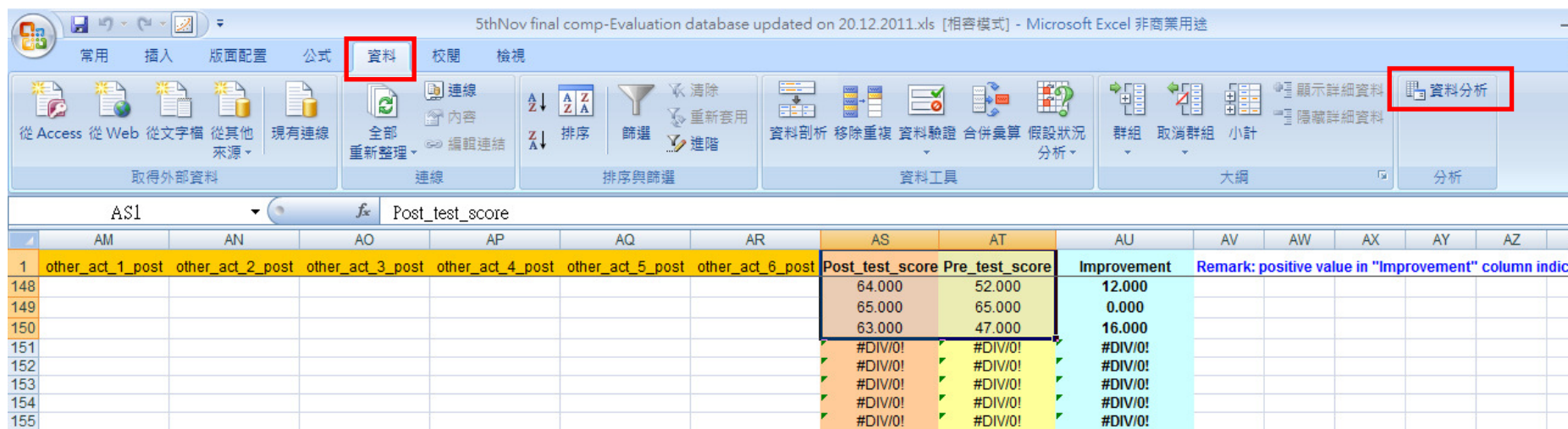


Step 1:

