

FINAL REPORT

CROSS-SECTOR SYSTEMS OF SUPPORT (SOS) PROGRAM: CLINICAL DATA EVALUATION



THE UNIVERSITY
OF QUEENSLAND
A U S T R A L I A



Barrington Centre

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Executive Summary

Cross-Sector Systems of Support (SoS) Program

Clinical Data Evaluation by the University of Queensland, Australia

Barrington Centre designed Systems of Support Program (SoS) to address negative stress, vicarious and cumulative trauma so as to build greater resilience and support in the workplace. The participants ranged across age, profession, role and gender.

The evaluation by the University of Queensland, Australia of 772 participants from Health Care, Education, Hospitality, Legal, Emergency and Veterinary Sectors shows:

- The SoS program is a solid and robust program that has very successful measurable outcomes
- The program has high validity and reliability across professions, gender, age and program delivery (face to face workshop or virtual on-line delivery) with no bias in outcomes
- The participants who scored ‘high psychological risk’ in their initial baseline testing before the Program delivery had significant reduction in their ‘risk levels’ with the complementary 1:1 psychological support.

Interestingly, male participants overall show higher ‘psychological risk’ in their initial baseline testing, meaning that they are more prone/vulnerable to Post Traumatic Stress Disorder. Irrespective, the SoS Program worked equally well for both males and females for decreasing their psychological risk in the workplace and thereby building their resilience.

The statistical stability of the data from the University of Queensland’s evaluation of the Systems of Support (SoS) indicate the SoS Program is effective to:

1. Reduce negative stress, cumulative trauma and vicarious trauma;
2. Increase resilience and effective coping strategies for sustainability;
3. Implement successfully across professional sectors, age groups, gender and roles.

Barrington Centre takes this opportunity to thank Dr Richard Robinson, Dr Nik Steffens and Dr Kate Zhaunerchyk for this very worthwhile evaluation of the Systems of Support Program.

As a consequence, this supports Australian businesses and organisations in knowing that their investment in the SoS program will lead to effective strategies for psychological risk mitigation and efficacy of increasing resilience of staff. Such positive outcomes have significant benefit in staff retention and overall staff wellbeing. These are key factors for being an ‘Employer of Choice’ within the current climate of staff shortages.

Overview

This study aims to critically review and validate Barrington Centre's *Systems of Support* (SoS) program. The SoS program effectiveness was measured using Post Traumatic Check List (PCL-5), Coping Scale for Adults Second Edition (CSA-2) and NEO Five-Factor Inventory (NEO FFI -3). Analyses as a function of a range of demographic and contextual variables was conducted to determine any specific effects on the efficacy of the program. Overall, the effectiveness of the program was validated.

Method

Participants

Participants included professional men (n=343) and women (n=446) of various ages across service industries (i.e., health care and social assistance, education, hospitality, judicial). The final sample includes 772 responses for PCL-5, 769 responses for CSA-2, and 149 responses for NEO- FFI- 3).¹ Table 1 shows the overall demographics of the total number of respondents.

Table 1. Overall demographics of total respondents.

Criteria	Number of observations	% of the total sample
Gender		
Females	446	57%
Males	343	43%
Age bracket		
20-29	130	16%
30-39	176	22%
40-49	349	44%
50-59	74	9%
60-69	60	8%
Supervisory Responsibility (in hours/employees)		
None	16	2%
1-30	362	46%
31-60	198	25%
61-100	76	10%
Above 100	137	17%
Delivery mode		
Online	145	18%
Face to face	644	82%
Industry		
Social Worker	10	1%
Psychologist	12	2%
Speech Pathologist	5	1%
Senior Education Improvement Leader (SEIL)	10	1%
Educator	3	<1%
Hospitality	31	4%
Health	67	8%
Legal	124	16%
Judicial	30	4%
Emergency Management	292	37%
Medical	101	13%
Veterinary	28	4%
Allied Health	76	10%

Note: This table shows total demographics of respondents (i.e., 789). Supervisory responsibility category that had data in ranges (i.e., 0-10, 0-20 and 0-30), the maximum values has been taken (i.e., 10, 20, 30).

