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AchieveWorks™
Learning & Productivity

Statistical Analysis

Statistical Analysis

Introduction

This report summarizes the methods and the findings of research conducted on the psychometric properties of The AchieveWorks® Learning and Productivity (AWLP) assessment. Further research and references are available at www.humanesources.com/research.

Areas and Scoring

The AWLP surveys individual preferences in each of 16 specific areas. Developed using a content and factor analysis (Price, et al., 1976, 1977), the AWLP is a comprehensive approach to the identification of how a student prefers to function, learn, concentrate, and perform during educational activities in the following areas:

a) **Environment** (Sound, Temperature, Light, and Design);

b) **Emotionality** (Motivation, Persistence, and the need for either Structure or Flexibility);

c) **Sociological needs** (Learning Alone, With Peers, and Teacher Motivation); and

d) **Physical needs** (Perceptual Preference(s), Time of Day, Intake, and Mobility).

Questions concerning each of the 16 areas are presented. Responses to these questions tend to reveal personalized preferences that, when identified as relevant areas, represent the way in which the individual prefers to study or concentrate.

Consistency Score

A consistency score is calculated for individuals based on their responses to questions that are repeated throughout the Inventory. The higher the consistency score, the greater confidence can be placed in interpreting the student's profile. For the profile results to be reliable, the student should have a consistency score of at least 70%, indicating that responses to 70% of the item pairs were in agreement. If the consistency score falls below 70%, the teacher should discuss the profile with the student, indicating that the results may not be reliable, and suggest that the student concentrate carefully and retake the Inventory. A low consistency score could mean many things, including lack of motivation, inability to concentrate, or lack of interest. It also may indicate a limited attention span or a lack of self-awareness. The possibilities need to be explored in detail with the student, since a low consistency score reflects one of the problems listed above and is not necessarily an indicator of either high or low ability.

Instrument Comparison

In a comparative analysis of learning style conceptualizations and psychometric analyses of nine different instruments which purportedly measure learning style instructional preference, the AWLP was the only one rated as having good or very good reliability and validity (Curry, 1987). The AWLP is an easy-to-administer, and interpret, inventory. Keefe (1982) reported that it "is the most widely-used assessment instrument in elementary and secondary schools" (p. 52).

Instrument Evolution

The 1984, 1985, 1986, 1990, 1996, 2003, 2005 and 2012 revisions of the AWLP incorporated several changes and improvements. The analyses included a determination and elimination of the items that were confusing, could be interpreted in different ways, or were not clear in their assessment of the defined areas. Those changes improved the items' discriminating ability and permitted greater flexibility on the part of the respondents. One change was the rewording of the items to increase clearness and improve reliability. The most recent reliability scores are shown in Table 1 below.

The 2012 revision of the AWLP instrument removed six areas from the 1996 version of the instrument. The two preferences with the lowest reliability scores were removed: Late Morning (.56) and Afternoon (.66), as well as Parent Motivated, Authority Figures Present, Responsibility and Learning in Several Ways.

Readability

Following the 2012 revisions, the readability of the assessment questions and the report content were measured. The measurements were done using the Readability-Score.com online analysis tool, which provides readability measurements from five recognized tools and aggregates the results into an average grade level. Note that the report is designed more for older students and educators to interpret. Younger students at the elementary or middle school level should seek the support of educators to help interpret the report.

Assessment Questions

The text analyzed consisted of 813 words in 70 sentences.

Readability Formula	Grade
Flesch-Kincaid Grade Level	4.2
Gunning-Fog Score	7.2
Coleman-Liau Index	7.0
SMOG Index	5.2
Automated Readability Index	2.7
Average Grade Level	5.3

Assessment Report

The text sample analyzed consisted of 3,588 words in 218 sentences.

Readability Formula	Grade
Flesch-Kincaid Grade Level	8.5
Gunning-Fog Score	11.4
Coleman-Liau Index	11.8
SMOG Index	8.3
Automated Readability Index	8.9
Average Grade Level	9.8

Reliability and Validity

Research in 2012 indicated that 81% (13 out of 16) of the reliabilities (Table 1) are equal to or greater than .75 for the Likert scale English translation in grades 6 through 12. The areas with the highest reliabilities include: needs Mobility, Motivation, Kinesthetic Preferences, requires Intake, Persistence, Noise Level, Temperature, Tactile, Learning Alone/Peer-Oriented Learner, Auditory, Visual, Light, and Time of Day (evening/morning). The areas with lower reliabilities include: Teacher-Motivated, Structure, and Design. Overall, there has been a significant improvement in terms of the reliabilities for the AWLP subscales based on the Likert scale. This reliability analysis was based on 1,910 randomly selected subjects in grades 6 through 12 who took the 2005 instrument.

Table 1: Reliability and Standard Error for AWLP 2012

Likert Scale in English, N=1910, Grades 6-12

Area	Reliability (Cronbach's Alpha)	Standard Error
Noise Level (quiet or sound)	0.84	1.83
Light (dim or bright)	0.75	1.52
Temperature (cool or warm)	0.83	1.49
Design (informal or formal)	0.72	1.56
Unmotivated/Self-Motivated	0.90	1.57
Not Persistent/Persistent	0.86	1.43
Structure (does or does not want structure)	0.73	1.57
Learning Alone/Peer-Oriented Learner	0.79	1.81
Auditory Preferences	0.79	1.46
Visual Preferences	0.76	1.37
Tactile Preferences	0.80	1.89
Kinesthetic Preferences	0.88	1.54
Requires Intake	0.86	1.50
Time of Day (morning or evening)	0.75	1.87
Mobility	0.91	1.25
Teacher-motivated	0.73	1.21
Average	**0.81**	**1.55**