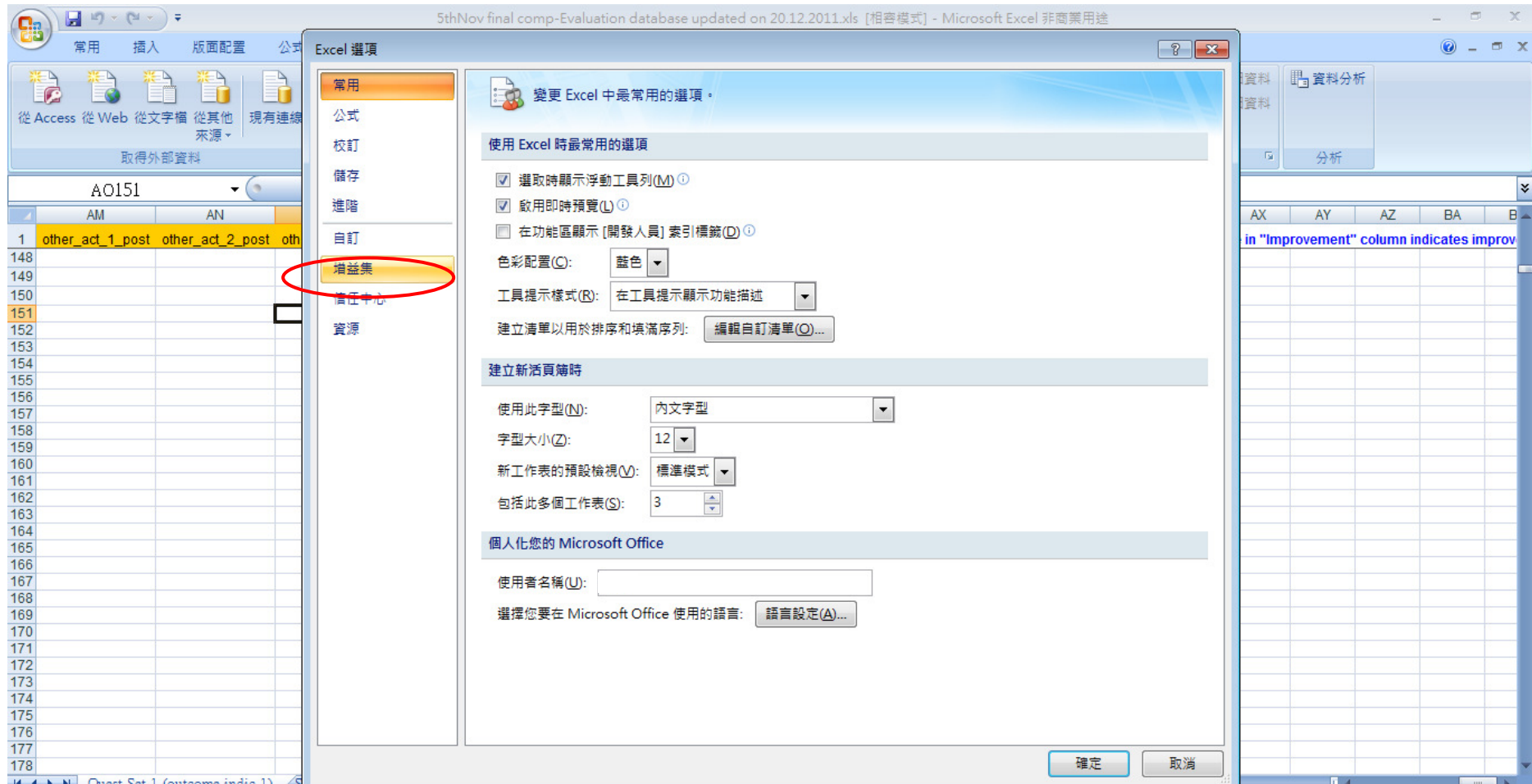
Please check whether the MS Excel programme has a button called “資料分析” (Data Analysis) in the “資料” (Data) tab.



若獲撥款人／機構在採用或修改問卷等問題上有疑問，歡迎聯絡禁毒基金秘書處。

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Step 3:
Click “增益集” (Add-Ins).