The participants are classified by 20-29 (n=130), 30-39 (n=176), 40-49 (n=349), 50-59 (n=74), 60-69 (n=60) age brackets. The dominant proportion of respondents is in their forties (n= 349) with 44% of participants belonging to that age group. Fifties (n= 74) and sixties (n=

¹ The initial number of responses received is 789. However, post-intervention data was not available for every respondent due to non-completion, departing organization or withdrawal from the program. Therefore, only responses with both pre- and post-program data were used in the analysis.

60) categories are the least representative with only 9% and 8% percent of the sample respectively. Supervisory responsibility denotes the number of hours/employees under management. Most of the sample bear relatively minor supervisory responsibility (n=362) with 46% of respondents having up to 30 subordinates/hours. The respondents with above 100 hours/subordinates (the highest category) supervisory burden (n=137) represent only 17% of the sample. Due to availability issues (e.g., COVID-19 disruptions), 82% of the respondents participated in the program face-to-face (n=644), while 18% had an on-line engagement (n=145). The industry distribution is quite diverse with respondents represented by thirteen industries: Social Worker (n=10), Psychologist (n=12), Speech Pathologist (n=5), SEIL (n=10), Educator (n=3), Hospitality (n=31), Health (n=67), Legal (n=124), Judicial (n=30), Emergency Management (n=292), Medical (n=101), Veterinary (n=28), Allied Health (n=76).

Data Analysis

Table 2 shows descriptive statistics for PCL-5, CSA-2 and NEO- FFI- 3 (baseline and post-intervention). Baseline values reflect initial PCL-5, CSA-2 and NEO- FFI-3 responses (i.e., before the SoS program). Post-intervention (i.e., post-program) values show the levels of PCL-5, CSA-2 and NEO- FFI-3 after the employees have participated in the SoS program. Baseline PCL-5 mean (standard deviation) is 17.37 (10.97), while post-intervention PCL-5 mean (standard deviation) is on the level of 8.66 (7.81). Therefore, the PCL-5 levels dropped by 49.9% on average after the SoS program was completed.

Table 2. Descriptive statistics for PCL-5, CSA-2 and NEO- FFI- 3 (i.e., baseline and post-intervention).

	# Obs. (1)	Mean (2)	Std. Dev (3)	Median (4)	Min (5)	Max (6)	% Δ (7)
PCL-5							
Baseline	772	17.37	10.97	16.50	0.00	62.00	
Post-intervention	772	8.66	7.81	6.00	0.00	46.00	- 49.9%
CSA-2. Baseline							
Productive Coping	769	50.05	12.00	49.00	29.00	78.00	
Non-Productive Coping	769	51.03	8.29	50.00	23.00	82.00	
Problem-Solving Coping	769	50.6	12.97	49.0	29.0	92.0	
CSA-2. Post-intervention							
Productive Coping	769	56.61	9.22	55.00	29.00	86.00	13.11%
Non-Productive Coping	769	45.99	7.34	45.00	21.00	85.00	-9.88%
Problem-Solving Coping	769	58.04	10.5	55.00	29.00	96.00	14.70%
NEO- FFI- 3. Baseline							
Neuroticism	149	2.64	1.07	3	1	5	
Extraversion	149	3.5	1.04	4	1	5	
Openness to experience	149	3.57	0.97	4	1	5	
Agreeableness	149	3.83	0.92	4	1	5	
Conscientiousness	149	3.46	1.01	3	1	5	
NEO- FFI- 3. Post-intervention							
Neuroticism	149	2.28	0.89	2	1	5	-13.64%
Extraversion	149	3.64	1.05	4	1	5	4.00%
Openness to experience	149	3.93	0.99	4	1	5	10.08%
Agreeableness	149	3.94	0.86	4	1	5	2.87%
Conscientiousness	149	3.6	0.97	4	1	5	4.05%

Note: NEO- FFI- 3 responses across all five indicators (i.e., neuroticism, extraversion, openness, agreeableness, conscientiousness) has been recoded into numerical values. Specifically, VL (i.e., very low), L (i.e., low), A (i.e., average), H (i.e., high), and VH (i.e., very high) have been assigned values of 1, 2, 3, 4, 5 respectively. ***p < 0.01, **p < 0.05, *p < 0.1. Column 7 shows percentage change between baseline and post-intervention results.

