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Exact Path Diagnostic and Louisiana Assessment of Educational Progress (LEAP)

Correlational Study

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Summary

This research study correlated scores on the Exact Path diagnostic assessment across testing windows (fall, winter, and spring) with scores on the spring Louisiana Assessment of Educational Progress (LEAP) assessments over a three–year period (2020–21, 2021–22, and 2022–23) for students in grades 3 through 8. This research study also correlated scores on the Exact Path diagnostic assessment across testing windows (fall, winter, and spring) with scores on the fall and spring administrations of the LEAP assessments in high school Algebra I, Geometry, English I, and English II over a three–year period (2020–21, 2021–22, and 2022–23). Finally, the longitudinal section of this research study correlated scores on the Exact Path diagnostic assessment in the spring testing window of prior school years with third grade spring administrations of the LEAP assessments in 2021, 2022, and 2023. Prior year data was from one or two school years prior to the third grade LEAP assessment administration, so Exact Path data for the longitudinal analysis was from spring Exact Path administrations in 2019, 2021, and 2022. Strong correlations were found between the Exact Path diagnostic and LEAP scores across content areas and testing windows. These findings suggest that the assessments measure similar skills and knowledge, and that Exact Path is a strong predictor of performance on LEAP.

Background

The Exact Path diagnostic assessment is a computer–adaptive test that can be administered up to five times a year in mathematics, language arts, and/or reading and which reports results on a vertical scale with scores ranging from 500 to 1500 across grade levels. Nine (9) schools from one Louisiana district that administered the Exact Path diagnostic also provided scores from students on the LEAP assessment, the Louisiana accountability summative assessment. After matching LEAP scores with Exact Path data, 14,047 student scores in math, 12,157 student scores in language arts, and 12,131 student scores in reading were included in the correlational analysis. This study investigates the strength of the relationship between scores on the Exact Path diagnostic and the LEAP by investigating correlations between student scores on both tests. Correlations between two tests offer a source of validity evidence, with strong correlations providing evidence that the assessments tend to measure the same skills and knowledge.

Sample Information

Nine schools from one Louisiana school district participated in this study by providing Edmentum with performance data from the LEAP assessment. These data were then joined with Exact Path diagnostic data using a unique student identification number. The Exact Path fall testing windows included administrations between August 20 and October 27, 2020, between August 10 and September 15, 2021, and between August 10 and September 2, 2022. Exact Path winter testing windows included administrations between January 5 and February 8, 2021, between January 10 and February 11, 2022, and between December 12, 2022 and January 20, 2023. Exact Path spring testing windows included administrations between April 5 and May 27, 2021, between April 11 and June 2, 2022, and between March 28 and May 16, 2023. To compare Exact Path diagnostic performance across a particular school year to spring performance on LEAP in that year, the LEAP data were merged with Exact Path scores from each testing window within the year. Tables 1–3 show the

number of Louisiana students in the merged sample across the three years by testing window, grade, and content area. Tables 4–6 show the number of Louisiana high school students in the merged sample across the three years by course, state season, and Exact Path testing window. Any sample size less than 50 students has been suppressed. For the high school correlation analysis, if a student took the LEAP in the fall state season only, all Exact Path testing occasions were merged with that LEAP testing event. If the student took the LEAP in the spring state season only, all Exact Path testing occasions were merged with that LEAP testing event. If the student took the LEAP in both the fall and spring state season for the same course, the fall LEAP test was merged with any corresponding fall and winter Exact Path testing occasions and the spring LEAP test was merged with any corresponding spring Exact Path testing occasions.

Table 1

Sample Sizes for the Exact Path Diagnostic Mathematics Assessment

Grade Level	Testing Window		
	Fall	Winter	Spring
3	708	727	629
4	724	791	745
5	712	758	696
6	641	696	600
7	636	631	645
8	656	656	600

Table 2

Sample Sizes for the Exact Path Diagnostic Language Arts Assessment

Grade Level	Testing Window		
	Fall	Winter	Spring
3	625	715	639
4	704	787	737
5	696	730	717
6	385	445	367
7	347	392	369
8	392	384	387

Table 3

Sample Sizes for the Exact Path Diagnostic Reading Assessment

Grade Level	Testing Window		
	Fall	Winter	Spring
3	644	708	643
4	699	759	755
5	680	713	716
6	383	447	373
7	393	394	375
8	387	385	384

Table 4

High School Sample Sizes for the Exact Path Diagnostic Mathematics Assessment

	State Season	Exact Path Season		
		Fall	Winter	Spring
Algebra I	Fall	66	57	*
	Spring	479	396	277
Geometry	Fall	106	76	*
	Spring	145	117	77

*Not included due to suppression rules (n < 50)

Table 5

High School Sample Sizes for the Exact Path Diagnostic Language Arts Assessment

	State Season	Exact Path Season		
		Fall	Winter	Spring
English I	Fall	189	73	65
	Spring	357	303	249
English II	Fall	209	140	80
	Spring	272	231	171

Table 6

High School Sample Sizes for the Exact Path Diagnostic Reading Assessment

	State Season	Exact Path Season		
		Fall	Winter	Spring
English I	Fall	176	77	67
	Spring	321	366	254
English II	Fall	161	140	79
	Spring	231	247	174

Table 7 shows the cumulative demographic composition of students in the sample during the 2020–2021, 2021–2022, and 2022–2023 school years compared to the overall state population of students in those three years. Some students had inconclusive demographic data where it was not possible to determine their true group membership in some categories. Therefore, these students were removed from the demographic analysis for all demographic categories. However, they were still included in the rest of the relevant analyses in this report. In general, students from the district in this study are more likely to be American Indian or Alaska Native, two or more races, or White, and less likely to be Asian, Black or African American, or Hispanic. Students from the district in this study are also less likely to be English Learners, about equally likely to be students with disabilities, and less likely to have Economically Disadvantaged status.

Table 7

Comparison of Student Demographic Characteristics between Sample and State across 2020–2021, 2021–2022, and 2022–2023

Characteristic	Sample (%)	State (%)	Difference (%)
American Indian or Alaska Native	17.58	0.58	17.00
Asian	0.26	1.60	-1.34
Black or African American	21.91	42.12	-20.21
Hispanic	2.98	9.54	-6.56
Native Hawaiian/Other Pacific Islander	0.05	0.08	-0.03
Two or more races	8.16	3.30	4.86
White	49.06	42.79	6.27
Female	48.64	48.80	-0.16
Male	51.36	51.20	0.16
English Language Learner	0.42	4.40	-3.98
Economically Disadvantaged	68.55	72.09	-3.54
Special Education	12.78	12.92	-0.14

Source: Louisiana Department of Education, 2021, 2022, 2023a. The state lists 'American Indian or Alaska Native' as 'American Indian.' The state lists 'Black or African American' as 'Black.' The state lists 'Native Hawaiian/Other Pacific Islander' as 'Hawaiian/Pacific Islander.' The state lists 'Two or more races' as 'Multiple Races (Non-Hispanic).' State Special Education data was only available for 2020–21 and 2021–22.

LEAP summative scores are divided into five performance levels: Unsatisfactory, Approaching Basic, Basic, Mastery, and Advanced. Table 8 compares the percentages of students in the sample in grades 3–8 who obtained each performance level based on their 2021, 2022, and 2023 state test scores, compared to the overall state population. Results show that in some grade levels and content areas the study sample participants were equally or more likely to be classified as basic or above as compared to the state population, and in other grade levels and content areas the study sample participants were less likely to be classified as basic or above as compared to the state population. Table 9 compares the percentages of students in the sample in high school Algebra I, Geometry, English I, or English II who obtained each performance level based on their state season in 2021, 2022, and 2023, compared to the overall state population, which is not divided by state season. Results show that in high school math, sample participants were equally or more likely to be classified as basic or above as compared to the state population, but in high school English, sample participants were equally or less likely to be classified as basic or above as compared to the state population.

Table 8

Distribution of LEAP Scores Across Performance Levels for Sample and State

Grade	Performance Level	Mathematics		English Language Arts	
		Sample (%)	State (%)	Sample (%)	State (%)
3	Unsatisfactory	12	15	17	21
	Approaching Basic	24	22	17	18
	Basic	31	27	22	21
	Mastery	31	31	39	34
	Advanced	3	5	5	5
4	Unsatisfactory	14	16	11	13
	Approaching Basic	30	24	18	19
	Basic	29	26	28	25
	Mastery	26	32	34	33
	Advanced	1	3	9	10
5	Unsatisfactory	14	15	11	10
	Approaching Basic	36	28	28	21
	Basic	29	28	30	29
	Mastery	20	26	30	35
	Advanced	1	4	2	4
6	Unsatisfactory	14	18	12	11
	Approaching Basic	31	27	27	23
	Basic	31	27	32	28
	Mastery	23	24	27	31
	Advanced	1	3	2	6
7	Unsatisfactory	10	12	15	14
	Approaching Basic	29	32	15	18
	Basic	35	32	25	25
	Mastery	23	22	34	29
	Advanced	3	3	9	14
8	Unsatisfactory	17	25	16	13
	Approaching Basic	26	28	17	17
	Basic	24	24	26	24
	Mastery	28	21	34	36
	Advanced	5	2	6	10

Source: Louisiana Department of Education, 2023b.

Table 9

Distribution of High School LEAP Scores Across Performance Levels for Sample and State

Subject	Performance Level	State Fall Sample (%)	State Spring Sample (%)	State (%)
Algebra I	Unsatisfactory	15	12	14
	Approaching Basic	22	22	27
	Basic	15	27	25
	Mastery	40	34	29
	Advanced	7	5	5
Geometry	Unsatisfactory	3	2	8
	Approaching Basic	19	18	31
	Basic	29	43	32
	Mastery	39	30	24
	Advanced	10	8	5
English I	Unsatisfactory	17	15	14
	Approaching Basic	17	18	19
	Basic	25	27	25
	Mastery	33	34	33
	Advanced	8	6	9
English II	Unsatisfactory	22	20	18
	Approaching Basic	17	18	16
	Basic	27	21	21
	Mastery	27	30	31
	Advanced	7	11	15

Methods and Results

In this study, student academic performance within a subject is measured through two assessments: the Exact Path diagnostic and the LEAP. The Exact Path diagnostic assessments in mathematics, language arts, and reading result in scores on a vertical scale so that performance within a subject can be compared across grades. However, the vertical scale for each subject is distinct, so scores cannot be compared across subjects. The LEAP assesses academic performance in mathematics and English language arts and are aligned to the

Louisiana State Standards (Louisiana Department of Education, 2023c). As noted in the Sample Information section, LEAP is administered in grades 3–8 once a year, typically in the spring, and administered once per semester in tested high school courses, whereas Exact Path is typically administered three times per year (fall, winter, spring). Correlations between spring Exact Path diagnostic scores and spring LEAP scores, as well as correlations between high school fall and winter Exact Path diagnostic scores and fall LEAP scores, are from test administrations closest in time, providing concurrent validity evidence. Correlations between fall and winter Exact Path diagnostic scores with spring LEAP scores are provided as predictive validity evidence for the Exact Path diagnostic.

