

## LSAT TECHNICAL REPORT SERIES

- **Analysis of Differential Prediction of Law School Performance by Race/Ethnicity Based on 2011–2014 Entering Law School Classes**

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## Table of Contents

<b>Executive Summary</b> .....	1
<b>Introduction</b> .....	2
<b>Methods</b> .....	3
Sample .....	3
Variables .....	4
Analysis Methods .....	5
Differential Validity .....	5
Differential Prediction .....	6
<b>Results</b> .....	6
Descriptive Statistics .....	7
Differential Validity .....	13
Differential Prediction .....	13
<b>Conclusions</b> .....	15
<b>References</b> .....	16



## Executive Summary

The Law School Admission Council (LSAC) has carried out annual predictive validity studies, also called LSAT Correlation Studies, since the Law School Admission Test (LSAT) was first administered. These studies are geared toward evaluating and ensuring the effectiveness and validity of LSAT scores for use in the law school admission process. In conjunction with these predictive validity studies, LSAC also conducts differential validity and differential prediction studies on the LSAT to ensure that the test is fair across racial/ethnic subgroups. The purpose of this report is to summarize the results of the 2012–2015 LSAT Correlation Studies, which are based on the 2011–2014 entering law school classes of participating schools, in a differential validity framework. The results presented serve to document and support the validity of LSAT scores for use in the law school admission process.

This study examined results for three racial/ethnic minority subgroups and the racial/ethnic nonminority (White) subgroup. Data were analyzed from 148 law schools, each of which over the 4-year study period enrolled 10 or more first-year students who identified themselves as Asian, Black, or Hispanic and 10 or more first-year students who identified themselves as White. Validity coefficients and prediction equations using LSAT score with first-year average (FYA), undergraduate grade point average (UGPA) with FYA, and the combination of both LSAT score and UGPA with FYA were calculated across subgroups and evaluated.

Results of analyses indicate that the validity coefficients calculated for each racial/ethnic subgroup were very similar to each other and that FYA tended to be, on average, slightly overpredicted for all three of the racial/ethnic minority subgroups studied in this report. The combination of both LSAT score and UGPA as predictors provided the least amount of overprediction for all of the racial/ethnic minority subgroups compared to the use of either predictor alone. Overall, results do not suggest that the use of LSAT score alone or the combination of LSAT score and UGPA contributes to unfair admission decisions for the racial/ethnic subgroups studied here.

At least two caveats should be remembered when evaluating the results of this study. First, only differences in average predicted performance were analyzed. That is, the performance of individuals within a subgroup whose FYAs are overpredicted on average may still be underpredicted, and vice versa. Second, differential prediction is only one aspect of an overall construct validity evaluation. Other aspects of validity should also be considered when deciding whether the use of any test scores is valid.

## Introduction

The Law School Admission Council (LSAC) has carried out annual predictive validity studies, also called LSAT Correlation Studies, on the Law School Admission Test (LSAT) since the test was first administered. The primary purpose of these correlation studies is to evaluate and ensure the effectiveness and predictive validity of the LSAT for use in the law school admission process. Predictive validity refers to the degree to which a variable predicts measurement of a construct at a later time. For example, the relationship between scores on the LSAT administered to prospective law students and their later first-year law school performance may be analyzed to evaluate the predictive validity of the LSAT.

In addition to providing evidence of the overall predictive validity of the LSAT, it is important to ensure that the inferences drawn from test scores are supported with validity evidence regarding fairness, as stakes associated with admission decisions are high. Although fairness is a social construct, in the law school admission process, fairness is related to judgments about how the test scores are interpreted and used in the process of evaluating and selecting students.

Two terms often used in studies evaluating test fairness in the admission process are differential validity and differential prediction. *Differential validity* exists if the magnitude of the validity coefficient differs for one particular subgroup versus another (Linn, 1978). For example, if the magnitude of the correlation between LSAT scores and law school first-year averages (FYAs) varies across relevant subgroups (e.g., racial/ethnic minority subgroups versus White subgroup) this could suggest the presence of differential validity by racial/ethnic subgroup.

*Differential prediction* focuses on subgroup differences in the prediction of an outcome. More specifically, differential prediction investigates whether the prediction model developed based on all students has the same meaning across different subgroups. For example, if it is assumed that a measure (e.g., LSAT score, undergraduate grade point average [UGPA]) predicts performance in law school, then if the prediction of performance is substantially different for one subgroup versus another, this suggests that prediction may have different meanings for each of the subgroups. If one subgroup of the applicant population experiences either significantly more overprediction (i.e., average predicted FYA greater than average observed FYA) or significantly more underprediction (i.e., average predicted FYA less than average observed FYA) than some other subgroup, then differential prediction is said to occur. The need to investigate differential prediction for relevant subgroups is directly

addressed by the *Standards for Educational and Psychological Testing* (AERA, APA, & NCME, 2014, p. 66).

