



Promoting Gender Equity in Alberta's Provincial Social Studies 30 Diploma Examinations

Marilyn Abbott

Centre for Research in Applied Measurement and Evaluation (CRAME), University of Alberta

For the past twelve years, Alberta's Grade 12 Social Studies 30 (SS 30) Diploma Examinations have received particular attention due to marked gender differences in performance. On the multiple-choice portion of the SS 30 Exam, males consistently outperform females by four to five percent. Investigations into these gender differences (e.g., Christison, 1997; Walter & Young, 1997; Gierl, 1999; Boughton, Dawber, & Hellsten, 2001) have produced conflicting explanations for why these differences occur. The purpose of this paper is to account for the gender differences by reporting the results of a differential bundle functioning (DBF) study conducted to substantively and statistically examine groups of multiple-choice items on four Social Studies 30 Examinations (administered in January and June of 1991 and 1992) that function differentially among males and females.

Method

Because attempts to understand the "underlying causes of differential item functioning (DIF) using substantive analyses of statistically identified items have, with few exceptions, met with overwhelming failure" (Roussos & Stout, 1996, p. 360), Douglas, Roussos, and Stout's (1996) confirmatory approach to DBF was used to examine and statistically test bundles of items that elicited performance differences for equal ability males and females on four Social Studies 30 Examinations. Walter and Young's (1997) conceptual framework was used by three high school teachers as an organizing principle for classifying the multiple choice exam items into bundles of items relating to *Economics*, *Politics*, *History*, *Control Tactics*, and *Peace and Internationalism*.

A four step DBF analysis was used to test Walter and

Young's (1997) theory that (a) males outperform females on items related to *Economics*, *Politics*, *History*, and *Control Tactics*; and (b) females outperform males on items related to *Peace and Internationalism*. First, a single item *SIBTEST* (Stout & Roussos, 1999) analysis was conducted on each of the exams to identify all DIF items, and provide effect size measures ($\hat{\beta}_{uni}$ values) for each of the items. Second, Walter's (1997) classification schema was used as the organizing principle to group and graph the $\hat{\beta}_{uni}$ values for these items into the content areas described above. Third, the graphs were visually inspected to identify patterns in the way the bundles were functioning. Fourth, using the two 1991 exams, the bundle hypotheses were tested at an alpha level of 0.01. Moderate and large DIF items (i.e., items with $\hat{\beta}_{uni}$ values ≥ 0.059) were removed from the analysis, and the bundle hypotheses were tested against the remaining items that formed the valid or matching subtests for the January and June 1991 exams. The bundles that consistently favoured one gender over the other on the January and June 1991 exams were predicted to function the same way on the 1992 exams.

Results and Discussion

The bundles that consistently yielded statistically significant $\hat{\beta}_{uni}$ ($p < .001$) across both the January and June 1991 exams were the bundles for *History* ($\hat{\beta}_{uni}$ = January: 0.792 / June: 0.195) and *Control Tactics* ($\hat{\beta}_{uni}$ = January: 0.188 / June: 0.199). These results indicated that the bundles for *History* and *Control Tactics* significantly favoured the male examinees over the female examinees.

Because these two 1991 bundles were predicted to function the same way on the 1992 exams, they were tested against the remaining items that formed the valid subtests on the January and June 1992 exams. The differential bundle functioning results for the 1992 prediction study are reported in Table 1. The only bundle that yielded a statistically significant $\hat{\beta}_{uni}$ ($p < .001$) across both the January and June 1992 exams was the bundle for *History*. Overall, these results indicated that the *History* items significantly favoured the male examinees over the female examinees across all four SS 30 exams.

In the future, the DIF occurring among the *History* item bundles should be examined to gain a better understanding of the secondary dimensions and causes of DIF in the SS 30 exams. It is assumed that further studies of this nature would lead to more responsible, ethical assessment practices that ensure gender equity in the SS 30 Examinations.

Table 1. *Differential Bundle Functioning Results for the 1992 Social Studies Diploma Examinations*

Bundle	No. of Items	$\hat{\beta}_{uni}$	Favours
<i>January</i>			
History	16	0.490*	Males
Control Tactics	12	-0.020	ns
<i>June</i>			
History	16	1.020*	Males
Control Tactics	5	-0.009	ns

* $p < .001$

References

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