

Western Kentucky University

TopSCHOLAR®

Masters Theses & Specialist Projects

Graduate School

Spring 2020

Content Validity Evaluation of an Unnamed National Professional Organization Certification Exam

Sean Tate

Western Kentucky University, S54TATE@YAH00.COM

Follow this and additional works at: <https://digitalcommons.wku.edu/theses>



Part of the [Social and Behavioral Sciences Commons](#)

Recommended Citation

Tate, Sean, "Content Validity Evaluation of an Unnamed National Professional Organization Certification Exam" (2020). *Masters Theses & Specialist Projects*. Paper 3189.

<https://digitalcommons.wku.edu/theses/3189>

This Thesis is brought to you for free and open access by TopSCHOLAR®. It has been accepted for inclusion in Masters Theses & Specialist Projects by an authorized administrator of TopSCHOLAR®. For more information, please contact topscholar@wku.edu.

CONTENT VALIDITY EVALUATION OF AN
UNNAMED NATIONAL PROFESSIONAL ORGANIZATION
CERTIFICATION EXAM

A Thesis
Presented to
The Faculty in the Department of Psychological Sciences
Western Kentucky University
Bowling Green, Kentucky

In Partial Fulfillment
Of the Requirements for the Degree
Master of Science

By
Sean Michael Tate

May 2020

CONTENT VALIDITY EVALUATION OF AN
UNNAMED NATIONAL PROFESSIONAL ORGANIZATION
CERTIFICATION EXAM

Date Recommended May 8, 2020

Elizabeth
Shoenfelt

Digitally signed by Elizabeth
Shoenfelt
Date: 2020.05.08 12:50:00
-05'00'

Dr. Elizabeth Shoenfelt, Director of Thesis

Reagan Brown

Digitally signed by Reagan
Brown
Date: 2020.05.08 13:28:13
-05'00'

Dr. Reagan D. Brown

Katrina A.
Burch

Digitally signed by Katrina A.
Burch
Date: 2020.05.08 14:38:48
-05'00'

Dr. Katrina Burch

Cheryl D
Davis

Digitally signed by Cheryl
D Davis
Date: 2020.05.12
08:41:49 -05'00'

5/12/2020

Dean, Graduate School

Date

I dedicate this thesis to my wife, Missy, without her love and support I would not be where I am today. I also dedicate this work to my parents who have always supported me and pushed me to better myself.

TABLE OF CONTENTS

Introduction.....	1
Validation Methods.....	3
The Current Study.....	18
Method.....	20
Results.....	21
Discussion.....	27
References.....	31
Appendix A: Psychology Practitioner Job Task Analysis & Draft Test Specifications.....	35
Appendix B: Revised Psychology Practitioner Certification Exam Test Specifications ..	49
Appendix C: SME Domain: Unique Item Numbers and Corresponding Domain.....	56
Appendix D: SME KG: Unique Item Number and Corresponding KG.....	57
Appendix E: SME KG within Domain.....	59
Appendix F: Knowledge Group Original Consensus – Unique Item Number.....	60
Appendix G: Domain Original Consensus – Unique Item Number.....	61
Appendix H: KG and Domain Original Consensus – Unique Item Number.....	62
Appendix I: Number of items that need to be added or removed by KG.....	63

CONTENT VALIDITY EVALUATION OF AN
UNNAMED NATIONAL PROFESSIONAL ORGANIZATION
CERTIFICATION EXAM

Sean Tate

May 2020

65 Pages

Directed by: Elizabeth Shoenfelt, Reagan D. Brown, Katrina Burch

Department of Psychological Sciences

Western Kentucky University

There are three validation strategies utilized for evaluating tests, content validity, construct validity, and criterion-related validity. Each of these methods serves a different and unique purpose when it comes to the validation of tests. Content validity pertains to whether the content measured by the test is representative of the content domain.

Verifying content validity is a multi-step process involving conducting a job analysis, identifying content domains, creating test specifications, creating test items, and then conducting analyses to identify whether or not the test items are representative and in accordance with the test specifications. The three SMEs chosen for this study were current members of the Unnamed National Professional Organization and had scored in the top 10 percent of all test takers on the national certification exam. There were substantial differences in what the SMEs reported versus what the test specifications outlined in regard to Knowledge Group and Domain. There are 15 test items can be utilized to refine the exam and correct some of the identified deficiencies.

Introduction

Test validation is a process that many Industrial-Organizational (I-O) psychologists will have to endure in some capacity at some point during their career. Because of widespread utilization and reach, it is vital to understand different validation methods, what they are used for, and the processes in each validation method. Once an individual understands the differences and nuances of each validation method, they will be able to select the appropriate validation method for the test they are working with. Arguably, validation is one of the most important concepts when it comes to measurement. The Standards for Educational and Psychological Testing (1999), defines validity as “the degree to which accumulated evidence and theory support specific interpretations of test scores entailed by proposed uses of a test.” A measure or test that is not valid serves little purpose as it cannot be used to draw accurate or reliable inferences or make any comparisons. Guion (1998) stated that validity concepts further enhanced the meaning of test scores and offer support for interpretations based on scores and individuals with those scores. Sireci (1998) stated that when it comes to test validity there are two prevalent groups: one holds that there are three distinct and separate forms of validity, and the other holds that validity is a unitary concept that is centered around construct validity. In this paper I will examine validity and how the different forms are related and different. Additionally, this paper will serve as a content validation study for the certification exam of an unnamed national professional organization, hence forth referred to as the UNPO.

There are three strategies for providing evidence of validity. Criterion-related validity has to do with predictive inferences (i.e., do the scores on a given test predict

performance on a criterion?). There are two main questions answered by criterion-related validity. The first evaluates whether a relationship exists between a predictor and a criterion. The second question examines this relationship and determines the magnitude of the relationship (Guion, 1998). In mathematical terms, the criterion Y is a function of the predictor X . The first and arguably most important requirement of establishing criterion-related validity is choosing a well measured and sound criterion.

Another means by which evidence can be gathered is construct validity, which is utilized to determine if there is support that a test or assessment is actually measuring what it was intended to measure. Within construct validity, there are convergent and discriminant validities provide support for claims of construct validity. Construct validity involves identifying constructs (clusters of covarying behaviors) and measures for those constructs, and then comparing results from those measures to results from measures that are purported to measure the same construct (i.e., convergent validity) or different independent constructs (i.e., discriminant validity; Binning & Barrett, 1989). That is, evidence for construct validity exists if the measure is related to other measures of the same construct and unrelated to measures of constructs.

The final strategy for gathering evidence is content validity, which supports claims that the knowledges measured by the test are representative of the knowledges identified in the content domain. There are several steps involved in developing support for content validity. These include conducting a job analysis and developing test specifications. The job analysis is vital in identifying and defining the domain that is to be measured, and the test specifications act as a blueprint against which to compare the test. A job analysis is an examination of a particular job and the work (e.g., tasks and

responsibilities) and the worker (knowledge, skills, and abilities) associated with that job. Test specifications are a map of what knowledges will be included in a test, how many items should assess each knowledge, and the difficulty of the items. The degree to which the test matches the blueprint is the basis behind content validity (Cronbach, 1971). Additionally, when examining a test for content validity, the test should ideally only be measuring the test taker on the targeted domains; the test should not contain extraneous material (Sireci, 1998).

Validation Methods

History of Validity

Throughout the history of psychometrics and validity theory, a consensus has been reached that it is unlikely that practitioners will be able to prove that they are measuring what they are intending to measure (Sireci, 2007). Therefore, the goal of validation theory, psychometricians, and practitioners should be to accumulate evidence in support of a test for a particular use. This thought about psychological testing dates back to the early 1900's when test scores were being correlated with external criteria in efforts to support the utility of those tests (Sireci, 1998).

As mentioned, there have been two perspectives regarding validity. The first perspective was that there are three distinct types of validity: content, criterion, and construct; this perspective has been rejected. The current perspective contends that validity is a unitary concept. These two perspectives exist in part because early psychologists began to question the use of the validity coefficients obtained through correlational studies as evidence of a test's validity (Sireci, 1998). In 1931, Thorndike discussed the difficulty of providing evidence for relating the purpose of the test to the

chosen criterion. Additionally, Thorndike (1931) and other behavioral scientists expressed that it was too restricting to view validation from a purely statistical standpoint. The gradual realizations of the shortcomings of validity coefficients coupled with behavioral scientists experimenting with other methods to validate their tests led to the eventual development of the three validation methods currently utilized: construct, criterion, and content validity (Sireci, 1998). One key member in the progression of validation was P.J. Rulon. Rulon's (1946) instrument validation approach was centered around four major elements. The first element indicated that validity pertains to the specific use of an instrument. The second stated that a validity assessment must include a content assessment, and the third expressed that different instruments require different forms of validity evidence. The fourth and final element stated that instruments can be "obviously valid" and do not need to be studied any further (Rulon, 1946). Another notable researcher in the development of validation was Gulliksen (1950) who agreed that evaluating the content of the measure was of paramount importance when validating a measure, and that those evaluations should be empirical. He agreed with this concept so much that he promoted three empirical procedures that could be used to examine intrinsic or content validity. The first procedure was to evaluate test scores before and after individuals received training in the relevant content. The second procedure was to assess the interrater agreement in the judgments made by subject matter experts (SME) about the test content. The final promoted procedure was to assess the test in relation to tests that supposedly measure the same thing (Gulliksen, 1950).

Arguably, the most important outcome of this change in the conceptualization and practice of validity was that the appropriateness of the content of the test in relation to the

purpose of the testing must be considered and stressed. Topics in validity that have been developed as a result of changes to the way scientists view validity include the criterion problem, predictive and concurrent validities within criterion validity, convergent and discriminant validities within construct validity. In many cases the three validation methods overlap and have many commonalities in what they are assessing and their overall purposes, which will be discussed later. However, the majority of this paper will discuss and examine the three validities, their nuances, and their procedures as separate entities to better highlight to their distinct purposes.

Criterion-related Validity

Criterion-related validity is defined as how well a measure predicts performance or behavior in another situation (e.g., ACT scores and college GPA). The main purpose of this validity approach is to accumulate evidence to be able to make predictive inferences. Take for example the SAT or ACT, a score on either one of those measures should predict how well an individual will perform in college. According to Guion (1998), the criterion Y is a mathematical function of the predictor X . This hypothesis can be tested directly by conducting a criterion-related validation study (Guion, 1998). This method for gathering validity evidence specifies something that has been identified as worth predicting, the criterion Y , and a way to assess the predictor X . Time plays a pivotal role in the realm of criterion-related validity. This is clearly outlined in the predictive and concurrent methods that can be utilized to evaluate the validity of a measure.

