

# Motivation Code (MCODE) Technical Report: Development and Validation

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## Introduction

MCODE 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, MCODE 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 MCODE 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.

MCODE 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 MCODE for vocational development, employee engagement, leadership development, and team development are briefly discussed.

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

The System for Identifying Motivated Abilities (SIMA®) is an important foundation for MCODE since the 27 motivational themes of MCODE were identified through the SIMA® process. This analytical process, developed by Arthur Miller<sup>1</sup>, 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, in the 1980s SIMA biographers began 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.

The SIMA taxonomy provides the 27 psychometric constructs of MCODE, which are called motivational themes. Since the taxonomy was introduced, the process and themes have been validated in a number of formal studies.<sup>2</sup> 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.

MCODE 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.

### MCODE'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.<sup>3</sup>

MCODE (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 MCODE 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."<sup>4</sup> 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."<sup>5</sup> Since MCODE 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 MCODE

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 MCODE. 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.

#### MCODE: Initial Development

The development of MCODE began in 2013.<sup>6</sup> Four open-ended text questions were used to obtain four distinct achievement stories from participants. The developers worked with senior SIMA biographers to identify the most prominent motivational themes from the SIMA taxonomy. This led to the identification of 27 motivational themes to be included in MCODE. 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.

#### MCODE: Current Version

Results from the early data analysis over nearly two years led to the current, commercially viable version of MCODE (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-type 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 MCODE. The first data set was a national data set collected through a survey panel. The second data set was drawn from an MCODE database of clients who took the assessment from February 2015 to June 2015. 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.<sup>7</sup> By definition, scales with fewer items will have lower alphas.

Cronbach's alpha ( $\alpha$ )	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.

MCODE 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 MCODE 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 MCODE.

MCODE DATA SET 2 - MCODE 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, two aspects of construct validity (factorial validity and convergent validity) and criterion validity.

### *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 MCODE. However, the SIMA foundation from which MCODE 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 MCODE 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 MCODE 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 MCODE. They indicate that all 27 themes measure a unified construct and that the items for each theme all measure the same concept.

#### *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 MCODE, 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, often presented using the acronym OCEAN: Openness, Conscientious, Extraversion, Agreeableness and Neuroticism. These five personality factors are expected to overlap to some extent with many MCODE themes.

Examining the big picture of the 135 correlations, the results generally provide strong support for MCODE's validity. Most of the MCODE themes correlated in predicted directions (statistically significantly) with several of the Big-5 scales.

#### *Criterion Validity*

Criterion validity is an indication of the degree to which a scale predicts meaningful outcomes. We examined MCODE's criterion validity, by investigating whether MCODE predicts the experience of flow and work performance. Flow refers to the experience of complete immersion in an activity, and it is often used to describe peak

performance. Previous studies have confirmed the positive effects of flow on satisfaction and performance. In addition, there is evidence that flow plays a larger role in work activities compared to leisure activities. While the pre-conditions for moving into a flow state have been identified (a balance between challenge presented and skill required for an activity), little is known about how these pre-conditions work in facilitating high performance. We tested the idea that using one's motivation code would mediate the relationship between flow experience and work performance.<sup>8</sup> Our results supported this hypothesis, which also provides evidence for criterion validity, as an individual's motivation code predicts work performance in a theoretically meaningful way.

## Conclusion

MCODE is a new assessment of core motivation that utilizes a cutting-edge method that combines narrative and quantitative approaches. MCODE 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 MCODE research team continues to expand the research base on validity and applied uses.

MCODE has been used to facilitate the development of individuals in numerous roles including: executive, student, teacher, manager, sales person, and pastor. MCODE 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 MCODE coaches.

<sup>1</sup> 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).

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

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

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

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

<sup>6</sup> The MCODE was originally called MCODE; short for motivational core. The assessment was renamed in 2020 to The Motivation Code, or MCODE.

<sup>7</sup> Nunnally, J. C. (1978). *Psychometric theory* (2nd ed.). New York: McGraw-Hill.

<sup>8</sup> Lowe, G, Hall, T.W., Wang, D.C., & Miller J. (2019). *Core Motivation: Bridging the Gap Between Flow Experience and Work Performance*. Unpublished Dissertation, Biola University, La Mirada, CA.