Higher performance on the Exact Path diagnostic is expected to correspond to higher scores, and corresponding performance levels, on LEAP. The distribution of fall, winter, and spring Exact Path diagnostic scores by LEAP performance category, grade level, and subject area are displayed cumulatively across the three school years for grades 3–8 in the box plots in Figures 1–3. The distribution of fall, winter, and spring Exact Path diagnostic scores by LEAP performance category and high school subject and season are displayed cumulatively across the three school years in the box plots in Figures 4–6. The boxes represent the distribution of Exact Path scores from the first quartile to the third quartile, with a horizontal line intersecting the box at the median. The whiskers of the boxes extend to 1.5 * the Interquartile Range (difference of third quartile and first quartile) for each score distribution. Any scores that fall outside of that range are considered outliers and have been removed from the plots for ease of readability. Based on the vertical progression of the box plots across performance levels, these figures show that within each subject, there is a clear relationship between the LEAP performance levels and Exact Path diagnostic scores. Within each subject area, almost all median Exact Path diagnostic scores increase as LEAP performance levels increase. When this is not the case, the sample sizes tend to be small. These results hold across the three testing windows. These boxplots suggest a strong relationship between LEAP performance levels and Exact Path diagnostic scores. Median and mean scale scores by LEAP performance level should not be interpreted as performance level predictions or cut scores but rather provide evidence that students that scored higher on the Exact Path diagnostic also received LEAP scores corresponding to higher performance levels. Tables A1–A3 in the appendix provide descriptive statistics for the data represented in Figures 1–3. Tables A4–A6 in the appendix provide descriptive statistics for the data represented in Figures 4–6.

Figure 1

Exact Path Diagnostic Mathematics Score Distribution by LEAP Mathematics Performance Level, Grade, and Exact Path Testing Window

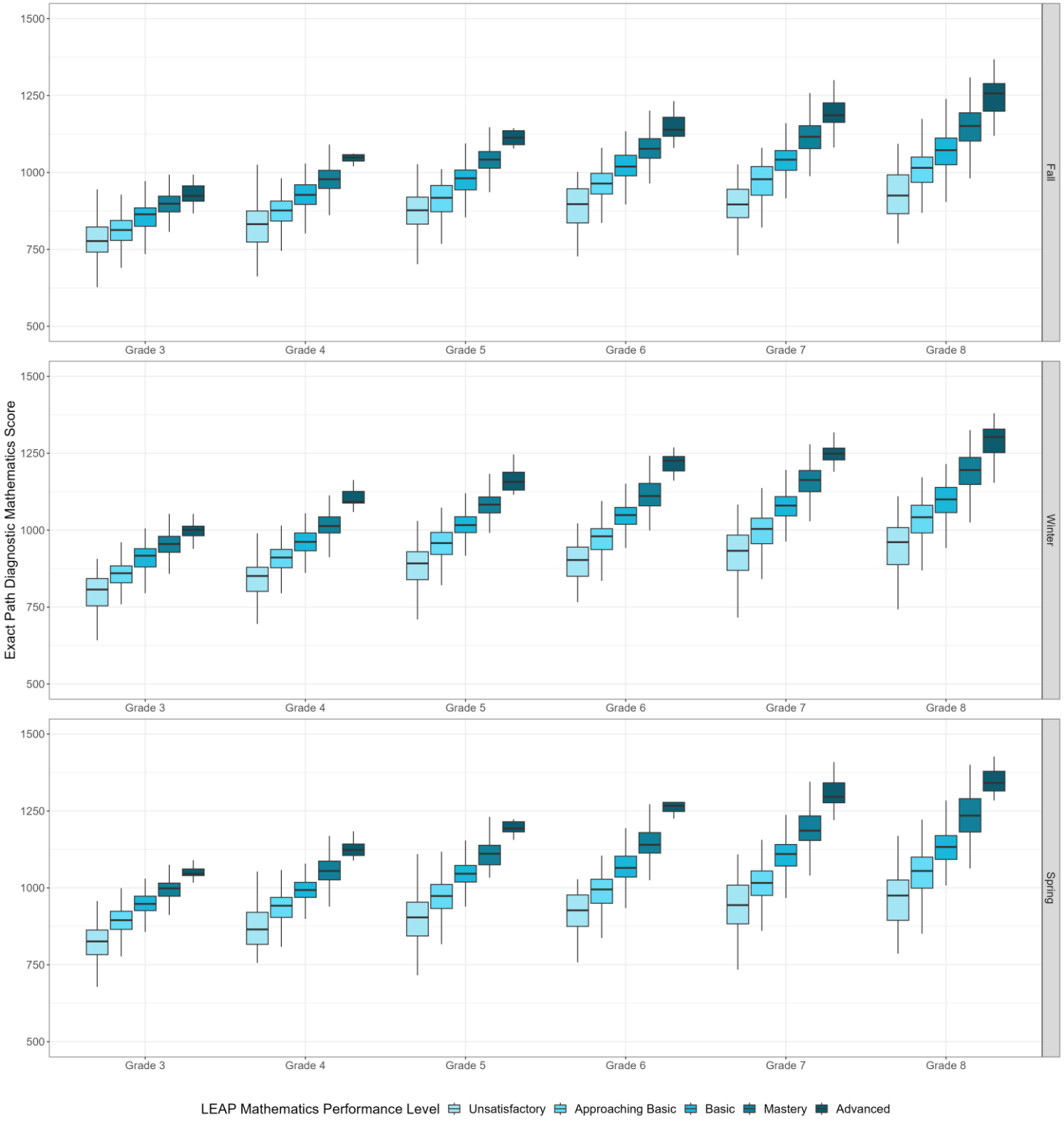


Figure 2

Exact Path Diagnostic Language Arts Score Distribution by LEAP English Language Arts Performance Level, Grade, and Exact Path Testing Window

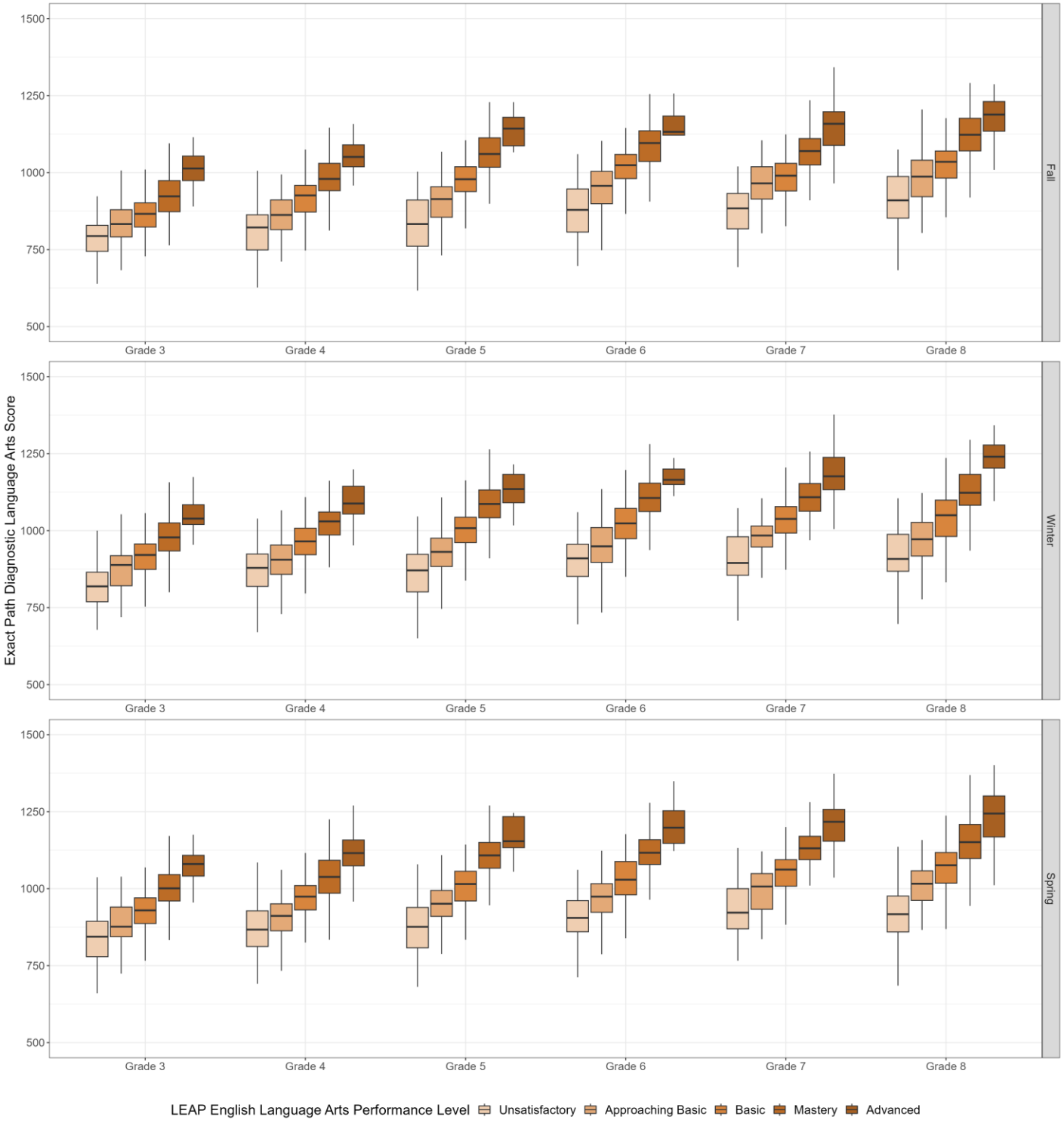


Figure 3

Exact Path Diagnostic Reading Score Distribution by LEAP English Language Arts Performance Level, Grade, and Exact Path Testing Window

