

MCORE TECHNICAL REPORT: DEVELOPMENT AND VALIDATION

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Introduction

MCORE is an online, self-report assessment of core motivation that identifies the top three motivations that represent an individual's strongest natural drives. In addition, MCORE provides scores and rankings for all 27 motivational themes. Although the assessment is self-report and provides quantitative results, it integrates a narrative methodology with a quantitative methodology. We believe it to be one of the first commercial assessments to accomplish this important breakthrough.

The 162 items of MCORE were based on 50 years of theory and research from the System for Identifying Motivated Abilities (SIMA®), a semi-structured interview and coding system for identifying an individual's core motivations. The SIMA system has been used by SIMA International, Inc. for the purposes of executive search, selection, employee engagement and development, and vocational development.

MCORE has been developed according to current psychometric standards. This report presents evidence of reliability and validity gathered to date, in accordance with *The Standards for Educational and Psychological Testing* (American Educational Research Association, American Psychological Association, and National Council on Measurement in Education, 1999). Primary applications of MCORE for vocational development, employee engagement, leadership development, and team development are briefly discussed.

System for Identifying Motivated Abilities (SIMA®): A Validated Foundation for MCORE

The System for Identifying Motivated Abilities (SIMA®) is an important foundation for MCORE since the 27 Core Motivations of MCORE were identified through the SIMA® process. This analytical process, developed by Arthur Miller¹, is based upon clients' stories of activities they have deeply enjoyed and done well. These "achievement stories," drawn out by interview and/or client autobiography, are then analyzed by a SIMA® biographer who identifies within them a pattern of motivated behavior that is both innate and unique.

When it was first utilized in 1961, SIMA was a purely idiographic process; each client's motivational pattern was developed through analysis of his/her own achievement narrative. However, after tens of thousands of individual pattern reports SIMA biographers began in the 1980s to identify recurring themes that they captured in a taxonomy of motivational elements. This thematization introduced a nomothetic dimension to the SIMA process, which enabled it to be thoroughly validated according to APA testing standards.

Since the SIMA taxonomy, which provides the 27 psychometric constructs of MCORE, was introduced, the process has been validated in a number of formal studies.² One of the most important was The Leadership Profile Project, carried out in 1989-1990 by Dr. John Crites (1928-2007), one of the leading vocational psychologists of the 20th century. The objective of the research was to evaluate the usefulness of SIMA® for identifying potential leaders for executive and managerial positions. The research design followed test standards established by the American Psychological Association (APA) in 1985 for determining the psychometric characteristics of assessment techniques (i.e., scoring objectivity, reliability, and validity).

Dr. Crites conducted seven studies to assess the extent to which SIMA® approximated the APA standards. He concluded that SIMA® was both theoretically sound and empirically reliable and valid for use as a selection tool. He found that it met all applicable APA standards for the assessment and selection of leaders, and that an individual MAP® profile is stable over time.

In his summary remarks, Dr. Crites praised SIMA®, noting that our assessment achieved "positive results" in all studies. He saw that as a "unique and highly positive outcome for this type of project." He further stated that "the weight of the evidence for these findings is indeed impressive," concluding that "SIMA® can be used with confidence as a selection and leadership identification method."

Dr. Crites' validation studies corroborate SIMA International's (SI's) experience that SIMA®'s accuracy is consistently demonstrated by its uncanny ability to predict a person's behavior in a given set of circumstances. Throughout the over fifty years during which SIMA® has been used with hundreds of thousands of people in a wide range of situations, SIMA® has time and time again anticipated how a person will function when placed in a given context. That remarkable reliability offers strong evidence of SIMA®'s accuracy in describing the unique motivated behavior of individual's.

MCORE builds on these studies because it is thoroughly grounded in the SIMA® process. However, it is also a new approach blending the narrative dimension of SIMA and its taxonomy of central motivational themes with traditional forms of psychometric assessment.