CSA-2 includes productive coping (CSA-2-PC), non-productive coping (CSA-2-NPC), and problem-solving coping (CSA-2-PSC) categories. The baseline CSA-2-PC mean (standard deviation) is 50.05 (12.00), and post-intervention CSA-2-PC mean (standard deviation) is 56.61 (9.22). The dynamics of CSA-2-PC change denote that productive coping have increased by 13.11% on average after the program. Baseline CSA-2-NPC mean (standard deviation) is 51.03 (8.2), while post-intervention CSA-2-NPC mean (standard deviation) is 45.99 (7.34). Non-productive coping level has decreased by 9.88% on average. Baseline CSA-2-PSC mean (standard deviation) is 50.6 (12.97), while post-intervention CSA-2-PSC mean (standard deviation) is 58.04 (10.5). Problem-Solving Coping has increased by 14.7% after the SoS program completion.

NEO- FFI- 3 includes neuroticism (domain N), extraversion (domain E), openness to experience (domain O), agreeableness (domain A), conscientiousness (domain C). Baseline domain N mean (standard deviation) is 2.64 (1.07), and post-intervention domain N mean (standard deviation) is 2.28 (0.89). Baseline domain E mean (standard deviation) is 3.5 (1.04), and post-intervention domain E mean (standard deviation) is 3.64 (1.05). Domain N (E) decreased (increased) by 13.64% (4.00%) after completing the SoS program. Baseline domain O mean (standard deviation) is 3.57 (0.97), and post-intervention domain O mean (standard deviation) is 3.93 (0.99). Baseline domain A mean (standard deviation) is 3.83 (0.92), and post-intervention domain A mean (standard deviation) is 3.94 (0.86). Baseline domain C mean (standard deviation) is 3.46 (1.01), and post-intervention domain C mean (standard deviation) is 3.6 (0.97). Therefore, domains O, A, and C increased by 10.08%, 2.87, and 4.05%.

Given the positive (i.e., denoting program efficacy) dynamics of change across all three indicators (i.e., PCL-5, CSA-2, and NEO-FFI-3), it is necessary to assess the statistical significance of such change. Table 3 presents the results of the T-test and Cohen's d statistics.

Table 3. T-test and Cohen's d statistics.

	T-stat. (1)	Cohen's d (2)	Cohen's d magnitude (3)	U3(d) (4)	Common Language Effect Size (CLES d) (5)	Cliff's Delta (6)
PCL-5	17.93***	0.91***	large	81.94 %	74.07 %	0.48
CSA. Productive Coping	-12.02** *	0.61 ***	moderate	73.01 %	66.77 %	0.34
CSA. Non-Productive Coping	12.59***	0.643***	moderate	73.97 %	67.52 %	0.35
CSA. Problem-Solving Coping	-12.32** *	0.628***	moderate	73.51 %	67.16 %	0.34
NEO. Neuroticism	3.18***	0.369***	small	64.38 %	60.28 %	0.21
NEO. Extraversion	-1.21	0.141	negligible	55.6 %	53.97 %	0.08
NEO. Openness to experience	-3.13***	0.363***	small	64.16 %	60.12 %	0.2
NEO. Agreeableness	-1.04	0.121	negligible	54.81 %	53.41 %	0.07
NEO. Conscientiousness	-1.16	0.135	negligible	55.39%	53.81 %	0.08

Note: Column 1 shows Welch two sample T-test for means. The Welch's t-test extension was used as both data samples (i.e., baseline and post-intervention) have different variances (see, column 3 in the Table 2) and not normally distributed (see, Appendix). ***p < 0.01, **p < 0.05, *p < 0.1. Given the expected change on CSA-2-PC, CSA-2-PSC, NEO-FFI-3 Domains E,O,A,C (i.e., expected to increase), the post-intervention group was a Group1 and baseline responses was Group 2 in statistical tests for columns 2,3,4,5,6.

PCL-5 and CSA indicators (i.e., CSA-2-PC, CSA-2-NPC, CSA-2-PSC) t-test statistics exhibit statistical significance denoting that the sample means are different. Specifically, PCL-5 t-stat is 17.93***, while CSA-2-PC, CSA-2-NPC, CSA-2-PSC t-test values are -12.02***, 12.59***, and -12.32 *** respectively. NEO- FFI-3 domain in N and domain O t-test statistics are 3.18*** and -3.13***. The insignificance of t-stat for NEO- FFI-3 domains E, A, and C might be explained by the lower magnitude of change between baseline and post-intervention results.