Indeed, these questions are not new to research sponsored by LSAC, nor are they unique to the LSAT or to the law school admission process. Several studies using LSAT data to investigate questions of differential validity and differential prediction across racial/ethnic subgroups have been conducted by LSAC (Norton, Suto, & Reese, 2006, 2009; Suto, Norton, & Reese, 2012). Differential prediction has also been the subject of research studies for other admission testing programs such as the SAT (e.g. Mattern, Patterson, & Kobrin, 2012; Shaw, Kobrin, Patterson, & Mattern, 2012), the ACT (e.g., Noble, 2003), and the GRE (e.g., Burton & Wang, 2005). Most of these studies concluded that, although there is evidence of differential prediction for racial/ethnic minorities, there is no evidence that members of these subgroups are disadvantaged by the use of test scores in the admission process. That is, the use of the racial/ethnic nonminority or the pooled regression model (minority and nonminority combined) tends to overpredict (or at least not underpredict) racial/ethnic minority performance on the criterion variable.

The purpose of the current study is to address questions of differential validity and differential prediction across racial/ethnic subgroups, where the racial/ethnic minority subgroups studied (Asian, Black, and Hispanic) are compared with the White subgroup within the total group using data from the 2011–2014 first-year law school classes. The present study is part of an ongoing monitoring effort designed to address the following question: Do any of the traditional predictors of first-year law school performance—LSAT score, UGPA, or the combination of both—result in differential prediction for racial/ethnic minority applicants?

## **Methods**

### **Sample**

The sample used in this study is drawn from LSAT Correlation Study data for the 2011–2014 entering law school classes of ABA-approved schools. Of these schools, 158 participated in the 2012–2015 LSAT Correlation Studies. In turn, 148 of these 158

schools had a sufficient number of students in one or more of the racial/ethnic minority subgroups, as required for the purposes of the current study.<sup>1</sup>

The racial/ethnic subgroups included in these analyses are as follows: Asian (including Native Hawaiian and Other Pacific Islander), Black, and Hispanic (including Puerto Rican). Race/ethnicity categories were based on self-report, and each racial/ethnic identity designation used for the correlation study data was based on a description code selected by students. Among the 148 schools included in the sample, 119 had 10 or more students in both the Asian and White student subgroups, 135 schools had 10 or more students in both the Black and White student subgroups, and 128 schools had 10 or more students in both the Hispanic and White student subgroups. Ten schools were excluded from the analyses, as there were no full-time fall-entering racial/ethnic minority students enrolled in these schools. Data from each of the 148 participating ABA-approved law schools were combined across the study years to ensure stability in the analysis and to increase the representation of the law school. The total sample included in the analyses in this study was  $N = 79,976$ .

## Variables

The following variables were included in this study:

**First-year average (FYA).** The FYA is the average grade earned by each full-time fall-entering student in their first year of law school. As different law schools use different scales for first-year grades, FYA values were transformed to a scale with a mean of 50 and a standard deviation of 10. Student FYA data were aggregated within schools, and results are reported on this transformed scale.

**Undergraduate grade point average (UGPA).** The average grade earned by each student during his or her undergraduate study is computed by LSAC's Credential Assembly Service (CAS) and is expressed on a scale from 0.00 to 4.33. Student UGPAs were aggregated within schools.

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<sup>1</sup> Canadian law schools were excluded from this report because they did not participate in LSAC's Credential Assembly Service (CAS). Ten or more students from the White subgroup and 10 or more students from at least one of the racial/ethnic minority subgroups were required for a school to be considered in these analyses.

**LSAT score.** LSAT score data were obtained from the 2012–2015 LSAT Correlation studies. Total LSAT scores are reported on a 120–180 scale, and LSAT scores were aggregated within school across test takers. If a test taker took the LSAT more than once, the average of all reportable LSAT scores for that test taker was used.

**Self-reported race/ethnicity.** Race/ethnicity designation categories for students were based on self-report, and only those students who identified themselves with a single racial/ethnic category were included. This study focused on the following racial/ethnic subgroups: Asian (including Native Hawaiian and Other Pacific Islander), Black, Hispanic (including Puerto Rican), and White.

## **Analysis Methods**

As the primary aim was to evaluate the fairness and appropriateness of using LSAT score and UGPA, either separately or in combination, as predictors of law school performance, two different types of analyses were carried out. First, validity coefficients (i.e., correlations) between each predictor and the criterion (FYA) were calculated and evaluated for each racial/ethnic subgroup. As mentioned above, if relationships between predictors and FYA differ substantially between subgroups, this could be an indication of differential validity. Second, regression models were developed using combined data across all of the student data (racial/ethnic minority and nonminority), and the prediction results were evaluated to assess whether the regression equations resulted in differential prediction for the racial/ethnic minority law school student subgroups represented in these analyses.