MCORE's Theoretical Basis in Contemporary Psychology

There is growing consensus, particularly within disciplines that focus on human behavior, that narrative provides deep insight for understanding human persons and for helping them make sense of their lives. **Narrative Psychology** has become a vital sub-discipline of psychology proper. A foremost thinker in this emerging new field is Dan McAdams. He and a colleague recently wrote that:

Contemporary narrative approaches have made much more explicit the ways in which storytelling shapes self-making...It is with respect to narrative identity...that personality psychology's commitment to showing how every person is like no other person is most readily accomplished. Every life story is unique. The rich texture of human individuality is best captured in the intensive examination of the individual life story.³

MCORE (and the SIMA process which grounds it) is distinctive among contemporary assessments because it is drawn explicitly from a client's unique life story. This makes it both consonant with the aims of narrative psychology but also distinct from other forms of psychometric assessment which begin not with the client's own story, but with a slate of pre-established options.

Another burgeoning movement that confirms both the methods and the objectives of MCORE is that of **Positive Psychology** defined by two of its founders, Martin Seligman and Mihaly Csikszentmihalyi as "the scientific study of positive human functioning and flourishing on multiple levels that include the biological, personal, relational, institutional, cultural, and global dimensions of life."⁴ Seligman also argues that positive psychology orients people to what he calls "the good life" that is "using your signature strengths every day to produce authentic happiness and abundant gratification."⁵ Since MCORE is about uncovering those innate motivated gifts of people by studying key moments of their positive functioning in order to help assure authentic happiness in their life, it is highly consistent with positive psychology.

Development of MCORE

As mentioned previously, during the 1980s, SIMA biographers began to identify recurring themes that led to a taxonomy of motivations. This introduced a nomothetic dimension to SIMA that was the first step in developing MCORE. The goal was to use SIMA themes to develop an online, cost-effective quantitative assessment. However, in order to retain the power of narrative in the assessment, we combined narrative and quantitative methods in such a way that produces quantitative results.

MCORE: Initial Development

The development of MCORE began in 2013. Four open-ended text questions were used to obtain four distinct achievement stories from participants. The developers worked with a senior SIMA biographer to identify the most prominent motivational themes from the SIMA taxonomy. This led to the identification of 27 motivational themes to be included in MCORE. The developers then translated these themes into statements on which individuals could rate the degree to which an item applied to a particular achievement story.

The developers had senior SIMA biographers write 6-8 items for each theme with the goal that these items would sufficiently capture the essence of the intended motivational theme. Items were revised or omitted if they were found to be overly complex, used SIMA jargon not readily understandable to the general public, captured more than one core idea, or had a reading level higher than 6th grade. From this initial pool of items, four items were selected for each motivational theme for the initial version. One item from each theme was displayed for each of the four achievement stories. A five-point Likert scale ranging from 1 – Does not apply to 5 – Most Deeply Satisfying was tested in the initial development.

These items were then field-tested with a small sample and feedback was sought to determine if the items were easy to understand and clear. In-depth analysis included computing alpha coefficients to examine internal consistency, and conducting exploratory factor analyses on each theme to examine whether the items from a theme hang together and measure a single construct. The factor analyses revealed that each theme measured a single construct. Alpha coefficients were low overall, suggesting the need to lengthen the scales and revise some items.

MCORE: Current Version

Results from the early data analysis over nearly two years led to the current, commercially viable version of MCORE (see below for a discussion of reliability and validity). Six items per motivational theme were included, which increased the internal consistency (reliability) of the themes. Two items are displayed for each of three achievement stories. Licensed SIMA biographers authored and approved each item.

The Likert scale was also revised, which produced more reliable scales. The “Does not apply” rating is now scored as missing data (so it does not affect the mean score for the theme) and an additional rating was added to retain a five-point Likert scale. The revised Likert scale ranges from: 1 - Not satisfying; 2 – Slightly satisfying; 3 – Moderately satisfying; 4 – Very satisfying; and 5 – Most deeply satisfying.