Cohen's d measure reflects the effect size for the comparison between baseline and post-intervention results. PCL-5 Cohen's d is 0.91*** denoting a large statistically significant difference in effect size with 81.9% of the baseline group are above the mean of the post-intervention group (Cohen's U3). PCL-5 CLES d denotes that 74.07% probability that randomly selected response from baseline sample will be greater than a randomly selected score from post-intervention. Cliff's delta is 0.48. CSA-2 Cohen's d exhibit moderate effect size across all indicators (i.e., CSA-2-PC, CSA-2-NPC, CSA-2-PSC) with values equal to 0.61***, 0.643***, and 0.628** respectively. On average, 73.25% of CSA-2-PC and CSA-2-PSC post-intervention responses are above the mean of the baseline responses. 73.95% of CSA-2-NPC baseline responses are above the mean of the post-intervention group (Cohen's U3). CSA-2 CLES d (Cliff's d) are 66.77 %, 67.52 %, and 67.16 % (0.34,0.35,0.34) for CSA-2-PC, CSA-2-NPC, CSA-2-PSC respectively. NEO- FFI- 3 domains exhibit either small or negligible effect sizes. Table 4 reports results for Hedge's g, Correlation ES, Fisher's z, Odds ratio and NNT.

Table 4. Hedge's g, Correlation ES, Fisher's z, Odds ratio and NNT.

	<i>Hedges' g</i> (1)	U3(g) (2)	CLES(g) (3)	Correlation ES (r) (4)	Fisher's z (5)	Odds Ratio ES (6)	Log OR (7)	NNT (8)
PCL-5	0.91***	81.93 %	74.06%	0.42***	0.44***	5.24***	1.66***	3.04
CSA-2. Productive Coping	0.61***	73 %	66.76 %	0.29***	0.3***	3.04***	1.11***	4.77
CSA-2. Non-Productive Coping	0.64***	73.96 %	67.51 %	0.31***	0.32***	3.21***	1.17***	4.52
CSA-2. Problem-Solving Coping	0.63***	73.57 %	67.15 %	0.3***	0.31***	3.13***	1.14***	4.64
NEO- FFI- 3.Neuroticism	0.37***	64.34 %	60.26 %	0.18***	0.18***	1.95***	0.67***	8.47
NEO- FFI- 3.Extraversion	0.14	55.59 %	53.96 %	0.07	0.07	1.29	0.26	23.97
NEO- FFI- 3.Openness to experience	0.36***	64.12 %	60.1 %	0.18***	0.18***	1.93	0.66***	8.62
NEO- FFI- 3.Agreeableness	0.12	54.8 %	53.4 %	0.06	0.06	1.25	0.22	28.12
NEO- FFI- 3.Conscientiousness	0.14	55.37 %	53.8 %	0.07	0.07	1.28	0.25	24.98

PCL-5, CSA-2 (i.e., CSA-2-PC, CSA-2-NPC, CSA-2-PSC), and NEO- FFI- 3 Hedge's g are similar in values and significance to Cohen's d. PCL-5 and CSA-2 effect size correlations demonstrate moderate (or closely near moderate)² association between baseline and post-intervention responses. NEO-FFI-3 indicators shows either small (i.e., domains N and O) or negligible (i.e., domain E, A, and C). Fisher's z values across PCL-5, CSA-2, and NEO-FFI-3

² CSA-2-PC correlation effect size is 0.29.

are of the similar magnitude and significance as correlation effect size. Number Needed to Treat (NNT) reflect the number of participants that need to go through an intervention to prevent one additional bad outcome. PCL-5 NNT is 3.04 and is the lowest among all other indicators (i.e., CSA-2 and NEO-FFI-3) meaning that SoS Program is the most effective in treating PTSD. The NNT level for CSA-2-PC, CSA-2-NPC, and CSA-2-PSC are 4.77, 4.52, and 4.64 respectively. NEO- FFI- 3 domain N and O are 8.47 and 8.62. NNT results are inline with Cohen`s d results and correspond to EF dynamics across all indicators. Table 5 reports the top ten key stressors (overall) by number of respondents.

Table 5. Top 10 Key Stressors (Overall).