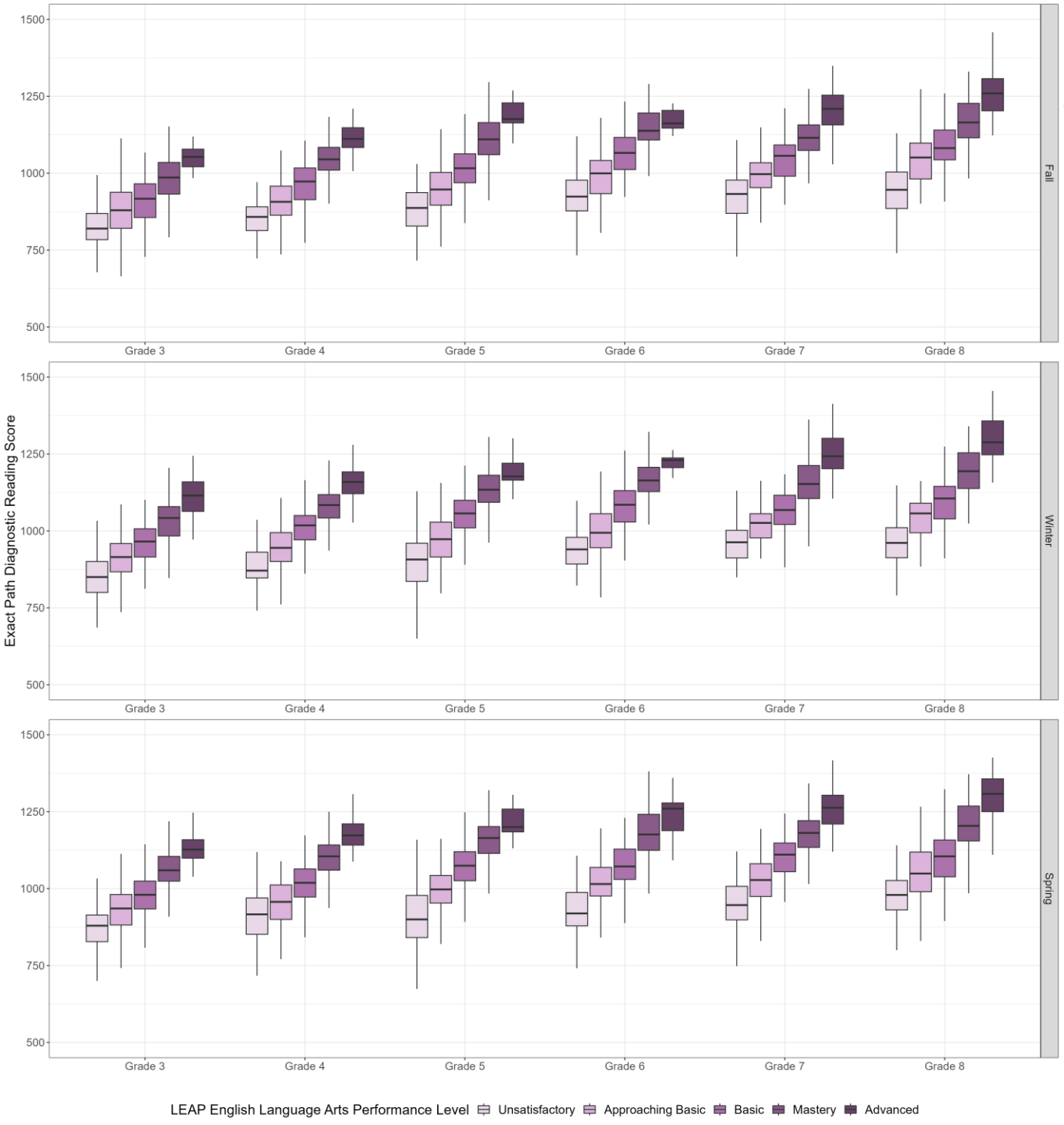


Figure 4

Exact Path Diagnostic Mathematics Score Distribution by LEAP Performance Level, High School Subject and Season, and Exact Path Testing Window

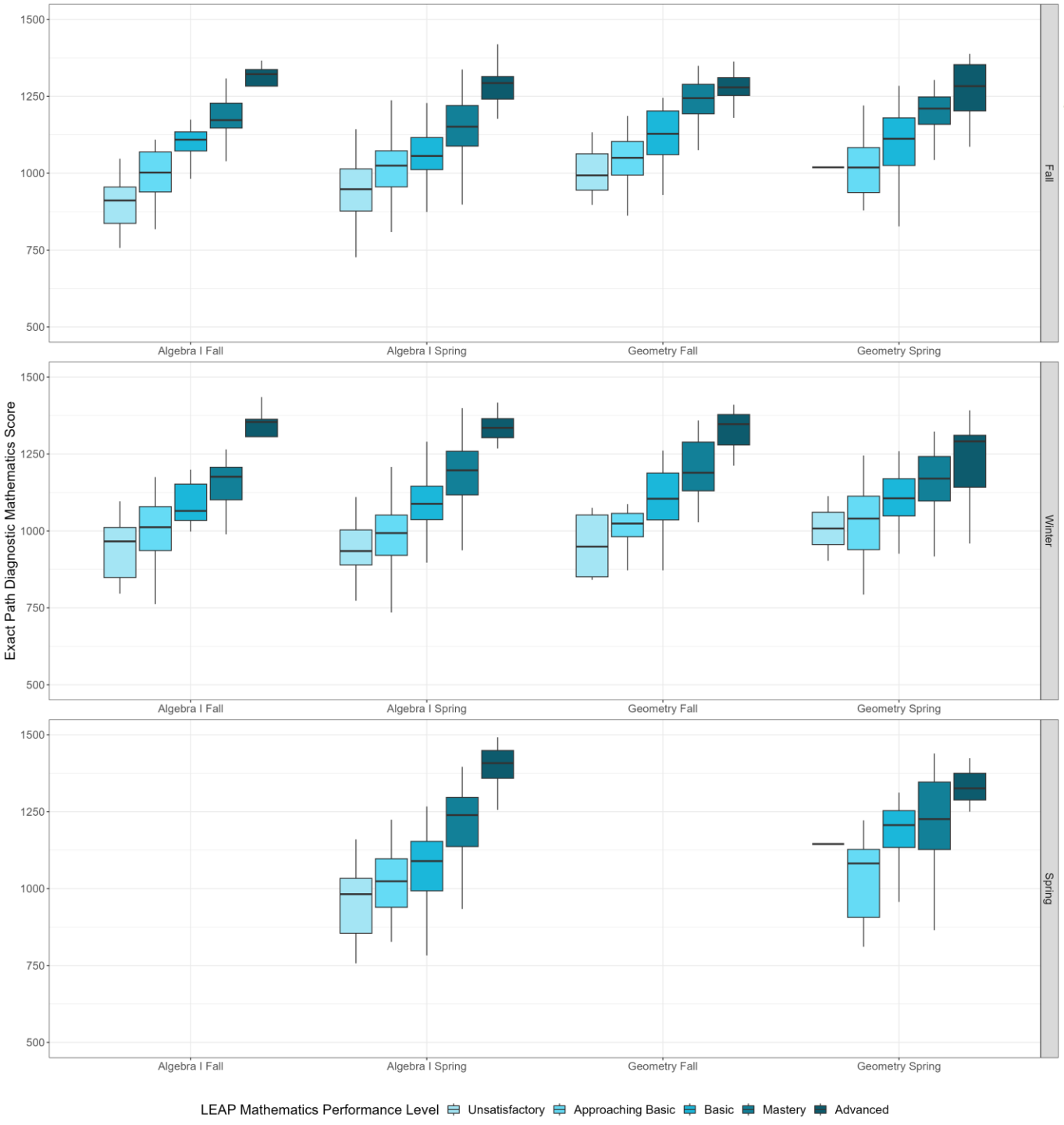


Figure 5

Exact Path Diagnostic Language Arts Score Distribution by LEAP Performance Level, High School Subject and Season, and Exact Path Testing Window

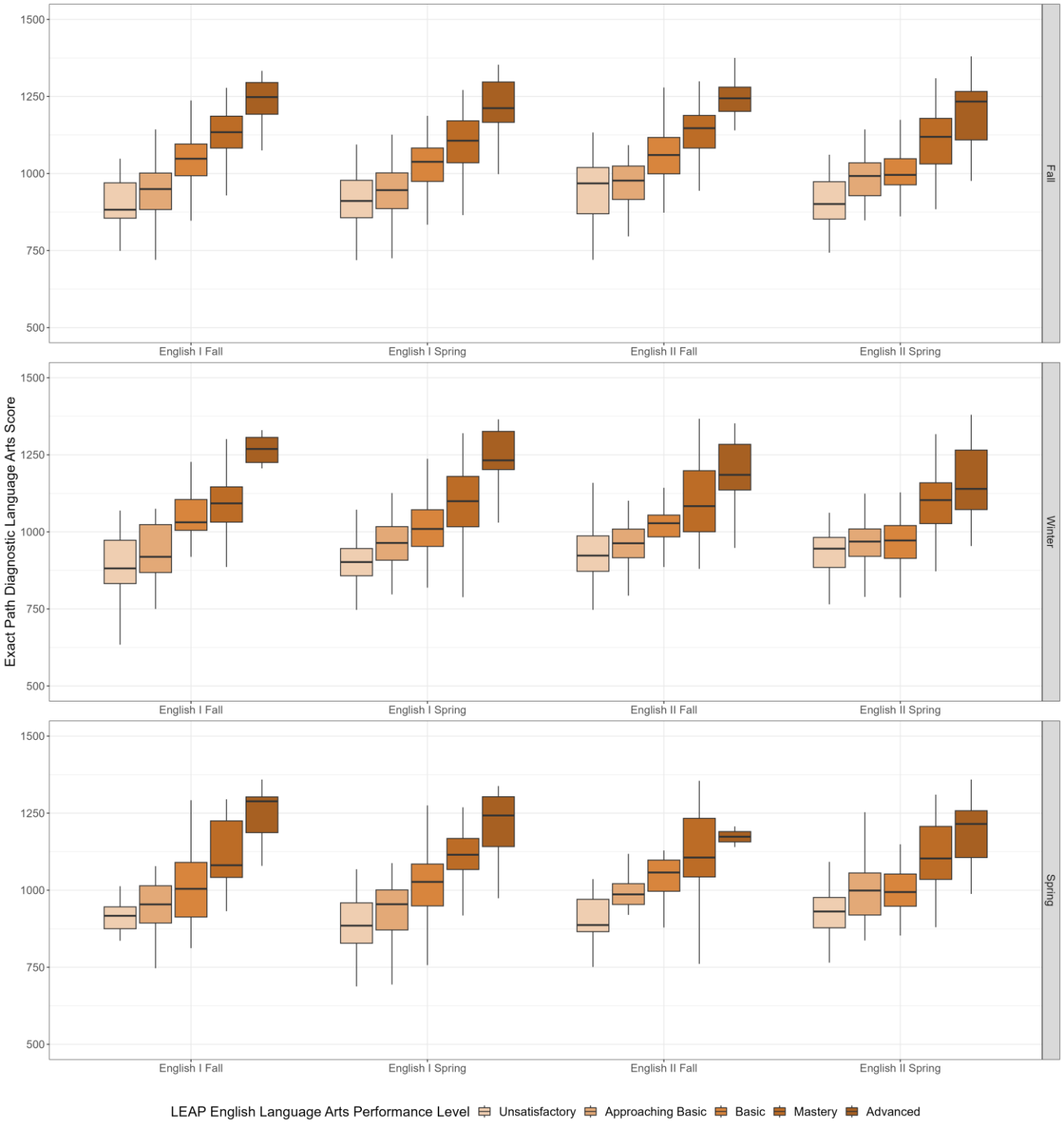
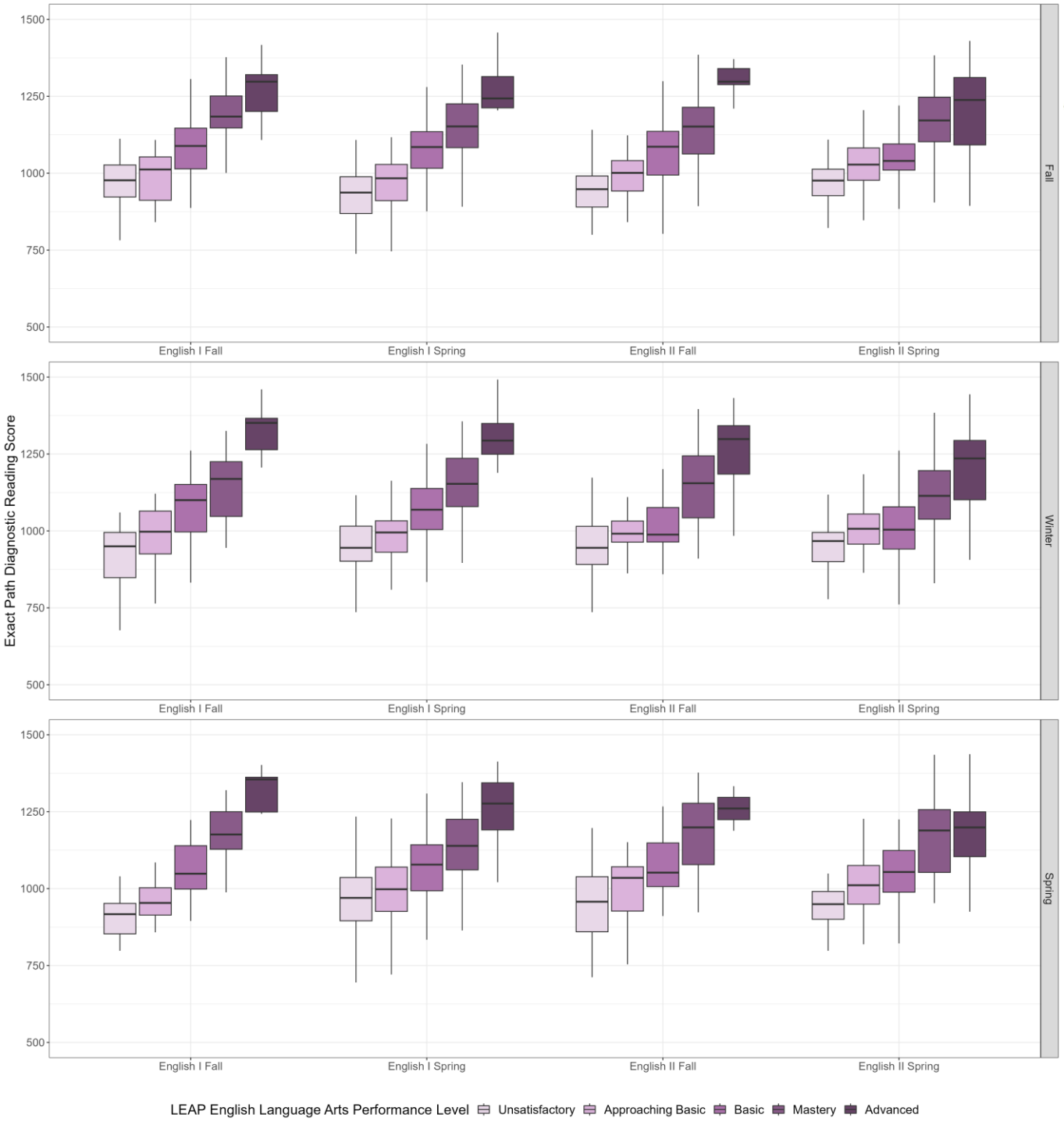