Two separate data sets were analyzed to examine the reliability and validity of MCORE. The first data set was a national data set collected through a survey panel. This data set included 347 participants with the following demographic characteristics: 73% female, 27% male; mean age of 31; 65% European American, 10% African American/Black, 5% Latino/a, 4% Asian American/Pacific Islander, 3% Native American, 13% other; 62% some college, 27% Bachelor’s degree, 11% graduate degree; 18% West, 23% Midwest, 33% South, 26% Northeast.

The second data set was drawn from an MCORE database of clients that took the assessment from February 2015 to June 2015. This data set included 306 participants with the following demographic characteristics: 45% female, 55% male; mean age of 44; 91% European American, 4% African American/Black, 1% Latino/a, 2% Asian American/Pacific Islander, 3% other; 3% High School degree or

less, 12% some college, 41% Bachelor's degree, 44% graduate degree; 20% West, 55% Midwest, 13% South, 11% Northeast, 1% outside U.S.

The results from each study are described below.

Reliability

The reliability of a scale score is an estimate of its stability, or that part of the score that is not due to random error. There are two main types of reliability: internal consistency and test-retest reliability. Internal consistency is the most common type of reliability used and we report on this below.

Internal consistency is typically evaluated using Cronbach's alpha. Cronbach's alpha measures the extent to which all the variables on a scale are positively associated with each other. It is an adjustment to the average correlation between every item and every other item. The alpha is also the average split-half reliability coefficient for all possible splits. A split half reliability is found by randomly selecting half of the items in a scale, computing the mean to create a composite variable, and then creating a composite variable of the remaining half, and correlating the two composite variables. The expected value for the random split-half reliability is alpha. Nunnally offered a rule of thumb of 0.70 as the cutoff for "acceptable" internal consistency, as shown below.⁶ By definition, scales with fewer items will have lower alphas.

Cronbach's alpha (α)	Internal consistency
.90 to .99	Excellent
.80 to .89	Good
.70 to .79	Acceptable
.60 to .69	Questionable
.50 to .59	Poor
Below .50	Unacceptable

Two data sets were analyzed as mentioned above. For data set one, gathered from a national panel of 347 individuals, the overall alphas were very strong. As the chart below shows, all 27 scales exhibited alpha coefficients above the conventional cutoff of .70, and fifteen scales were in the .80 to .89 range. The mean alpha across all 27 scales was .80, demonstrating strong overall internal consistency.

MCORE DATA SET 1 - NATIONAL VALIDATION STUDY	
Alpha Range	No. of Scales in this Range
.70 to .79	12
.80 to .89	15
Mean alpha of all 27 themes	0.80

The second data analysis, conducted on a sample of 306 individuals from the MCORE database, generally corroborated these results. As the chart below shows, all but one scale exhibited alphas above .70. The mean alpha was exactly the same at .80, again indicating strong overall internal consistency for MCORE.

MCORE DATA SET 2 - MCORE DATABASE VALIDATION STUDY	
Alpha Range	No. of Scales in this Range
.60 to .69	1
.70 to .79	10
.80 to .89	16
Mean alpha of all 27 themes	0.80

Validity

The validity of an assessment provides an indication of the degree to which it measures the construct it is intended to measure. There are several types of validity. We address here content validity, and two aspects of construct validity: factorial validity and convergent validity. Criterion validity, an indication of the degree to which a scale predicts meaningful outcomes is also important. We do not currently have results for criterion validity; however, we are in the process of conducting research to test MCORE's criterion validity, investigating whether MCORE predicts the experience of flow and performance using the daily experience data collection method.

Content Validity

Content validity refers to the degree to which an instrument adequately covers the content domain of the construct. There is no definitive taxonomy of motivational themes against which to compare MCORE. However, the SIMA foundation from which MCORE is derived provides strong evidence for content validity. Tens of

thousands of SIMA biographies were analyzed to arrive at the SIMA taxonomy of recurring motivational themes. This provides strong evidence that the 27 MCORE themes cover the content domain of motivation well.