	Stressor	# of responses
1	Relentless job demands 24/7	297
2	Lack of management support	281
3	Staff turnover	164
4	Individual not collective focus	163
5	Isolation	158
6	High responsibility & no authority	146
7	Lack of leadership	110
8	Silos of operation	100
9	Hours	80
10	Lack of role clarity	76

The most common stressor for employees of the reported industries are relentless job demands 24/7 (n=297), lack of management support (n=281) and staff turnover (n=164). Cumulatively, isolation (n=158) and silos of operation (n=100) represent one more significant stress factor. Table 7 show the top ten key stressors by stressor. The stressors frequency reported in Table 6 mostly correspond to overall key stressors reported in Table 5.

Table 6. Top 10 Key Stressors (by Stressor)

	Key Stressor 1	# of responses	Key Stressor 2	# of responses	Key Stressor 3	# of responses
1	Relentless job demands 24/7	201	Isolation	115	Staff turnover	117
2	Lack of management support	124	Lack of management support	89	Lack of leadership	87
3	Silos of operation	100	Individual not collective focus	83	Individual not collective focus	80
4	Hours	58	Lack of role clarity	76	Lack of management support	68
5	High responsibility & no Authority	54	High responsibility & no Authority	42	Relentless job demands 24/7	65
6	Isolation	43	Dealing with personal issues of staff	37	High responsibility & no Authority	50
7	Unclear Position Descriptions	35	Political interference	32	Poor and inconsistent communication	49
8	Staff turnover	27	Relentless job demands 24/7	31	Administration overload	35
9	File load	25	Administration overload	30	Executive turnover	32
10	Lack of leadership	23	Staff expectations	25	Judgement writing	30

Correlation analysis.

Table 7 reports correlations between PCL-5 and CSA-2. There is a significantly positive correlation of 0.68*** between PCL-5 baseline and PCL-5 post-intervention. Such a correlation is expected as higher pre-existing PTSD will most likely lead to higher post-intervention PTSD. The similar correlations are observed for CSA -2 indicators (i.e., CSA-2-PC, CSA-2-NPC, CSA-2-PSC). PCL-5 and CSA-2 indicators are also highly statistically significant (both positively and negatively). For instance, correlations between PCL5.B and PC.B, NPC.B, as well as PS.B are -0.73***, 0.7***, and -0.63*** respectively. That means that the higher employee's PTSD is, the lower his/her Problem Coping and Problem-Solving are and the higher his/her Non-problem solving is.

Table 7 . PCL-5 and CSA-2 correlation.

	PCL5.B	PCL5.Post	PC.B	PC.Post	NPC.B	NPC.Post	PS.B	PS.Post
PCL5.B	1	0.68***	-0.73***	-0.6***	0.7***	0.39***	-0.63***	-0.5***
PCL5.Post	0.68***	1	-0.42***	-0.48***	0.5***	0.47***	-0.34***	-0.39***
PC.B	-0.73***	-0.42***	1	0.83***	-0.56***	-0.31***	0.85***	0.68***
PC. Post	-0.6***	-0.48***	0.83***	1	-0.46***	-0.36***	0.7***	0.72***
NPC.B	0.7***	0.5***	-0.56***	-0.46***	1	0.68***	-0.42***	-0.32***
NPC. Post	0.39***	0.47***	-0.31***	-0.36***	0.68***	1	-0.22***	-0.27***
PS.B	-0.63***	-0.34***	0.85***	0.7***	-0.42***	-0.22***	1	0.81***
PS. Post	-0.5***	-0.39***	0.68***	0.72***	-0.32***	-0.27***	0.81***	1

Note: This table presents pair-wise Pearson correlation of the PCL5 and CSA-2 indicators. NEO- FFI- 3 was excluded from correlation analysis due to much lower number of observations. Correlation above 0.7 (in absolute value) is highlighted in green. Notation of the indicators: B – baseline, Post – post intervention, PC- Productive coping, NPC- Non-productive coping, PS – Problem Solving. ***p < 0.01, **p < 0.05, *p < 0.1