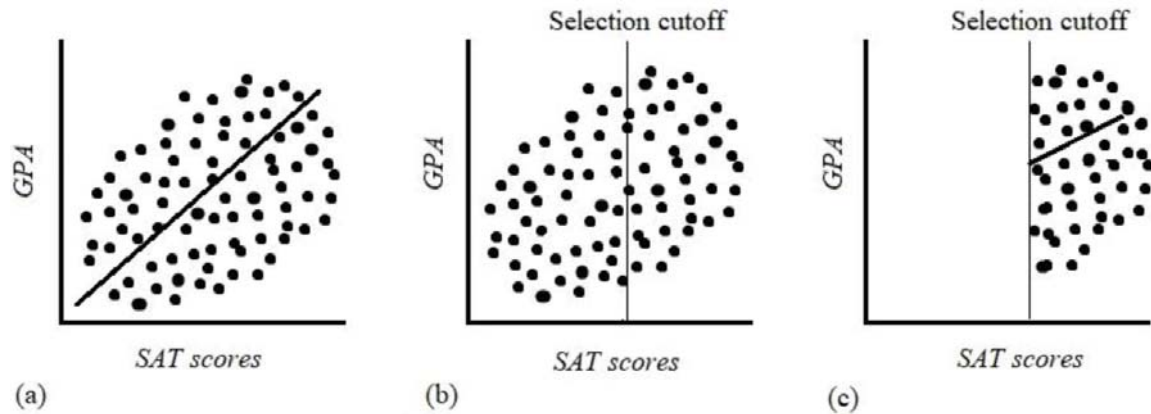
Predictive and concurrent validity are two ways in which a criterion-related validity study can be conducted. A study is predictive if the criterion is obtained after the test is administered, and a study is concurrent if the criterion is obtained at approximately

the same time that the test is administered (Cronbach & Meehl, 1955). The predictive model takes more time to complete than the concurrent model because in the predictive model the test is administered to individuals who are not currently a part of the context that the test is intended to measure. To explain this model, consider individuals who are applying for a job. The applicants would be given a test, individuals who earn scores that fall into a predetermined range would be selected for the job. After a predetermined amount of time has passed with those individuals working in their new roles, their job performance would be measured. Their test scores then would be correlated with their performance scores. The test would be considered valid if those who earned high scores on the test performed well on the job and those who earned low scores performed poorly on the job. For the concurrent model, the difference would be that the individuals who take the test would already be working in the job. The concurrent model can be conducted more quickly because the researcher does not have to wait to see how the individuals will perform on the job; they can simply look at their already completed performance reviews and correlate those with their test scores.

There are two major issues when conducting a criterion-related validity study: the criterion problem and range restriction. The criterion problem has to do with defining the criterion well both conceptually and operationally. When underlying constructs are poorly defined or left unspecified, it becomes difficult to make inferences and interpret the measures (Guion, 1998). Range restriction also is a prevalent issue when it comes to conducting criterion-related validity studies. Range restriction is associated with the truncation of one or more variables; when the variance of a variable is significantly less in a sample than the variance in a population, the sample coefficient will not accurately

represent the population validity (Guion, 1998). Range restriction dilutes the relevant population and, when present, significantly reduces the strength of the correlations thus making interpretations of the data difficult and inaccurate. A graphic representation of range restriction can be seen in Figure 1. In range restriction, there is a set of data (a) into which a selection cutoff is introduced (b). As can be seen (c), this significantly reduces the sample variance as compared to the population variance.

Figure 1
Range Restriction



There are several ways in which range restriction can be avoided. One way involves utilizing a random selection procedure in which applicants are randomly selected rather than basing selection on test scores. Another way incorporates the use of a second test. In this approach, individuals would take two tests: the one that is being validated and another test with established relevance. Selection would be based on the scores from the test with established relevance. This method would still result in some range restriction because it is not a random selection procedure; however, this results in indirect range restriction which has less significant effects on the data and study as a whole.

Construct Validity

In the minds of researchers who follow the unitary concept of validation, construct validity is seen as the primary, or all-encompassing, method for validation. In other words, construct validity is the basis for all test validation as it contains many facets and is a scientific process (Barrett, 1992). The purpose of construct validity is to gather evidence for inferences about a measure's meaning. A researcher may consider construct validation when they believe none of the relevant criterion available are fully valid (Cronbach & Meehl, 1955). Constructs in the psychological sense are defined as labels for groups of covarying behaviors (Binning & Barrett, 1989). In the development of construct validity, two approaches emerged: convergent and discriminate validities. These two sub-validities coupled with a Multi-Trait Multi-Method (MTMM) matrix provide evidence for claims of construct validity.

Convergent validity refers to comparing the test under examination to other tests that appear to be valid measures of the construct you are targeting. In convergent validation, individuals take the test that the researcher is attempting to validate and also take other tests that are known measures of the same construct. The scores are then correlated and, if all of the tests are mono-trait and hetero-method, the correlations should be significantly different from zero in addition to being sufficiently large (Bagozzi, Yi, & Philips, 1991). To establish discriminant validity, the individuals also take tests using multiple methods that are known measures of other constructs. Those scores are then correlated and should ideally result in correlation coefficients of zero or coefficients that are sufficiently low. This follows the logic that tests that measure the same construct should correlate well with each other even when administered in different methods and

tests that measure different constructs should not correlate well. All of these correlation coefficients are organized in a table known as a Multi-Trait Multi-Method matrix (Figure 2). The convergent validity coefficients are located diagonally outside of the triangles and the discriminant validity coefficients are located in clusters inside of the triangles. Additionally, the measure reliability is located in the parenthesis along the top diagonal line.

Figure 2
Multi-Trait Multi-Method Matrix

	Method 1			Method 2			Method 3		
Traits	Trait 1	Trait 2	Trait 3	Trait 1	Trait 2	Trait 3	Trait 1	Trait 2	Trait 3
Method 1	(.90)								
	.10	(.90)							
	.10	.10	(.90)						
Method 2	.50	.12	.12	(.80)					
	.14	.50	.12	.20	(.80)				
	.14	.14	.50	.20	.20	(.80)			
Method 3	.50	.05	.05	.40	.03	.03	(.85)		
	.04	.50	.05	.02	.40	.03	.30	(.85)	
	.04	.04	.50	.02	.02	.40	.30	.30	(.85)

Note. Reprinted from “Multitrait–multimethod matrix” (Eid, 2010).

Content Validity

In the early 1950s, as theories and concepts of validity were emerging and developing, a need to clearly define and summarize the new conceptualizations of validity also was emerging (Sireci, 1998). One of the first researchers to undertake this task was Cureton, whose work was one of the earliest mentions of content validity. His validity chapter in *Educational Measurement* summarized content validity utilizing newer concepts, while also referencing older notions including correlations with external

criteria (Linguist, Anderson, Chauncey, Conrad, Cook, & Cureton, 1955). In addition to covering topics such as relevance and reliability within validity, Cureton also highlighted a need for the curriculum or content to be relevant in certain circumstances. Over the years, the concept of content validity has been defined and then challenged by numerous people and agencies. However, in addition to these challenges, it has also seen growth and acceptance.

Due to the recent emergence and growth of the content validity concept, a panel was commissioned in 1951 by the American Psychological Association (APA). This panel was tasked with proposing test standards to be utilized for the construction, use, and interpretation of psychological tests (Sireci, 1998). Despite the fact that this APA committee recognized content validity, they also limited its relevance while simultaneously governing it with a strict set of standards. The definition and realm of functional use of content validity changed several times between 1951 and 1954. The importance of content validity was continuing to increase as it was now also seen as relevant to industrial and personnel testing (Sireci, 1998). Unfortunately, caveats pertaining to perceived limitations surrounding content validity remained prevalent. The 1954 *Technical Recommendations* publication popularized the idea that there were three separate, but equal types of validity. However, this idea was not accepted by all researchers, and the controversy surrounding content was prevalent. Over the years, many researchers including Cronbach and Meehl (1955), Guion (1977), and Murphy (2009) would express their concerns and distain with various aspects of content validity.

Murphy (2009) claimed that content validation has many uses, however, validity is not one of them. Murphy identified three methods in which content validity can be

demonstrated. The first method he identified was when the test is representative of the work domain. The second was when the test measures knowledge, skills, and abilities (KSA) that are required for the job. The final method identified involved utilizing subject matter experts (SME) to judge whether or not, and the degree to which, the KSAs required to perform well on the test overlap with the KSAs required to perform well on the job (Murphy, 2009).

According to these three methods, claims that a test will be a good predictor of future performance revolves around the extent to which the content of the test and the content of the job overlap (Murphy, 2009). The main claims made by Murphy are that this overlap, or lack of overlap, actually has minimal effect on whether or not the test will predict future job performance, and that there is minimal theoretical and empirical support that content validity influences criterion-related validity. He claims that a well-developed measure will most likely be a good predictor of performance regardless of its match to job content.

There are several reasons why Murphy claimed that content validity has no use as a method for validating selection tests: a lack of supporting evidence, and consistent ineffectiveness of content matching tests (Murphy, 2009). Empirical studies that examine the relationship between the congruence of test content and job content and the validity of those tests as predictors of future performance are few and far between. Considerable research has examined the Armed Services Vocational Aptitude Battery (ASVAB) and the General Aptitude Test Battery (GATB), and the same conclusions were reached: both were generally good predictors of performance; however, regardless of whether or not

there was a match between test content and job content, there was no meaningful difference in the validities of the tests.

Additionally, Guion explained misguided uses of the term content validity, stating that when people describe content validity, they are actually describing either special cases of construct validity or operational definitions and not validity at all (Guion, 1977). In Guion's 1978 article *Content Validity in Moderation*, he explained that many cases of content validity actually have little to do with validity and instead deal with content-related test construction. Furthermore, Guion detailed that just because the test content is representative of the content domain, that does not necessarily equate to validity (Guion, 1978). Despite the claims and arguments made by Murphy and several other researchers, many in the scientific community have defended the use of content validity and have provided support refuting the claims.

The claim that content matching is not evidence of validity has been vehemently refuted by many researchers. Thornton (2009) referenced the 1999 *Standards* saying that for arguments of validity to be sound, they need to incorporate various strands of evidence and should include all relevant evidence, including evidence of content matching. These various strands of evidence can be found within the processes of a content validity study; these studies involve thorough analyses of the job and KSAs, meticulous test development to include eliminating unfair content, reliability in the form of inter-rater agreement, and SME confirmations that the test content and responses match the job (Thornton, 2009). Thornton provided an example of content validity being probative by stating that one could infer that scores on a test of speed and accuracy in data entry would be predictive of those tasks in a work environment (Thornton, 2009).

The idea that when test content is matched with job content has little effect on whether a test will be a good predictor of performance has been put to the test in several studies. Further evidence that content matching matters and provides evidence of validity was provided by Tan (2009). Tan highlighted a study that demonstrated that the validity of job knowledge tests was higher ($r = .31$) when the test contents matched the job contents as compared to those with moderate ($r = .17$) or low ($r = .16$) job and test content overlap (Tan, 2009). Additionally, similar results of increased validity for predictors were demonstrated with situational and job-related interviews compared to psychological interviews, and for situational judgement tests based on job analysis compared to situational judgment tests not based on job analysis (Tan, 2009).

Refining the Concept of Content Validity. Two additional proponents of content validity, Kim and Oswald (2009), attempted to further clarify the context and concept of content validity. They proposed that the purpose of content validity is to identify constructs and construct relationships that are relevant to the selection of personnel, and to measure how selection and criterion measures content is representative of the aforementioned constructs (Kim & Oswald, 2009). This is a broad process that involves theories, research, and job-related information. One of the practical values of the content validation processes is that it can reduce selection error; predictor and criterion measures that are psychometrically sound and job-relevant are able to be introduced into personnel selection systems. Kim and Oswald (2009) also mentioned that another benefit of content validity is that while gathering evidence for content validity, people may be less likely to overlook other constructs such as personality and motivation that have demonstrated ability to predict several performance criteria.

A common theme in the writings of those who critique content validity seems to be a confusion of meanings or a confounding of terms. The way that content validity is defined in literature on selection does not align with the current thinking on validity (Highhouse, 2009). There seems to be a thought that through content validity the test will measure the job, when actually they are measuring attributes of job candidates. More specifically, researchers should be measuring attributes that have been deemed as important to performance on the job (Highhouse, 2009). When talking about content validation, it should be applied to test items that measure the specified attribute(s), and their representativeness and relevance to the attribute(s). Additionally, there seems to be confusion when discussing job relatedness and content validity. As previously mentioned, content validity refers to items and their relevance and representativeness in relation to an attribute, whereas job relatedness refers to a predictive relationship between the test and job performance or the relationship between the attributes on the test and the attributes involved in performance of the job (Highhouse, 2009). Another issue where there seems to be a disconnect is the relationship between content validity and criterion-related validity in relation to personality tests.