## **Differential Validity**

In this study, bivariate correlations between LSAT scores and FYA, as well as between UGPA and FYA, were evaluated and compared across the three racial/ethnic subgroups. A correlation describes the linear relationship between two variables. Correlations can range in value from  $-1$  to  $1$ : A positive correlation indicates that high values on one variable are indicative of high values on the other variable, a negative correlation indicates that low values on one variable are indicative of high values on the other variable, and a correlation of  $0$  indicates that there is no relationship between the two variables under study.

Bivariate correlations were first calculated at the school level and then averaged within racial/ethnic subgroups for comparison purposes. In addition, multiple regression

analysis was used to obtain a multiple correlation value that indicates the correlation between the predicted FYA and the observed FYA when LSAT score and UGPA were used as combined predictors. As with the bivariate analyses, multiple regression analyses were first conducted at the school level, and the resulting multiple correlations were averaged within racial/ethnic subgroups for comparison.

### **Differential Prediction**

As mentioned above, differential prediction investigates whether a common prediction model is fair to all subgroups of students. In this study, three separate least-squares regression equations were used to predict FYA. These regression equations included using LSAT score alone as a predictor of FYA, UGPA alone as a predictor of FYA, and using LSAT score and UGPA as combined predictors of FYA. Differences between the predicted FYA and the actual (observed) FYA were evaluated for each model by subgroup. Because each school has a distinct grading scale, before running the regression analysis, a conversion was made to allow comparisons across law schools and to preserve the confidentiality of the school-level data. As described above, FYAs were converted to a scale where the mean for the total group of students at each school was set to 50 and the standard deviation to 10.

For each regression equation, in order to calculate mean differences, average observed FYAs for each subgroup were subtracted from the subgroup's predicted FYAs within each school. A resulting negative difference indicates that the respective regression equation underpredicts the average performance of a subgroup in a law school, while a positive value indicates that the regression equation overpredicts the mean performance of a subgroup in a law school.

## **Results**

The results from this study are presented in three parts. The first part includes descriptive data for each of the four racial/ethnic subgroups. The second part reports the validity coefficients between the predictor variables and FYA for each subgroup. In the third part, the results of applying the prediction equations derived using the total group data are reported for the separate subgroups.

## Descriptive Statistics

Descriptive statistics for the sample of students within the law schools used in this study are presented in Tables 1–5 and Figures 1–3. These data provide information about the number and proportion of racial/ethnic minority and nonminority students and the size of the racial/ethnic minority subgroups among the law schools included in this study. The tables and figures also allow for the comparison of LSAT score, UGPA, and FYA between racial/ethnic minority and nonminority student subgroups.

Table 1 describes the overall racial/ethnic subgroup breakdown for schools that participated in the 2012–2015 LSAT Correlation Studies. Of the 84,927 students at the 166 schools represented across the 4 years, 7,763 (9.1%) were Asian, 6,903 (8.1%) were Black, 6,786 (8.0%) were Hispanic, and 63,475 (74.7%) were White.

TABLE 1  
*Number and percentage of Asian, Black, Hispanic, and White first-year students among schools that participated in the 2012–2015 LSAT Correlation Studies*

Entering Class	Total	No. of Schools	Racial/Ethnic Subgroup							
			Asian		Black		Hispanic		White	
			<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%
2011	22,510	144	2,049	9.1%	1,681	7.5%	1,679	7.5%	17,101	76.0%
2012	20,361	147	1,894	9.3%	1,708	8.4%	1,680	8.3%	15,079	74.1%
2013	20,262	158	1,831	9.0%	1,731	8.5%	1,758	8.7%	14,942	73.7%
2014	21,794	166	1,989	9.1%	1,783	8.2%	1,669	7.7%	16,353	75.0%
Total	84,927	166	7,763	9.1%	6,903	8.1%	6,786	8.0%	63,475	74.7%

Table 2 describes the racial/ethnic subgroup breakdown for those schools that participated in the 2012–2015 LSAT Correlation Studies and met the criteria for inclusion in this study (i.e., 10 or more students from the racial/ethnic nonminority subgroup and 10 or more students from at least one of the racial/ethnic minority subgroups enrolled in the school). The sample for the analyses used in this study included 148 schools that met the sample size requirements. A total of 79,976 students were represented in the study sample. The proportion of students in each racial/ethnic subgroup was very similar to that of the total group and is in line with demographic percentages reported by the Law School Admission Council and the American Bar Association (ABA, 2016).