Regression analysis

Regression analysis (i.e., interaction model) was employed to identify if there any other factors that will in any way contribute to the effectiveness of the intervention. The basic interaction model set up is the following:

$$Indicator_i = \beta_1 InterventionDummy + \beta_2 GenderDummy + \beta_3 Age + \beta_4 DeliveryDummy + \beta_5 SupervisoryResponsibility + \beta_6 OneonOneSession + \beta_7 WorkshopSize + \beta_8 Covid - 19 + \epsilon_i ,$$

where $Indicator\{PCL-5, CSA-2\ PC, CSA-2\ NPC, CSA-2\ PSC, NEO-FFI-3\ Domains\ N, E, O, A, C\}$ is a score given by respondent i , $InterventionDummy$ is a categorical variable that takes value 1 if the response was given post-intervention and 0 otherwise, $GenderDummy$ is a categorical variable that takes value 1 if the response was given by Male and 0 otherwise, Age is numeric value that is first number from the age bracket column (i.e., 20, 30, 40, 50, 60), $DeliveryDummy$ is a categorical variable that takes value 1 if Delivery was Face-to-face and 0 otherwise, $SupervisoryResponsibility$ reflects number of hours/employees under management, $1on1\ Session$ shows session how many hours have been taken in one on one setting, $WorkshopSize$ is number of participants in the workshop, $Covid-19$ is a categorical variable that takes value 1 if the response was given after 11 March 2020 (i.e., after WHO declared COVID-19 pandemic) and 0 otherwise. Table 8 reports PCL-5 interaction regression results.

Table 8. PCL-5 interaction regression.

	Dependent variable							
	PCL-5 (1)	PCL-5 (2)	PCL-5 (3)	PCL-5 (4)	PCL-5 (5)	PCL-5 (6)	PCL-5 (7)	PCL-5 (8)
Intervention	-8.696*** t = -17.93	-8.054*** t = -12.50	-8.994*** t = -5.269	-8.351*** t = -7.478	-7.727*** t = -12.30	-9.127*** t = -1.749	-7.969*** t = -7.651	-9.123*** t = -17.60
Male		1.421** t = 2.05						
Intervention*Male		-1.479 t = -1.51						
Age			-0.107** t = -3.42					
Intervention*Age			0.008 t = 0.18					
Delivery (F2F)				-1.477* t = -1.68				
Intervention*F2F				-0.424 t = -0.34				
Supervisory responsibility (SR)					0.0004 t = 0.1217			
Intervention*SR					-0.013* t = -2.41			
1on1 Session						1.749 t = 1.35		
Intervention*1on1						-4.383** t = -2.39		
Workshop Size (WS)							0.099** t = 2.15	
Intervention*WS							-0.051 t = -0.78	
COVID-19								2.913** t = 2.83
Intervention*COVID-19								1.95 t = 1.41
Observations	1544	1544	1544	1544	1544	114	1544	1544
R2	0.17	0.17	0.18	0.18	0.18	0.57	0.18	0.18
F Statistic	321.73***	108.81***	115.86***	110.15***	111.49***	47.767***	109.41***	107.50***

Note: This table reports effects of SoS program implementation on PTSD. Column 1 reports effects on SoS program in insolation. Columns 2, 3, 4 show results of the effects of gender, age, and delivery mode on PTSD. Columns 5, 6, 7 show result of effects of supervisory responsibility, one on one sessions as well as workshop size. Column reports effects of Covid-19 pandemic on the PTSD. Intercepts are dropped for simplicity.

Table 8 presents results of the effects of the SoS program implementation (i.e., intervention) on the PTSD. The intervention coefficient is -8.696 (t= -17.93) which denotes that participation in program decreases the level of PCL-5 by 8.969 points. Such an effect is consistent across all other regression set ups denoting the exceptional robustness of the intervention results. Male coefficient of 1.421** (t = 2.05) is significant if the intervention is equal to null (i.e., intervention variable is not used/zero), meaning that males have by 1.421 point higher PCL-5 levels compared to women. The interaction term between males and interaction is insignificant meaning that there no effect of gender on the efficacy of the intervention. Age coefficient is -0.107** (t = -3.42) meaning that higher age leads to lower levels of PTSD. The interaction term between age and interaction is insignificant meaning that there no effects of age on the efficacy of intervention. The delivery coefficient is -1.477* (t = -1.68) meaning that face to face delivery method decrease PTSD by 1.477 points. Workshop size coefficient is 0.099*** (t = 2.15) which denotes a positive relation between the number of people participation in a workshop and levels of PTSD if the intervention is set to null (i.e., intervention variable is not used/zero). The COVID-19 coefficient equals to 2.913*** (t = 2.83) denoting that the pandemic increased levels of PTSD by 2.913 point.