More recent definitions and approaches to content validity have been proposed in an effort to further clarify the concept. Haynes, Richard, and Kubany (1995, p. 238), summarized many definitions into this: “content validity is the degree to which elements of an assessment instrument are relevant to and representative of the targeted construct for a particular assessment purpose.” One key element of content validity is face validity. Face validity refers to whether or not a measure looks reasonable to those who would take it and that the test appears to be representative of the domain, that is, face validity is

related to the acceptance of the measure. Face validity is not tested or confirmed statistically; in most cases SMEs judge if a test is face valid (Bannigan & Watson, 2009). The importance of face validity lies in that the acceptance of a test can affect the utility of the test (Bannigan & Watson, 2009). Content validation methods can provide many things including information about data obtained from measures, related inferences, and the measure itself. Additionally, content validity is both a quantitative and qualitative process (Haynes, Richard, & Kubany, 1995). Due to the dynamic nature of constructs, there are four implications: content validity cannot be thought to remain stable, content validity should be periodically re-examined, inferences from unrevised assessments may be erroneous (Haynes, Richard, Kubany, 1995). Future directions for content validity that could help in decreasing its misuse are the incorporation of validation transportability and synthetic validity. These two methods utilize correlational evidence further than traditional methods while not lacking in job content (Tonowski, 2009). Transportability validity utilizes similarities between the original situation being validated and future situations. Synthetic validity involves taking aspects of tests for specific job elements and tasks and combining them to create a new test to be used for a new job or tasks that share most elements (Tonowski, 2009). Furthermore, Haynes, Richard, and Kubany (1995) stated that content validation should not just be limited to examining new measures; it should also be used to re-examine measures that had previously been considered content valid.

Content Validity and Personality Tests. Murphy (2009) claimed that “the jury is still out” on the question of whether or not content validity has any effect in the context of personality tests. Davison and Bing (2009) argued the frame-of-reference effect found

in personality testing demonstrates that increases in content validity for personality tests would also increase the tests' criterion-related validity. Criterion-related validity and the reliability of personality tests can see increases when the content of the test items is altered to contextualize them to specific situations (Davison & Bing, 2009). Furthermore, O'Neill, Goffin, and Tett (2009) discussed how personality trait scale validities vary across jobs and that the use of content validation methods can aid in identifying traits that are more job relevant. These two rebuttals to Murphy's (2009) article provide evidence of the usefulness and credibility of content validity outside of conventional scenarios. Along a similar line of thought, Tippins (2009) was critical of criterion-related validity for individual psychological assessments (IPAs). Tippins expressed that in corporate settings it is difficult to conduct criterion-related validity studies of IPAs because of small sample sizes, varying job requirements, and the criterion problem. Tippins conceded that criterion-related validity studies are useful in establishing job relevance, predictive ability, and cut-off scores; however, similar validity evidence can also be gathered via content methods and that a properly conducted content validity study provides better justification for inferences than a poorly conducted criterion-related validity study.

Content Validity in Test Development. The process of conducting a content validity study and gathering evidence revolves around conducting a job analysis, defining the content domain, the creation of the test, and verifying that the test content overlaps with the job content. The focus of a job analysis should be on work behaviors and any tasks associated with them (Clifford, 1994). Conducting a job analysis enables a researcher to identify job tasks and duties, how often they are performed, when they are

performed, the conditions under which they are performed, and relevant knowledge, skills, and abilities. This can be accomplished with several methods, including observations, interviews, and surveys. With the resulting job analysis information, the content domain of a job can be clearly articulated and defined, which is a major step early in the content validity process. Additionally, this collection of information can be used to create a job description which can be used to set job requirements (Morgeson & Campion, 2000). The content domain is a compilation of all of the behaviors involved in a job or the activity that is being studied. When the tasks are identified, it is important to verify those tasks. This can be accomplished by having other incumbents in the job, superiors, and/or SMEs review the tasks and duties and rate them for criticality or importance. This will identify the time for completion, frequency, difficulty, and consequence of error for each task (Clifford, 1994). SMEs can identify the major facets of their specific occupation that can later be used in the creation of tests (American Educational Research Association, 1999). Once all of the tasks, behaviors, and KSAs have been identified, verified, and compiled, the test specifications can be created.

When developing a content valid test, a statement of purpose needs to be created along with identifying the content domain being measured. These two items then need to be transformed into a framework for the test, which will detail the extent of the domain that is to be measured (American Educational Research Association, 1999). What the test is meant to measure, the extent to which it is measured, and what inferences can be drawn from scores (i.e., the test objectives and outcomes) will be decided by the job analysis and SME judgements. It can be helpful to utilize a tool known as a table of specifications during this stage. This table lays out the major content areas on one margin and cognitive

processes on the other margin. Within this matrix, weights are assigned that indicate the relative emphasis of each area. The cell weights should total to 100 with each weight indicating a percentage of the total item count for the test (Crocker & Algina, 1986). Additionally, the format, length, timing, response format of the test will need to be identified and selected (Gavin, 1977). The next step is to begin creating pools of test items that coincide with the outline of the test content specifications. All of the test items should then be carefully reviewed with some items being chosen for inclusion on the test. At this point, the test should be created along with an official answer key (Crocker & Algina, 1986). Then in the content validation process, a select group of SMEs would make judgements about the test items categorizing them into the knowledge and domain areas that were identified during the job analysis. Additionally, test instructions need to be created and the test be administered consistently to all test takers to help ensure its validity and reliability.

The Current Study

In 2015, the UNPO decided to develop a certification program for psychology practitioners. Two psychometricians were contracted to lead the certification exam development process. A Job Task Analysis (JTA; i.e., a job analysis) was conducted for the role of psychological practitioner. The JTA identified six Task Domains that were used in the development of a certification exam. Each domain was weighted to represent its importance in the performance of the job of psychology practitioner. The six Task Domains and their respective weights may be found in Appendix A. Additionally, 38 knowledges were identified; however, the knowledges were not weighted, and the

number of knowledges linked to each task within a domain was not restricted. Items were developed at the domain level, an exam was created, and the exam was then put into use.

Several issues were identified in the original JTA that needed remediation to help ensure the test specifications and, thus, the basis for evaluating the content validity of the certification exam, were sound. Two primary problems were an inconsistent level of specificity in identifying tasks within a domain and failing to limit the number of knowledges linked to each task within a domain. An I-O Psychologist led a three-step process to remediate these issues. The process included reducing the 38 knowledges into 15 Knowledge Groups, establishing the weight of each Knowledge Group within each domain, and then revising the certification exam's test specification. Task Domains and component tasks were retained from the original JTA. Weights for a given Task Domain also were retained from the original JTA and reflect the proportion of the Certification Exam that should assess that domain. That is, the domain weight reflects how many test items out of 100 items should assess a given domain. The task domain weights across all six domains sum to 100, reflecting the 100 items on the Certification Exam.

Subject Matter Experts (SMEs) participated in a systematic quantitative process to weight the Knowledge Groups for each Task Domain. Weights for the Knowledge Groups within a Task Domain sum to the Task Domain weight and reflect, within a Task Domain, how many test items should assess a given Knowledge Group. The weights of all Knowledge Groups across all Task Domains sum to 100, again reflecting the 100 items on the Certification Exam. The Revised Test Specifications and the 15 Knowledge Groups and their respective weights may be found in Appendix B.

In this thesis, I assessed the content representativeness of the Certification Exam using the Revised Test Specifications as the targeted exam content. This content validation study was conducted in an attempt to provide evidence that the knowledge measured by UNPO certification exam is representative of the knowledge required to perform the PP job. That is, evaluated the evidence that the content of the certification exam is representative of the content of the job as defined by the Revised Test Specifications. Additionally, the National Commission for Certifying Agencies (NCCA) requires evidence of exam validity for the UNPO certification program to be accredited. The UNPO chose to use a content validation strategy to support their certification exam.

Method

Participants

Three current members of the UNPO served as SMEs. These individuals were chosen to serve as SMEs because they scored in the top 10 percent of all test takers on the national certification exam and, as such, should be knowledgeable of the content assessed by the exam. Additionally, they also were considered to be conscientious and trustworthy. All three participants in this study were Caucasian females, hold Ph.D.'s in psychology, and work as either a professor/associate provost, assistant professor, or consultant for the United States government. The average work experience of the SMEs is 14.33 years ($SD = 4.04$).

The number of SMEs was limited to three for two reasons. First is a concern for test security. The exam is the national certification exam for the UNPO; there currently are no alternate forms. Security of the test items was of paramount importance. Accordingly, each SME was required to sign a confidentiality agreement prior to

completing any portions of the workshop. Second, potential SMEs needed to attend the UNPO annual conference where the workshop was held. Participating in the SME workshop required a commitment of a large block of time that otherwise could be used to attend conference sessions or networking. Some may have been reluctant to forfeit conference time to participate pro bono in the workshop.

Procedure

At the annual UNPO conference, the IO psychologist conducted a workshop with the three SMEs who used their knowledge and professional judgment to evaluate each test item to determine the Task Domain and Knowledge Group being assessed by the item. To help ensure the SMEs understood the task, they independently evaluated items on the first page of the worksheet; then the I-O psychologist led a discussion of each item until consensus was reached by the group on the Domain and Knowledge Group for that item. Each SME then independently identified the Domain and Knowledge Group for the remaining test items. When the SMEs finished, the I-O psychologist led the SMEs in a discussion of each item until they reach consensus on the most representative Domain and Knowledge Group for each item. It took approximately five hours to complete the process of categorizing 100 test items and 15 trial test items. The Domain and Knowledge Group data from the SME workshop were entered into a data base with each test item identified by a unique item number.

Results

The ultimate objective of the UNPO is to revise the exam based on item-level psychometric properties; bad items will need to be replaced. The UNPO will need to know what Domain and Knowledge Group the replacement items will need to represent.

To provide the necessary data to the UNPO to accomplish their objective, three primary analyses and three secondary analyses were conducted. The three primary analyses were:

- 1) A comparison of SME versus Test Specification Domain for each item.
- 2) A comparison of SME versus Test Specification Knowledge Group for each item.
- 3) A comparison of SME versus Test Specification Knowledge Group within Domain for each item.

The additional, secondary analyses examined the original consensus on (a) Knowledge Group alone, (b) Domain alone, and (c) Knowledge Group and Domain together.

A master spreadsheet was created in Excel by graduate students in a master's level I-O Psychology program. The students entered the Domain and Knowledge Group classifications that the SMEs provided for each item.

Analysis 1: Comparison of SME Domain and Test Specification Domain

Analysis 1, a comparison of SME Consensus Domain and Test-Specification Domain, was calculated by sorting the exam items in an Excel spreadsheet based on Domain. A separate spreadsheet was created for each individual Domain (1-6). The exam items within each SME Domain were counted and compared to the item total from the master spreadsheet.

The results from Analysis 1 revealed that the SMEs categorized six items into Domain 1; eighteen items into Domain 2; twenty-three items as into Domain 3; thirty-five items into Domain 4; nine items into Domain 5; and nine items into Domain 6. The unique item numbers and their corresponding Domain can be found in Appendix C.

The test specifications indicated there should be thirteen items in Domain 1; sixteen items in Domain 2; twenty items in Domain 3; thirty-five items in Domain 4; eleven items in Domain 5; and five items in Domain 6. The comparison between the SMEs categorizations and the test specifications are presented in Table 1.

Table 1
Domain Comparison of SME categorizations to Test Specifications.

