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Can LASSI Score Profiles Help Identify Postsecondary Students

with Underlying Reading Problems?

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Abstract

This study investigated whether scores on the Learning and Study Skills Inventory (LASSI)

could be used to identify postsecondary students who had deficiencies in reading comprehension

and vocabulary as measured by the Nelson-Denny Reading Test (NDRT). The sample consisted

of 110 voluntary respondents from among students entering UNBC. While there were significant

correlations between some of the LASSI scales and percentile ranks on the NDRT, the significant

LASSI scales could not be used to reliably classify poor readers. Participants who obtained low

percentile rankings on vocabulary and comprehension were most often misclassified as average

or good readers. Further research is required to obtain an understanding of the relationship

between scores on the LASSI scales and levels of reading proficiency.

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Over the past few decades there has been an increase in the numbers of underprepared students attending colleges and universities (Abrams & Jernigan, 1984; Noel & Levitz, 1982). The challenge for postsecondary learning resource personnel is to teach those students how to implement strategies that assist them in their academic endeavors. The Learning and Study Skills Inventory (LASSI), which has been translated into more than 30 languages and is used by more than half of all colleges in the United States (Murray, 1998), is a diagnostic tool to help identify areas in which students might benefit most from educational interventions (Weinstein, 1987). "Many colleges and universities give [the LASSI] to their entire freshman class or use it in student affairs programs or classes geared for students at risk for academic failure" (Murray, 1998, p. 36).   The LASSI is a non-threatening self-report instrument that was designed to measure students' attitude, motivation, time management, anxiety, concentration, information processing, selecting main ideas, use of study aids, self testing and test strategies. However, when using the LASSI as a diagnostic tool at the Learning Skills Centre (LSC), we wondered how beneficial it was to teach study skills and learning strategies that address weaknesses identified by the LASSI if the underlying problem were poor reading. For example, if we teach a student to use study aids such as the index, he or she needs to be able to understand the passages found using the index; otherwise, he or she will wonder why the LSC was unhelpful, and we will wonder why the great study tips failed. We sometimes suspected that the student's real problem was not a study strategy such as test preparation, but rather reading comprehension. So we wondered if the commonly used LASSI would signal to us when a more formal reading diagnosis might be a good idea. It was hypothesized that scores or patterns of scores on the LASSI might

be indicative of underlying reading problems. This research was intended to add to the literature on how to interpret LASSI profiles so that practitioners can appropriately address areas of academic weaknesses and help students succeed in college and university.

During the 1997-98 academic year, the LSC conducted a pilot study to investigate the relationship between reading ability and the use of learning and study strategies (Richardson, 1998). The participants consisted of 27 female and 4 male first-year students attending the University of Northern British Columbia (UNBC). Study skills were assessed using the LASSI (Weinstein, Palmer, & Schulte, 1987), and reading ability was assessed with the Nelson-Denny Reading Test (NDRT) (Brown, Vick Fishco, & Hanna, 1993). The results from that pilot project indicated that reading ability was related to the use of some learning and study skills as measured by the LASSI. Specifically, high anxiety and low scores on selecting main ideas and on test taking, as measured by the LASSI, were significantly correlated with poor scores on the NDRT. A review of the literature on the use of the LASSI revealed a lack of research in the area of relationships between LASSI profiles and reading ability. The apparent gap in the literature, coupled with the results from the pilot project, lead to our research question: Can LASSI score profiles help identify postsecondary students with underlying reading problems?

<div align="center">Method</div>

<u>Participants</u>

The sample consisted of 110 voluntary respondents who were incoming students attending Student Success Week at UNBC. Student Success Week is held the week before the fall semester, and students who wish to attend the orientation activities are required to pay a $30 fee. Participants included 59 females ranging in age from 18 to 37 ($\underline{M} = 20.0$, $\underline{SD} = 3.7$), and 51 males ranging in age from 18 to 47 ($\underline{M} = 20.0$, $\underline{SD} = 4.9$). The majority of the respondents were

in their first year of university ($\underline{n}$ = 99). The rest were entering UNBC at the second ($\underline{n}$ = 8), third

($\underline{n}$ = 2) and fourth ($\underline{n}$ = 1) year levels. The ages of the entire sample ranged from 18 to 47 years,

($\underline{M}$ = 20.0, $\underline{SD}$ = 4.3).

