

APPLIED SKILLS & KNOWLEDGE

Evidence for the Validity & Reliability of the Mental Skills Assessment (MSA)

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Abstract

This study reports on the validity and reliability of the Mental Skills Assessment (MSA), a measure of social-cognitive constructs that have proven to be essential for successful performance in sports. The seven social cognitive skills measured by the MSA include goal setting, goal implementation, mastery approach, self-efficacy (task confidence), self-worth, locus of control (personal control), and openness to feedback. A self-management model of social-cognitive skills is presented which is comprised of a goals construct and a self construct. The model's ability to predict self-ratings of effort, performance satisfaction, and leadership as well as predict coach ratings of athletic performance, student-athlete status, and citizen-athlete status was examined. A factor analysis of the seven social-cognitive skills supported the construct validity of the self-management model and the results of regression analyses supported the criterion-related validity of the model to predict self and coach ratings of athletic performance, student-athlete status, and citizen-athlete behavior.

Overview

The Mental Skills Assessment (MSA) was developed according to the Standards for Educational and Psychological Testing (published by the American Psychological Association and the National Council for Measurement in Education), by the Principles for the Validation and Use of Personnel Selection Procedures (published by the Society for Industrial-Organizational Psychology) and by the Uniform Guidelines on Employee Selection Procedures (published by the US Department of Labor).

The MSA was developed to assist athletes, coaches, parents, and sport psychologists improve the mental skills that are critical to an athlete's success—on and off the field. Much research in sports psychology, educational psychology, health psychology, and in social cognitive psychology during the past twenty years has provided strong evidence that there exists a set of mental skills that can be measured, developed, and self-managed to the benefit of athletes. In fact, one prominent psychologist, Albert Bandura (2005), stated that these mental skills, if they “were put in a pill, would be considered a scientific milestone in the field of medicine.”

The MSA measures seven social cognitive constructs (self-efficacy, locus of control, goal setting, goal implementation, mastery approach, self-worth, and open to feedback) and three “outcome variables” that are important characteristics of successful athletes—effort, satisfaction, and leadership. The seven social-cognitive variables and three outcome variables are referred to as the ten mental skills.

The MSA measures beliefs and behaviors. Consistent with the views of cognitive-behavioral theorists of behavior change, such as Aaron Beck (1970, 1985) and Albert Ellis (1979), changes in beliefs lead to changes in behavior. Empirical evidence for the role of beliefs in sport performance is provided by a study of self-talk by Conroy and Metzler (2004). They found distinct patterns of self-talk accompanied failure and success and these patterns were different for fear of failure and sport anxiety. Consistent with the evidence for the importance of beliefs, the MSA seeks to obtain information about an athlete's beliefs and behaviors because to improve an athlete's performance both behavior and beliefs much change. Thus, scores on the ten mental skills reflect ratings of both behavior and beliefs that influence performance.

The MSA is a single-rater or multi-rater assessment tool. The athlete can rate him or herself and, alternatively, in addition to the athlete's self-ratings a parent, coach, teammate or other person(s) knowledgeable about the athlete can also provide ratings. These ratings are combined into a single report to provide a multi-rater or "360 degree" perspective of the athlete. The multi-rater approach is a very common practice for measuring leadership in work settings (Smither, London, & Reilly, 2005).

The MSA is suitable for athletes who are 12 years old or older and have a reading comprehension level at the sixth grade level or above. The user of the MSA must consider the maturity of the MSA rater—many 12 year old athletes are sufficiently mature and introspective to make accurate ratings about their behavior and beliefs. If the user is not able to report accurately about his or her own behaviors and beliefs then the MSA will provide less accurate results so a multi-rater approach is recommended.

There are 180 items in the MSA, 18 items for each mental skill. The ten mental skills are measured with ratings on a five point scale. The ten mental skills are rated in the context of six different situations. Considering the extent of research supporting the situational specificity hypothesis¹ of beliefs and behaviors, the MSA provides the user with information about each mental skill in each of six important applied sports situations. The situations are game, practice, and setbacks in game situations as well as situations involving interactions with parents and coaches, off-the-field situations, and interactions with teammates.

The MSA contains a ten item validity scale that measures the rater's tendency to make socially desirable responses. A low score on the validity index indicates that the rater made more socially desirable ratings (i.e., was faking good) than are commonly made by raters.