Figure 6

Exact Path Diagnostic Reading Score Distribution by LEAP Performance Level, High School Subject and Season, and Exact Path Testing Window



Figures 1–6 suggest strong relationships between scores on Exact Path diagnostic and LEAP. Tables 10–12 provide weighted correlation coefficients for grades 3–8 between Exact Path fall, winter, and spring scores with LEAP spring scores cumulatively over the 2020–2021, 2021–2022, and 2022–2023 school years. Tables 13–15 provide weighted correlation coefficients for high school between Exact Path fall, winter, and spring scores with LEAP fall and spring scores cumulatively over the 2020–2021, 2021–2022, and 2022–2023 school years. Correlation coefficients measure the linear relationship between LEAP scores and Exact Path diagnostic scores in each testing window and range from 0 to +/-1, where the larger the absolute value of the correlation coefficient, the stronger the association between the two measures. Correlation coefficients were weighted to address issues of score range restriction, meaning to adjust for ranges of the score scales where there were very few scores in the sample data (Bailey, 2023; Bills & Li, 2005).

Cohen, Cohen, West, & Aiken (2003) provided a standard or rule of thumb for interpreting the strength of the relationship. Correlation coefficients between 0.10 and 0.29 represent a small association, coefficients between 0.30 and 0.49 represent a medium association, and coefficients of 0.50 and above represent a large association or relationship. The weighted correlations between Exact Path diagnostic and LEAP scores for grades 3–8 range from 0.674 to 0.862 (Mathematics), 0.638 to 0.787 (Language Arts), and 0.674 to 0.818 (Reading), indicating a large association or strong relationship between scores on the two assessments. The weighted correlations between Exact Path diagnostic and LEAP scores for high school range from 0.506 to 0.751 (Mathematics), 0.602 to 0.764 (Language Arts), and 0.629 to 0.814 (Reading), indicating a large association or strong relationship between scores on the two assessments. These correlations provide evidence that the Exact Path diagnostic assessment and LEAP are measuring similar knowledge and skills.

Table 10

Weighted Correlation Coefficients between LEAP Grades 3–8 Mathematics Scores and Exact Path Diagnostic Mathematics Scores in 2020–23

Grade	Testing Window		
	Fall	Winter	Spring
3	0.674	0.771	0.812
4	0.743	0.808	0.824
5	0.775	0.828	0.835
6	0.818	0.862	0.851
7	0.806	0.831	0.853
8	0.749	0.784	0.784

Table 11

Weighted Correlation Coefficients between LEAP Grades 3–8 English Language Arts Scores and Exact Path Diagnostic Language Arts Scores in 2020–23

Grade	Testing Window		
	Fall	Winter	Spring
3	0.638	0.712	0.706
4	0.729	0.727	0.747
5	0.762	0.768	0.787
6	0.730	0.760	0.750
7	0.712	0.755	0.785
8	0.694	0.725	0.734

Table 12

Weighted Correlation Coefficients between LEAP Grades 3–8 English Language Arts Scores and Exact Path Diagnostic Reading Scores in 2020–23

Grade	Testing Window		
	Fall	Winter	Spring
3	0.674	0.735	0.762
4	0.756	0.783	0.775
5	0.757	0.763	0.773
6	0.754	0.781	0.748
7	0.771	0.760	0.818
8	0.722	0.768	0.728

Table 13

Weighted Correlation Coefficients between LEAP High School Scores and Exact Path Diagnostic Mathematics Scores in 2020–23

Subject	State Season	Exact Path Testing Window		
		Fall	Winter	Spring
Algebra I	Fall	0.751	0.740	*
	Spring	0.710	0.724	0.700
Geometry	Fall	0.595	0.631	*
	Spring	0.634	0.506	0.515

*Not included due to suppression rules (n < 50)

Table 14

Weighted Correlation Coefficients between LEAP High School Scores and Exact Path Diagnostic Language Arts Scores in 2020–23

Subject	State Season	Exact Path Testing Window		
		Fall	Winter	Spring
English I	Fall	0.764	0.707	0.706
	Spring	0.702	0.702	0.699
English II	Fall	0.717	0.698	0.673
	Spring	0.722	0.660	0.602

Table 15

Weighted Correlation Coefficients between LEAP High School Scores and Exact Path Diagnostic Reading Scores in 2020–23

Subject	State Season	Exact Path Testing Window		
		Fall	Winter	Spring
English I	Fall	0.751	0.698	0.814
	Spring	0.731	0.730	0.639
English II	Fall	0.800	0.718	0.746
	Spring	0.640	0.629	0.666

Scatterplots by grade level and testing window cumulatively over the 2020–2021, 2021–2022, and 2022–2023 school years are provided in Figures A1–A6 in the appendix. These plots provide a visual representation of the relationship between student performance on each test by content area across both Exact Path and state testing windows. Like the correlations, the scatterplots also demonstrate that students who score higher on the Exact Path diagnostic tend to score higher on the LEAP and vice versa.

One additional predictive validity analysis was performed using LEAP and Exact Path diagnostic. To see how well Exact Path diagnostic scores one year prior to state testing predict Grade 3 LEAP scores, Exact Path scores from spring 2022 and 2021 were matched with LEAP scores from spring 2023 and 2022, respectively. To see how well Exact Path diagnostic scores in two years prior to state testing predict Grade 3 LEAP scores, Exact Path scores from spring 2021 and 2019 were matched with LEAP scores from spring 2023 and 2021, respectively. Table 16 shows the number of students and weighted correlations between LEAP and Exact Path scores one year prior to state testing in third grade. The weighted correlations ranged from 0.622 to 0.678 across subjects. Table 17 shows the number of students and weighted correlations between LEAP and Exact Path scores two years prior to state testing in third grade. The weighted correlations ranged from 0.541 to 0.614 across subjects. Scatterplots of these longitudinal score relationships are provided in Figures A7–A9 in the Appendix. The transition from Grade 1 and 2 to Grade 3 is very important for students and educators as students often take their first accountability assessment for mathematics and English language arts in Grade 3. These results indicate that Exact Path diagnostic spring scores from prior school years are strongly correlated with future Grade 3 state accountability scores, even though there is a one- to two-year developmental gap between the testing occasions used in this correlation analysis.

Table 16

Longitudinal Weighted Correlation Coefficients between Spring 2022–2023 Grade 3 LEAP Scores to Spring 2021–2022 Grade 2 Exact Path Diagnostic Scores

Content Area	Number of Students	Correlation
Mathematics	458	0.678
Language Arts	431	0.622
Reading	449	0.663

Table 17

Longitudinal Weighted Correlation Coefficients between Spring 2022-2023 Grade 3 LEAP Scores to Spring 2020–2021 Grade 1 Exact Path Diagnostic Scores

Content Area	Number of Students	Correlation
Mathematics	427	0.614
Language Arts	394	0.561
Reading	408	0.541

Conclusion

Results indicated that performance on the Exact Path diagnostic is correlated with performance on the LEAP. In other words, students that score high on the LEAP also tend to score high on the Exact Path diagnostic and vice versa. These results suggest that both the LEAP and the Exact Path diagnostic measure similar constructs, providing validity evidence for the use of Exact Path diagnostic as a measure of academic achievement in Louisiana.

