DISC, TEAMS, VALUES and BAI

Path analysis is an analytic technique that provides a way for researchers to explore and/or test theoretical suppositions specific to causal (predictive) relationships among a set of variables. For example, causal modeling examines whether a pattern of intercorrelations among variables (i.e. a subset of the DISC, TEAMS, VALUES and BAI scales) provides a reasonable fit based on the purpose and use of these scales. Importantly, fitting path analytic models with correlational data (i.e., data that are non-randomly sampled), the degree of confidence in the validity of causal inference or statements are much weaker than those possible to make in true experimental research (i.e. studies that include a randomized sampling/design component). To this end, the results of causal modeling are valid and *unbiased* only if the *assumed* model adequately/reasonably reflects the real or true causal process.

The development of a causal or exploratory path analytic model is challenging, and specification of the model is a declaration of our beliefs regarding the causal links among the scales. The initial path model is informed by (a) theory, (b) expert opinion, (c) experience, (d) informal theories. Advantages of path analysis over traditional multiple regression are many when examining the interrelationships among multiple predictors and outcome variables is the goal. For example, in path analysis both indirect and direct effects are estimated. In contrast, only direct relationships are estimated in standard multiple regression. Also, all dependent variables in a path model are adjusted for measurement error, thus providing another advantage over traditional region modeling.

Figure 2 displays the results of an exploratory path model with standardized regression coefficients (correlations) on the paths (arrows). One-way arrows or paths represent causal or predictive relations and double-headed arrows represent standard correlation coefficients. **Figure 2 represents only one possible model of many that may be plausible based on theory, expert opinion or experience.** The strength of path analytic modeling is that theories and/or suppositions can be formally evaluated or testing using empirical data. The model in Figure 2 fits the observed data relatively well according to criteria used in structural equation modeling (i.e. Comparative Fit Index = .90; Root Mean Square Error of Approximation = .10). All path coefficients and correlations in Figure 2 are statistically significant at $p < .001$.

Figure 2. Path Analysis Model of DISC, TEAMS, VALUES and BAI
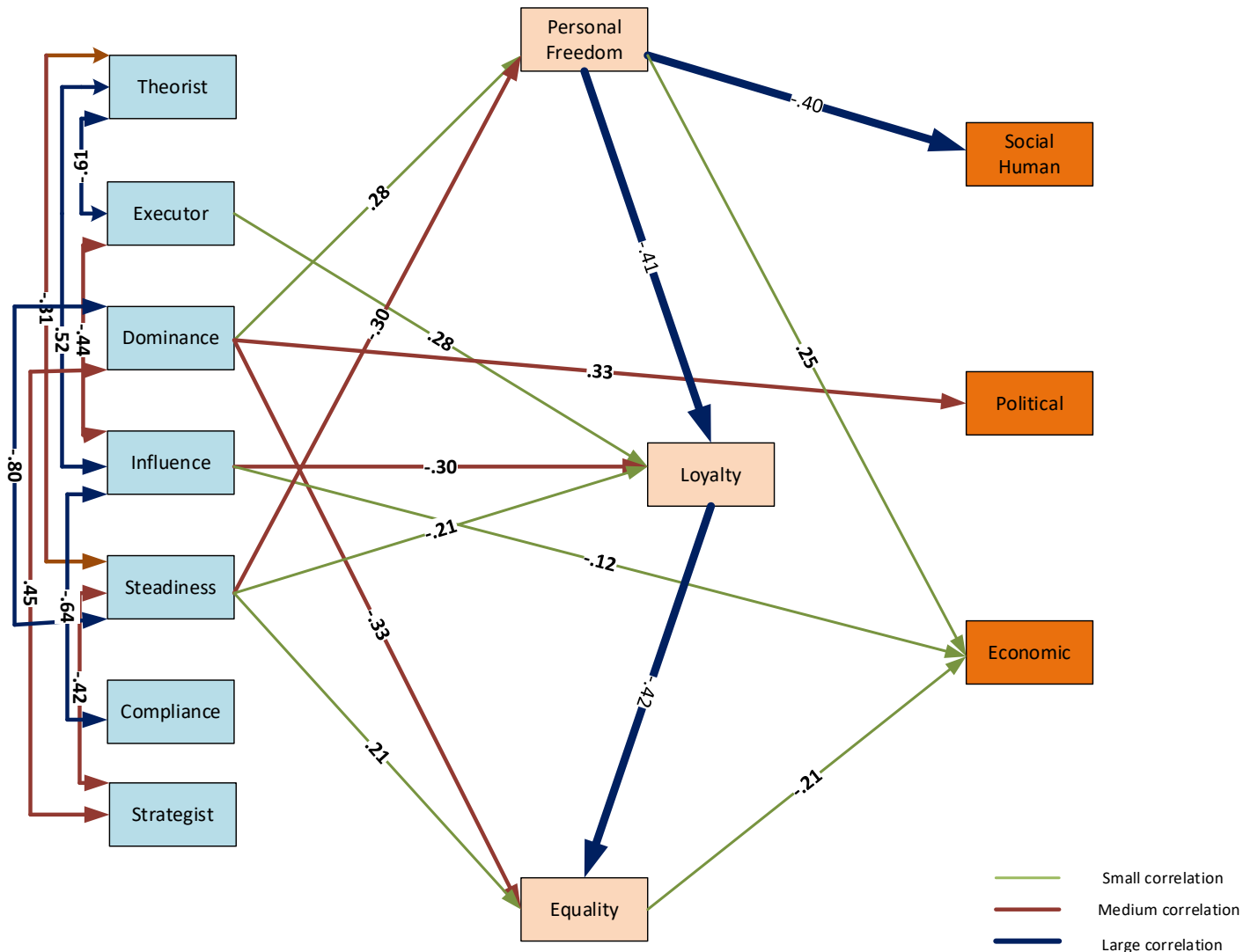
In causal modeling, the causal relationships are examined among a set of variables that have been logically ordered by time. Logically, a causal variable (one-way arrows/paths from one scale to another) must precede any variable that it affects. So, in Figure 2, we assume that persons exhibiting certain levels of the attributes measured by the scales on the far left (blue) precede the measurements on the scales in the middle (beige) and that the scales on the far right (orange) provide measurements on the primary outcomes of interest.