	Domain 1	Domain 2	Domain 3	Domain 4	Domain 5	Domain 6	Sum
Test Specifications	13	16	20	35	11	5	100
SME	6	18	23	35	9	9	100
Difference	-7	+2	+3	0	-2	+4	Sum ABV =[18]

Analysis 2: Comparison of SME Knowledge Group and Test Specification

Knowledge Group

Analysis 2, a comparison of SME Consensus Knowledge Group and Test-Specification Knowledge Group, was calculated by sorting the exam items based on Knowledge Group. A separate spreadsheet was created for each individual Knowledge Group (A-O). The exam items within each SME Knowledge Group were counted and compared against the item total from the master spreadsheet. The results for Analysis 2 are summarized in Table 2. The results indicate that, according to the SME consensus, the exam missed the test specifications for knowledge group by 58 items; that is, 42 items match the test specifications in terms of the number of items per knowledge group. The unique item numbers and their corresponding Knowledge Group can be found in Appendix D.

Analysis 3: Comparison of SME versus Test Specifications for Knowledge Group within Domain

Analysis 3, a comparison of SME versus Test-Specifications for Knowledge Group within Domain, was calculated by first totaling the number of items for each Knowledge Group within each individual Domain. To calculate their percentages, the number of items for each Knowledge Group was then divided by 100 (representing the

**Table 2
Knowledge Group Comparison of SME categorizations to Test Specifications**

Knowledge Group	Test Specifications	SMEs	Difference
A	8	11	+3
B	11	8	-3
C*	3	2	-1
D	6	5	-1
E	8	6	-2
F	8	3	-5
G*	9	31	+22
H*	3	0	-3
I	3	4	+1
J	11	6	-5
K	2	0	-2
L*	11	7	-4
M*	3	4	+1
N	2	4	+2
O	12	9	-3
Total/sum	100	100	Sum = 0; Sum ABV= [58]

Note. * one item not accounted for in the JTA.

total item count for the test). This allowed for the number of items for each Knowledge Group to be compared across each Domain. In Appendix E, the number of items that should allocated for each Knowledge Group within each Domain (i.e., test specifications) are compared to SME consensus.

Analysis A: Examination of SME Consensus for Knowledge Group

Analysis A, an examination of original SME consensus for Knowledge Group, was calculated by examining the Knowledge Group categorizations for each item. The items on which all of the SMEs agreed (i.e., there was original consensus) received a marking indicating said consensus. Items for this analysis were only included in the total if they had not also been found to have original consensus on Domain as well. Thus, Analysis A examined items for original consensus on Knowledge Group only. The analysis revealed that, of the 100 items, the SMEs reached consensus on 25 of the items. Specifically, there were three items in Knowledge Group A, two items in Knowledge Group C, fifteen items in Knowledge Group G, two items in Knowledge Group I, and one item each in Knowledge Groups M, N, O. Appendix F displays the unique item number for the items in which original consensus was reached for each Knowledge Group.

Analysis B: Examination of SME Consensus for Domain

Analysis B, an examination of original consensus for Domain, was calculated by examining the Domain categorizations for each item. The items on which all of the SMEs agreed received a marking indicating original consensus. Items for this analysis were only included in the total if they had not also been found to have original consensus on Knowledge Group as well. Analysis B found that the SMEs reached consensus on 20 out of the 100 items. Specifically, there were two items in Domain 1, four items in Domain 2, one item in Domain 3, twelve items in Domain 4, zero items in Domain 5, and one item in Domain 6. Appendix G displays the unique item number for the items in which original consensus was reached for each Domain.

Analysis C: Examination of SME Consensus for Both Knowledge Group and Domain

Analysis C, an examination of original SME consensus for both Knowledge Group and Domain together, was calculated by examining the items that received a marking indicating original consensus on both Knowledge Group and Domain and totaling said items. Of the 100 items, 23 were found to have original consensus on both Knowledge Group and Domain. These items may be found in Appendix H.

Trial Item Results

In addition to the 100 scored items on the exam, there were 15 trial items. Analyses 1, 2, and 3 and Analyses A, B, and C were performed on the 15 trial items. Results are as follows. Analysis 1: one item was categorized into Domain 1, three items into Domain 2, two items into Domain 3, five items into Domain 4, one item into Domain 5, and three items into Domain 6. Analysis 2: two items into Knowledge Group A, two items into Knowledge Group B, one item into Knowledge Group D, two items into Knowledge Group E, two items into Knowledge Group G, one item into Knowledge Group J, two items into Knowledge Group L, one item into Knowledge Group M, one item into Knowledge Group N, and one item into Knowledge Group O.

Analysis A: one item reached original consensus based only on Knowledge Group. Analysis B: five items reached original consensus based only on Domain. Analysis C: four items reached original consensus based on both Knowledge Group and Domain. Each of the 15 test items their chronological number, unique item number, Domain, and Knowledge Group are displayed in Table 3.

Table 3
Test Items

Chronological Number	Unique Number	Knowledge Group (SME)	Domain (SME)
21	528775-4	O	1
23	528777-48	D	6
28	528889-148	B	2
30	528903-215	B	2
36	528913-29	M	4
43	528922-64	N	2
45	528924-87	A	4
51	528930-200	A	3
60	528978-6	J	4
86	529023-192	L	5
91	529035-224	G	3
93	529037-287	L	4
95	529039-289	G	4
109	529054-287	E	6
115	529060-258	E	6

Discussion

This thesis examined the content validity of a national certification exam. A series of analyses were conducted to exam the content representativeness of 100 scored test items in terms of Domain and Knowledge Group. While conducting analysis A, which was an examination of original consensus for Knowledge Group alone, it was revealed that the SMEs did not reach original consensus on any items falling into Knowledge Group H or Knowledge Group K. Additionally, Knowledge Group G had the most items reaching original consensus with 18 items. As was reported previously, 25 items reached original consensus on only Knowledge Group; however, when the consensus on Knowledge Group and Domain was considered, there were 49 items that reached original consensus on Knowledge Group in total. Analysis B revealed that Domain 4 had the most items reaching original consensus with 20 items. There were 20 items that reached original consensus on Domain only; however, when items that reached consensus on

Knowledge Group within Domain were considered, there were 44 items that reached original consensus on Domain in total.

In Table 1, which compares SME categorizations of Domain to Test Specifications of Domain, the sum of the absolute value of the differences was 18. This is a substantial difference as it indicates that, whether adding or removing items, a total of 18 changes needs to be made for the test to align with the test specifications at the Domain level. In Table 2, which compares SME categorizations of Knowledge Groups to Test Specifications of Knowledge Groups, the sum of the absolute value of the differences was 58. This is a substantial difference as it indicates that more than half of the test items need to be changed for the test to align with the test specifications.

Difference Mitigation

Analysis 3, which was a comparison of SME versus Test-Specifications for Knowledge Group within Domain, revealed differences in the Knowledge Groups within the Domains. The Test Specifications are written as the number of items assessing Knowledge Group *within* Domain. As such, the alignment of actual test items to Test Specifications should be evaluated at this combined level. To minimize these differences and to have items better align with the test specifications, items need to be removed and or added to the Domains based on each Knowledge Group weight within that Domain. The number of items that need to be added or removed by Knowledge Group can be seen in Appendix I.

Limitations

A potential limitation of this study was that it employed just three SMEs to identify which Domain and Knowledge Group was best represented by each item.

Although more SMEs would lengthen the time required to complete this study, it likely would also provide more accurate identification of the most appropriate Domain and Knowledge Group for each item. Another potential limitation to this study is that the original job task analysis that was used to create the test specifications and the test was flawed. This has the potential to be a limitation because the flaws in the job task analysis could have skewed the test specifications. One flaw was that the tasks for the Knowledge Groups were defined at inconsistent levels of specificity across the Domains. Additionally, the Knowledges assigned to each Domain and Task within Domain were not weighted. The lack of weighting Knowledges suggests that no one Knowledge Group has more or less value than any other Knowledge Group within a given Domain, which is unlikely. However, the flaws were noted by the I-O Psychologist and the test specifications were revised in an attempt to mitigate or minimize these problems.

Conclusion

The importance of this content validity study was to gather evidence that the knowledge being measured by the certification exam is representative of the knowledge needed to effectively perform the duties of an applied sport psychologist. If the revised JTA was thorough and accurate and the SMEs provided unbiased and accurate responses, then the data that were gathered and results of the analyses provide evidence in support of content validity.

Although the differences between the SMEs categorizations for Knowledge Groups and Domains and the test specifications were significant, these differences can be addressed by adding items where there were too few items and removing items where there were too many. The 15 unscored test items may be used to address at least some

of the items that need to be added. Additionally, if items were misclassified, they could potentially be used to aid in minimizing the previously mentioned differences.

The differences between the test specifications and Domain and Knowledge Group representation on the exam should be as close to zero as possible. These adjustments will increase content representativeness of the exam and will strengthen the justification behind utilizing this test for the purpose of national certification. Validity and legal defensibility are directly related. The Uniform Guidelines for Employee Selection Procedures (EEOC, 1978/1981) indicate that if a selection test has disparate impact against a group protected by EEO laws, the test must be job related and consistent with business necessity. It is likely that the certification credential awarded upon passing the national certification exam will be required by some employers. Accordingly, and consistent with sound personnel practice, it is important that the UNPO has validity evidence for the exam. This thesis provides some evidence of content validity, but also indicates there is substantial room for improvement in terms of proportional representation of exam item content matched to the test specifications.

References

- American Educational Research Association, American Psychological Association, & National Council on Measurement and Education. (1999). *Standards for educational and psychological testing*. Washington, D.C.: American Educational Research Association.
- Bagozzi, R., Yi, Y., & Lynn P.W. (1991). Assessing Construct Validity in Organization Research. *Administrative Science Quarterly*, 36, 421-458.
- Bannigan, K., & Watson, R. (2009). Reliability and validity in a nutshell. *Journal of Clinical Nursing*, 18, 3237-3243.
- Barrett, G. V. (1992). Clarifying construct validity: Definitions, processes, and models. *Human Performance*, 5, 13-58.
http://dx.doi.org/10.1207/s15327043hup0501&2_2
- Binning, J. F., & Barrett, G. V. (1989). Validity of personnel decisions: A conceptual analysis of the inferential and evidential bases. *Journal of Applied Psychology*, 74, 478-494.<http://dx.doi.org/10.1037/0021-9010.74.3.478>
- Clifford, J. P. (1994). Job analysis: Why do it, and how should it be done? *Public Personnel Management*, 23, 32340. <https://doi.org/10.1177/009102609402300211>
- Crocker, L. M., & Algina, J. *Process of test construction. Introduction to Classical and Modern Test Theory*, Orlando, Holt, Rinehart, and Winston, 1986.
- Cronbach, L. J., & Meehl, P. E. (1955). Construct validity in psychological tests. *Psychological Bulletin*, 52, 281-302. <http://dx.doi.org/10.1037/h0040957>

- Cronbach, L. J. (1971) Test validation. in R. L. Thorndike (ed.), *Educational Measurement, 2nd ed.* (American Council on Education, Washington, DC), pp. 443-507.
- Davison, H. K., & Bing, M. N. (2009). Content validity does matter for the criterion-related validity of personality tests. *Industrial and Organizational Psychology, 2*, 501-503.
- Equal Employment Opportunity Commission (1978/1981). *Uniform Guidelines on Employee Selection Procedures*. <http://www.uniformguidelines.com>
- Eid, M. (2010). Multitrait–multimethod matrix. In N. J. Salkind (Ed.), *Encyclopedia of research design* (pp. 851-855). Thousand Oaks, CA: SAGE Publications, Inc. doi:10.4135/9781412961288.n255
- Gavin, A. T. (1977). Guide to the development of written tests for selection and promotion: The content validity model. *Technical Memorandum 77-6*. Personnel Research and Development Center, United States Civil service commission. Washington, D.C.
- Guion, R. M. (1977). Content Validity—The source of my discontent. *Applied Psychological Measurement, 1*, 1-10.
<https://doi.org/10.1177/014662167700100103>
- Guion, R. M., (1978). “Content validity” in moderation. *Personnel Psychology, 31*, 205-213
- Guion, R. M., (1998). *Assessment, measurement, and prediction for personnel decisions*. Mahwah, New Jersey: Lawrence Erlbaum Associates, publishers.
- Gulliksen, H., (1950). 'Intrinsic validity', *American Psychologist, 5*, 511-517.