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Appendix

Table A1

Descriptive Statistics of Exact Path Diagnostic Mathematics Scores by LEAP Exam Mathematics Performance Levels and Grade

Grade	Performance Level	Fall			Winter			Spring		
		n	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*
3	Unsatisfactory	85	782.9	71.8	80	799.2	78.8	73	822.6	75.7
	Approaching Basic	167	810.8	51.6	169	857.0	47.7	137	892.3	50.9
	Basic	217	855.8	49.6	223	909.2	45.1	197	943.6	44.4
	Mastery	216	898.2	40.0	229	954.4	41.2	204	995.2	38.0
	Advanced	23	928.9	32.6	26	994.0	32.8	18	1045.9	22.8
4	Unsatisfactory	90	827.4	88.6	95	844.4	79.5	99	867.9	82.1
	Approaching Basic	224	870.3	57.5	243	905.6	52.9	225	932.4	56.4
	Basic	208	924.9	50.0	232	958.2	48.1	218	991.2	44.4
	Mastery	193	976.9	42.1	212	1013.6	42.0	195	1056.5	47.3
	Advanced	9	1051.9	45.4	9	1103.9	34.4	8	1127.9	33.3
5	Unsatisfactory	97	870.2	81.0	101	880.1	81.2	92	892.9	94.2
	Approaching Basic	242	912.4	65.5	262	952.4	62.1	240	967.4	66.2
	Basic	215	976.5	48.0	226	1015.8	44.3	208	1045.5	43.4
	Mastery	148	1043.2	49.8	159	1082.8	44.9	147	1112.5	42.0
	Advanced	10	1110.7	51.4	10	1162.9	40.9	9	1203.2	37.5
6	Unsatisfactory	91	887.8	66.7	89	898.9	69.7	80	916.5	73.7
	Approaching Basic	205	958.8	51.6	219	969.9	54.8	193	984.9	60.3
	Basic	192	1022.5	53.2	216	1046.6	47.7	183	1066.2	54.4
	Mastery	146	1079.5	52.9	165	1115.8	48.9	138	1144.4	53.1
	Advanced	7	1149.3	51.4	7	1217.1	41.0	6	1269.3	37.4
7	Unsatisfactory	63	895.0	73.1	62	924.1	75.1	61	942.1	87.4
	Approaching Basic	180	967.4	70.7	180	990.9	75.2	183	1011.6	67.1
	Basic	224	1038.5	49.0	218	1075.2	51.6	229	1104.7	53.5
	Mastery	151	1111.7	57.0	153	1160.2	55.3	157	1192.6	60.6
	Advanced	18	1193.4	58.3	18	1247.8	45.5	15	1305.5	47.4

Grade	Performance Level	Fall			Winter			Spring		
		n	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*
8	Unsatisfactory	104	931.3	82.5	103	946.3	92.9	83	960.1	98.8
	Approaching Basic	172	1008.9	74.6	173	1033.2	72.1	157	1046.4	80.1
	Basic	160	1066.7	70.5	161	1094.4	62.5	150	1125.5	73.6
	Mastery	187	1144.3	72.3	188	1189.2	73.3	179	1232.4	78.1
	Advanced	33	1248.2	59.3	31	1292.4	49.7	31	1345.4	41.7

Table A2

Descriptive Statistics of Exact Path Diagnostic Language Arts Scores by LEAP Exam English Language Arts Performance Levels and Grade

Grade	Performance Level	Fall			Winter			Spring		
		n	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*
3	Unsatisfactory	114	791.6	75.5	121	823.1	74.8	117	837.3	85.4
	Approaching Basic	107	831.5	76.3	122	873.6	70.3	112	883.2	74.7
	Basic	138	865.1	60.4	150	916.2	61.1	130	930.1	63.1
	Mastery	236	920.1	75.6	285	975.4	73.9	246	998.0	75.2
	Advanced	30	998.9	76.6	37	1046.9	62.1	34	1077.6	58.7
4	Unsatisfactory	73	810.4	83.2	77	865.9	83.3	75	866.1	82.8
	Approaching Basic	128	861.6	70.0	144	899.3	67.4	138	899.1	73.7
	Basic	207	915.3	75.5	220	956.5	72.2	209	968.4	66.6
	Mastery	230	979.6	69.1	275	1024.3	63.7	249	1036.6	74.2
	Advanced	66	1050.3	56.7	71	1090.0	63.4	66	1112.2	70.4
5	Unsatisfactory	77	833.1	92.8	77	859.3	89.4	79	873.1	86.9
	Approaching Basic	196	905.8	74.0	195	923.8	75.0	197	947.3	71.5
	Basic	206	975.6	76.1	223	1004.0	69.9	215	1012.7	69.8
	Mastery	206	1059.5	75.3	224	1084.6	70.1	215	1107.0	71.6
	Advanced	11	1136.2	54.5	11	1134.8	65.5	11	1170.6	68.7
6	Unsatisfactory	45	877.3	94.5	50	895.4	83.0	51	905.5	81.8
	Approaching Basic	109	950.1	71.3	117	950.7	80.9	106	965.9	83.8
	Basic	123	1018.3	59.8	144	1021.0	69.6	109	1029.8	76.0
	Mastery	102	1087.7	81.1	125	1109.9	76.7	94	1117.8	78.2
	Advanced	6	1141.2	84.4	9	1182.9	55.3	7	1209.9	81.1
7	Unsatisfactory	56	874.3	83.8	60	903.3	86.0	58	934.8	81.3
	Approaching Basic	57	964.4	69.1	61	971.1	71.9	52	990.6	80.0
	Basic	87	982.6	75.9	101	1026.5	78.1	97	1048.6	70.2
	Mastery	115	1066.3	73.0	132	1106.6	74.9	127	1134.0	68.6
	Advanced	32	1139.3	120.7	38	1178.5	98.3	35	1214.3	83.1

Grade	Performance Level	Fall			Winter			Spring		
		n	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*
8	Unsatisfactory	63	908.4	99.6	61	930.1	102.8	56	917.3	101.6
	Approaching Basic	66	986.8	83.9	62	963.3	100.5	68	1005.5	97.1
	Basic	101	1028.5	76.3	101	1039.0	87.2	99	1069.2	77.8
	Mastery	140	1118.9	82.3	135	1123.4	82.7	139	1149.4	84.2
	Advanced	22	1174.2	102.1	25	1235.9	83.6	25	1229.6	98.0

Table A3

Descriptive Statistics of Exact Path Diagnostic Reading Scores by LEAP Exam English Language Arts Performance Levels and Grade

Grade	Performance Level	Fall			Winter			Spring		
		n	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*
3	Unsatisfactory	116	830.1	77.3	127	854.5	79.2	108	875.8	71.4
	Approaching Basic	112	880.5	85.4	121	913.5	65.4	110	929.8	73.4
	Basic	146	912.1	72.2	150	957.5	69.3	135	973.4	68.6
	Mastery	241	980.5	75.8	275	1030.0	76.1	258	1056.6	66.6
	Advanced	29	1050.8	64.9	35	1111.4	64.7	32	1133.4	54.0
4	Unsatisfactory	74	852.8	70.6	75	886.0	75.3	82	909.1	87.8
	Approaching Basic	127	907.8	71.6	139	944.7	69.0	141	955.4	72.9
	Basic	207	965.2	75.6	209	1004.7	68.9	212	1013.6	72.6
	Mastery	229	1040.7	68.5	267	1075.0	68.6	253	1097.7	69.2
	Advanced	62	1106.5	63.4	69	1156.5	52.1	67	1173.7	65.9
5	Unsatisfactory	75	882.5	80.3	77	896.6	99.4	81	912.3	106.5
	Approaching Basic	187	943.2	76.5	195	966.1	82.5	198	990.5	79.8
	Basic	201	1012.8	83.6	215	1049.6	78.6	212	1065.1	79.1
	Mastery	206	1104.3	79.3	217	1134.2	69.0	214	1156.6	68.3
	Advanced	11	1189.4	56.1	9	1190.8	67.3	11	1217.1	52.8
6	Unsatisfactory	47	925.0	83.8	51	937.7	80.5	50	926.3	83.1
	Approaching Basic	106	983.3	79.2	119	995.7	84.0	105	1016.5	79.7
	Basic	124	1067.9	73.8	143	1082.3	71.6	115	1072.3	77.1
	Mastery	99	1145.5	70.7	124	1168.6	69.1	96	1175.6	84.4
	Advanced	7	1185.0	64.9	10	1229.7	65.8	7	1235.1	88.4
7	Unsatisfactory	58	930.1	84.8	59	957.8	75.2	56	947.9	83.4
	Approaching Basic	61	991.9	73.6	60	1021.2	80.0	51	1030.7	78.7
	Basic	98	1047.9	74.4	99	1060.5	73.4	96	1101.1	68.2
	Mastery	137	1119.6	76.4	138	1151.6	85.4	137	1174.1	71.5
	Advanced	39	1205.7	81.3	38	1242.5	87.8	35	1261.7	67.4

Grade	Performance Level	Fall			Winter			Spring		
		n	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*
8	Unsatisfactory	62	945.3	98.6	64	966.1	86.0	60	975.9	91.0
	Approaching Basic	66	1047.1	89.4	65	1034.6	95.8	65	1048.4	95.0
	Basic	96	1081.0	90.4	100	1094.2	81.2	99	1101.3	89.4
	Mastery	141	1162.8	84.0	133	1189.8	80.4	134	1205.0	89.8
	Advanced	22	1255.1	98.3	23	1295.9	76.7	26	1282.0	108.7

Table A4

Descriptive Statistics of Exact Path Diagnostic Mathematics Scores by LEAP Exam Performance Levels and High School Subject and Season

Subject	State Season	Performance Level	Fall			Winter			Spring		
			n	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*
Algebra I	Fall	Unsatisfactory	10	907.2	92.5	8	941.1	110.1	—	—	—
		Approaching Basic	13	964.8	134.2	13	1000.5	112.5	—	—	—
		Basic	10	1096.3	57.1	11	1090.3	71.2	—	—	—
		Mastery	28	1164.6	98.7	20	1156.8	75.4	—	—	—
		Advanced	5	1297.2	73.0	5	1319.0	111.7	—	—	—
	Spring	Unsatisfactory	53	946.7	102.4	48	955.1	96.3	39	963.2	110.1
		Approaching Basic	104	1014.3	95.2	83	989.1	104.8	62	1018.2	92.9
		Basic	127	1058.7	83.2	107	1081.0	95.4	82	1065.9	129.3
		Mastery	167	1147.2	93.5	141	1175.9	108.4	83	1200.7	130.4
		Advanced	28	1270.6	71.5	17	1313.3	92.1	11	1384.5	102.0
Geometry	Fall	Unsatisfactory	3	1007.7	118.7	4	953.5	123.2	—	—	—
		Approaching Basic	21	1022.5	137.4	17	1022.9	109.6	—	—	—
		Basic	30	1117.5	88.3	26	1095.7	114.8	—	—	—
		Mastery	41	1218.7	111.8	26	1204.5	97.5	—	—	—
		Advanced	11	1281.5	52.8	3	1323.0	101.2	—	—	—
	Spring	Unsatisfactory	1	1019.0	—	2	1008.0	148.5	1	1145.0	—
		Approaching Basic	28	1006.9	111.3	17	1035.3	125.2	18	1030.1	138.6
		Basic	65	1100.3	111.7	44	1106.8	95.6	32	1166.6	114.0
		Mastery	40	1193.9	75.4	41	1157.5	110.1	23	1225.5	147.4
		Advanced	11	1247.2	154.1	13	1228.9	126.1	3	1333.3	87.2

Table A5

Descriptive Statistics of Exact Path Diagnostic Language Arts Scores by LEAP Exam Performance Levels and High School Subject and Season