Mental Skills

The seven social cognitive skills measured by the MSA are supported by findings in the psychological literature. During the past three decades much research was published about the role of goal setting, goal implementation, mastery approach, self-worth, locus of control, and openness to feedback in sports performance, educational achievement, work performance, and good health habits. Effort and satisfaction are common outcome measures in these studies. Finally, there are recent studies that indicate that successful leaders possess these mental skills. A description of each of the ten mental skills and research evidence for the importance of their role in performance are presented.

1. Open to Feedback

Open to feedback refers to a positive attitude to feedback and seeking feedback, either positive or negative, from as many different sources as possible. The feedback information is not distorted by the athlete to match pre-existing ideas of strengths and skills in need of development. In the MSA, open to feedback includes

¹The situational specificity hypothesis states that personal characteristics or traits are not consistent from situation to situation. For example, the hypothesis holds that a shy person is not shy in all situations. To properly assess a person's shyness one must measure the person in multiple situations to understand the person's shyness accurately.

athletes who carefully observe their own performance and compare it to personal standards and expectations. An athlete is open to feedback when he/she observes others' performances to find ways to improve. While there is little research about the impact of multi-rater feedback on athletes' performance, there is strong evidence of its importance in work settings and among effective leaders. In a meta-analysis of 24 longitudinal studies, the researchers (Smither, London, & Reilly, 2005) concluded that performance improvement among business managers is most likely to occur when feedback indicates that change is necessary, recipients have a positive feedback orientation, perceive a need to change their behavior, react positively to the feedback, believe change is feasible, set appropriate goals to regulate their behavior, and take actions that lead to skill and performance improvement. However, negative feedback can have a counterproductive impact. For example, negative performance feedback given to an athlete whose self-worth and affect are compromised can create a pattern of negative self-talk that diminishes self-efficacy and performance (Cervone, Kopp, Schaumann, & Scott, 1994).

2. Goal Setting

Setting goals effectively includes setting specific, moderately challenging, and realistic goals (Locke & Latham, 1990; Locke & Latham, 2002). Setting "do my best" goals in favor of specific, observable, and challenging goals results in less effective goals. A specific goal is easy to track and measure on a continual basis (e.g., daily or weekly). A properly challenging goal is one that the athlete knows will require a moderate amount of work and time to achieve. The goal set by the athlete should be achievable in a reasonable timeframe. When athletes set effective goals the goals result in real and valued progress in improving skills and performance (Lerner & Locke, 1995).

3. Goal Implementation

Research indicates that most athletes set goals but they rate them as only moderately effective. In a study by Burton, Weinberg, Yukelson, & Weigand, 1998, athletes who set a variety of goals and created and implemented a range of realistic strategies for accomplishing those goals were more successful athletes. The athlete possesses an implementation mindset creates specific plans for tracking and achieving the goals that he/she sets. For example the athlete who implements goals effectively keeps a record of goals, tracks progress toward goals frequently (e.g., daily or weekly), identifies milestones that indicate progress toward goals, and makes adjustments to goals, as needed. The athlete with an implementation mindset is more single-minded in achieving goals, anticipates obstacles to achieving goals and plans ways to overcome the obstacles (Henderson, deLiver, & Gollwitzer, 2008).

4. Locus of Control

Locus of control has long been known to have a positive impact on academic, work, and athletic performance. Students who scored higher on measures of internal locus of control perform better in math and reading tests (Clifford & Cleary, 1972) and for boys this effect was greater than IQ scores. More recently, researchers (Wang, Bowling, & Eschleman, 2010) reported on a meta-analysis of locus of control in work settings and found statistically significant correlations (uncorrected) between locus of control and job performance (.16), job satisfaction (.34), and burnout (.38). Among athletes, locus of control predicts performance. Hall, Church, & Stone (1980) report that elite weight lifters have an internal locus of control. Burke & Straub (1977) reported that the most successful athletes have an internal locus of control. Athletes with strong locus of control beliefs hold that their success is due to their skills and hard work and failures and setbacks can be avoided by hard

work. There are other benefits to locus of control. In a study by Denny & Steiner (2009), locus of control scores among elite collegiate athletes predicted happiness and satisfaction.