TABLE 2  
*Number and percentage of Asian, Black, Hispanic, and White first-year students included in this study*

Entering Class	Total	No. Schools	Racial/Ethnic Subgroup							
			Asian		Black		Hispanic		White	
			<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%
2011	21,444	133	1,888	8.8%	1,647	7.7%	1,629	7.6%	16,280	75.9%
2012	19,442	137	1,745	9.0%	1,674	8.6%	1,641	8.4%	14,382	74.0%
2013	19,149	145	1,673	8.7%	1,701	8.9%	1,713	8.9%	14,062	73.4%
2014	19,941	148	1,769	8.9%	1,723	8.6%	1,601	8.0%	14,848	74.5%
Total	79,976	148	7,075	8.8%	6,745	8.4%	6,584	8.2%	59,572	74.5%

Table 3 provides a distribution of law schools by percentage of subgroup enrollment across the 148 law schools. Table 3 reveals that the Asian, Black, and Hispanic subgroups make up approximately 0–10% of the enrolled student subgroup in most of the law schools included in this study, whereas the majority of law schools evaluated are primarily composed of White students. However, the representation of Asian, Black, and Hispanic enrolled students is somewhat higher within the entering classes studied in this report than has been observed in prior similar reports (Suto et al., 2012).

TABLE 3  
*Distribution of law schools by percentage of racial/ethnic subgroup enrollment*

% of Subgroup Enrollment	Racial/Ethnic Subgroup							
	Asian		Black		Hispanic		White	
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%
0–10	76	63.9%	107	79.3%	91	71.1%	1	0.7%
11–20	33	27.7%	22	16.3%	30	23.4%	1	0.7%
21–30	9	7.6%	1	0.7%	3	2.3%	1	0.7%
31–40	0	0.0%	1	0.7%	3	2.3%	2	1.4%
41–50	0	0.0%	1	0.7%	1	0.8%	3	2.0%
51–60	0	0.0%	0	0.0%	0	0.0%	9	6.1%
61–70	1	0.8%	2	1.5%	0	0.0%	23	15.5%
71–80	0	0.0%	0	0.0%	0	0.0%	42	28.4%
81–90	0	0.0%	0	0.0%	0	0.0%	56	37.8%
91–100	0	0.0%	1	0.7%	0	0.0%	10	6.8%

Table 4 shows that of the 148 law schools included in this study, 119 met sample size requirements for Asian and White students, 135 schools met the requirements for Black and White students, and 128 schools met the requirements for Hispanic and White students. These numbers were slightly smaller than found in previous years; the greatest decrease in school participation was found in the Asian subgroup (see Suto et al., 2012).

TABLE 4

*Summary of the number of included law schools by size of racial/ethnic minority subgroup*

Racial/Ethnic Minority Subgroup	Subgroup Size					Total
	10–29	30–49	50–74	75–99	100 or More	
Asian	44	28	17	11	19	119
Black	58	33	22	12	10	135
Hispanic	52	30	19	10	17	128

Table 5 provides descriptive statistics by racial/ethnic subgroup for the variables used in this study. Results indicate that the means across all three variables tend to be highest for the White subgroup, followed by the Asian, Hispanic, and Black subgroups. The greatest amount of variation in FYA was observed for the Black subgroup, followed by the Hispanic, Asian, and White subgroups. For the LSAT score and UGPA variables, the Asian subgroup had the largest standard deviation and the White subgroup the smallest.

TABLE 5

*Descriptive statistics of study variables for included law schools*

Racial/Ethnic Subgroup	No. Schools	N	LSAT		UGPA		FYA	
			Mean	SD	Mean	SD	Mean	SD
Asian	119	7,075	155.60	5.64	3.28	0.23	47.17	2.05
Black	135	6,745	149.89	4.34	3.20	0.20	43.05	3.17
Hispanic	128	6,584	152.95	5.04	3.31	0.20	46.31	2.53
White	148	59,572	156.25	5.26	3.39	0.18	51.32	0.87

Figure 1 presents differences between mean LSAT scores comparing White students with Asian, Black, and Hispanic students, respectively. Mean differences were calculated for each subgroup separately within each school. The x-axis reflects the mean score difference between the White subgroup and each respective racial/ethnic minority subgroup, and the y-axis indicates the number of schools displaying each observed mean difference. Each figure includes a vertical dashed line to indicate a mean difference value of 0 for reference. Figures 2 and 3 present similar analyses of mean differences found within schools for UGPA and FYA. Note that across figures for different variables (e.g., LSAT, UGPA, and FYA), the scale represented in the horizontal axes will change to reflect scale differences.

Figures 1–3 show that White students outperformed Black students on each of the predictor variables (LSAT score and UGPA) and on the criterion variable (FYA in law school). Mean differences between the performance of White and Hispanic law students on LSAT score, UGPA, and FYA followed similar patterns, but the differences were less extreme than those found for the Black subgroup. Differences between the performance

of White and Asian law students on these variables tended to be smaller but still in the same direction as those reported for the other two racial/ethnic minority subgroups.