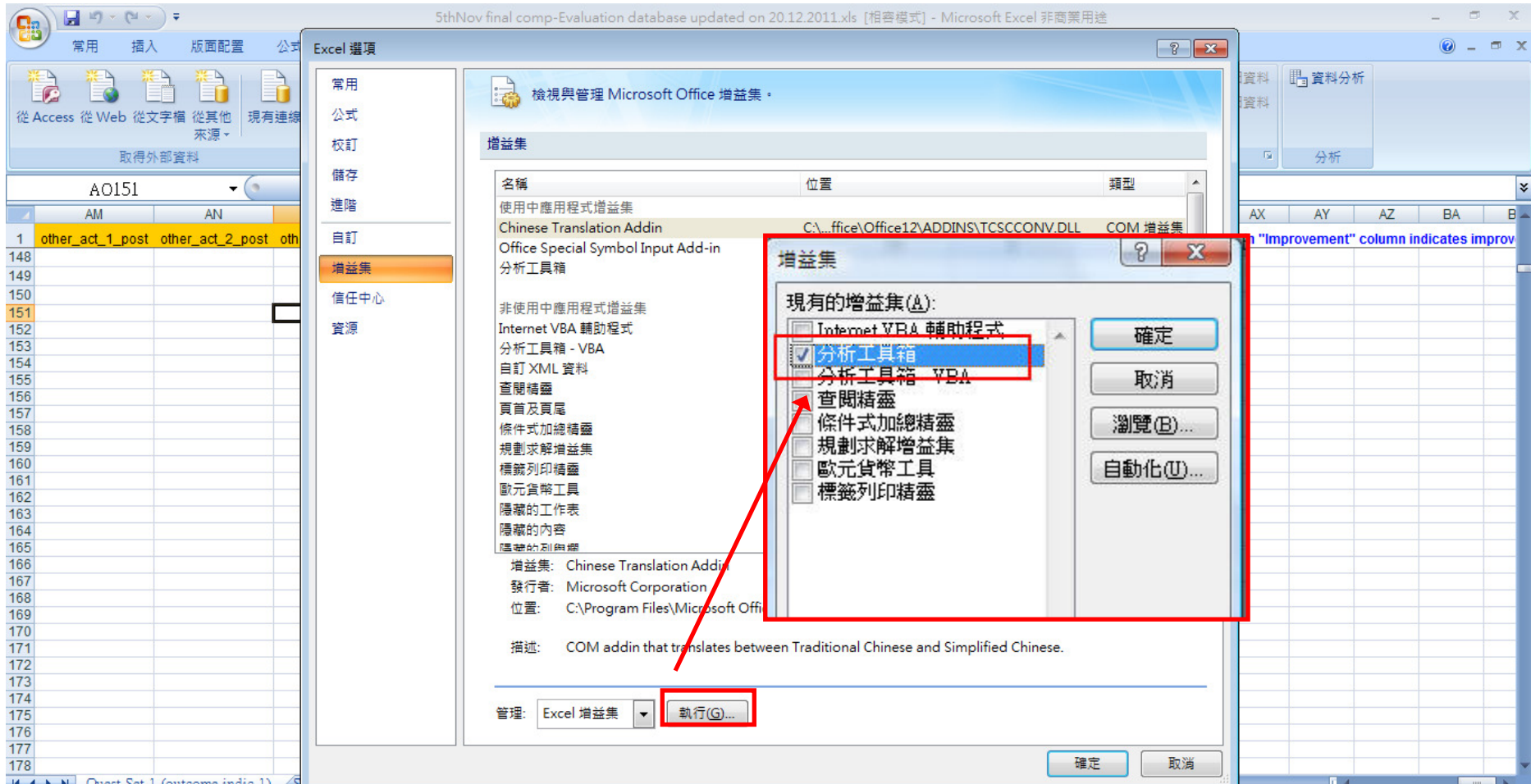


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Step 4:

Click “執行” (Go) and choose “分析工具箱” (Analysis ToolPak).



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Step 5:

After these steps, “資料分析” button will appear in the “資料” tab.

The screenshot shows the Microsoft Excel interface with the 'Data' tab selected in the ribbon. The 'Data Analysis' button is highlighted with a red box. The spreadsheet displays data for 'Post_test_score' and 'Pre_test_score' across various rows, with an 'Improvement' column calculated as the difference between the two scores. A remark in the 'Improvement' column states: 'Remark: positive value in "Improvement" column indicates improv'. The status bar at the bottom shows '平均值: 55.339 項目個數: 300 加總: 16490.875'.

	AM	AN	AO	AP	AQ	AR	AS	AT	AU	AV	AW	AX	AY	AZ	BA	B
1	other_act_1_post	other_act_2_post	other_act_3_post	other_act_4_post	other_act_5_post	other_act_6_post	Post_test_score	Pre_test_score	Improvement	Remark: positive value in "Improvement" column indicates improv						
148							64.000	52.000	12.000							
149							65.000	65.000	0.000							
150							63.000	47.000	16.000							
151							#DIV/0!	#DIV/0!	#DIV/0!							
152							#DIV/0!	#DIV/0!	#DIV/0!							
153							#DIV/0!	#DIV/0!	#DIV/0!							
154							#DIV/0!	#DIV/0!	#DIV/0!							
155							#DIV/0!	#DIV/0!	#DIV/0!							
156							#DIV/0!	#DIV/0!	#DIV/0!							
157							#DIV/0!	#DIV/0!	#DIV/0!							
158							#DIV/0!	#DIV/0!	#DIV/0!							
159							#DIV/0!	#DIV/0!	#DIV/0!							
160							#DIV/0!	#DIV/0!	#DIV/0!							
161							#DIV/0!	#DIV/0!	#DIV/0!							
162							#DIV/0!	#DIV/0!	#DIV/0!							
163							#DIV/0!	#DIV/0!	#DIV/0!							
164							#DIV/0!	#DIV/0!	#DIV/0!							
165							#DIV/0!	#DIV/0!	#DIV/0!							
166							#DIV/0!	#DIV/0!	#DIV/0!							
167							#DIV/0!	#DIV/0!	#DIV/0!							
168							#DIV/0!	#DIV/0!	#DIV/0!							
169							#DIV/0!	#DIV/0!	#DIV/0!							
170							#DIV/0!	#DIV/0!	#DIV/0!							
171							#DIV/0!	#DIV/0!	#DIV/0!							
172							#DIV/0!	#DIV/0!	#DIV/0!							
173							#DIV/0!	#DIV/0!	#DIV/0!							
174							#DIV/0!	#DIV/0!	#DIV/0!							
175							#DIV/0!	#DIV/0!	#DIV/0!							
176							#DIV/0!	#DIV/0!	#DIV/0!							
177							#DIV/0!	#DIV/0!	#DIV/0!							
178							#DIV/0!	#DIV/0!	#DIV/0!							