5. Mastery Approach

In their early work on mastery approach goals and behavior patterns, Dweck and Leggett (1988) articulated a model that “accounts for these patterns in terms of underlying psychological processes. The model specifies how individuals' implicit theories orient them toward particular goals and how these goals set up the different patterns. Indeed, we show how each feature (cognitive, affective, and behavioral) of the adaptive and maladaptive patterns can be seen to follow directly from different goals.” Their model predicts that when individuals set personal improvement goals compared to goals that focus on outperforming others or gaining recognition, many benefits accrue to the goal setter. Athletes with a strong Mastery Approach are more often motivated by personal improvements in their skills and performance than by obtaining external rewards and recognition. Athletes with a strong Mastery Approach are not motivated by being the best on the team or winning the admiration of coaches, parents, or friends. Instead they are motivated by experiencing real progress in their mastery of skills and knowledge needed to perform successfully. Athletes with a strong Mastery Approach are not very stressed by a setback as long as the setback results in improving skills and learning something new. Duda and Nichols(1992)reported finding significant differences in high school students' beliefs about the causes of success in school and sport which, in turn, related to their personal goals. The ego-involved or performance goal of superiority was associated with the belief that success requires high ability. A task or mastery approach (the goal of gaining knowledge)was associated with beliefs that success requires interest, effort, and collaboration with others. These goal-beliefs cut across sport and school goals and performance.

6. Self-Efficacy

One of the most frequently studied constructs in social-cognitive psychology is self-efficacy. Self-efficacy is the expectation of success in performing a specific task. Bandura (1977) describes its many benefits including the initiation of coping behavior, how much effort will be expended, and how long effort will be expended in the face of obstacles and challenging circumstances. Research on self-efficacy in sports has indicated its important role in performance. Self-efficacy scores have been demonstrated to distinguish whether an athlete competes in higher level, more competitive levels and, consistent with Bandura's assertion, that prediction is better for position-specific self-efficacy than general self-efficacy (Weigand & Stockham, 2000).

Athletes with high levels of Self-efficacy (called Task Confidence in the MSA) have strong expectations of success on the specific tasks they perform. Confidence in executing a task can vary greatly from task to task. A high Task Confidence score indicates that the athlete is confident in performing well on tasks critical to success in his/her sport. Athletes with high levels of Task Confidence are more likely to succeed on a task even when the task is challenging, great amounts of effort must be expended, and when their skills are somewhat deficient.

7. Self-Worth

The correlation between Self-Worth and performance is smaller than most people unfamiliar with the research might assume. The relationship is complicated by the difficulty in distinguishing between people with healthy self-esteem and those who are narcissistic, defensive, and conceited. Baumeister, et.al. (2003) reviewed Self-

Worth research and concluded that its primary positive impact is on initiative and feeling happy. The former may explain its modest relationship to leadership. Athletes with high levels of Self-Worth possess a respect for themselves that is not dependent upon being a successful athlete, receiving rewards and recognition from others, or achieving high levels of performance. Athletes with high levels of Self-Worth experience less anxiety, feel less guilty and ashamed when setbacks occur. Their Self-Worth is based upon a belief in their basic goodness and value as a person. In a study by Kruger (2010) self-confidence was one of a set of six psychological variables that differentiated successful female university field hockey players from unsuccessful ones.

8. Effort

Effort is a common outcome variable studied by researchers who are examining the importance of social cognitive variables such as self-efficacy (Bandura, 1977), locus of control (Burke & Straub, 1977), mastery approach (Dweck & Leggett, 1988), and goal setting (Locke & Latham, 2002). Higher levels of mastery of these social-cognitive constructs lead to higher levels of effort which in turn leads to higher levels of performance.

Following this logic, it is expected that athletes who obtain high MSA scores will make greater effort to succeed on tasks, they will spend the time working on their skills, and will make the sacrifices needed to gain skills and perform successfully. This includes preparing mentally and physically for a game, foregoing fun activities in order to practice, practicing more and harder than others, and getting the most out of practice sessions.