Materials

Nelson-Denny Reading Test (NDRT). The vocabulary and reading comprehension

subscales of forms G or H of the NDRT (Brown et al., 1993) were used to measure reading

ability.

The Learning and Study Strategies Inventory (LASSI). The LASSI, (Weinstein et al.,

1987) was used to measure attitude, motivation, time management, anxiety, concentration,

information processing, selecting main ideas, use of study aids, self testing, and test strategies.

The reliability of the LASSI is adequate for research purposes. The internal consistency

(coefficient alpha) for the 10 scales' scores ranges from 0.68 to 0.86, and test-retest (3-week

interval) correlation coefficients range from 0.72 to 0.85 (Weinstein, 1987). Albaili (1997)

reports similar (although slightly lower) internal consistency (coefficient alpha) ranging from

0.65 to 0.79 for the 10 scales scores. In this study, the coefficient alphas ranged from 0.69 to

0.86.

Procedure

Data collection setting. A week before the academic year began in September 1998,

UNBC hosted Student Success Week for incoming students. During that week, the students were

invited to attend group administrations of the LASSI and the NDRT. The participants signed

consent forms and voluntarily provided demographic information. All participants were invited

to drop-in to the LSC for their results, and when appropriate, they were referred to the LSC study

skills tutor or the Counselling Centre for assistance.

Results

The descriptive statistics for each of the 10 LASSI scales are presented in Table 1. Table 2 shows the descriptive statistics for the NDRT scales.

[INSERT TABLES 1 AND 2 ABOUT HERE]

The percentile ranks for vocabulary and comprehension scales from the NDRT were used in the analyses for this study. Percentile ranks from the NDRT where used because (a) the correlations between the percentile ranks and their raw and scaled scores were all above 0.97; therefore, the results would not depend on the type of score (raw, percentile, or scale) used; and (b) many practitioners use the percentile rank in their assessment decisions and reports.

Correlations. As a first step toward investigating the link between LASSI scores and NDRT scores, we examined the correlations between the 10 scales from the LASSI and the NDRT percentile ranks for vocabulary and comprehension. These correlations measure the individual relation of each learning and study strategy variable to the reading performance. As shown in Table 3, there were several statistically significant correlations between the LASSI scores and NDRT scores. Attitude (ATT) was positively correlated with vocabulary, and anxiety (ANX) was positively correlated both with the vocabulary and comprehension. Given the interpretation of the LASSI anxiety scores, this means that higher comprehension and vocabulary scores were associated with lower levels anxiety. Selecting main ideas (SMI) and test strategies (TST) were also positively correlated both with vocabulary and comprehension. Thus, the correlations indicated that a good attitude, average to low levels of anxiety, the ability to select main ideas, and good test strategies were related to proficiency in reading abilities whereas a poor attitude, higher levels of anxiety, weaknesses in the ability to select main ideas, and weak test strategies were related to poor reading skills.

[INSERT TABLE 3 ABOUT HERE]

Discriminant function analyses.   The significantly correlated percentile scores from the LASSI were used in discriminant function analyses to determine whether those scales could be used to classify poor readers. The participants were divided into groups based on their percentile rank scores on the comprehension and vocabulary subscales of the NDRT.   Table 4 depicts the discriminant function analyses results for 2 groups of readers whose NDRT percentile ranks on the vocabulary and comprehension subscales were above (good readers) and below (poor readers) the 50th percentile. Table 5 depicts the discriminant function results for 3 groups of readers whose NDRT percentile ranks on the vocabulary and comprehension subscale were (a) equal to or less than 40 (poor readers), (b) between 41 and 59 (average readers) and, (c) equal to or greater than 60 (good readers). As shown in Tables 4 and 5, the discriminant function analysis using the LASSI scales that were significantly correlated with vocabulary and comprehension did not reliably predict membership in the poor reader group. The numbers of correctly classified participants are represented in bold in the diagonal cells within Tables 4 and 5. For example, in Table 4, of the 22 students whose percentile rank on vocabulary was below 50, 3 students were correctly classified in the poor readers category while 19 of the 22 students were misclassified in the good readers category. The same overall pattern of results was found when the correlated LASSI scales were used in logistic regression analyses to predict group membership: Poor readers were most often misclassified as average or good readers.

