

Sigma

Survey
for
Security
Officers

Australian Supplementary Information

Sigma Survey for Security Officers (SSSO) **Australian Supplementary Information**

Dr Andrew Armstong

The *Sigma Survey for Security Officers (SSSO)* is designed to measure the basic problem-solving and report writing skills necessary to perform the role of a security officer. Normative and scoring information for the SSSO, collected from a large Australian sample of prospective security officers, is presented in this supplement.

Test Characteristics

Subtests

The SSSO comprises three subtests: *Security Problem-Solving*, *Spelling*, and *Sentences*. The *Security Problem-Solving* subtest consists of 20 multi-choice items that follow brief scenarios related to the work of a security officer. The applicant indicates the correct response to each item. The *Spelling* subtest consists of 28 words, 17 of which are misspelled. Applicants have to indicate whether each word is misspelled. The *Sentences* subtest consists of 8 sentences, four of which contain grammatical errors. Applicants identify which four are free of errors. Note that only seven of the eight *Sentence* items are scored. Responses to item 55 are omitted.

Time

Applicants have 35 minutes to complete the 56 items. There are no time limits for each of the three subtests.

Scoring

Applicants receive a single point for each correct answer. Total raw scores for *Spelling* (0 to 28) and *Sentences* (0 to 7) subtests are combined to form a measure of Incident Report Writing Aptitude (0 to 35). Total raw scores for *Security Problem-Solving* (0 to 20) and Incident Report Writing Aptitude are combined to form an Overall raw score (0 to 55).

Scoring Services

Formal scoring services provide a profile for each test-taker. The percentage of correct responses for each subtest is indicated, and the test-taker's total score is percentile ranked. The current document provides the Australian data that can be used to better inform recruitment or selection decisions.

Australian Sample Characteristics

The Australian sample comprised 990 persons who applied for the position of security officer. Applicants ranged from 15 to 68 years of age ($M = 35.81$, $SD = 11.60$). Eighty three percent of the group were male, sixteen percent were female. Age data was unavailable for 52 applicants. Sex data was unavailable for 43 persons.

Performance of the Australian sample on the SSSO

Table 1 shows summary statistics relating to the performance of the 990 prospective security officers on the SSSO in Australia.

Table 1. SSSO means, standard deviations, minimum and maximum possible scores, and percentage of items answered correctly by the Australian sample

	Mean	Std. Deviation	Min	Max	Percentage of Items Correct
Problem-Solving	15.37	3.33	0	20	77%
*Spelling	20.47	5.52	0	28	73%
*Sentences	3.99	2.10	0	7	57%
Incident Report Writing Aptitude	24.45	7.03	0	35	70%
Overall Score	39.82	9.18	0	55	72%

$N = 990$. * Spelling and Grammar & Punctuation subtests combine to form the measure of Incident Report Writing Aptitude.

The data in Table 1 indicate that the average applicant scored quite highly on the SSSO. With the exception of the Sentences subtest, the means were well above half marks. It was common for prospective Australian security officers to correctly determine above 70% of the answers on the SSSO.

Tables 2 to 6 contain the data necessary to convert SSSO profile scores back and forth across raw scores, percentages of items correct, and percentile ranks. Data is provided for each SSSO component. This data allows the performance of any Australian SSSO test-taker to be ranked in relation to any other.

Table 2. *Security Problem-Solving*

<i>Security Problem-Solving</i>		
Raw Score	*Percentage of Items Correct	*Percentile Rank
0	0	<1
1	5	<1
2	10	<1
3	15	<1
4	20	<1
5	25	1
6	30	1
7	35	2
8	40	2
9	45	3
10	50	6
11	55	10
12	60	14
13	65	19
14	70	26
15	75	34
16	80	42
17	85	56
18	90	70
19	95	83
20	100	94

$N = 990$. *Rounded to nearest whole figure.

Looking at Table 2, it can be seen that a raw score of 10 out of 20 equates to 50% of items answered correctly. However, 10/20 only equates to the 6th percentile rank. This means that only six percent of the Australian sample scored lower than this, while ninety-four percent scored equal to or higher than 10/20.

It can also be seen that a raw score of 20 out of 20, or 100% of items answered correctly, equates to the 94th percentile rank. This indicates that ninety-four percent of the Australian sample scored lower than 20/20, while 6% scored 20/20 on this subtest.

In terms of problem-solving ability, an employer wishing to screen out the less-able half of applicants would use a raw score of 17/20 or 85% of items correct as the cut-off for this subtest. Fifty-six percent of prospective Australian security officer scored lower than this, while forty-four percent scored equal to 17/20 or higher.

Table 3. Spelling

<i>Spelling</i>		
Raw Score	*Percentage of Items Correct	*Percentile Rank
0	0	<1
1	4	2
2	7	2
3	11	2
4	14	3
5	18	3
6	21	4
7	25	4
8	29	5
9	32	5
10	36	5
11	39	6
12	43	6
13	46	7
14	50	9
15	54	11
16	57	13
17	61	16
18	64	19
19	68	26
20	71	34
21	75	40
22	79	50
23	82	59
24	86	70
25	89	78
26	93	85
27	96	93
28	100	98

N = 990. *Rounded to nearest whole figure.