Table 9. CSA-2 Productive Coping interaction regression.

	<i>Dependent variable:</i>						
	(1)	(2)	(3)	PC		(6)	(7)
				(4)	(5)		
Intervention	6.563***	6.060***	7.405***	6.186***	6.001***	5.978***	6.663***
	t = 12.023	t = 8.349	t = 3.827	t = 4.931	t = 8.465	t = 5.094	t = 11.313
Male		-1.095					
		t = -1.407					
Intervention*Male		1.159					
		t = 1.052					
Age			0.048				
			t = 1.355				
Intervention*Age			-0.023				
			t = -0.454				
Delivery (F2F)				1.745*			
				t = 1.772			
Intervention*F2F				0.464			
				t = 0.333			
Supervisory responsibility (SR)					-0.006		
					t = -1.288		
Intervention*SR					0.008		
					t = 1.244		
Workshop Size (WS)						0.038	
						t = 0.728	
Intervention*WS						0.041	
						t = 0.563	
COVID-19							-2.069*
							t = -1.775
Intervention*COVID-19							-0.135
							t = -0.086
Observations	1,538	1,538	1,538	1,538	1,538	1,538	1,538
R ²	0.086	0.087	0.087	0.091	0.087	0.088	0.091
F Statistic	144.556***	48.846***	48.978***	51.104***	48.809***	49.164***	50.897***

Note:

*p<0.1; **p<0.05; ***p<0.01

Table 9 presents results of the effects of the SoS program implementation (i.e., intervention) on the CSA-2 Productive coping. The intervention coefficient is 6.563 (t= 12.023) which denotes that participation in the program increased levels of Productive coping by 6.563 points. Such an effect is consistent across all other regression set ups meaning the exceptional robustness of intervention results.

Table 10. CSA-2 Non-productive Coping interaction regression.

	<i>Dependent variable:</i>						
	(1)	(2)	(3)	NPC			(7)
Intervention	-5.035*** t = -12.599	-4.922*** t = -9.258	-6.263*** t = -4.455	-4.703*** t = -5.108	-5.009*** t = -9.648	-5.349*** t = -6.230	-5.079*** t = -11.771
Male		0.322 t = 0.565					
Intervention*Male		-0.261 t = -0.323					
Age			-0.109*** t = -4.209				
Intervention*Age			0.033 t = 0.910				
Delivery (F2F)				0.467 t = 0.646			
Intervention*F2F				-0.409 t = -0.400			
Supervisory responsibility (SR)					-0.001 t = -0.442		
Intervention*SR					-0.0004 t = -0.078		
Workshop Size (WS)						0.046 t = 1.223	
Intervention*WS						0.022 t = 0.413	
COVID-19							1.338 t = 1.566
Intervention*COVID-19							-0.039 t = -0.034
Observations	1,538	1,538	1,538	1,538	1,538	1,538	1,538
R ²	0.094	0.094	0.109	0.094	0.094	0.096	0.097
F Statistic	158.738***	52.965***	62.499***	53.000***	53.028***	54.595***	54.806***

Note:

*p<0.1; **p<0.05; ***p<0.01

Table 10 presents results of the effects of SoS program implementation (i.e., intervention) on the CSA-2 Non-productive coping. The intervention coefficient is -5.035 (t= -12.599) which denotes that participation in the program decreased levels of non-productive coping by 5.035 points. Such an effect is consistent across all other regression set ups meaning the exceptional robustness of intervention results.

Table 11. CSA-2 Problem Solving Coping interaction regression.