Subject	State Season	Performance Level	Fall			Winter			Spring		
			n	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*
English I	Fall	Unsatisfactory	30	914.0	93.9	18	889.9	109.8	13	905.6	63.2
		Approaching Basic	26	945.2	93.2	15	936.9	103.5	15	934.4	111.2
		Basic	50	1042.7	90.2	15	1053.0	77.1	14	1006.4	124.6
		Mastery	67	1125.1	88.2	18	1098.7	123.8	15	1121.2	111.0
		Advanced	16	1236.5	74.1	7	1248.4	87.4	8	1244.4	99.2
	Spring	Unsatisfactory	55	919.5	98.4	39	896.2	86.9	49	891.8	110.6
		Approaching Basic	67	935.0	102.3	53	959.9	86.2	56	924.8	108.5
		Basic	98	1027.3	72.5	84	1010.5	93.8	65	1009.0	114.2
		Mastery	114	1098.3	92.2	110	1098.5	103.7	67	1107.8	102.4
		Advanced	23	1210.6	100.6	17	1241.6	94.7	12	1215.2	113.3
English II	Fall	Unsatisfactory	43	949.2	92.8	41	939.3	100.9	18	922.5	106.4
		Approaching Basic	34	960.6	91.0	21	952.5	95.6	16	972.8	93.0
		Basic	61	1051.2	91.8	36	1029.7	87.4	20	1053.7	105.7
		Mastery	55	1128.0	92.5	32	1098.6	119.4	24	1117.5	137.6
		Advanced	16	1228.8	94.0	10	1193.1	121.1	2	1173.5	47.4
	Spring	Unsatisfactory	47	905.5	81.7	44	925.2	90.9	47	929.9	92.7
		Approaching Basic	52	978.8	80.0	48	960.8	99.2	32	986.1	122.2
		Basic	60	1005.4	94.8	47	958.6	86.5	30	991.2	94.9
		Mastery	81	1109.0	101.2	74	1099.8	93.8	49	1110.0	109.6
		Advanced	32	1200.3	113.8	18	1165.4	131.3	13	1166.1	159.0

Table A6

Descriptive Statistics of Exact Path Diagnostic Reading by LEAP Exam Performance Levels and High School Subject and Season

Subject	State Season	Performance Level	Fall			Winter			Spring		
			n	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*
English I	Fall	Unsatisfactory	30	971.3	97.6	17	941.8	140.3	13	909.6	73.4
		Approaching Basic	23	986.3	86.6	22	990.6	94.0	14	957.6	71.0
		Basic	46	1083.3	88.7	14	1069.2	117.2	14	1059.2	97.4
		Mastery	61	1189.8	95.0	17	1144.3	111.5	17	1179.8	89.6
		Advanced	16	1272.1	83.0	7	1297.0	148.2	9	1295.1	124.6
	Spring	Unsatisfactory	43	929.2	81.5	52	954.4	92.2	46	959.6	117.9
		Approaching Basic	62	967.3	91.8	62	979.9	92.2	53	981.5	113.1
		Basic	93	1071.7	95.6	99	1070.0	96.9	67	1069.9	115.8
		Mastery	107	1149.4	101.4	129	1151.7	106.5	74	1143.4	109.1
		Advanced	16	1243.8	111.4	24	1301.7	87.5	14	1260.8	120.2
English II	Fall	Unsatisfactory	37	940.3	88.2	35	947.5	98.9	18	955.7	126.8
		Approaching Basic	25	1000.3	83.5	23	980.5	82.5	17	977.1	132.1
		Basic	45	1076.3	110.8	37	1012.7	102.9	19	1076.1	100.4
		Mastery	40	1146.6	99.5	35	1145.2	130.3	23	1175.5	119.6
		Advanced	14	1306.9	64.6	10	1254.3	138.6	2	1260.5	102.5
	Spring	Unsatisfactory	49	971.5	70.1	45	944.2	90.6	50	938.7	68.8
		Approaching Basic	49	1022.5	99.2	49	1013.8	101.2	32	1015.5	111.6
		Basic	52	1036.7	91.1	48	1005.7	110.6	31	1048.5	102.5
		Mastery	64	1160.2	117.4	79	1122.7	119.8	46	1173.5	123.9
		Advanced	17	1205.1	155.0	26	1212.7	140.2	15	1185.2	130.7

Figure A1

Scatterplot of Exact Path Mathematics Scores and Spring LEAP Mathematics Scores by Exact Path Testing Window and Grade Level

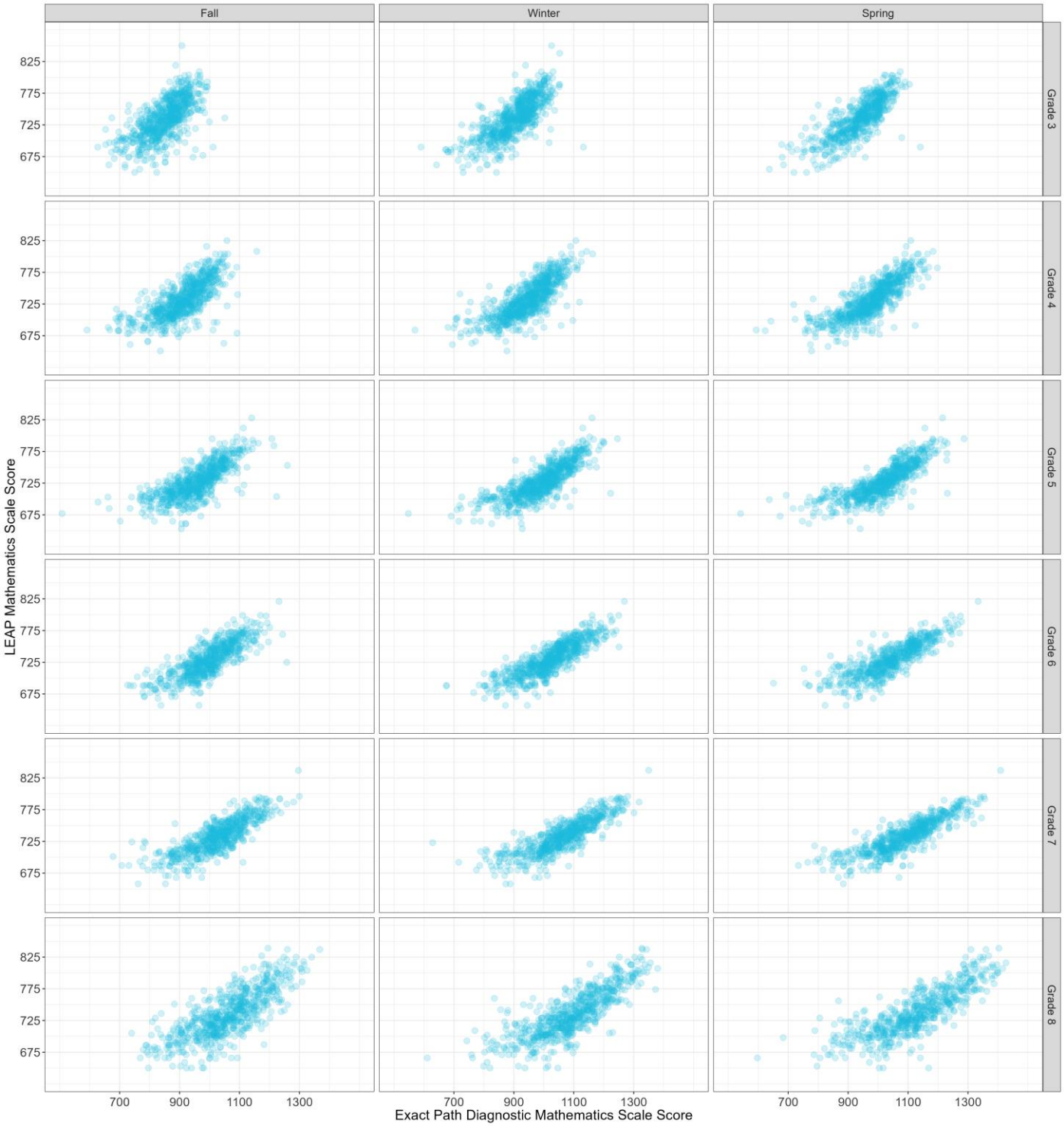

Figure A2

Scatterplot of Exact Path Language Arts Scores and Spring LEAP English Language Arts Scores by Exact Path Testing Window and Grade Level

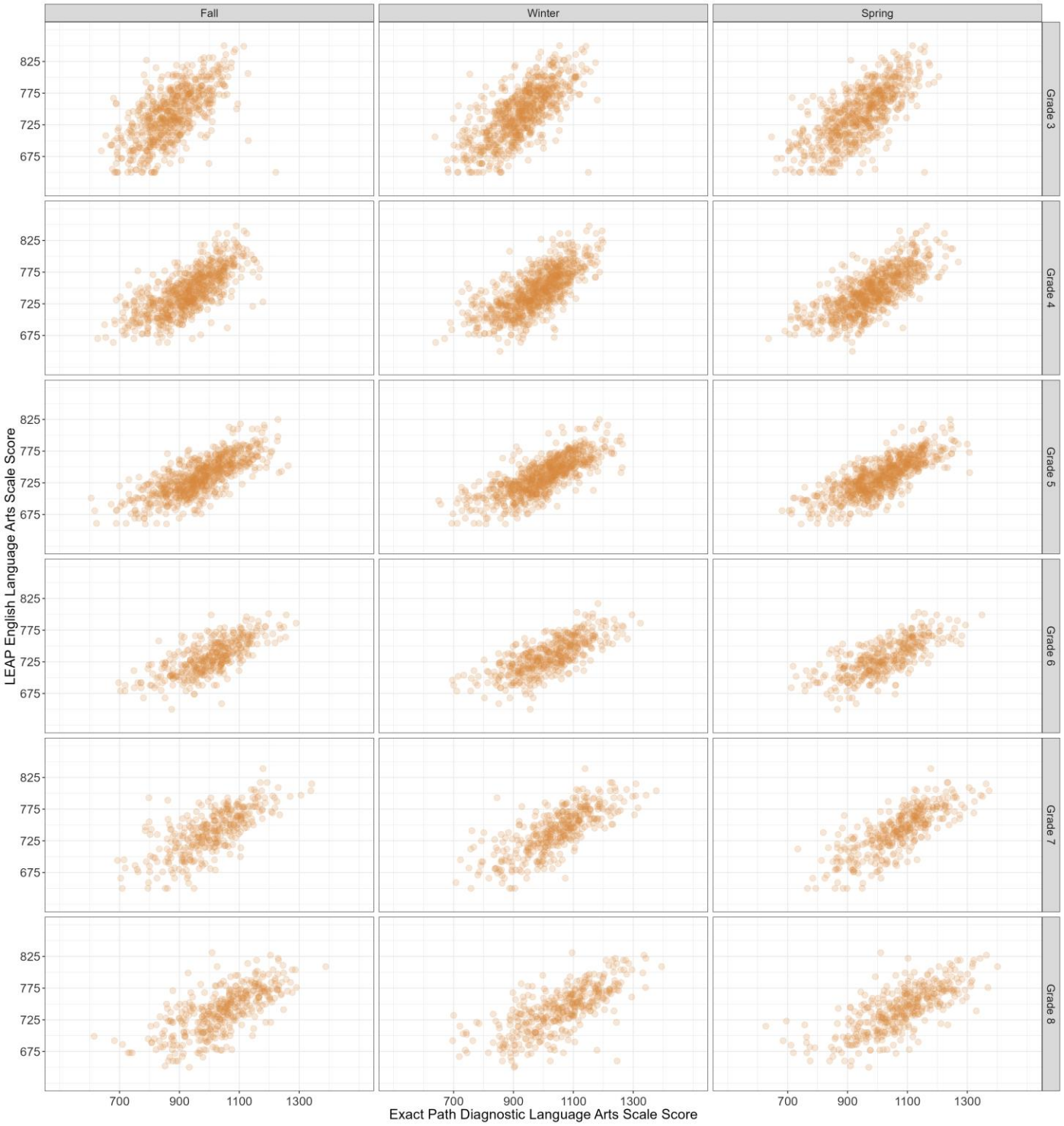

Figure A3

Scatterplot of Exact Path Reading Scores and Spring LEAP English Language Arts Scores by Exact Path Testing Window and Grade Level