9. Leadership

Some researchers have described the role of social cognitive variables such as goal setting, leadership efficacy, and mastery approach in successful leadership (Hannah, Avolio, Luthans, & Harms, 2008; Dominick, Squires, & Cervone, 2010). There is less research in sports psychology regarding the social cognitive aspects of leadership in sports. One study among youths examined the relations among self-worth, locus of control, and sport leadership behavior. Recreational youth soccer players were rated for their leadership. These ratings were significantly correlated with the athletes' scores for self-worth and locus of control (Pease&Zhang,2002).

10. Satisfaction

In health psychology, researchers found that the factors that lead to behavior change initiation are different from those that lead to maintenance of behavior change. Whereas those who are interested in trying different and new ideas were more likely to initiate behavior change, maintenance of behavior change was more likely among those who experienced performance satisfaction. Performance satisfaction occurs when individuals judge that the time and effort expended to achieve a goal were worthwhile. That is, they judge that the benefits were worth the costs (Finch, Linde, Jeffery, Rothman, & King, 2005; Nigg, Borrelli, Maddock, & Dishman, 2008; Fuglestad, Rothman, & Jeffrey, 2008). While there is little if any research of this kind in sport psychology, the mental skills management model holds that performance satisfaction applies to athletes and their training.

In other words, the athlete who expresses satisfaction with performance judges as worthwhile the time and effort exerted to achieve valued goals; the athlete is satisfied with the end result in light of the effort made. Performance Satisfaction is important to long-term commitment (e.g., more than six months) to achieving goals; it is less important to initiating a new training program or setting new goals. Athletes who have high Satisfaction scores set effective short and long-term goals and have plans to implement them.

Applied Situations

Consistent with the situational specificity hypothesis, the MSA measures each of the ten mental skills in each of six important, applied sports situations. These situations were selected on the basis of interviews with coaches and athletes, reports in the literature about situations that affect mental skills, and common sense observation. Each of the situations is briefly described below.

1. Game

Game refers to the typical sporting event in which the athlete performs.

The games situations referenced in the MSA items are typical games and not pre-season, championship events, or unusual in any way.

2. Practice

Practice refers to the common, scheduled, structured practice that the athlete's coach conducts on a regularly scheduled basis.

3. Setbacks

Setbacks refers to game situations in which something occurs that is frustrating, discouraging, or otherwise undesirable for the athlete individually or the team overall. These include bad calls by referees or umpires, making an error at a crucial moment, and losing badly, to name a few.

4. Parents & Coaches

Athletes interact with their parents and coaches frequently before, during, and after a game and before, during, and after the season. These interactions are the focus of the MSA's Parents & Coaches items.

5. Off-the-Field Situations

Athletes must demonstrate good citizenship behavior off the field. Athletes often attend classes, interact with friends, and participate in outside activities. These situations are important to an athlete's success and the focus of the Off-the-Field items.

6. Teammates

Athletes must develop friendships and personal relationships with their teammates to enable themselves and the team to succeed. Athletes also must be accepted by their teammates. These associations and interactions are the focus of the MSA's Teammates items.

Descriptive Statistics

The average and standard deviation for the 10 mental skills (averaged across the 18 items that comprise the mental skill score) and the average and standard deviation for the six situations (averaged across the 30 items that comprise the situation score) are presented in the table below. These descriptive statistics are based upon a sample size of 312 comprised of male and female high school and university athletes, primarily in the United States. Also presented are the averages and standard deviations for the sample used in the criterion-related validation study.

For the overall sample Of 312, the mental skill with the highest average score was Effort (4.03) followed by Task Confidence (3.95) and Mastery Approach (3.93).

The mental skills with the lowest average scores are for Goal Implementation (3.42), Self-Worth (3.43), and Goal Setting (3.53). In the criterion data (n=45) the average ratings were quite similar with the exception of Self-Worth in which the criterion data average was higher (4.0).

Regarding situations, the highest rated situations were Game (3.80) and Practice (3.79) and the lowest rated situations were Setbacks (3.66) and Parents & Coaches (3.61). There were fewer differences among average situation ratings than among mental skills ratings. Situations ratings ranged from 3.80 (Game) to 3.61 (Parents & Coaches) and average mental skills ratings ranged from 3.42 (Goal Implementation) to 4.03 (Effort).