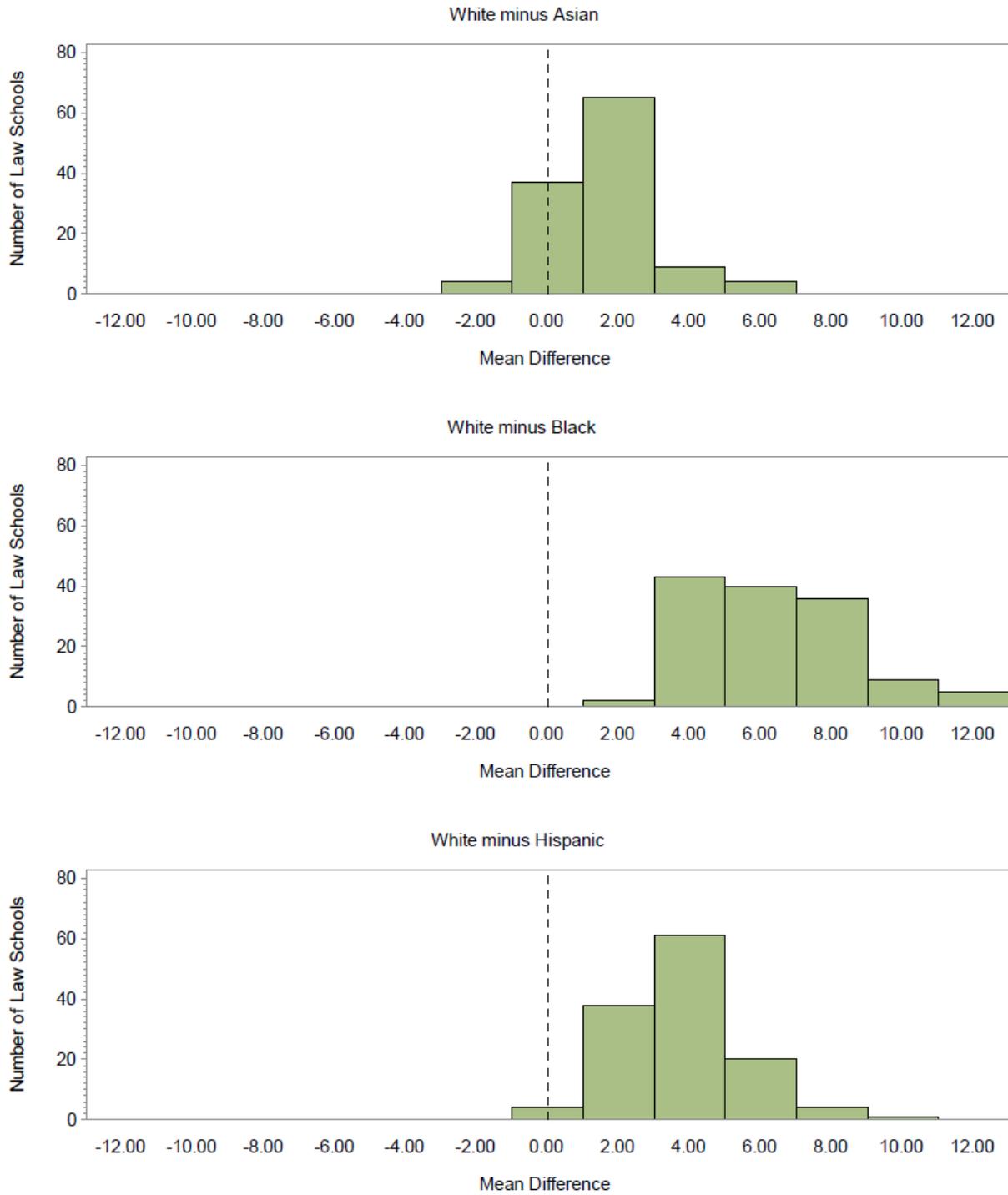


FIGURE 1. Mean LSAT score differences within school by racial/ethnic subgroup