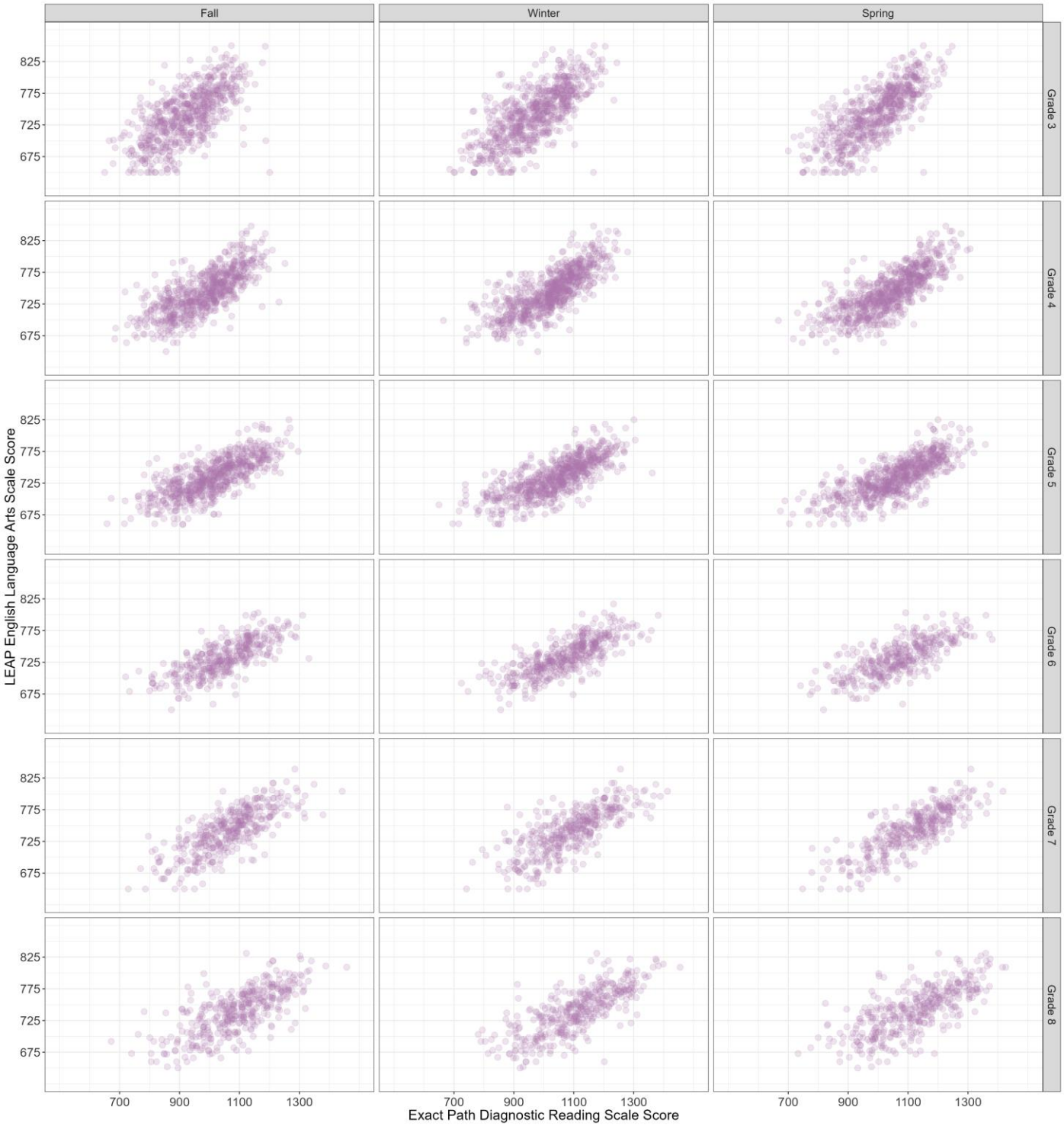

Figure A4

Scatterplot of Exact Path Mathematics Scores and High School Subject Scores by Exact Path Testing Window and High School Subject and Season

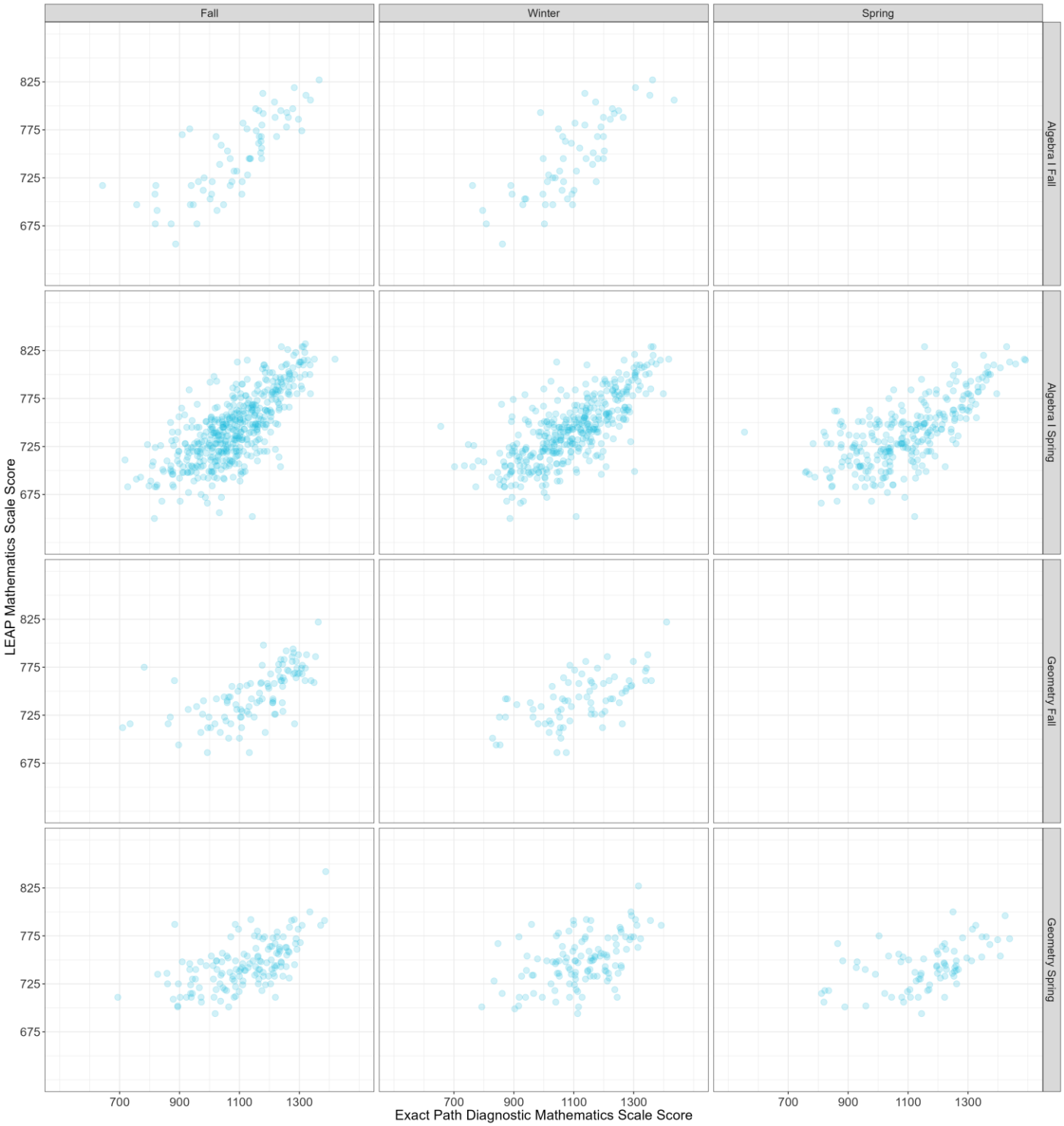

Figure A5

Scatterplot of Exact Path Language Arts Scores and High School Subject Scores by Exact Path Testing Window and High School Subject and Season

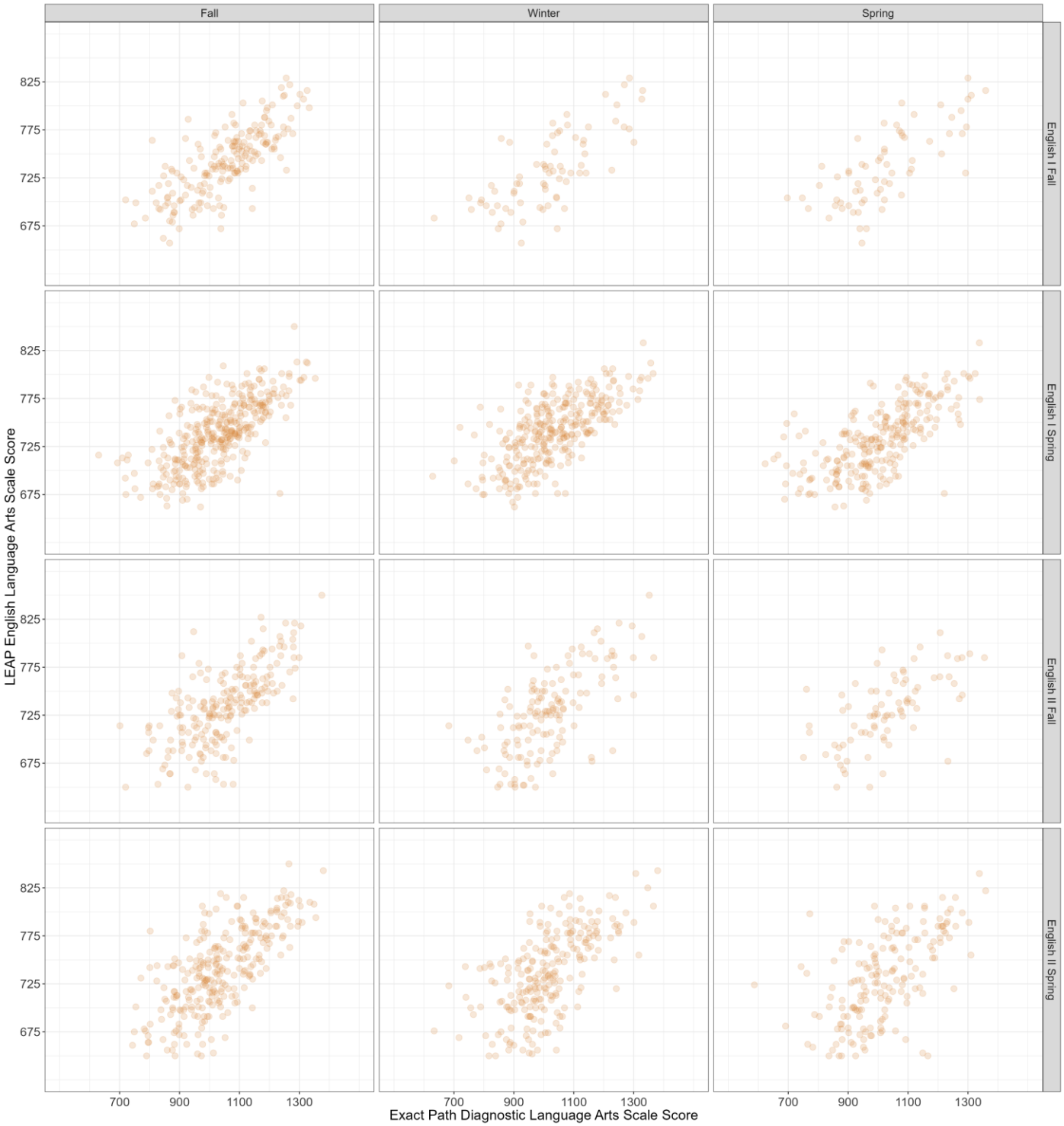

Figure A6

Scatterplot of Exact Path Reading Scores and High School Subject Scores by Exact Path Testing Window and High School Subject and Season