Construct: Factorial Validity

Construct validity is a broad term that refers to various indicators that a scale measures what it is intended to measure. There are several aspects to construct validity. Generally the first aspect of construct validity to be addressed is known as factorial validity. This is evaluated through a statistical procedure known as factor analysis. Factor analysis provides an indication of the degree to which the items on a scale “hang together” and measure one, unified construct.

After we developed MCORE and demonstrated good overall reliability we conducted factor analyses on the two separate data sets mentioned above. In the first data set, we conducted an exploratory factor analysis on each of the 27 themes. All 27 themes formed a single factor, indicating the items hang together well. All factor loadings (a statistic produced for each item that provides an indication of how well the underlying construct predicts the variance of that item) were above .30 (the conventional cutoff for an acceptable factor loading) except for one item. In fact, all factor loadings were above .40 except for three items. The average factor loading range across all 27 themes ranged from .54 to .70. These results provide strong support for the factorial validity of MCORE. They indicate that all 27 themes measure a unified construct and that the items for each theme all measure the same thing.

Factor analysis results from the second data set corroborated those from the first. All 27 themes again formed a single factor, indicating the items hang together well. All factor loadings were above .30 except for one item. All factor loadings were above .40 except for seven items. The average factor loading range across all 27 themes ranged from .51 to .74. These results again provide robust support for the factorial validity of MCORE.

Construct: Convergent Validity

Convergent validity is exhibited when a measure correlates with other measures in theoretically predicted ways. For example, we would expect a measure of subjective well being (social scientists’ term for happiness) to correlate positively with a measure of self-esteem. People with high self-esteem generally experience more positive moods. If two such measures correlated negatively or not at all, that would suggest at least one of the measures is not measuring what it is supposed to measure.

In a first step to demonstrate convergent validity for MCORE, we correlated it with a short version of the Big-5 Personality Inventory. The Big-5 is one of the most widely used and scientifically robust measures of personality. It consists of five main

factors: Extraversion, Agreeableness, Conscientious, Neuroticism, and Openness. These five personality factors are expected to overlap to some extent with many MCORE themes.

Examining the big picture of the 135 correlations, the results generally provide strong support for MCORE's validity. Most of the MCORE themes correlated in predicted directions (statistically significantly) with several of the Big-5 scales. Only seven MCORE themes did not correlate above .20 with any Big-5 themes, showing the strong degree of overlap that is theoretically expected. Below is a list of results that illustrate theoretically meaningful correlations that support the validity of MCORE. All correlations reported below were statistically significant at the .05 probability level (meaning there is less than a 5% chance of obtaining this correlation if there really is no association between the two scales) and met the criterion of being .20 or greater. MCORE themes are listed first:

- Excel, Make Progress, Develop, Bring to Completion, Make it Right, Improve, Make it Work and Master all correlated positively with **Conscientious**
- Be Key and Evoke Recognition correlated positively with **Extraversion**
- Experience the Ideal and Explore correlated positively with **Openness**
- Overcome, Meet the Challenge, Establish and Achieve Potential all correlated positively with **Conscientious** and negatively with **Neuroticism**
- Influence Behavior correlated positively with **Extraversion** and negatively with **Neuroticism**
- Participate and Make an Impact correlated positively with **Extraversion** and **Conscientious**

Scoring, Administration and Feedback

In the first step for scoring MCORE, a proprietary algorithm is used to weight the 1 to 5 Likert score for each item. Next, the mean of the six weighted item scores is calculated for each theme. The themes are then rank ordered based on the weighted mean scores to determine the top three themes.

MCORE is administered online using the Qualtrics survey platform. Participants go to a registration link and enter their name and email address. The survey system then sends an email with a unique link for the participant to take MCORE. Once a participant completes MCORE, an individual report is automatically emailed to the participant immediately, as well as to his/her coach if it was administered through an MCORE coach.