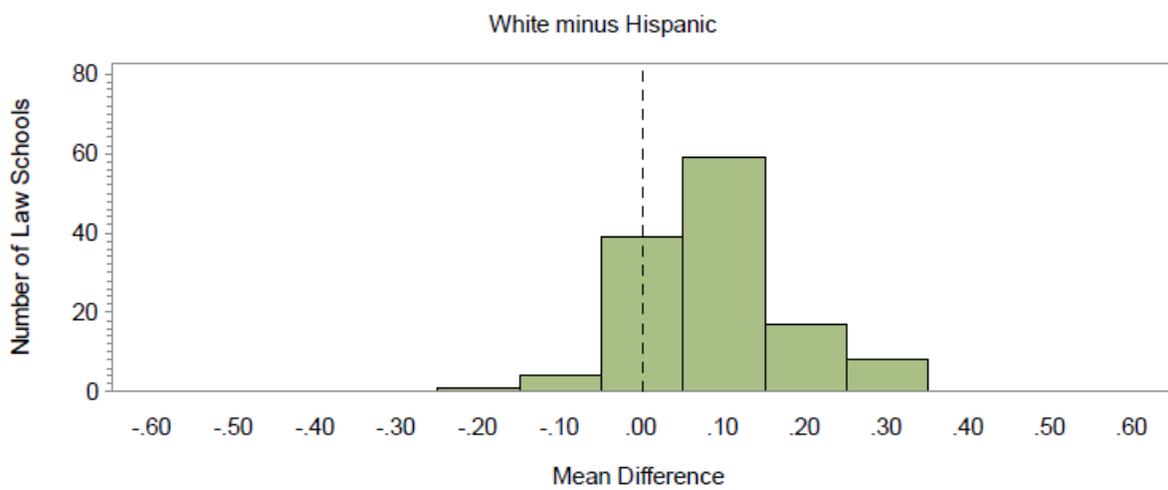
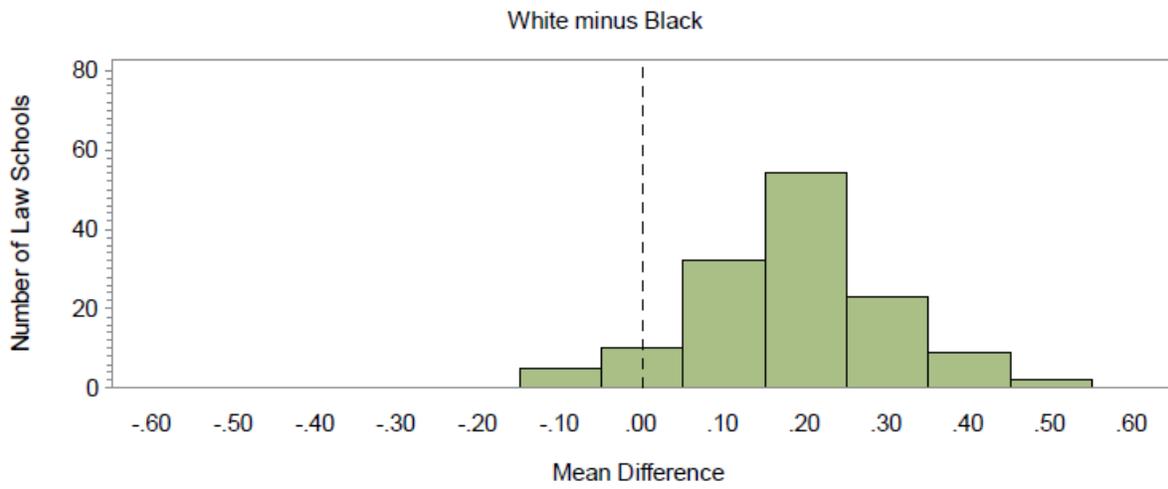
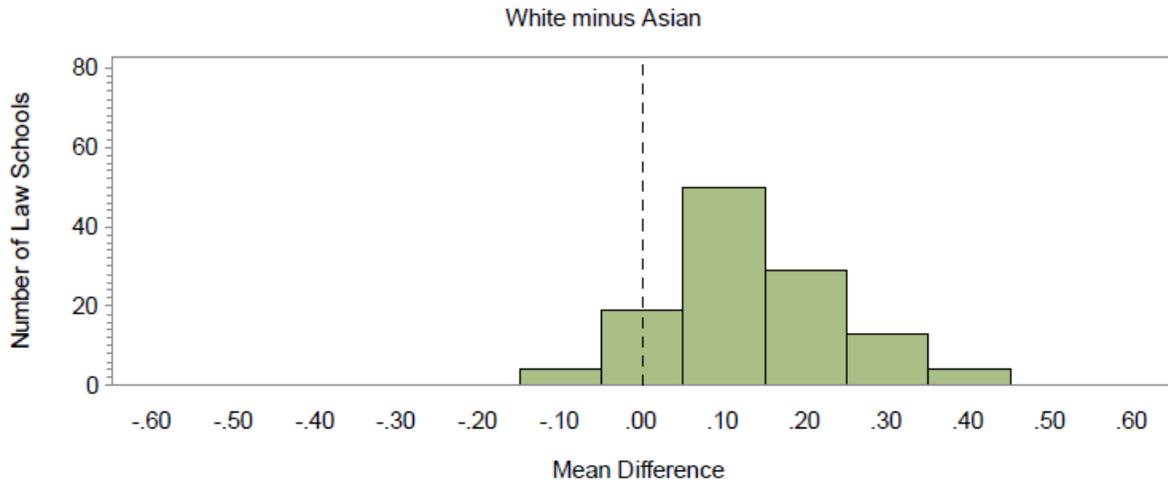