In Figure 2, standardized (structural) path coefficients are embedded on the paths. Path coefficients are analogous to standardized regression coefficients resulting from a regression analysis and their interpretation is similar. For example, the standardized path coefficient is interpreted as follows: A 1 standard deviation unit change in the *dependent variable* (DV) is associated with 1 standard deviation unit change of the *independent variable* (IV). In figure 2, consider the path - Personal Freedom → Social Human. Here, Personal Freedom is the independent variable (IV) and Social Human is the dependent

variable (DV). The value -.40 is interpreted as follows: "As a person's score on Social Human changes by -.40 standard deviation units; their score on Personal Freedom increases by the same amount". So as a person's Personal Freedom increases, their Social Humanitarian attribute decreases (which appears consistent with the conceptual definitions of these scales). Remember that the interpretation of the values considers or "accounts" for all of the scales being estimated simultaneously – not one at a time or "uniquely."

Next, in Figure 2 notice that the scales in the middle of the figure serve as both IVs and DVs. The scales in the middle of Figure 2 provide a way for us to estimate *indirect effects*. An indirect effect occurs when a scale affects a DV through its effect on some other scale (known as an intervening variable). Finally, in Figure 2 the double-headed arrows on the far left represent correlations and coefficients are embedded on the arrows. Collectively, estimation of all path coefficients occurs simultaneously resulting in coefficients that include consideration of all other relationships – at the same time. This is very different than simple bivariate correlational analysis (only estimates two-way relationships in isolation) or standard multiple liner regression (which only allows multiple IVs but only one DV in a model).

Frequency and Percentage of Individuals with Highest Scores by Scale

Tables 3 through 5 provide summary counts and percentages for the number and percentage of individuals displaying the highest scores on each scale for the BAI, TEAMS and VALUES scales. DISC scores were previously compared in a more robust international study of 300,000+ participants and those results are part of the Appendix. Note that some individuals exhibited the same score levels on two scales, therefore the total sample size count does not sum to 9,765.

Table 3. Highest Score and Percentage by Scale - BAI

BAI	I	S	P	E	A	K	Total
Highest (n)	1379	2874	439	2683	441	1498	**9314**
Percent (%)	14.1	29.4	4.5	27.5	4.5	15.3	**95.3**

Note. 451/9,765 or 4.6% individuals had two or more scores at same value. Counts are based on single, unique highest value relative to other scales.