若獲撥款人／機構在採用或修改問卷等問題上有疑問，歡迎聯絡禁毒基金秘書處。

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Step 6:

To start t-test, click “資料分析” and choose “t 檢定：成對母體平均數差異檢定” (t-test: Paired two sample for means).

The screenshot shows the Microsoft Excel interface with the 'Data Analysis' task pane open. The task pane lists various analysis tools, and 't 檢定：成對母體平均數差異檢定' is highlighted. The spreadsheet data is as follows:

	AM	AN	AO	AP	AQ	AR	AS	AT	AU	AV	AW	AX	AY	AZ
1	other_act_1_post	other_act_2_post	other_act_3_post	other_act_4_post	other_act_5_post	other_act_6_post	Post_test_score	Pre_test_score	Improvement	Remark: positive value in "Improvement" column i				
148							64.000	52.000	12.000					
149							65.000	65.000	0.000					
150							63.000	47.000	16.000					
151							#DIV/0!	#DIV/0!	#DIV/0!					
152							#DIV/0!	#DIV/0!	#DIV/0!					
153							#DIV/0!	#DIV/0!	#DIV/0!					
154							#DIV/0!	#DIV/0!	#DIV/0!					
155							#DIV/0!	#DIV/0!	#DIV/0!					
156							#DIV/0!	#DIV/0!	#DIV/0!					
157							#DIV/0!	#DIV/0!	#DIV/0!					
158							#DIV/0!	#DIV/0!	#DIV/0!					
159							#DIV/0!	#DIV/0!	#DIV/0!					
160							#DIV/0!	#DIV/0!	#DIV/0!					
161							#DIV/0!	#DIV/0!	#DIV/0!					
162							#DIV/0!	#DIV/0!	#DIV/0!					
163							#DIV/0!	#DIV/0!	#DIV/0!					
164							#DIV/0!	#DIV/0!	#DIV/0!					
165							#DIV/0!	#DIV/0!	#DIV/0!					
166							#DIV/0!	#DIV/0!	#DIV/0!					
167							#DIV/0!	#DIV/0!	#DIV/0!					

若獲撥款人／機構在採用或修改問卷等問題上有疑問，歡迎聯絡禁毒基金秘書處。

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Step 7:

Highlight all pre-test scores (including the label “Pre_test_score” in the 1st row) in the box “變數 1 的範圍(1)” (Variable 1 range).

The screenshot shows the Microsoft Excel interface with the '資料' (Data) tab selected. A dialog box for a t-test is open, with the '變數 1 的範圍(1):' field highlighted in red and containing the formula '\$AT\$1:\$AT\$150'. The background spreadsheet shows a table with columns labeled AM through AT. The 'Pre_test_score' column is highlighted in yellow in the first row, and the rest of the rows in that column contain '#DIV/0!'.