[INSERT TABLES 4 AND 5 ABOUT HERE]

Discussion

It was hypothesized that scores or patterns of scores on the LASSI might be indicative of underlying reading problems. Working on study strategies with dozens of students who had taken

the LASSI, we sometimes sensed that students had an underlying reading problem which undermined our efforts and their efforts to improve strategies such as preparing for tests and test taking. We hoped that we could use the LASSI to flag students with reading problems. While students readily complete the non-threatening, self-report LASSI, few voluntarily brave a standardized reading test which can relegate them to a grade level or some substandard classification. Hoping that LASSI scores could indentify reading problems was not unreasonable considering LASSI scales such as information processing and selecting main ideas. Although some of the items in the LASSI scales appear to tap the types of sub-skills associated with reading methods advocated by study skills professionals, the results from this study suggest that practitioners should not rely on LASSI score profiles or patterns of LASSI scores to help identity underlying reading problems. As in the earlier pilot project, in this study the significant correlations between the LASSI scales and the NDRT indicated that low to average levels of anxiety, the ability to select main ideas from textbooks and lectures, and good test strategies were associated with good reading comprehension skills. Furthermore, a good attitude, lack of anxiety, the ability to select main ideas and good test strategies were related to good vocabulary skills. However, in the current study, when the LASSI scales that were significantly correlated with the NDRT subscales were used to predict membership in the various reading categories, poor readers were most often misclassified as average or good readers.

As outlined in the method section, the respondents in this study were volunteer students who attended the Student Success Week activities held just before the beginning of the fall semester, and, therefore, the sample is not representative of incoming students since not all new students attend Student Success Week. Students who voluntarily come to learning resource centres for assistance sometime during the semester, often after receiving midterm exam results,

may respond to the self-report items on the LASSI in ways that differ from the student participants from which results for this study were taken. Additionally, in this study the proportion of students with higher percentile rankings on the NDRT was much greater than the proportion of students who scored lower on the comprehension and vocabulary subscales. The statistical effect of having an unbalanced sample of poor readers relative to average or good readers must be taken into account when interrupting the results of this study. That is, we cannot say that LASSI scores can not predict underlying reading problems but that with so many good readers and so few poor readers in our sample we were unable to find any predictive power. Nevertheless, the results from this study are interesting because there are several contexts in which the LASSI is used with students who are good readers.

Further research is required to investigate the significance of the correlations between the LASSI scales and the performance results on the NDRT. Researchers should look toward using balanced samples from populations that more closely represent voluntary resource centre "drop-in" students as well as from underprepared incoming students who are required to enroll in developmental courses. It is possible that further research using different sample populations will provide a clearer understanding of how LASSI score profiles, or patterns in LASSI scores, can be used effectively by practitioners when working with postsecondary students who may have reading problems.