Table 4. Highest Score and Percentage by Scale - TEAMS

TEAMS	T	E	A	M	S	Total
Highest (n)	1268	743	2284	403	941	**5639**
Percent (%)	13.0	7.6	23.4	4.1	9.6	**57.7**

Note. 685/9,765 or 7% individuals had two or more scores at same value. Counts are based on single, unique highest value relative to other scales.

Table 5. Highest Score and Percentage by Scale - VALUES

VALUES	I	EQ	PF	J	Total
Highest (n)	2849	597	691	4808	**8945**
Percent (%)	29.2	6.1	7.1	49.2	**91.6**

Note. 820/9,765 or 8.4% individuals had two or more scores at same value.
Counts are based on single, unique highest value relative to other scales.

Summary

The results included in this document provide the results of correlational analysis, MDS and path analysis. The magnitude and direction of relationships among the 19 scales are reported using a large sample representative of individuals typically using IML®/ PeopleKeys® assessments. The results reported here provide new insight into the multidimensional relationships among the 19 scales using innovative statistical and psychometric techniques.

Previous DISC Validation and Reliability studies (DISC Technical Supplement 2006, IML® DISC Validation Study 2015) have provided the basis of a robust and reliable predictor of behavior in the workplace. Through observation and behavioral predictions, certain elements of correlating factors are important in the multi-dimensional prediction of job specific success. These additional elements have been correlated with DISC Theory and certain elements, predicted through observation, have been given statistical validation of the correlation.

This study, along with future scheduled studies, clearly demonstrates a strong correlation (and at times a strong inverse correlation) between workplace communication preferences, values, team thinking styles, and underlying motivational factors. Together, these elements can be used for a highly repeatable and predictable rate of job fit and performance relative to an individual's preferential behavioral patterns.

Additionally, there are factors working totally independent of one another which have also been identified. One example is high Knowledge. While this is certainly a desirable trait, it does not directly correlate with other traits. In summary, just because someone has high or low Knowledge it does not predict job success as accurately as someone who has a high Dominant/Strategist pattern. Only if there is detailed knowledge of job specific requirements does this factor in.

Understanding these important relationships will significantly help in hiring a candidate to the right job environment and provide a path of training and management expectations.

Ref: A Brief History of Development

DISC – The history of DISC began with the elements of Fire, Earth, Air and Water. The theory behind these four quadrants of personality style was originally written by Empedocles in 444 B.C. He recognized that people seemed to act in four distinctly different ways, but instead of attributing it to internal factors, like DISC personality styles, he believed it was external environmental factors that affected the way we would act. In fact, the concept of the elements determining your personality style is still in use by astrology disciplines today. By 400 B.C., the history of DISC moved forward, as these four quadrants had shifted from environmental factors to internal factors, when Hippocrates redefined these quadrants as Choleric, Sanguine, Phlegmatic and Melancholic. He called them the 4 Temperaments.

Carl Jung & The Myers-Briggs Personality Test – From there, the history of DISC fast-forwards quite a bit. Though psychology itself had many advancements, it wasn't until 1921 that Carl Gustav Jung re-examined these four quadrants and types of behavior. Carl Jung realized that while personality styles are indeed internal, Jung attributed the difference in personality styles to the way we think and process information. His four styles were Thinking, Feeling, Sensation and Intuition, now often used in the Myers-Briggs Personality Test (MBTI). And thus, the history of DISC advanced forward yet again.

William Moulton Marston & The Birth of the DISC Personality Styles – Which brings us to William Moulton Marston. In 1928, he published the book "Emotions of Normal People," developing what we know and use today as the DISC Personality System, which was validated during his studies at Harvard University. He redefined these four quadrants of DISC and behavior as predictable traits that we act out in our everyday lives. He saw our DISC personality styles as being both internal and innate, but impacted largely by our external environment. William Moulton Marston defined the four quadrants of personality as Dominance, Influence, Steadiness, and Compliance, which we still use in DISC Personality Tests today. The history of DISC doesn't come to its present state until 1940. In 1940, Walter Clark took the theory of William Moulton Marston and developed the first DISC personality profile.

The Institute for Motivational Living (IML) – In the 1970's Dr. Sanford Kulkin saw the need for a more contemporary assessment and reporting that could be easily applied in the workplace and with education, counseling, and personal relationships. Through extensive research, development and validation the IML®/PeopleKeys® DISC personality system was released in the mid 1980's and has been an industry leader in the practical, positive application of the information within relationships worldwide. The Institute's research has been used by millions globally, and is available in 33 different languages.