- Haynes, S. N., Richard, D. C. S., & Kubany, E. S. (1995). Content validity in psychological assessment: A functional approach to concepts and methods. *Psychological Assessment, 7*, 238-247.
- Highhouse, S. (2009). Tests don't measure jobs: The meaning of content validity. *Industrial and Organizational Psychology, 2*, 493-495.
- Kim, B. H., & Oswald, F. L. (2009). Clarifying the concept and context of content validation. *Industrial and Organizational Psychology, 2*, 497-500.
- Morgeson, F. P., & Campion, M. A. (2000). Accuracy in job analysis: Toward an inference-based model. *Journal of Organizational Behavior, 21*, 819-827.
- Murphy, K. R. (2009). Content validation is useful for many things, but validity isn't one of them. *Industrial and Organizational Psychology, 2*, 453-464.
- Rulon, P. J. (1946). On the validity of educational tests. *Harvard Educational Review 16*, 290-296.
- Sireci, S. G. (1998). The Construct of Content Validity. *Social Indicators Research, 45*, 83-117.
- Sireci, S. G. (2007). On Validity Theory and Test Validation. *Educational Researcher, 36*, 477-481. <https://doi.org/10.3102/0013189X07311609>
- Tan, J. A. (2009). Babies, Bathwater, and Validity: Content validity is useful in the validation process. *Industrial and Organizational Psychology, 2*, 514-516.
- Tippins, N. T. (2009). What's wrong with content-oriented validity studies for individual psychological assessments? *Industrial and Organizational Psychology, 2*, 327-329.

Thorndike, E. L. (1931). *Measurement of Intelligence*. New York, Bureau of Publications, Teachers College, Columbia University.

Thornton, G. C. (2009). Evidence of content matching is evidence of validity. *Industrial and Organizational Psychology*, 2, 496-474.

Tonowski, R. F. (2009). "Content" still belongs with validity. *Industrial and Organizational Psychology*, 2, 481-485.

**APPENDIX A:
PSYCHOLOGY PRACTITIONER JOB TASK ANALYSIS & DRAFT TEST SPECIFICATIONS**

Psychology Practitioner Job Task Analysis

Applied sport psychology practitioners employ an evidence-based understanding of the psychology of human performance to conceptualize and enhance the expression or improvement of performance, holistic well-being, and social functioning.

¹ This document describes a common psychology process. The authors recognize that some of the tasks delineated herein may be performed simultaneously, cyclically or in a different order as appropriate to the specific situation, client, performer(s) or performance environment.

Domain I – Rapport, Roles and Expectations (13%)

T-1 Establish and maintain rapport with the client/performer(s).

The effective performance of this task requires knowledge of:

- K-1 Techniques for establishing and maintaining rapport (e.g., active listening, presence in the performing environment, demonstrating interest, respecting boundaries)
- K-2 Techniques for promoting client/performers' self-awareness
- K-3 Techniques for establishing trust (e.g., clarification of roles, management of multiple relationships (e.g., teams, organizations))
- K-4 Techniques for establishing a safe environment (e.g., non-judgmental, neutral stance, assurance of confidentiality)
- K-5 Contextual intelligence factors (e.g., culture, values, attitudes, history and language of the performance domain, consultant role within performance and training environment, and organizational structure)
- K-6 Developmentally appropriate communication techniques

T-2 Explain the professional/consultant role within the specific setting or system with clients and important others.

The effective performance of this task requires knowledge of:

- K-3 Techniques for establishing trust (e.g., clarification of roles, management of multiple relationships (e.g., teams, organizations))
- K-5 Contextual intelligence factors (e.g., culture, values, attitudes, history and language of the performance domain, consultant role within performance and training environment, and organizational structure)
- K-7 Components of the professional/consultant role (e.g., boundaries of competence)

- K-8 Conceptual orientations (e.g., resonance, cognitive-behavioral, acceptance/mindfulness)
- K-9 Systems theory

T-3 Explain what is expected of the client/performer(s).

The effective performance of this task requires knowledge of:

- K-4 Techniques for establishing a safe environment (e.g., non-judgmental, neutral stance, assurance of confidentiality)
- K-6 Developmentally appropriate communication techniques
- K-8 Conceptual orientations (e.g., cognitive-behavioral, acceptance/mindfulness)
- K-10 Intervention research and its applications
- K-11 Change processes (e.g., trans-theoretical model, motivational interviewing)

T-4 Explain/describe the consulting process.

The effective performance of this task requires knowledge of:

- K-5 Contextual intelligence factors (e.g., culture, values, attitudes, history and language of the performance domain, consultant role within performance and training environment, and organizational structure)
- K-6 Developmentally appropriate communication techniques
- K-7 Components of the professional/consultant role (e.g., boundaries of competence)
- K-8 Conceptual orientations (e.g., cognitive-behavioral, acceptance/mindfulness)
- K-9 Systems theory
- K-11 Change processes (e.g., trans-theoretical model, motivational interviewing)
- K-12 Application of counseling and consulting theory to performance

T-5 Discuss and/or clarify the consulting process (e.g., Informed consent, documentation, contract, confidentiality, limits of availability) to help clients make informed decisions.

The effective performance of this task requires knowledge of:

- K-5 Contextual intelligence factors (e.g., culture, values, attitudes, history and language of the performance domain, consultant role within performance and training environment, and organizational structure)
- K-6 Developmentally appropriate communication techniques
- K-13 Purpose/function of documents that pertain to the consulting process

Domain II – Assessment (16%)

T-6 Obtain and summarize individual, team/group and organizational assessment data and information pertaining to performance via interviews, direct observation, the administration of questionnaires and standardized tests, collaboration with other professionals, etc.. Assessment includes but is not limited to:

- Observing performance
- Obtaining a sport history
- Obtaining collateral assessment data and information
- Determining important factors in the performance environment (e.g., organizational characteristics (leadership, culture, dynamics), relationships with coaches)
- Identifying personal characteristics (e.g., family, SES, social values, personality, cognitive ability, motivation)
- Identifying perceived individual and organizational strengths and weaknesses
- Obtaining a health and injury history
- Identifying significant life events that may be affecting performance
- Identifying/assessing client beliefs and biases about sport psychology

The effective performance of this task requires knowledge of:

- K-1 Techniques for establishing and maintaining rapport (e.g., active listening, presence in the performing environment, demonstrating interest, respecting boundaries)
- K-5 Contextual intelligence factors (e.g., culture, values, attitudes, history and language of the performance domain, consultant role within performance and training environment, and organizational structure)
- K-6 Developmentally appropriate communication techniques
- K-8 Conceptual orientations (e.g., cognitive-behavioral, acceptance/mindfulness)
- K-9 Systems theory
- K-14 Available tests and measures and their appropriate selection and uses
- K-15 Interviewing techniques (e.g., motivational interviewing, micro skills, effective questioning)
- K-16 Multi-cultural and diversity issues

- K-17 Leadership development theory and application
- K-18 Psychology of injury and rehabilitation
- K-19 Techniques for identifying possible physical and mental health conditions requiring referral

- K-20 Verbal and non-verbal performance indicators (e.g., body language, emotional displays, communication patterns, response to adversity)
- K-21 Coaching techniques and effectiveness
- K-22 Motor learning/biomechanics, skill acquisition and execution
- K-23 Physiological bases of sports/performance (e.g., preparation, and recovery)
- K-24 Periodization and training cycles
- K-25 Neuropsychology of performance
- K-26 Performance psychophysiology

Domain III – Goals, Outcomes and Planning (20%)

- T-7 Integrate and evaluate assessment data within a theoretical framework of performance excellence, evidence-based practice and professional judgment.

The effective performance of this task requires knowledge of:

- K-5 Contextual intelligence factors (e.g., culture, values, attitudes, history and language of the performance domain, consultant role within performance and training environment, and organizational structure)
- K-8 Conceptual orientations (e.g., cognitive-behavioral, acceptance/mindfulness)
- K-9 Systems theory
- K-10 Intervention research and its applications
- K-11 Change processes (e.g., trans-theoretical model, motivational interviewing)
- K-14 Available tests and measures and their appropriate selection and uses
- K-16 Multi-cultural and diversity issues
- K-19 Techniques for identifying possible physical and mental health conditions requiring referral
- K-20 Verbal and non-verbal performance indicators (e.g., body language, emotional displays, communication patterns, response to adversity)
- K-22 Motor learning/biomechanics, skill acquisition and execution
- K-23 Physiological bases of sports/performance (e.g., preparation, and recovery)
- K-24 Periodization and training cycles
- K-25 Neuropsychology of performance
- K-26 Performance psychophysiology
- K-27 Theories of performance excellence

- T-8 Collaborate with the client/performer(s), and when appropriate, members of the performance team (e.g., coaches, colleagues, and other professionals) to formulate a plan to determine and prioritize goals and desired outcomes.

The effective performance of this task requires knowledge of:

- K-5 Contextual intelligence factors (e.g., culture, values, attitudes, history and language of the performance domain, consultant role within performance and training environment, and organizational structure)
- K-6 Developmentally appropriate communication techniques
- K-7 Components of the professional/consultant role (e.g., boundaries of competence)
- K-8 Conceptual orientations (e.g., cognitive-behavioral, acceptance/mindfulness)
- K-9 Systems theory
- K-10 Intervention research and its applications
- K-11 Change processes (e.g., trans-theoretical model, motivational interviewing)
- K-15 Interviewing techniques (e.g., motivational interviewing, micro skills, effective questioning)
- K-16 Multi-cultural and diversity issues
- K-17 Leadership development theory and application
- K-18 Psychology of injury and rehabilitation
- K-19 Techniques for identifying possible physical and mental health conditions requiring referral
- K-20 Verbal and non-verbal performance indicators (e.g., body language, emotional displays, communication patterns, response to adversity)
- K-21 Coaching techniques and effectiveness
- K-22 Motor learning/biomechanics, skill acquisition and execution
- K-23 Physiological bases of sports/performance (e.g., preparation, and recovery)
- K-24 Periodization and training cycles
- K-25 Neuropsychology of performance
- K-26 Performance psychophysiology
- K-27 Theories of performance excellence
- K-28 Mental skills related to performance (i.e., energy management, concentration, emotional control, self-confidence, motivation, interpersonal etc.)
- K-29 Performance psychology interventions/methods (i.e., relaxation training, mindfulness, imagery, goal setting, self-talk, team building, brief interventions, on-site intervention, interventions targeting chaotic, high pressure moments, etc.)

K-30 Theories of learning effectiveness (e.g., how information is absorbed, processed and retained)

T-9 Identify personal and systemic resources and barriers related to the achievement of goals and desired outcomes.

The effective performance of this task requires knowledge of:

K-2 Techniques for promoting client/performers' self-awareness

K-5 Contextual intelligence factors (e.g., culture, values, attitudes, history and language of the performance domain, consultant role within performance and training environment, and organizational structure)

K-6 Developmentally appropriate communication techniques

K-7 Components of the professional/consultant role (e.g., boundaries of competence)

K-8 Conceptual orientations (e.g., cognitive-behavioral, acceptance/mindfulness)

K-9 Systems theory

K-10 Intervention research and its applications

K-11 Change processes (e.g., trans-theoretical model, motivational interviewing)

K-12 Application of counseling and consulting theory to performance

K-16 Multi-cultural and diversity issues

K-17 Leadership development theory and application

K-18 Psychology of injury and rehabilitation

K-19 Techniques for identifying possible physical and mental health conditions requiring referral

K-21 Coaching techniques and effectiveness

K-22 Motor learning/biomechanics, skill acquisition and execution

K-23 Physiological bases of sports/performance (e.g., preparation, and recovery)

K-24 Periodization and training cycles

Domain IV – Implementation (35%)

T-10 Implement a performance plan combining awareness, education and action to facilitate achievement of desired outcomes.