MEANMENTALSKILL/SITUATION	Overall Results (n=312)		Respondents with criterion data (n=45)	
	Average	Std. Dev	Average	Std. Dev
Effort	4.03	0.4	3.9	0.4
Goal Implementation	3.42	0.6	3.6	0.6
Goal Setting	3.53	0.6	3.8	0.6
Personal Control	3.86	0.5	3.8	0.4
Leadership	3.56	0.5	3.8	0.5
Mastery Approach	3.93	0.3	3.9	0.4
Open to Feedback	3.65	0.5	3.9	0.5
Satisfaction	3.91	0.4	3.9	0.4
Self-Worth	3.43	0.5	4.0	0.4
Task Confidence	3.95	0.5	3.7	0.5
Game	3.80	0.5	3.9	0.5
Off-Field Situations	3.73	0.5	4.0	0.4
Parents & Coaches	3.61	0.6	3.8	0.5
Practice	3.79	0.4	3.6	0.4
Setbacks	3.66	0.4	3.9	0.5
Teammates	3.78	0.5	3.7	0.5
OVERALLAVERAGE	3.70	0.5	3.80	0.5

Reliability

The ten mental skills are each measured by averaging the ratings provided by the rater(s) on 18 items. Below are the internal consistency reliabilities (Cronbach's alpha) for each of the mental skills. For all mental skills the reliabilities are high. In all cases the calculations are based on a sample size of 160.

Mental Skill	Reliability
Effort	0.856
Open to Feedback	0.836
Satisfaction	0.758
Self-Worth	0.734
Task Confidence	0.757
Goal Implementation	0.892
Goal Setting	0.872
Locus of Control	0.821
Mastery Approach	0.801
Leadership	0.880

The six situations are each measured by averaging the ratings provided by the rater(s) on 30 items. Below are the internal consistency reliabilities (Cronbach's alpha) for each of the situations. For all situations the reliabilities are high. In all cases the calculations are based on a sample size of 160.

Situation	Reliability
Game	0.843
Practice	0.893
Setbacks	0.851
Off-the-Field	0.868
Parents & Coaches	0.890
Teammates	0.890

The reliability of the ten item validity index is .760.