IML® was the first to produce an entirely online, internet-based version of the DISC assessment in the 1990s and the first matching technology online as early as 1994/1995. IML® has over 100 copyrights of DISC and DISC-related behavioral materials, as well as patent(s) pending on its specific algorithms and methods of matching.

BAI – The Behavioral Attitudes Index Assessment and the complementary I-SPEAK were developed over a 7 year period from 2006-2013. PeopleKeys® began looking for a "secret sauce" or some form of explaining why DISC, TEAMS, and Workplace Values were not always accurately able to fully predict the

success of new hires in certain positions, such as sales. Job fit could be predicted with DISC at a high level of accuracy, but something else made certain sales people excel at the position while others worked very hard to simply "get by." We eliminated the obvious things with education, experience, work ethic (hours put in), etc. There was still an ingredient missing.

Dr. Sanford Kulkin and Dr. Brad Smith were acquainted with several thought-leaders in this area, dating back to the time of Dr. William Marston who first coined the term DISC in 1928 (*Emotions of Normal People*). One such man was Dr. Eduard Spranger, who also wrote a book in 1928 titled, "Types of Men; the Psychology and Ethics of Personality." Spranger identified 6 very powerful motivators to behavior he described as (MS) Motivational Styles or sometimes called the Value Index. Today, we would define these traits as passions, still classified under motivational factors as well.

Dr. Spranger used certain elements which are still very applicable today. Other attributes, such as Religious Beliefs, cannot be used in hiring and were removed. In 2006, it was our goal to make the motivators more contemporary and also extensively test this with clients, educators, and researchers. Over the next 7 years we refined the BAI assessment and I-SPEAK report to predict at a 90% or higher level who would be the top sales persons in a given group.

Almost by accident, as many scientific projects produce, we found the BAI was a very strong correlator to behavioral patterns of Millennials vs. other generations, especially the Baby Boomer era. Millennials act much more closely with passions and personal life-balance than do the Baby Boomers, who were raised on very strong Workplace Values.

Many independent tests were conducted with clientele to determine benchmarking and traits for predicting strong hiring performance. Much of this data is proprietary to the individual clientele, as most are in a very competitive market and do not want to share the data of successful hiring predictability.

T.E.A.M.S. – T.E.A.M.S. is an acronym for Theorist, Executor, Analyzer, Manager, and Strategist. The development of teams took place in the mid to late 1990s, with the first publications in early 2000.

In the development, many models of team analysis were studied and tested against groups participating in PeopleKeys® trials. One model, used in earlier decades, believed that most people in teams either acted in a creative way, were an analyzer (inspector), a refiner of things, or an executor of plans. If you exhibited equal amounts of each trait, you were considered a managerial style with some of each strength trait being exhibited, but none predominantly. In this case the manager was more of a maintainer, compared to someone aggressively moving things forward. These older models did not account for the strong charging driver.

PeopleKeys® made a contemporary version of the models and included a Theorist, Executor, Analyzer, Manager, and Strategist. The Strategist is the one who will move things ahead quickly.

T.E.A.M.S. was checked for reliability in the Eastern Model Study and LeTournou testing, along with an outcome-based validation taking place with The Bair Foundation and Celtic Health Care in 2014. Reliability tests proved to be >.80.

Workplace Values – Workplace Values was developed in the early 1990s with first publication in 1993. Research and analysis was done by Dr. Sanford Kulkin working in conjunction with AT&T. AT&T had already identified what were considered Core Common Bonds of workers. They also did research on how Traditions, Impressions, Challenges, and Synthesis take place in the workforce. The Core Common Bonds and other data eventually went into the development of the 4 major workplace values that are easily observed, assessed, and were legal in the selection process (used as one part of the hiring process). Workplace Values has been used by The Institute for Motivational Living® and PeopleKeys® since the mid-1990s, and over 500,000 assessments have been used in training and hiring. Values was used in a pilot program for Eastern University on predicting student retention, and was tested for reliability and validation with the results being accurate in predicting retention. Retention did increase through the pilot program, and while not having enough data to statistically validate the finding, it did appear students increased their GPA as they understood more of the common bonds with teachers and classmates.