FIGURE 2. Mean UGPA differences within school by racial/ethnic subgroup

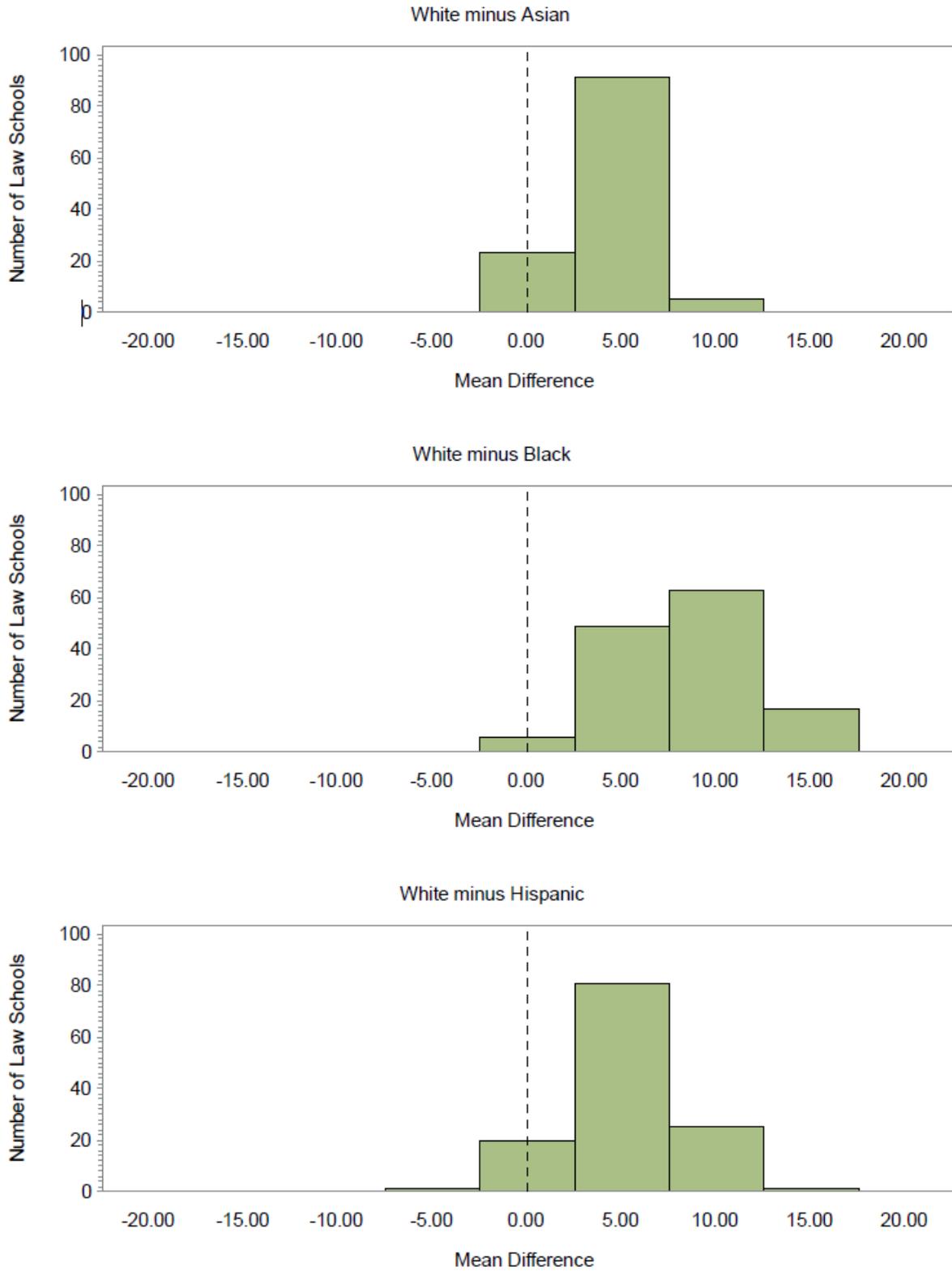


FIGURE 3. Mean FYA differences within school by racial/ethnic subgroup

## Differential Validity

The relationships between the predictor variables (LSAT score and UGPA) and the criterion variable (FYA) are measured through the computation of correlation coefficients. Correlation coefficients can range in value from  $-1$  to  $1$ , where  $1$  represents a perfect positive linear relationship. For each school with a sufficient number of racial/ethnic minority students, the correlation coefficients for each subgroup were calculated separately by law school and averaged for all schools included in the comparison sample.

Table 6 provides the correlation coefficients between the predictors (LSAT score and UGPA)—both alone and in combination—and the FYA. For all racial/ethnic subgroups, the combination of LSAT score and UGPA results in higher correlations than each individual predictor alone. Results also show that across all subgroups LSAT score has a stronger correlation with FYA compared to UGPA with FYA.

To further evaluate the results presented in Table 6, correlation differences between the White subgroup and each racial/ethnic minority subgroup were calculated using Fisher's  $r$ -to- $z$  transformation (Fisher, 1921) to assess whether the differences in correlations between subgroups were statistically significant. None of the calculated differences were found to be significantly different from one another at a significance level of  $p < .05$ .