The effective performance of this task requires knowledge of:

K-1 Techniques for establishing and maintaining rapport (e.g., active listening, presence in the performing environment, demonstrating interest, respecting boundaries)

- K-2 Techniques for promoting client/performers' self-awareness
- K-3 Techniques for establishing trust (e.g., clarification of roles, management of multiple relationships (e.g., teams, organizations))
- K-4 Techniques for establishing a safe environment (e.g., non-judgmental, neutral stance, assurance of confidentiality)
- K-5 Contextual intelligence factors (e.g., culture, values, attitudes, history and language of the performance domain, consultant role within performance and training environment, and organizational structure)
- K-6 Developmentally appropriate communication techniques
- K-7 Components of the professional/consultant role (e.g., boundaries of competence)
- K-8 Conceptual orientations (e.g., cognitive-behavioral, acceptance/mindfulness)
- K-9 Systems theory
- K-10 Intervention research and its applications
- K-11 Change processes (e.g., trans-theoretical model, motivational interviewing)
- K-12 Application of counseling and consulting theory to performance
- K-16 Multi-cultural and diversity issues
- K-17 Leadership development theory and application
- K-18 Psychology of injury and rehabilitation
- K-19 Techniques for identifying possible physical and mental health conditions requiring referral
- K-20 Verbal and non-verbal performance indicators (e.g., body language, emotional displays, communication patterns, response to adversity)
- K-21 Coaching techniques and effectiveness
- K-22 Motor learning/biomechanics, skill acquisition and execution
- K-23 Physiological bases of sports/performance (e.g., preparation, and recovery)
- K-24 Periodization and training cycles
- K-27 Theories of performance excellence
- K-28 Mental skills related to performance (i.e., energy management, concentration, emotional control, self-confidence, motivation, interpersonal etc.)
- K-29 Performance psychology interventions/methods (i.e., relaxation training, mindfulness, imagery, goal setting, self-talk, team building, brief interventions, on-site intervention, interventions targeting chaotic, high pressure moments, etc.)

- T-11 Implement a performance plan providing and obtaining feedback as the client/performer(s) work toward achieving the goals and desired outcomes.

The effective performance of this task requires knowledge of:

- K-2 Techniques for promoting client/performers' self-awareness
- K-3 Techniques for establishing trust (e.g., clarification of roles, management of multiple relationships (e.g., teams, organizations))
- K-4 Techniques for establishing a safe environment (e.g., non-judgmental, neutral stance, assurance of confidentiality)
- K-5 Contextual intelligence factors (e.g., culture, values, attitudes, history and language of the performance domain, consultant role within performance and training environment, and organizational structure)
- K-6 Developmentally appropriate communication techniques
- K-7 Components of the professional/consultant role (e.g., boundaries of competence)
- K-8 Conceptual orientations (e.g., cognitive-behavioral, acceptance/mindfulness)
- K-9 Systems theory
- K-11 Change processes (e.g., trans-theoretical model, motivational interviewing)
- K-12 Application of counseling and consulting theory to performance
- K-16 Multi-cultural and diversity issues
- K-17 Leadership development theory and application
- K-18 Psychology of injury and rehabilitation
- K-19 Techniques for identifying possible physical and mental health conditions requiring referral
- K-20 Verbal and non-verbal performance indicators (e.g., body language, emotional displays, communication patterns, response to adversity)
- K-21 Coaching techniques and effectiveness
- K-22 Motor learning/biomechanics, skill acquisition and execution
- K-23 Physiological bases of sports/performance (e.g., preparation, and recovery)
- K-24 Periodization and training cycles
- K-27 Theories of performance excellence
- K-28 Mental skills related to performance (i.e., energy management, concentration, emotional control, self-confidence, motivation, interpersonal etc.)
- K-29 Performance psychology interventions/methods (i.e., relaxation training, mindfulness, imagery, goal setting, self-talk, team building, brief interventions, on-site intervention, interventions targeting chaotic, high pressure moments, etc.)
- K-31 Techniques for group facilitation

Domain V – Evaluation (11%)

- T-12 Assess progress, reset goals and/or revise implementation strategies and techniques either as part of a continuing process/relationship (e.g., on continuing basis, yearly, season-by-season) or as part of assisting clients in making progress towards established goals.

The effective performance of this task requires knowledge of:

- K-1 Techniques for establishing and maintaining rapport (e.g., active listening, presence in the performing environment, demonstrating interest, respecting boundaries)
- K-2 Techniques for promoting client/performers' self-awareness
- K-3 Techniques for establishing trust (e.g., clarification of roles, management of multiple relationships (e.g., teams, organizations))
- K-4 Techniques for establishing a safe environment (e.g., non-judgmental, neutral stance, assurance of confidentiality)
- K-5 Contextual intelligence factors (e.g., culture, values, attitudes, history and language of the performance domain, consultant role within performance and training environment, and organizational structure)
- K-6 Developmentally appropriate communication techniques
- K-7 Components of the professional/consultant role (e.g., boundaries of competence)
- K-8 Conceptual orientations (e.g., cognitive-behavioral, acceptance/mindfulness)
- K-9 Systems theory
- K-10 Intervention research and its applications
- K-11 Change processes (e.g., trans-theoretical model, motivational interviewing)
- K-12 Application of counseling and consulting theory to performance
- K-13 Purpose/function of documents that pertain to the consulting process
- K-14 Available tests and measures and their appropriate selection and uses
- K-15 Interviewing techniques (e.g., motivational interviewing, micro skills, effective questioning)
- K-16 Multi-cultural and diversity issues
- K-17 Leadership development theory and application
- K-18 Psychology of injury and rehabilitation
- K-19 Techniques for identifying possible physical and mental health conditions requiring referral
- K-20 Verbal and non-verbal performance indicators (e.g., body language, emotional displays, communication patterns, response to adversity)
- K-21 Coaching techniques and effectiveness
- K-22 Motor learning/biomechanics, skill acquisition and execution

- K-23 Physiological bases of sports/performance (e.g., preparation, and recovery)
 - K-24 Periodization and training cycles
 - K-25 Neuropsychology of performance
 - K-26 Performance psychophysiology
 - K-27 Theories of performance excellence
 - K-28 Mental skills related to performance (i.e., energy management, concentration, emotional control, self-confidence, motivation, interpersonal etc.)
 - K-29 Performance psychology interventions/methods (i.e., relaxation training, mindfulness, imagery, goal setting, self-talk, team building, brief interventions, on-site intervention, interventions targeting chaotic, high pressure moments, etc.)
 - K-31 Techniques for group facilitation
 - K-32 Methods of evaluating consultant effectiveness (e.g., peer approaches, self-report, engagement)
 - K-33 Program evaluation methods
 - K-34 Elements of a performance report
- T-13 When possible and appropriate, obtain feedback from clients/performer(s) on consultant effectiveness.

The effective performance of this task requires knowledge of:

- K-2 Techniques for promoting client/performers' self-awareness
 - K-3 Techniques for establishing trust (e.g., clarification of roles, management of multiple relationships (e.g., teams, organizations))
 - K-5 Contextual intelligence factors (e.g., culture, values, attitudes, history and language of the performance domain, consultant role within performance and training environment, and organizational structure)
 - K-12 Application of counseling and consulting theory to performance
 - K-13 Purpose/function of documents that pertain to the consulting process
 - K-14 Available tests and measures and their appropriate selection and uses
 - K-32 Methods of evaluating consultant effectiveness (e.g., peer approaches, self-report, engagement)
 - K-33 Program evaluation methods
- T-14 When ethically appropriate, obtain feedback from coaches/leadership regarding performer utilization of mental skills training and consultant effectiveness.

The effective performance of this task requires knowledge of:

- K-1 Techniques for establishing and maintaining rapport (e.g., active listening, presence in the performing environment, demonstrating interest, respecting boundaries)
- K-2 Techniques for promoting client/performers' self-awareness
- K-3 Techniques for establishing trust (e.g., clarification of roles, management of multiple relationships (e.g., teams, organizations))
- K-5 Contextual intelligence factors (e.g., culture, values, attitudes, history and language of the performance domain, consultant role within performance and training environment, and organizational structure)
- K-6 Developmentally appropriate communication techniques
- K-7 Components of the professional/consultant role (e.g., boundaries of competence)
- K-9 Systems theory
- K-10 Intervention research and its applications
- K-21 Coaching techniques and effectiveness
- K-31 Techniques for group facilitation
- K-32 Methods of evaluating consultant effectiveness (e.g., peer approaches, self-report, engagement)
- K-33 Program evaluation methods
- K-34 Elements of a performance report

T-15 Consolidate progress and conclude the professional relationship when appropriate based upon client and/or professional opinion.

The effective performance of this task requires knowledge of:

- K-2 Techniques for promoting client/performers' self-awareness
- K-4 Techniques for establishing a safe environment (e.g., non-judgmental, neutral stance, assurance of confidentiality)
- K-5 Contextual intelligence factors (e.g., culture, values, attitudes, history and language of the performance domain, consultant role within performance and training environment, and organizational structure)
- K-6 Developmentally appropriate communication techniques
- K-15 Interviewing techniques (e.g., motivational interviewing, micro skills, effective questioning)
- K-34 Elements of a performance report

Domain VI – Professional Issues (5%)

T-16 Certified practitioners engage in activities to maintain and enhance professional competence.

The effective performance of this task requires knowledge of:

- K-35 Available training, education and continuing education programs and opportunities
- T-17 Certified practitioners practice in a manner consistent with applicable laws, regulations and the *AASP Code of Ethical Principles and Standards*.

The effective performance of this task requires knowledge of:

- K-36 The *AASP Code of Ethical Principles and Standards*
- T-18 Certified practitioners engage in a process of self-reflective practice that includes a process of continuous learning.

The effective performance of this task requires knowledge of:

- K-35 Available training, education and continuing education programs and opportunities
- K-37 Systematic reflective practice
- T-19 Certified practitioners recognize their own biases, stereotypes and misconceptions to prevent them from interfering with their relationships with clients/performer(s).

The effective performance of this task requires knowledge of:

- K-16 Multi-cultural and diversity issues
- T-20 Certified practitioners recognize the limits of their knowledge and skills and accordingly refer clients/performers to, or seek collaboration with other qualified professionals, as necessary.

The effective performance of this task requires knowledge of:

- K-7 Components of the professional/consultant role (e.g., boundaries of competence)
- K-19 Techniques for identifying possible physical and mental health conditions requiring referral
- T-21 Certified practitioners engage in activities that enhance their knowledge and skills that relate to their supervision of professional colleagues seeking certification.

