

\*

0.70                      0.71                      ( 56) 0.78                      (Cronbach's Alpha)

(65)                      26                      34 :                      (60)                      34                      125                      31 :

**.1**

(Hyde,                      )  
                     .(                      )  
                     Fennema and Lamon, 1990: 139)  
 1973

(Lucy Sells)  
 (critical filter) "                      "                      .2005/11/18                      2005/2/13

" "
   
 (The International Organization of Women and Mathematics
   
 -1 30 1980 Education)
   
 -2
   
 -3
   
 (The International Commission on Mathematics
   
 .Education, 1999)

(mathematical ability and
   
 .mathematical achievement)
   
 (Feingold, 1994)

)
   
 (
   
 )
   
 (
   
 .(Feingold, 1994)

(Benbow and Stanley, 1982)
   
 ( %61 ) 2188

SAT-M Scholastic Aptitude Test
   
 28
   
 effect size

0.82
   
 " " " "
   
 " " " "
   
 145 155 . 2000

:
   
 "
   
 3.6 3.5 ( )
   
 "

(Hanna et al., 1990) 11

theory item " " response

15 (Becker, 1990)

Rasch Model

(Young and Fisler, 2000)

(SAT)

69284 (Wainer and Steinberg, 1992)

(SAT-M)

106936 1990

%54.3 %45.7

47000

503.64

458.39 33

45.25

(adjusted mean) 33.76

11.49 (SAT) (1993

process approach

%25.4

cross-sectional computational skills

(Leahey, 2001)

(strategy assembly)

%50

( 14 ) 3 - 22 - 24 - 16 - 11 -

(Galbraith, 1986) 177 157

" " " " " " " " " " " "

(Stockard and Wood, 1984)  
(Tressou, 1980)

:

10

:

:

100

(Kianian, 1996; Swafford, 1980) :

(Kianian, 1996)

100	15
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113 366 479

:

(Swafford, 1980)

)

(

.2

32

( )

Scholastic Aptitude Test

( )

(Cronbach's alpha)

) 0.76

( 10 )

( 56

( 32 ) 0.71

( 24 ) 0.70

( )

10 8 6

125

( )

3

(1)

2.65	18.80	20		
2.43	17.77	39		
3.53	10.09	45		
1.32	11.62	21		

(2)

4.66	10.85	20		
3.59	7.92	39		
4.18	8.92	59		
3.01	6.33	45		
3.51	7.33	21		
3.18	6.65	66		
4.13	7.72	65		
3.54	7.72	60		
3.85	7.72	125		

(3)

(3)  
0.05

(2)

7.72

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.( 26 34 :  
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80 .2003/2002  
30 20  
30

(SPSS)

14  
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(  
( 14 )

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( - )

(1)

(2)

(3)

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0.16	2.00	25.52	1	25.52	
0.001	14.03	179.23	1	179.23	
0.005	8.30	106.00	1	106.00	×
-	-	12.78	121	1545.99	

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(3)

(2)

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10.85

0.05

6.33

(7.92= )

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(Hyde, Fennema and Lamon, 1990)

100

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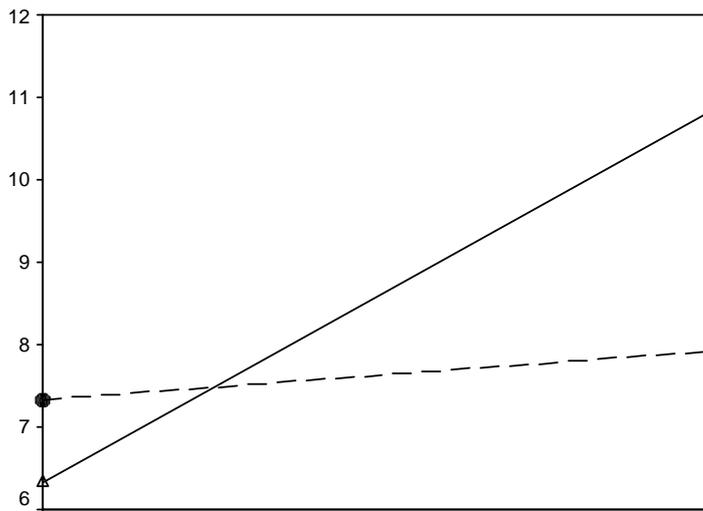
(Hyde, Fennema and Lamon, 1990)

(Gallagher and De Lisi, 1994)

) conventional ( 7.92 10.85 )  
 .unconventional (1)

(Kimball, 1989) 39 (1)  
 (60 %65 )  
 21  
 (65 %31 )

(novel)  
 (Gallagher and De Lisi, 1994) (17.8 18.8)



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.2

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## **The Relationship between Mathematical Reasoning, Gender, Level of Verbal Ability and their Interaction among Eleventh Grade Students in the Sultanate of Oman**

*Ali M. Ibrahim and Abdullah M. Al-Sarimi\**

### **ABSTRACT**

The aim of this study was to examine the effect of gender, verbal ability and their interaction on quantitative thinking of eleventh grade students. The study used data obtained from the administration of a preliminary scholastic aptitude, which consisted of two parts: verbal and quantitative. The test used multiple-choice test items with four or five alternatives for each question. The Cronbach's reliability estimate for the whole test was 0.78, with 0.71 for the verbal part and 0.70 for the quantitative part. The content validity of the test was verified through a jury panel.

The sample of the study consisted of 125 eleventh grade (second secondary) students from Muscat region, out of which 65 males (31 from science stream and 34 from arts stream) and 60 females (32 from the science stream and 26 from arts stream). Schools and classes within schools were randomly chosen.

The results indicated that there was no gender difference on mathematical thinking, but as expected females outperformed males in verbal ability. However, there was a significant two-way interaction between sex of the student and level of verbal ability with males of the high verbal ability group performing better than females of the same group in the quantitative part of the test; but at the low verbal ability level, females performed better than males in the mathematical thinking test.

In light of the results of the study, it has been suggested that further studies should be conducted to investigate the effect of gender on mathematical reasoning ability in samples from other grades and levels of education and in other Arab countries as well. The study also recommends helping females of high verbal ability to similarly excel in mathematical ability as male students of equivalent verbal ability do.

**Keywords:** Mathematical reasoning, Verbal ability, Gender differences.

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