In the case of spelling ability, an employer wishing to screen out the less-able half of applicants would use a raw score of 22/28 or 79% of items correct as the cut-off. Fifty percent of Australian security officer applicants scored lower than this, while fifty percent scored equal to this or higher. The top fifteen percent of applicants scored 26/28 or higher.

Table 4. *Sentences*

<i>Sentences</i>		
Raw Score	*Percentage of Items Correct	*Percentile Rank
0	0	<1
1	14	10
2	29	16
3	43	23
4	57	37
5	71	53
6	86	72
7	100	89

N = 990. *Rounded to nearest whole figure.

With regards to grammar and punctuation skills, an employer wishing to screen out the less-able half of applicants would use a raw score of 5/7 or 71% of items correct as the cut-off. Fifty-three percent of Australian security officer applicants scored lower than this, while forty-seven percent scored equal to 5/7 or higher. In fact, eleven percent of applicants scored 100%.

Table 5. Incident Report Writing Aptitude

Incident Report Writing Aptitude		
Raw Score	*Percentage of Items Correct	*Percentile Rank
0	0	<1
1	3	2
2	6	2
3	8	2
4	11	3
5	14	3
6	17	3
7	19	4
8	22	4
9	25	5
10	28	5
11	31	5
12	33	6
13	36	6
14	39	7
15	42	8
16	44	9
17	47	11
18	50	13
19	53	15
20	56	18
21	58	22
22	61	27
23	64	31
24	67	37
25	69	43
26	72	47
27	75	55
28	78	62
29	81	69
30	83	76
31	86	83
32	89	88
33	92	93
34	94	97
35	97	99

N = 990. *Rounded to nearest whole figure. Note that the Spelling and Sentences subtests combine to form the measure of Incident Report Writing Aptitude.

In terms of report writing aptitude, an employer seeking to screen out the less-able half of applicants would use a raw score of 27/35 or 75% of items correct as the cut-off. Fifty-five percent of Australian applicants scored lower than this, and forty-five percent equal to this or higher.

Table 6. Overall SSSO Performance

Raw Score	Overall SSSO Performance	
	Percentage of Items Correct	Percentile Rank
0	0	<1
1	2	<1
2	4	<1
3	5	<1
4	7	<1
5	9	<1
6	11	<1
7	13	<1
8	15	<1
9	16	1
10	18	1
11	20	1
12	22	1
13	24	2
14	25	2
15	27	2
16	29	3
17	31	3
18	33	3
19	35	4
20	36	4
21	38	5
22	40	5
23	42	5
24	44	6
25	45	6
26	47	7
27	49	8
28	51	9
29	53	11
30	55	12
31	56	14
32	58	16
33	60	19
34	62	21
35	64	24
36	65	28
37	67	31
38	69	34
39	71	37
40	73	41
41	75	45
42	76	49
43	78	54
44	80	59
45	82	64
46	84	70
47	85	74

48	87	81
49	89	86
50	91	89
51	93	92
52	95	95
53	96	97
54	98	99
55	100	99

N = 990. *Rounded to nearest whole figure.

With respect to overall performance, an employer seeking to screen out the less-able half of applicants would use a total raw score of 43/55 or 78% of items correct as the cut-off. Fifty-four percent of Australian applicants scored lower than this, and forty-six percent equal to this or higher.

SSSO Score Classification Ranges

Below in Table 7, Australian raw scores and percentile ranks are converted into the classification ranges commonly applied to measures of ability. While less precise than percentile rankings, these ranges allow the performance of any SSSO test-taker to be classified and discussed in common terms.

Table 7. SSSO raw scores and percentile ranks by classification range

Classification range	Percentile Ranks	Security Problem-Solving	Spelling	Sentences	Incident Report Writing Aptitude	Overall Score
		Raw scores				
Extremely low	1 to 4	1 to 9	1 to 7	-	1 to 8	1 to 20
Very low	5 to 11	10 to 11	8 to 15	1	9 to 17	21 to 29
Below average	12 to 23	12 to 13	16 to 18	2 to 3	18 to 21	30 to 34
Slightly below average	24 to 40	14 to 15	19 to 21	4	22 to 24	35 to 39
Average	41 to 60	16 to 17	22 to 23	5	25 to 27	40 to 44
Slightly above average	61 to 77	18	24	6	28 to 29	45 to 47
Above average	78 to 89	19	25 to 26	7	30 to 32	48 to 50
Well above average	90 to 96	20	27	-	33	51 to 52
Superior	97 to 100	-	28	-	34 to 35	53 to 55

Looking at Table 7, it can be seen that a raw score of 10 or 11 on the *Security Problem-Solving* subtest falls within the 5th and 11th percentile ranks. Such scores and ranks are considered to be "Very low".

Summary

Overall, the data indicate that the SSSO maintains its validity in the Australian context. It remains a reasonably easy test of problem solving and report writing skills. It distinguishes best between poor and average performers, and is less suited to identifying high performers. Thus, the SSSO is best suited for early use in the selection process with a view to identifying those applicants ill-suited to the responsibilities of a security officer.