Appendix B

DISC Worldwide Percentages by Environment

Data taken over 10-year period, a sample size of just over 300,000 profiles reviewed

Comparison by Environment		Graph 1 Mask, Public Self				Graph 2 Core, Private Self				Graph 3 Mirror, Self Percept			
Environment	Sample Size	D	I	S	C	D	I	S	C	D	I	S	C
Home/Family/Caregiving	22870	4%	19%	54%	23%	2%	6%	80%	11%	3%	9%	66%	22%
Education	134637	5%	37%	39%	19%	7%	13%	58%	22%	5%	22%	47%	26%
Church/Ministry	2634	11%	36%	31%	22%	9%	18%	52%	22%	10%	25%	36%	29%
Self Discovery	64963	13%	33%	25%	29%	14%	16%	42%	28%	13%	24%	28%	35%
Business	11542	17%	32%	24%	27%	16%	16%	43%	25%	16%	23%	27%	34%
Business-Mgmt/Sales	64706	25%	23%	28%	24%	20%	9%	56%	15%	23%	14%	37%	26%
Total Results Reviewed	301352												

Appendix C

These factors tend to work independently of one another with no strong direct or indirect correlation

Elements not directly influenced in pairs, Low or No Correlation (r < |.10|)	
Dominance with Analyzer	Compliance with Equality
Influence with Social Humanitarian	Compliance with Unawareness
Influence with Political	Compliance with Social Humanitarian
Influence with Economic	Compliance with Economic
Influence with Artistic	Compliance with Artistic
Influence with Knowledge	Theorist with Justice
Steadiness with Analyzer	Theorist with Inner Awareness
Steadiness with Justice	Theorist with Economic

Compliance with Manager	Executor with Analyzer
Executor with Inner Awareness	Manager with Political
Executor with Economic	Strategist with Inner Awareness
Executor with Artistic	Strategist with Justice
Analyzer with Loyalty	Loyalty with Political
Analyzer with Personal Freedom	Loyalty with Economic
Analyzer with Justice	Personal Freedom with Artistic
Manager with Loyalty	Justice with Political
Manager with Justice	Justice with Artistic
Manager with Inner Awareness	Justice with Knowledge
Manager with Artistic	Inner Awareness with Artistic
Influence with Equality	Political with Knowledge

Appendix D

Table 1. Correlation Coefficients for DISC, TEAMS, VALUES and BAI

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
dominance	1																		
influence	0.10	1																	
steadiness	-0.82	-0.32	1																
compliance	-0.32	-0.66	0.17	1															
theorist	0.46	0.51	-0.50	-0.45	1														
executor	-0.58	-0.40	0.60	0.36	-0.67	1													
analyzer	-0.03	-0.26	-0.02	0.33	-0.26	-0.07	1												
manager	-0.26	-0.10	0.30	0.03	-0.44	0.10	-0.15	1											
strategist	0.43	0.15	-0.39	-0.19	0.12	-0.49	-0.28	-0.22	1										
loyalty	-0.24	-0.42	0.30	0.35	-0.43	0.47	0.14	0.07	-0.23	1									
equality	-0.42	0.07	0.37	-0.01	-0.12	0.20	-0.06	0.18	-0.22	-0.18	1								
persfreedom	0.59	0.20	-0.60	-0.20	0.41	-0.48	-0.04	-0.22	0.33	-0.48	-0.38	1							
justice	-0.10	0.16	0.09	-0.13	0.07	-0.10	-0.05	0.05	0.05	-0.36	-0.18	-0.36	1						
Inneraware	-0.23	0.13	0.18	-0.07	0.02	0.03	-0.13	0.06	-0.02	-0.10	0.26	-0.19	0.12	1					
socialhuman	-0.47	-0.09	0.51	0.03	-0.29	0.37	-0.05	0.22	-0.25	0.22	0.27	-0.55	0.20	0.24	1				
political	0.37	0.05	-0.33	-0.11	0.15	-0.24	0.03	-0.07	0.17	-0.02	-0.25	0.22	-0.03	-0.33	-0.24	1			
economic	0.34	-0.08	-0.30	0.07	0.00	-0.09	0.04	-0.12	0.21	0.05	-0.31	0.32	-0.17	-0.51	-0.59	0.17	1		
artistic	-0.13	0.09	0.10	-0.06	0.10	0.01	-0.08	0.02	-0.11	-0.12	0.17	0.07	-0.09	0.01	-0.11	-0.44	-0.30	1	
knowledge	0.25	-0.08	-0.28	0.11	0.11	-0.19	0.23	-0.16	0.06	-0.10	-0.19	0.26	-0.05	-0.47	-0.48	0.00	0.27	-0.16	1

Note. Light shading: no relationship; Dark shading: highest relationships; No shading: weak or moderate relationships N=9,765.