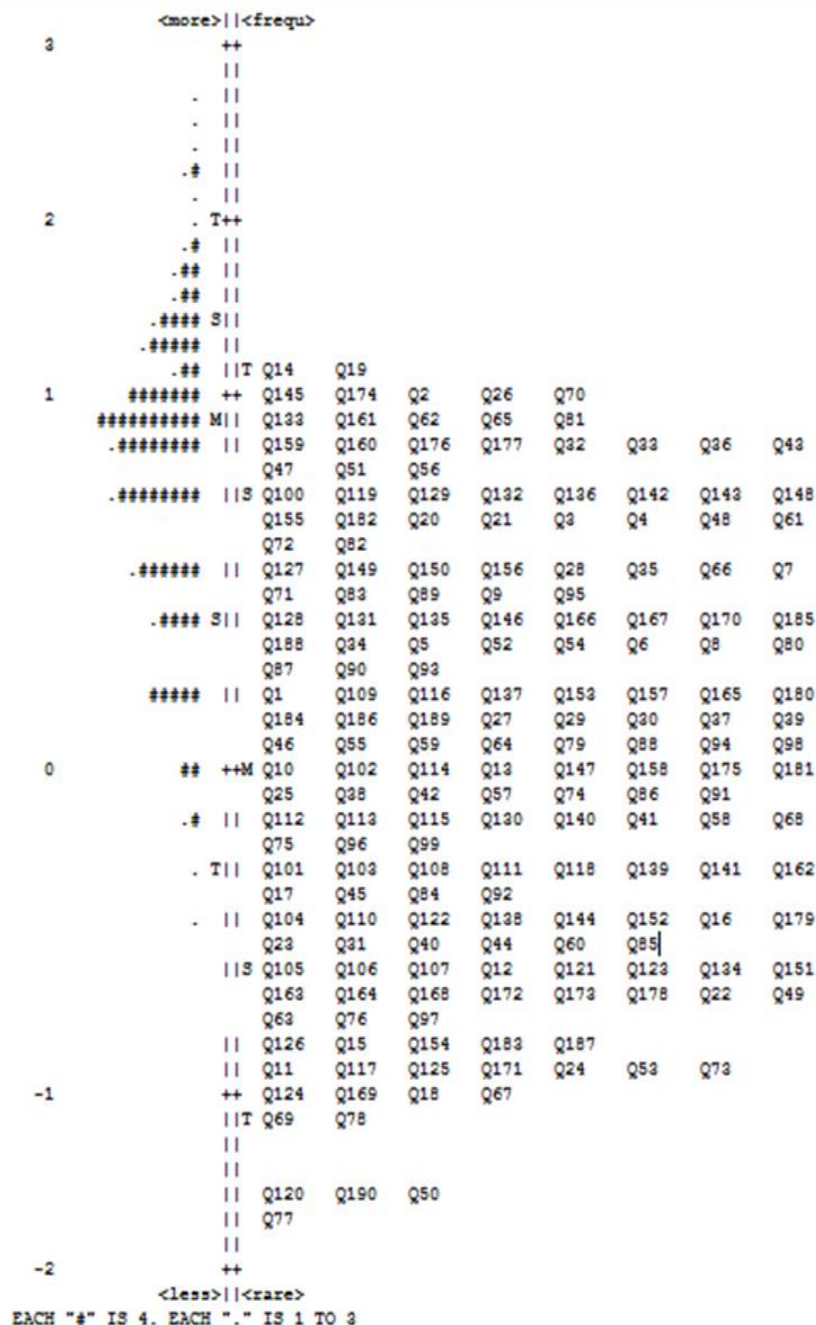
Rasch Item Analysis

A Rasch analysis uses a one-parameter logistic model to assess each item's psychometric quality. A Rasch analysis provides interval scale measurement on a common scale—that is, item and person scores are both expressed as logits (logarithm of an odds ratio). Logits provide more meaningful comparisons of the relative standing of each person and each item and a meaningful comparison of items **and** persons (see Graph 1 below). Logits have a mean of 0.0 and a standard deviation of 1.0. Graph 1 displays the distribution of the item logits on the right. Positive logits indicate a difficult item, that is, athletes make ratings that are lower for these items (hard to endorse). Negative logits indicate items that are rated higher (easy to endorse). The item logits range

is from +1.66 to -1.14. This distribution indicates that the MSA measures a wide range of the mental skills competence.

On the left side of the graph is the distribution of athlete's scores (n=312). The scores form a normal distribution. The range of person logits was from +2.77 to -.44 and the scores form, approximately, normal distribution. There are relatively more positive scores than negative scores. A positive person logit represents a high score and a negative person logit represents a low score indicating low mental skills competence.

Graph1



The person and item logit distributions are approximately normal and cover a wide range of the competence scale. The two distributions are not aligned as much as is desirable. The person logit distribution is somewhat above the item distribution. This may be explained by the fact that the ratings are self-ratings and athletes have a tendency to overrate their competence. These data include athletes with low validity scores (high social desirability responding). If the logit analysis was run without low validity index scores the distributions would align better. Additionally, the MSA is a multi-rater assessment and if data from others' ratings (e.g., coaches, assistant coaches, teammates) were included there would be less social desirability rating and the distributions would overlap to a greater extent. Finally, replacing items that are very easy to endorse (e.g., Q77, Q80, Q120, Q190) with items that are more difficult to endorse would also increase the alignment of the person and item distributions.

Construct Validity

A principal components factor analysis with a varimax rotation was performed with the seven social cognitive variables (n=312). Two factors had eigenvalues greater than 1.0. The percent of variance in the correlation matrix explained by the two factors was 81.15%. The factor loadings for the rotated matrix indicated that the two factors included one whose greatest loadings were related to Goals and the other whose significant loadings were related to Self. Mastery Approach had substantial loadings on both factors. These data largely support the construct validity of the self-management model (see Appendix) with the exception that open to feedback loaded only on the goal construct.

Eigenvalues for the two extracted factors.