The effective performance of this task requires knowledge of:

- K-35 Available training, education and continuing education programs and opportunities
- K-38 Roles, responsibilities and techniques of professional supervision and mentoring

Knowledge Statement Summary

The effective performance of these various tasks require knowledge of:

- K-1 Techniques for establishing and maintaining rapport (e.g., active listening, presence in the performing environment, demonstrating interest, respecting boundaries)
- K-2 Techniques for promoting client/performers' self-awareness
- K-3 Techniques for establishing trust (e.g., clarification of roles, management of multiple relationships (e.g., teams, organizations))
- K-4 Techniques for establishing a safe environment (e.g., non-judgmental, neutral stance, assurance of confidentiality)
- K-5 Contextual intelligence factors (e.g., culture, values, attitudes, history and language of the performance domain, consultant role within performance and training environment, and organizational structure)
- K-6 Developmentally appropriate communication techniques
- K-7 Components of the professional/consultant role (e.g., boundaries of competence)
- K-8 Conceptual orientations (e.g., cognitive-behavioral, acceptance/mindfulness)
- K-9 Systems theory
- K-10 Intervention research and its applications
- K-11 Change processes (e.g., trans-theoretical model, motivational interviewing)
- K-12 Application of counseling and consulting theory to performance
- K-13 Purpose/function of documents that pertain to the consulting process
- K-14 Available tests and measures and their appropriate selection and uses
- K-15 Interviewing techniques (e.g., motivational interviewing, micro skills, effective questioning)
- K-16 Multi-cultural and diversity issues
- K-17 Leadership development theory and application
- K-18 Psychology of injury and rehabilitation
- K-19 Techniques for identifying possible physical and mental health conditions requiring referral
- K-20 Verbal and non-verbal performance indicators (e.g., body language, emotional displays, communication patterns, response to adversity)
- K-21 Coaching techniques and effectiveness

- K-22 Motor learning/biomechanics, skill acquisition and execution
- K-23 Physiological bases of sports/performance (e.g., preparation, and recovery)
- K-24 Periodization and training cycles
- K-25 Neuropsychology of performance
- K-26 Performance psychophysiology
- K-27 Theories of performance excellence
- K-28 Mental skills related to performance (i.e., energy management, concentration, emotional control, self-confidence, motivation, interpersonal etc.)
- K-29 Performance psychology interventions/methods (i.e., relaxation training, mindfulness, imagery, goal setting, self-talk, team building, brief interventions, on-site intervention, interventions targeting chaotic, high pressure moments, etc.)
- K-30 Theories of learning effectiveness (e.g., how information is absorbed, processed and retained)
- K-31 Techniques for group facilitation
- K-32 Methods of evaluating consultant effectiveness (e.g., peer approaches, self-report, engagement)
- K-33 Program evaluation methods
- K-34 Elements of a performance report
- K-35 Available training, education and continuing education programs and opportunities
- K-36 *The AASP Code of Ethical Principles and Standards*
- K-37 Systematic reflective practice
- K-38 Roles, responsibilities and techniques of professional supervision and mentoring

APPENDIX B:

REVISED PSYCHOLOGY PRACTITIONER CERTIFICATION EXAM TEST SPECIFICATIONS

May 11, 2018

CONTAINING TASK DOMAINS AND WEIGHTS
WITH RELEVANT KNOWLEDGE GROUPS WEIGHTED WITHIN EACH DOMAIN

Domain I – Rapport, Roles, and Expectations (13%)

Tasks

- Establish and maintain rapport with the client/performer(s).
- Explain the professional/consultant role within the specific setting or system with clients and important others.
- Explain what is expected of the client/performer(s).
- Explain/describe the consulting process.
- Discuss and/or clarify the consulting process (e.g., informed consent, documentation, contract, confidentiality, limits of availability) to help clients make informed decisions.

Relevant Knowledge Groups

O-TECHNIQUES FOR DEVELOPING RAPPORT, TRUST, AND OPEN COMMUNICATION WITH CLIENTS (6%)

E-ETHICS AND PROFESSIONAL ISSUES (2%)

D-CULTURE AND DIVERSITY (2%)

OTHER KNOWLEDGE GROUPS (A, B, J; 3%)

Domain II – Assessment (16%)

Tasks

- Obtain and summarize individual, team/group and organizational assessment data and information pertaining to performance via interviews, direct observation, the administration of questionnaires and standardized tests, collaboration with other professionals, etc. Assessment includes but is not limited to:
 - Observing performance
 - Obtaining a sport history
 - Obtaining collateral assessment data and information
 - Determining important factors in the performance environment (e.g., organizational characteristics (leadership, culture, dynamics), relationships with coaches)
 - Identifying personal characteristics (e.g., family, SES, social values, personality, cognitive ability, motivation)
 - Identifying perceived individual and organizational strengths and weaknesses

- Obtaining a health and injury history
- Identifying significant life events that may be affecting performance
- Identifying/assessing client beliefs and biases about sport psychology

Relevant Knowledge Groups

B-ASSESSMENT OF INDIVIDUALS, TEAMS/GROUPS, & ORGANIZATIONS (7%)

O-TECHNIQUES FOR DEVELOPING RAPPORT, TRUST, AND OPEN COMMUNICATION WITH CLIENTS (2%)

OTHER KNOWLEDGE GROUPS (A, C, D, E, G, J, N; 7%)

Domain III – Goals, Outcomes, and Planning (20%)

Tasks

- Integrate and evaluate assessment data within a theoretical framework of performance excellence, evidence-based practice, and professional judgment.
- Collaborate with the client/performer(s) and, when appropriate, members of the performance team (e.g., coaches, colleagues, and other professionals) to formulate a plan to determine and prioritize goals and desired outcomes.
- Identify personal and systemic resources and barriers related to the achievement of goals and desired outcomes.

Relevant Knowledge Groups

G-FOUNDATIONAL PSYCHOLOGICAL THEORIES, MODELS, AND CONSTRUCTS (3%)

A-APPLICATION OF THEORIES AND PRINCIPLES OF COUNSELING AND CONSULTING (3%)

L-PERFORMANCE PSYCHOLOGY INTERVENTIONS (3%)

J-MENTAL SKILLS AND TOOLS RELATED TO PERFORMANCE (2%)

B-ASSESSMENT OF INDIVIDUALS, TEAMS/GROUPS, & ORGANIZATIONS (2%)

OTHER KNOWLEDGE GROUPS (D, F, H, I, K, M, O; 7%)

Domain IV – Implementation (35%)

Tasks

- Implement a performance plan combining awareness, education, and action to facilitate achievement of desired outcomes.
- Implement a performance plan providing and obtaining feedback as the client/performer(s) work toward achieving the goals and desired outcomes.

Relevant Knowledge Groups

L-PERFORMANCE PSYCHOLOGY INTERVENTIONS (7%)

J-MENTAL SKILLS AND TOOLS RELATED TO PERFORMANCE (7%)

G-FOUNDATIONAL PSYCHOLOGICAL THEORIES, MODELS, AND CONSTRUCTS (4%)

A-APPLICATION OF THEORIES AND PRINCIPLES OF COUNSELING AND CONSULTING (3%)

O-TECHNIQUES FOR DEVELOPING RAPPORT, TRUST, AND OPEN COMMUNICATION WITH CLIENTS (2%)

I-LEARNING AND SKILL ACQUISITION (2%)

OTHER KNOWLEDGE GROUPS (B, C, D, E, F, H, K, M, N; 10%)

Domain V – Evaluation (11%)

Tasks

- Assess progress, reset goals, and/or revise implementation strategies and techniques either as part of a continuing process/relationship (e.g., on continuing basis, yearly, season-by-season) or as part of assisting clients in making progress toward established goals.
- When possible and appropriate, obtain feedback from clients/performer(s) on consultant effectiveness.
- When ethically appropriate, obtain feedback from coaches/leadership regarding performer utilization of mental skills training and consultant effectiveness.
- Consolidate progress and conclude the professional relationship when appropriate based upon client and/or professional opinion.

Relevant Knowledge Groups

F-EVALUATION OF CONSULTING AND PROGRAM EFFECTIVENESS (6%)

OTHER KNOWLEDGE GROUPS (A, B, E, O, 5%)

Domain VI – Professional Issues (5%)

Tasks

- Engage in activities to maintain and enhance professional competence.
- Practice in a manner consistent with applicable laws, regulations, and the *AASP Code of Ethical Principles and Standards*.
- Engage in a process of self-reflective practice that includes a process of continuous learning.
- Recognize own biases, stereotypes, and misconceptions to prevent interfering with relationships with clients/performer(s).
- Recognize the limits of own knowledge and skills and accordingly refer clients/performers to or seek collaboration with other qualified professionals as necessary.
- Engage in activities that enhance knowledge and skills that relate to supervision of professional colleagues seeking certification (required only for those providing mentorship/supervision).

Relevant Knowledge Groups

E-ETHICS AND PROFESSIONAL ISSUES (3%)

OTHER KNOWLEDGE GROUPS (D, F; 2%)

Note

Task Domains and component tasks were retained from the original Job Task Analysis (JTA). Weights for a given Task Domain also were retained from the original JTA and reflect the proportion of the Certification Exam that should assess that domain. That is, the domain weight reflects how many test items out of 100 items should assess a given domain. The task domain weights across all six domains sum to 100, reflecting the 100 items on the Certification Exam.

¹ Please see the listing of Knowledge Groups with Component Knowledge Statements at the end of this document.

¹ Certified Mental Performance Consultant Subject Matter Experts participated in a systematic quantitative process to weight the Knowledge Groups for each Task Domain. Weights for the Knowledge Groups within a Task Domain sum to the Task Domain weight and reflect, within a Task Domain, how many test items should assess a given Knowledge Group. The weights of all Knowledge Groups across all Task Domains sum to 100, again reflecting the 100 items on the Certification Exam.

Remaining relevant Knowledge Groups that were weighted 1% or less (i.e., representing one or fewer test items) were clustered together.

15 Knowledge Groups (A - O)
(in alphabetical order by Group name)
With Weights and Component Knowledge Statements

A APPLICATION OF THEORIES AND PRINCIPLES OF COUNSELING AND CONSULTING (8%)

- Conceptual orientations (e.g., resonance, cognitive-behavioral, acceptance/mindfulness)
- Systems theory
- Change processes (e.g., trans-theoretical model, solution-focused brief therapy; theory of planned behavior)
- Application of counseling and consulting theory to performance

B ASSESSMENT OF INDIVIDUALS, TEAMS/GROUPS, & ORGANIZATIONS (11%)

- Available tests and measures and their appropriate selection and uses
- Interviewing techniques (e.g., motivational interviewing, micro skills, effective questioning)
- Verbal and non-verbal performance indicators (e.g., body language, emotional displays, communication patterns, response to adversity)
- Elements of a performance report written by a coach, personnel director, etc. about an athlete
- Other sources of assessment data (e.g., observation, reports, existing data bases such as season statistics, etc.)