The individual report provides the top 3 themes, and a description of each of these themes. It also provides the rank ordering of all 27 themes so participants can see the relative score comparisons for all themes, and which themes are low for them.

Numerous practical exercises are also provided to assist participants in activating and leveraging their core motivations in all domains of life.

Application: Activating Core Motivations

MCORE is used as a starting point for discovery of one's unique motivations. Some participants take MCORE on their own, while others take it in the context of working with an MCORE coach and/or with a team as part of a team development process. In the report and/or with the help of a coach, individuals are encouraged to identify their top three motivations within their achievement stories in order to better understand and own their core motivations. In addition, the report provides several exercises to assist individuals in integrating their core motivations into one statement that more deeply captures their core motivational blueprint. This leads to a more informed view of the self, which positively impacts one's sense of identity.

Further exercises are provided to assist individuals in leveraging their core motivations in multiple domains of life. For example, MCORE encourages individuals to 1) identify the degree to which job tasks or vocational directions fit with their core motivations; 2) gradually craft their job according to their core motivations; 3) approach tasks that do not fit well in a different way that leverages their core motivations; and 4) reflect on conditions and environments that activate their core motivations.

MCORE's intended purpose is to facilitate personal growth and development with respect to how one is uniquely motivated to express one's self and contribute to the world. It is intended to be used as a springboard for discussion with coaches, managers, friends, colleagues, and advisors to facilitate self-awareness and development. MCORE results are viewed as a beginning understanding of one's core motivations to be fleshed out in self-reflection, new practices, and dialogue with advisors. MCORE is also commonly used to complement other assessments in the personality and motivational domain. Feedback about core motivations can be the basis for further interventions that help individuals activate their core motivations and apply them to current and new challenges.

In addition, MCORE can be used for team development. Team members are encouraged to share their achievement stories, which help them to gain a deeper understanding of how their co-workers are naturally motivated. The big picture of the team's core motivations is then mapped out against key job functions, which helps to identify areas of motivational overlap and gap areas. This serves to create better alignment of the team's overall motivations with essential functions. For these applications, the psychometric properties of MCORE are more than adequate.

Conclusion

MCORE is a new assessment of core motivation that utilizes a cutting-edge method that combines narrative and quantitative approaches. MCORE is currently being used in the areas of executive coaching and development, vocational development, team development and employee engagement. Thus far, it has been used by corporations and faith-based organizations and it is rapidly expanding into new sectors. For these purposes, it has adequate reliability (internal consistency) and validity. The MCORE research team continues to expand the research base on validity and applied uses.

MCORE has been used to facilitate the development of individuals in numerous roles including: executive, student, teacher, manager, sales person, and pastor. MCORE coach training is now being offered online and is currently being refined based on principals derived from positive psychology, narrative psychology, and the collective experience of current MCORE coaches.

¹ Miller and his colleagues have written a variety of books about SIMA® and its impact in helping people be more productive and fulfilled. For example: *The Power of Uniqueness*, by Arthur Miller & William Hendricks (Zondervan, 2002); *Who Do You Think You Are?: Understanding Your Motives and Maximizing Your Abilities*, by Dr. Nick Isbister & Dr. Martin Robinson (Harper Collins, 1999).

² The SIMA Theory & Research Handbook is available upon request. This includes a bibliography of books, articles, and dissertations relevant to SIMA's validity.

³ Dan McAdams & J.L. Pals (2006). A new Big Five: Fundamental principles for an integrative science of personality. *American Psychologist*, 61(3), 204-21

⁴ Seligman, M.E.P.; Csikszentmihalyi, M. (2000). "Positive Psychology: An introduction". *American Psychologist* 55 (1): 5-14.

⁵ Seligman, M.E.P. (2009). *Authentic Happiness*. New York: Free Press.

⁶ Nunnally, J. C. (1978). *Psychometric theory* (2nd ed.). New York: McGraw-Hill.