	AM	AN	AO	AP	AQ	AR	AS	AT
1	other_act_1_post	other_act_2_post	other_act_3_post	other_act_4_post	other_act_5_post	other_act_6_post	Post test score	Pre_test_score
145							62.000	52.000
146							64.000	65.000
147							64.000	59.000
148							64.000	52.000
149							65.000	65.000
150							63.000	47.000
151							#DIV/0!	#DIV/0!
152							#DIV/0!	#DIV/0!
153							#DIV/0!	#DIV/0!
154							#DIV/0!	#DIV/0!
155							#DIV/0!	#DIV/0!
156							#DIV/0!	#DIV/0!
157							#DIV/0!	#DIV/0!
158							#DIV/0!	#DIV/0!
159							#DIV/0!	#DIV/0!
160							#DIV/0!	#DIV/0!
161							#DIV/0!	#DIV/0!
162							#DIV/0!	#DIV/0!
163							#DIV/0!	#DIV/0!
164							#DIV/0!	#DIV/0!
165							#DIV/0!	#DIV/0!

若獲撥款人／機構在採用或修改問卷等問題上有疑問，歡迎聯絡禁毒基金秘書處。

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Step 8:

Highlight the post-test scores in the box “變數 2 的範圍(2)” (Variable 2 range) (including the “Post_test_score” label in the 1st row), and set the value of α and other options as shown below:

	AM	AN	AO	AP	AQ	AR	AS	AT
1	other_act_1_post	other_act_2_post	other_act_3_post	other_act_4_post	other_act_5_post	other_act_6_post	Post_test_score	Pre_test_score
2							57.000	53.000
3							49.000	49.000
4							56.000	58.000
5							59.000	59.000
6							64.000	59.000
7							61.000	62.000
8							58.000	56.000
9							64.000	64.000
10							57.000	57.000
11							52.000	57.000
12							46.000	49.000
13							50.000	52.000
14							53.000	50.000
15							57.000	57.000
16							65.000	65.000
17							65.000	56.000
18							63.000	64.000
19							54.000	44.000
20							63.000	60.000
21							55.000	55.000
22							39.000	39.000

若獲撥款人／機構在採用或修改問卷等問題上有疑問，歡迎聯絡禁毒基金秘書處。

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Step 9:

The result of the paired t-test will be found in a new spreadsheet.

	A	B	C	D	E	F
1	t 檢定：成對母體平均數差異檢定					
2						
3		Pre test score	Post test score			
4	平均數	54.67030201	56.00671141			
5	變異數	57.7107717	57.11481952			
6	觀察值個數	149	149			
7	皮耳森相關係數	0.733034585				
8	假設的均數差	0				
9	自由度	148				
10	t 統計	-2.946305507				
11	P(T<=t) 單尾	0.001868525				
12	臨界值：單尾	1.655214507				
13	P(T<=t) 雙尾	0.003737049				
14	臨界值：雙尾	1.976122461				
15						
16						
17						
18						
19						

若獲撥款人／機構在採用或修改問卷等問題上有疑問，歡迎聯絡禁毒基金秘書處。

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Interpretation:

Average pre-test and post-test scores will be found in cell B4 and C4. Significant improvement is found when **both** of the following conditions are met:

- (1) Average pre-test score is lower than average post-test score, and
- (2) P ($T<=t$)單尾 is smaller than 0.05.

	A	B	C	D	E	F	G	H	I	J	K	L	M	N
1	t 檢定：成對母體平均數差異檢定													
2														
3		Pre test score	Post test score											
4	平均數	54.67030201	56.00671141	average scores for pre-test and post-test columns										
5	變異數	57.7107717	57.11481952											
6	觀察值個數	149	149											
7	皮耳森相關係數	0.733034585												
8	假設的均數差	0												
9	自由度	148												
10	t統計	-2.946305507												
11	P(T<=t) 單尾	0.001868525		p-value for t-test. Significant difference between pre-rest and post-test indicated by a p-value which is smaller than 0.05.										
12	臨界值：單尾	1.655214507												
13	P(T<=t) 雙尾	0.003737049												
14	臨界值：雙尾	1.976122461												
15														

若獲撥款人／機構在採用或修改問卷等問題上有疑問，歡迎聯絡禁毒基金秘書處。

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