TABLE 6  
*Correlations of LSAT score, UGPA, and the combination of LSAT score and UGPA with FYA by racial/ethnic subgroup*

Racial/Ethnic Subgroup	No. of Schools	N	Correlation		
			LSAT M (SD)	UGPA M (SD)	LSAT & UGPA M (SD)
Asian	119	7,075	0.31 (0.19)	0.13 (0.21)	0.41 (0.16)
Black	135	6,745	0.28 (0.18)	0.14 (0.21)	0.41 (0.15)
Hispanic	128	6,584	0.35 (0.20)	0.17 (0.19)	0.46 (0.16)
White	148	59,572	0.34 (0.10)	0.24 (0.10)	0.45 (0.09)

## Differential Prediction

Whereas the above evaluation of the correlation coefficients provides a measure of overall bias across the range of the predictor, the evaluation of differential prediction examines whether each predictor or combination of predictors systematically over- or

underpredicts FYA across different racial/ethnic subgroups. Differential prediction was quantified by subtracting the observed FYA from the predicted FYA for each model and comparing the average of this difference across subgroups. Negative average values indicate underprediction, whereas positive average values indicate overprediction.

Using least-squares regression, separate equations were derived to predict law school FYA for the total group of law school students within each individual law school for LSAT score alone, UGPA alone, and the combination of both predictor variables. The weighted averages of the mean residuals between predicted FYA and observed FYA for each prediction equation/subgroup combination are provided in Table 7.

TABLE 7  
*Summary of mean residuals between predicted and observed FYA by racial/ethnic minority subgroup*

Racial/Ethnic Minority Subgroup	Residuals		
	LSAT <i>M</i>	UGPA <i>M</i>	LSAT & UGPA <i>M</i>
Asian	2.12	1.85	1.61
Black	2.30	5.04	1.13
Hispanic	1.30	2.93	0.90

Table 7 reveals that when FYA is estimated from a regression equation based on data for all students, LSAT scores tend to slightly overpredict the performance of all racial/ethnic minority subgroups, with the mean residuals for the subgroup ranging from 1.30 (Hispanic) to 2.30 (Black). Table 7 also shows that using the UGPA as a single predictor also overpredicts the performance of each of the racial/ethnic minority subgroups, with the greatest amount of overprediction occurring in the Black subgroup (5.04). The overprediction is approximately twice as large for the Black and Hispanic subgroups when UGPA alone is used compared to when LSAT score alone is used. This suggests that although LSAT score overpredicts the FYAs for the racial/ethnic minority subgroups in this study, it still tends to be a better predictor overall than UGPA when only a single predictor is used in the model. Lastly, results indicate that the prediction equation using a combination of both LSAT score and UGPA led to the most accurate prediction of FYA for all racial/ethnic minority subgroups, with residuals ranging from .90 (Hispanic) to 1.61 (Asian).

## Conclusions

The purpose of this study was to address questions of differential validity and differential prediction across racial/ethnic subgroups. Validity coefficients between predictors (LSAT score and UGPA) and FYA were evaluated across racial/ethnic subgroups, and regression equations were fit to the data using LSAT, UGPA, and the combination of LSAT score and UGPA as predictors of FYA. Differences between predicted and observed FYA for each model across subgroups were evaluated to assess whether the use of a common regression equation could systematically exclude members of racial/ethnic minority subgroups in the admission process.

Results indicate that the use of UGPA as a sole predictor seemed to produce the greatest amount of differential prediction between the White subgroup and each of the racial/ethnic minority subgroups evaluated in this study. In fact, for two of the three racial/ethnic minority subgroups (Black and Hispanic), using the UGPA alone led to twice as much overprediction as using LSAT score alone. Results also indicate that the use of the combination of both LSAT score and UGPA in the prediction equation led to the least amount of differential prediction across racial/ethnic subgroups. In fact, the overprediction observed with both predictors included in the model was quite small across subgroups. None of the regression equations studied here would serve to systematically exclude individual members of the three racial/ethnic minority subgroups, as first-year performance of the racial/ethnic minority students tended to be slightly overpredicted.

Studies on differential prediction frequently show that the prediction equation based on the racial/ethnic nonminority subgroup tends to overpredict the criterion performance of racial/ethnic minority subgroup members (Linn, 1984). Linn and Hastings (1984) suggested that the degree of overprediction for the racial/ethnic minority subgroup decreases as the predictive accuracy for the racial/ethnic nonminority subgroup increases, and that overprediction can be caused by variables not included in the prediction equation. Results from this study are in line with past and current literature and provide additional evidence to help support the validity of the use of the LSAT in the law school admission process.

At least two caveats should be remembered when evaluating the results of this study. First, only differences in average predicted performance were analyzed. That is, the performance of individuals within a subgroup whose FYAs are overpredicted on average may still be underpredicted, and vice versa. Second, differential prediction is only one aspect of an overall construct validity evaluation. Other aspects of validity should also be considered when deciding whether the use of any test scores is valid.

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