Table 1

Descriptive Statistics for the LASSI Scales (N = 110)

Scale	M	SD	Minimum Scale Score	Maximum Scale Score
Attitude (ATT)	32.6	4.5	14	40
Motivation (MOT)	31.4	5.1	15	39
Time Management (TMT)	24.6	5.6	13	37
Anxiety (ANX)	26.5	6.5	11	37
Concentration (CON)	27.2	5.1	15	40
Information Processing (INP)	27.8	5.6	13	40
Selecting Main Ideas (SMI)	17.7	3.3	0	25
Study Aids (STA)	26.3	5.2	14	38
Self-Testing (SFT)	26.9	5.3	9	39
Test Strategies (TST)	29.0	4.8	17	39

Table 2

Descriptive Statistics for the Percentile Ranks on the NDRT (N = 110)

Scale	M	SD	Minimum Percentile	Maximum Percentile
Vocabulary	71.6	23.3	7	99
Reading Comprehension	67.2	23.5	17	99

Table 3

Correlations between LASSI Scales and NDRT Vocabulary and Reading

Comprehension Percentile Ranks (N = 110)

	NDRT Scales	
LASSI Scales	Vocabulary	Reading Comprehension
Attitude (ATT)	.23*	.17
Motivation (MOT)	.17	.10
Time Management (TMT)	-.10	-.13
Anxiety (ANX)	.37**	.29**
Concentration (CON)	.16	.04
Information Processing (INP)	.18	.06
Selecting Main Ideas (SMI)	.29**	.26**
Study Aids (STA)	-.05	-.03
Self-Testing (SFT)	.08	.09
Test Strategies (TST)	.43**	.38**

Note. * $p < .05$ (2-tailed) and ** $p < .01$ (2-tailed)

Table 4

Predicted Group Membership Results using Discriminant Function Analyses with Groups Split at

the 50th Percentile on the NDRT Vocabulary and Comprehension Scales

	Predicted Group Membership	
NDRT Scales	Poor Readers Below 50th	Good Readers 50th or Above
Vocabulary		
Poor Readers ($\underline{n}$ = 22)	**3**	19
Good Readers ($\underline{n}$ = 88)	3	**85**
Comprehension		
Poor Readers ($\underline{n}$ = 30)	**6**	24
Good Readers ($\underline{n}$ = 80)	3	**77**

Note. The numbers of correctly classified participants are represented in bold in the diagonal

cells.

Table 5

Predicted Group Membership Results using Discriminant Function Analyses with Groups Split

Below the 41st Percentile, Between 41st and 59th, and, Above the 59th Percentile on the NDRT

Vocabulary and Comprehension Subscales

	Predicted Group Membership		
NDRT Scales	Poor Readers Below 41st	Average Readers 41st to 59th	Good Readers Above 59th
Vocabulary			
Poor Readers ($\underline{n}$ = 13)	**1**	3	9
Average Readers ($\underline{n}$ = 20)	0	**2**	18
Good Readers ($\underline{n}$ = 77)	0	1	**76**
Comprehension			
Poor Readers ($\underline{n}$ = 20)	**2**	0	18
Average Readers ($\underline{n}$ = 20)	1	**0**	19
Good Readers ($\underline{n}$ = 70)	1	0	**69**

Note. The numbers of correctly classified participants are represented in bold in the diagonal

cells.

References

Abrams, H. G., & Jernigan, L. P. (1984). Academic support services and the success of high-risk college students. American Education Research Journal, 21(2), 261-274.

Albaili, M.A. (1997). Differences among low-, average-, and high-acheiving college students on learning and study strategies.   Educational Psychology, 17(1-2) 171-177.

Brown, J. I., Vick Fishco, V., & Hanna, G. (1993). Nelson-Denny Reading Test. Chicago: Riverside Publishing.

Murray, B. (1998, April). Getting smart about learning is her lesson. APA Monitor, 29(4), p. 36.

Noel, L., & Levitz, R. (Eds.). (1982). How to succeed with academically underprepared students. Iowa City, IA: American College Testing Service National Center for Advancing Educational Practice.

Richardson, C. (1998). An examination of the relationship between reading ability and learning and study skills. Unpublished manuscript, University of Northern British Columbia, Prince George, British Columbia, Canada.

Weinstein, C. E. (1987). LASSI User's Manual. Clearwater, FL: H & H Publishing.

Weinstein, C. E., Palmer, D. R., & Schulte, A. C. (1987). Learning and Study Strategies Inventory. Clearwater, FL: H & H Publishing.

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