Factors	Eigenvalue	Initial Eigenvalues	
		% of Variance	Cumulative %
1	2.9908	42.7	42.7
2	2.7437	39.2	81.9

Factor loadings for varimax rotation

Mental Skills	Goals	Self	h ²
Goal Implementation	.8972		.868
Goal Setting	.8984		.886
Personal Control		.8428	.839
Mastery Approach	.4840	.7419	.805
Open to Feedback	.8739		.809
Self-Worth		.9056	.740
Task Confidence		.7877	.788

Criterion-Related Validity

The MSA is based upon a mental skills model (see Appendix) that holds that the seven social-cognitive variables predict important outcomes such as the effort an athlete will make to perform well, the performance satisfaction an athlete experiences with his or her efforts and results, and the likelihood that an athlete will demonstrate strong leadership skills. To test these relationships (predictors and self-ratings of effort, satisfaction, and leader), stepwise regression analyses were run for each outcome and the seven social-cognitive variables. To further test the criterion-related validity of the MSA independent ratings by coaches who had not seen an athlete’s MSA results were obtained for three aspects of an athlete – student-athlete, athlete performance, and citizen-athlete. The items rated by the coaches to obtain the criterion measures are listed below. To test the relationships between the seven social-cognitive variables (predictors) and the three criterion measures (coach ratings), stepwise regression analyses were run for each criterion measure and the seven social-cognitive variables. The results of those analyses are listed below.

	Self Ratings			Coach Ratings		
	Effort 71%	Satisfaction 60%	Leader 49%	Student Athlete 35%	Athlete Performance 32%	Citizen Athlete 22%
Predictors						
Open to Feedback	X		X	X		X
Self-Worth	X	X				X
Task Confidence	X	X	X	X	X	
Goal Implementation	X				X	
Goal Setting			X		X	X
Personal Control	X	X	X	X	X	X
Mastery Approach	X	X		X		

- X = Statistically significant predictor ($p < .05$) of a criterion measure.
- Percents listed under criterion measures are the R^2 for the regression model.
- Predictor reliability ranged from .734 to .890.

Coach Ratings were provided for the following items:

Student-Athlete

1. When it comes to school grades, this athlete’s rank-in-class is about in the top 10%, 25%, 33%, or 50%.
2. Most people consider the athlete to be a successful student-athlete.

Athlete Performance

1. In the most recent season, the athlete achieved most of his/her targeted, realistic goals.
2. The athlete’s individual performance statistics are better than almost any other team member.
3. Compared to other athletes I know, this athlete’s performance statistics are in the top 10%, 25%, 33%, or 50%.

Citizen-Athlete

1. The athlete performs to his/her potential in games or competitive situations.
2. The athlete handles setbacks in his/her personal life better than most people I know.
3. The athlete has never violated any school rules or regulations.
4. The athlete is more mature and self-assured than most others of his/her age.

The results indicate that the seven social-cognitive variables (predictors) all contributed to explaining differences in outcome measures (effort, satisfaction, leader, student-athlete, athlete performance, and citizen-athlete). For example, six of the seven predictors (open to feedback, self-worth, task confidence, goal implementation, personal control, and mastery approach) had statistically significant regression coefficients in a stepwise regression for predicting effort. For coach ratings, all predictors contributed to the prediction of one or more of the three criterion measures. For example, athlete performance was predicted by task confidence, goal implementation, goal setting, and personal control. Overall these results provide strong support for the criterion-related validity of the MSA.

Discussion and Summary

The importance of mental skills to performance in sport and other life domains such as health, learning, and work has been well established. Less well established is the specific set of mental skills and how they impact specific and important outcome measures in sport. Further, there are few validated measures of mental skills for sport. This research examined psychometric qualities and the construct and criterion-related validity of the Mental Skills Assessment (MSA). The MSA is based upon self-management theory (Bandura, 1977). The MSA measures seven social cognitive variables goal setting, goal implementation, mastery approach, self-efficacy (task confidence), self-worth, locus of control (personal control), and openness to feedback. These seven social cognitive variables formed two constructs - self and goals - consistent with the self-management model. Open to feedback loaded on the goal construct only and mastery approach loaded on both constructs. Aside from these differences, all measures loaded as predicted by the self-management model.

The criterion-related validity of the MSA was established by the pattern of correlations among the seven social cognitive variables and three mental skills outcome variables (effort, performance satisfaction and leadership). Criterion-related validity evidence for the MSA was also established from a subset of data (n=45) in which criterion measures of student-athlete, athlete performance, and citizen athlete were obtained independently from the athlete's coaches and assistant coaches. These data indicated that all seven of the social cognitive variables predicted one or more of these three criterion measures.

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Appendix

Self-Management Model