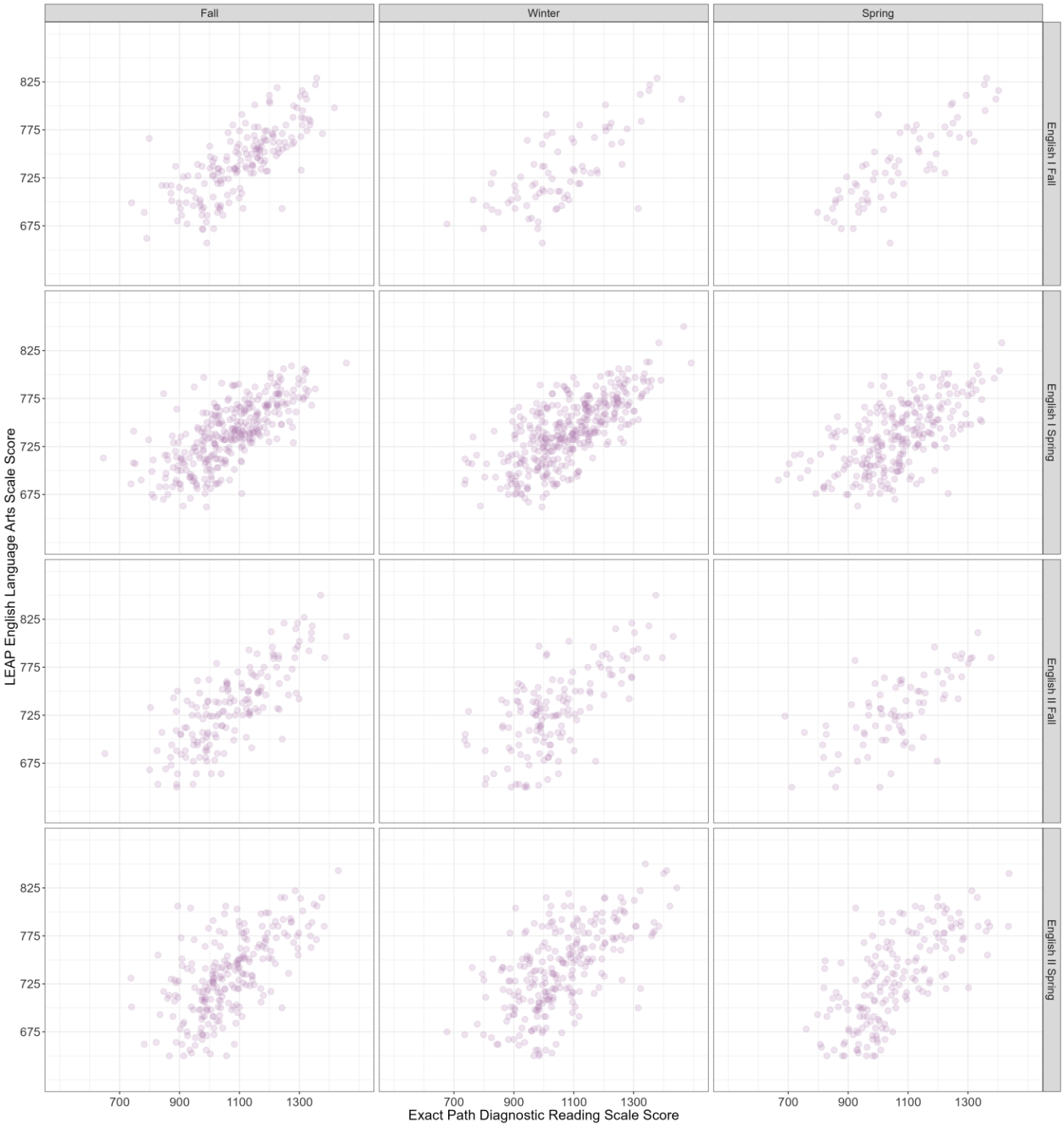

Figure A7

Scatterplot of Exact Path Mathematics Scores 1–Year and 2–Years Prior to Grade 3 LEAP Mathematics Scores

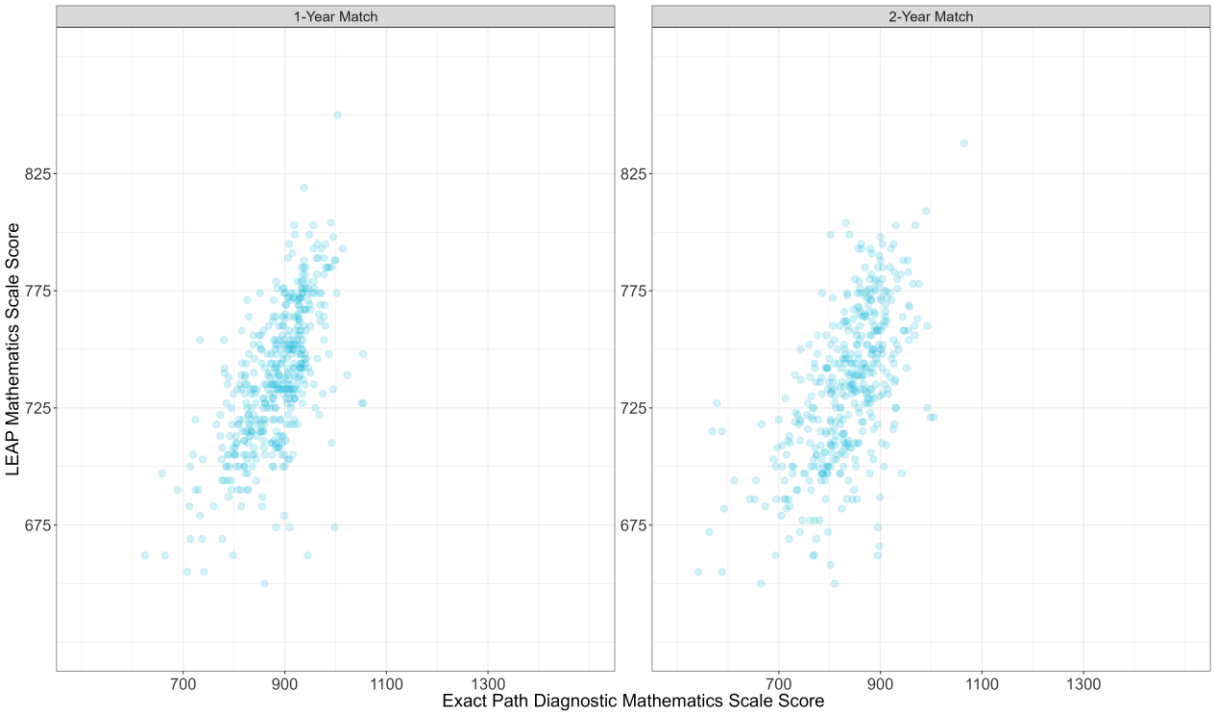

Figure A8

Scatterplot of Exact Path Language Arts Scores 1–Year and 2–Years Prior to Grade 3 LEAP English Language Arts Scores

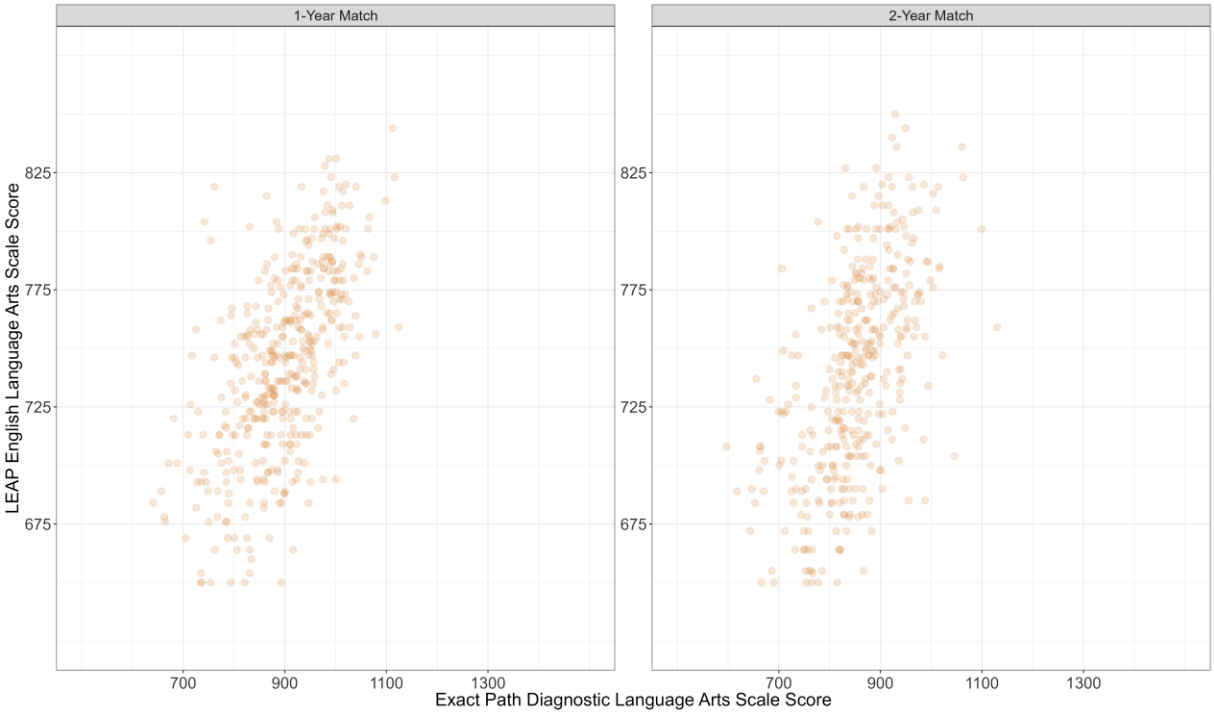

Figure A9

Scatterplot of Exact Path Reading Scores 1–Year and 2–Years Prior to Grade 3 LEAP English Language Arts Scores