C COACHING EFFECTIVENESS (3%)

- Models of coaching, coaching methods and techniques, and evaluation of coaching effectiveness

D CULTURE AND DIVERSITY (6%)

- Contextual intelligence factors (e.g., culture, values, attitudes, history and language of the performance domain, consultant role within performance and training environment, organizational structure)
- Multi-cultural and diversity issues

E ETHICS AND PROFESSIONAL ISSUES (8%)

- Components of the professional/consultant role (e.g., boundaries of competence)
- Purpose/function of documents that pertain to the consulting process
- Techniques for identifying possible physical and mental health conditions requiring referral
- The AASP Code of Ethical Principles and Standards

- F EVALUATION OF CONSULTING AND PROGRAM EFFECTIVENESS (8%)**
- Methods of evaluating consultant effectiveness (e.g., peer approaches, self-report, engagement)
 - Program evaluation methods
 - Systematic reflective practice
- G FOUNDATIONAL PSYCHOLOGICAL THEORIES, MODELS, AND CONSTRUCTS (9%)**
- Theories, models, and constructs from various sub-disciplines in psychology that inform practice (e.g., achievement goal theory, attribution theory, catastrophe model, cue utilization model, debilitating/facilitative anxiety principles, IZOF model, multidimensional anxiety model, reversal theory, learned helplessness, self-determination theory, self-efficacy theory, social cognitive theory, other theories of motivation)
- H LEADERSHIP DEVELOPMENT (3%)**
- Theories and application of leadership development, personal leadership, and team/group leadership models and methods
- I LEARNING AND SKILL ACQUISITION (3%)**
- Motor learning/biomechanics, skill acquisition, and execution
 - Theories of learning effectiveness (e.g., how information is absorbed, processed, and retained)
- J MENTAL SKILLS AND TOOLS RELATED TO PERFORMANCE (11%)**
- Mental skills (e.g., attentional focus, concentration, confidence, emotional control, energy management, mindfulness) and mental tools used to build skills (e.g., imagery, goal setting, relaxation strategies, self-talk) related to performance.
 - Research on effectiveness of different mental skills for various demographics, settings, and physical skills
- K NEUROPSYCHOLOGICAL BASES OF PERFORMANCE (2%)**
- Neuropsychology of performance
 - Performance psychophysiology
- L PERFORMANCE PSYCHOLOGY INTERVENTIONS (11%)**
- Techniques for promoting client/performers' self-awareness
 - Intervention research and its applications
 - Theories and frameworks of performance excellence

- Performance psychology interventions/methods (e.g., relaxation training, mindfulness training, goal setting, team building, brief interventions, on-site intervention, interventions targeting chaotic and/or high-pressure situations, etc.)
- Techniques for group facilitation

M PHYSIOLOGICAL BASES OF PERFORMANCE (3%)

- Physiological bases of sports/performance (e.g., preparation, recovery)
- Periodization and training cycles

N PSYCHOLOGY OF INJURY AND REHABILITATION (2%)

- Psychology of injury and rehabilitation

O TECHNIQUES FOR DEVELOPING RAPPORT, TRUST, AND OPEN COMMUNICATION WITH CLIENTS (12%)

- Techniques for establishing and maintaining rapport (e.g., active listening, presence in the performing environment, demonstrating interest, respecting boundaries)
- Techniques for establishing trust (e.g., clarification of roles, management of multiple relationships (e.g., teams, organizations))
- Techniques for establishing a safe environment (e.g., non-judgmental, neutral stance, assurance of confidentiality)
- Developmentally appropriate communication techniques

Note

The weight for a Knowledge Group appears in parentheses following each group title. The weights indicate the number of exam items out of 100 items that target that knowledge group. The weights summed for all 15 knowledge groups equals 100, reflecting the 100 items on the exam.

The component knowledge statements were taken from the original Job Task Analysis. Knowledge Groups were formed and knowledge statements were slightly revised by a group of Certified Mental Performance Consultant (CMPC) Subject Matter Experts (SMEs). Two knowledge statements were deleted and three statements were added. A second group of CMPC SMEs participated in a systematic quantitative process to weight the Knowledge Groups.

Appendix C:
SME Domain: Unique Item Numbers and Corresponding Domain

Domain 1	Domain 2	Domain 3	Domain 4	Domain 5	Domain 6
515813-33	528145-257	516136-71	528137-138	528142-236	528140-231
528135-84	528146-47	528136-115	528925-97	528148-52	528150-68
528138-142	528147-50	528139-220	528926-99	529042-2	528780-110
528144-249	528149-54	528143-237	528931-207	529045-9	529024-193
529002-85	528151-82	528778-106	528935-227	529048-203	529052-274
529025-194	528152-86	528902-199	528937-228	529049-207	529056-31
	528153-89	528910-7	528940-256	529051-209	529057-120
	528896-119	528915-45	528942-1	529053-279	529058-123
	528897-137	528916-46	528977-5	529055-1	529059-134
	528904-218	528920-60	528979-7		
	528906-230	528921-62	528980-13		
	528908-295	528923-69	528981-20		
	528909-4	528927-117	528982-23		
	528917-56	528929-157	528984-28		
	528918-58	528938-239	528985-36		
	528928-122	528983-24	528986-41		
	529014-128	529016-136	528987-42		
	529021-163	529018-141	528989-43		
		529020-151	528990-63		
		529032-208	529001-73		
		529043-3	529004-104		
		529044-7	529008-107		
		529046-149	529010-124		
			529011-125		
			529012-127		
			529015-131		
			529019-147		
			529033-209		
			529036-225		
			529038-288		
			529040-296		
			529041-299		
			529047-202		

Appendix D:
SME Knowledge Group (KG): Unique Item Number and Corresponding KG

A	B	C	D	E	F
528136-115	528145-257	528927-117	528138-142	528780-110	529049-207
528137-138	528146-47	529043-3	528140-231	529024-193	529053-279
528139-220	528147-50		528150-68	529056-31	529055-1
528141-232	528151-82		528153-89	529057-120	
528902-199	528152-86		529052-274	529058-123	
528904-218	528896-119			529059-134	
528937-228	528897-137				
528990-63	529051-209				
529016-136					
529021-163					
529044-7					
G	H	I	J	K	L
528148-52		528149-54	528977-5		528931-207
528778-106		528915-45	528979-7		528942-1
528906-230		528928-122	528980-13		529008-107
528908-295		528989-43	528981-20		529011-125
528909-4			528982-23		529012-127
528910-7			529004-104		529038-288
528916-46					529047-202
528917-56					
528918-58					
528920-60					
528921-62					
528923-69					
528925-97					
528926-99					
528929-157					
528935-227					
528938-239					
528940-256					
528983-24					
529010-124					
529014-128					
529015-131					
529018-141					
529019-147					
529020-151					
529032-208					
529033-209					
529036-225					
529040-296					
529042-2					
529046-149					

Appendix D:
SME Knowledge Group (KG): Unique Item Number and Corresponding KG

M	N	O
528985-36	516136-71	515813-33
528987-42	528932-226	528135-84
529001-73	528984-28	528142-236
529045-9	528986-41	528143-237
		528144-249
		529002-85
		529025-194
		529041-299
		529048-203

Appendix E:

SME Knowledge Group within Domain

Domain 1	SME	Test Specifications	Domain 2	SME	Test Specifications
Knowledge Group	D - 1 O - 5	O - 6 E - 2 D - 2 A - 1 B - 1 J - 1	Knowledge Group	A - 2 B - 7 D - 1 G - 6 I - 2	B - 7 O - 2 A - 1 C - 1 D - 1 E - 1 G - 1 J - 1 N - 1
Domain 3	SME	Test Specifications	Domain 4	SME	Test Specifications
Knowledge Group	A - 5 C - 2 G - 13 I - 1 O - 1 N - 1	G - 3 A - 3 L - 3 J - 2 B - 2 D - 1 F - 1 H - 1 I - 1 K - 1 M - 1 O - 1	Knowledge Group	A - 4 G - 10 I - 1 J - 6 L - 7 M - 3 N - 3 O - 1	L - 7 J - 7 G - 4 A - 3 O - 2 I - 2 B - 1 C - 1 D - 1 E - 1 F - 1 H - 1 K - 1 M - 1 N - 1
Domain 5	SME	Test Specifications	Domain 6	SME	Test Specifications
Knowledge Group	B - 1 F - 3 G - 2 M - 1 O - 2	F - 6 A - 1 B - 1 E - 1 O - 5	Knowledge Group	D - 3 E - 6	E - 3 D - 1 F - 1

Appendix F:
Knowledge Group Original Consensus – Unique Item Number

A	B	C	D	E	F
528139-220 528141-232 528902-199	528151-82 528152-86 528897-137	528927-117 529043-3	528150-68 529052-274	528870-110 529024-193 529056-31 529057-120 529058-123 529059-134	529049-207
G	H	I	J	K	L
528148-52 528778-106 528190-7 528916-46 528917-56 528918-58 528920-60 528921-62 528923-69 528935-97 528929-157 528935-227 528938-239 528940-256 529015-131 529020-151 529033-209 529046-149		528915-45 528928-122	528977-5 528981-20 528982-23		529008-107
M	N	O			
529001-73 529045-9	516136-71 528984-28 528986-41	515813-33 528142-236 528144-249			

Appendix G:
Domain Original Consensus – Unique Item Number

Domain 1	Domain 2	Domain 3	Domain 4	Domain 5	Domain 6
515813-33	528151-82	528910-7	528137-138	529049-207	528140-231
528135-84	528152-86	528923-69	528931-207		528150-68
528144-249	528153-89	529044-7	528937-228		528780-110
529002-85	528896-119		528942-1		529024-193
	528897-137		528977-5		529052-274
	528906-230		528979-7		529056-31
	528908-295		528980-13		529057-120
			528981-20		529058-123
			528982-23		529059-134
			528984-28		
			528986-21		
			528987-42		
			529001-73		
			529004-104		
			529008-107		
			529010-124		
			529011-125		
			529015-131		
			529036-225		
			529038-288		

Appendix H:
 Knowledge Group and Domain Original Consensus – Unique Item Number

Chronological Number	Unique Item Number	Knowledge Group	Domain
1	515813-33	O	1
12	528144-249	O	1
18	528150-68	D	6
19	528151-82	B	2
20	528152-86	B	2
25	528780-110	E	6
27	528897-137	B	2
35	528910-7	G	3
44	528923-69	G	3
59	528977-5	J	4
63	528981-20	J	4
64	528982-23	J	4
66	528984-28	N	4
68	528986-41	N	4
72	529001-73	M	4
75	529008-107	L	4
80	529015-131	G	4
87	529024-193	E	6
105	529049-207	F	5
107	529052-274	D	6
111	529056-31	E	6
112	529057-120	E	6
113	529058-123	E	6
114	529059-134	E	6

Appendix I:

Number of items that need to be added or removed by Knowledge Group

Knowledge Group A: (add two items, remove 4 items)

- one item needs to be added to Domain 1
- one item needs to be removed from Domain 2
- two items need to be removed from Domain 3
- one item needs to be removed from Domain 4
- one item needs to be added to Domain 5.

Knowledge Group B: (add four items)

- one item needs to be added to Domain 1
- two items need to be added to Domain 3
- one item needs to be added to Domain 4.

Knowledge Group C: (add two items)

- one item needs to be added to Domain 2
- one item needs to be added to Domain 4

Knowledge Group D: (add three items, remove two items)

- one item needs to be added to Domain 1
- one item needs to be added to Domain 3
- one item needs to be added to Domain 4
- two items need to be removed from Domain 6

Knowledge Group E: (add five items, remove three items)

- two items need to be added to Domain 1
- one item needs to be added to Domain 2

- one item needs to be added to Domain 4
- one item needs to be added to Domain 5
- three items need to be removed from Domain 6.

Knowledge F: (add five items)

- one item needs to be added to Domain 3
- one item needs to be added to Domain 4
- two items need to be added to Domain 5
- one item needs to be added to Domain 6

Knowledge Group G: (remove 21 items)

- five items need to be removed from Domain 2
- ten items need to be removed from Domain 3
- six items need to be removed from Domain 4

Knowledge Group H: (add two items)

- one item needs to be added to Domain 3
- one item needs to be added to Domain 4

Knowledge Group I: (add one item, remove two items)

- two items need to be removed from Domain 2
- one item needs to be added to Domain 4

Knowledge Group J: (add five items)

- one item needs to be added to Domain 1
- one item needs to be added to Domain 2
- two items need to be added to Domain 3
- one item needs to be added to Domain 4

Knowledge Group K: (add two items)

- one item needs to be added to Domain 3
- one item needs to be added to Domain 4

Knowledge Group L: (add three items)

- three items need to be added to Domain 3

Knowledge Group M: (add one item, remove three items)

- one item needs to be added to Domain 3
- two items need to be removed from Domain 4
- one item needs to be removed from Domain 5.

Knowledge Group N: (add one item, remove three items)

- one item needs to be added to Domain 2
- one item needs to be removed from Domain 3
- two items need to be removed from Domain 4.

Knowledge Group O: (add four items, remove one item)

- one item needs to be added to Domain 1
- two items need to be added to Domain 2
- one item needs to be added to Domain 4
- one item needs to be removed from Domain 5.