	<i>Dependent variable:</i>						
	(1)	(2)	(3)	PSC		(6)	(7)
				(4)	(5)		
Intervention	7.440*** t = 12.320	6.811*** t = 8.525	6.861*** t = 3.206	6.669*** t = 4.829	6.434*** t = 8.211	6.973*** t = 5.367	7.595*** t = 11.691
Male		-3.128*** t = -3.649					
Intervention*Male		1.446 t = 1.193					
Age			0.045 t = 1.134				
Intervention*Age			0.016 t = 0.282				
Delivery (F2F)				3.233*** t = 2.982			
Intervention*F2F				0.950 t = 0.619			
Supervisory responsibility (SR)					-0.006 t = -1.131		
Intervention*SR					0.014** t = 2.011		
Workshop Size (WS)						-0.039 t = -0.678	
Intervention*WS						0.033 t = 0.406	
COVID-19							-3.371*** t = -2.621
Intervention*COVID-19							-0.177 t = -0.103
Observations	1,538	1,538	1,538	1,538	1,538	1,538	1,538
R ²	0.090	0.100	0.092	0.104	0.092	0.090	0.100
F Statistic	151.776***	56.811***	51.858***	59.236***	52.069***	50.699***	56.517***

Note:

*p<0.1; **p<0.05; ***p<0.01

Table 11 presents results of the effects of the SoS program implementation (i.e., intervention) on the CSA-2 Problem Solving coping. The intervention coefficient is 7.440 (t= 12.320) which denotes that participation in the program increased the levels of Problem Solving by 7.440 points. Such an effect is consistent across all other regression set ups meaning the exceptional robustness of intervention results.

Table 12. NEO-FFI-3 Domain N interaction regression.

	Dependent variable:						
	N						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Intervention	-0.362*** t = -3.182	-0.333** t = -2.564	-0.323 t = -0.853	-0.622*** t = -3.003	-0.418*** t = -2.611	-0.332* t = -1.855	-0.295** t = -2.290
Male		-0.161 t = -0.850					
Intervention*Male		-0.124 t = -0.462					
Age			-0.010 t = -1.437				
Intervention*Age			-0.001 t = -0.108				
Delivery (F2F)				-0.169 t = -0.964			
Intervention*F2F				0.372 t = 1.501			
Supervisory responsibility (SR)					-0.001 t = -1.107		
Intervention*SR					0.001 t = 0.494		
Workshop Size (WS)						-0.001 t = -0.171	
Intervention*WS						-0.002 t = -0.225	
COVID-19							0.056 t = 0.215
Intervention*COVID-19							-0.259 t = -0.825
Observations	298	298	298	298	298	298	298
R ²	0.033	0.043	0.048	0.040	0.038	0.034	0.038
F Statistic	10.122***	4.378***	4.934***	4.134***	3.831**	3.443**	3.829**

Note: *p<0.1; **p<0.05; ***p<0.01

Table 12 presents results of the effects of the SoS program implementation (i.e., intervention) on the NEO-FFI_3 Domain N. The intervention coefficient is -0.362 (t= -3.182) which denotes that participation in the program decreased the levels of Neuroticism by 0.362 points. Such an effect is consistent across all other regression set ups meaning the exceptional robustness of intervention results.

Table 13. NEO-FFI-3 Domain E interaction regression.

	<i>Dependent variable:</i>						
	E						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Intervention	0.148	0.158	0.024	-0.022	0.020	0.263	0.236*
	t = 1.215	t = 1.146	t = 0.060	t = -0.100	t = 0.120	t = 1.381	t = 1.718
Male		0.396**					
		t = 1.973					
Intervention*Male		-0.044					
		t = -0.153					
Age			0.003				
			t = 0.424				
Intervention*Age			0.003				
			t = 0.318				
Delivery (F2F)				-0.053			
				t = -0.281			
Intervention*F2F				0.243			
				t = 0.919			
Supervisory responsibility (SR)					-0.001		
					t = -1.052		
Intervention*SR					0.002		
					t = 1.061		
Workshop Size (WS)						0.002	
						t = 0.300	
Intervention*WS						-0.007	
						t = -0.787	
COVID-19							0.284
							t = 1.023
Intervention*COVID-19							-0.475
							t = -1.419
Observations	298	298	298	298	298	298	298
R ²	0.005	0.028	0.008	0.009	0.009	0.008	0.012
F Statistic	1.477	2.827**	0.805	0.863	0.928	0.741	1.188

Note:

*p<0.1; **p<0.05; ***p<0.01

Table 13 presents results of the effects of the SoS program implementation (i.e., intervention) on the NEO-FFI_3 Domain O. The intervention coefficient is insignificant.

Table 14. NEO-FFI-3 Domain O interaction regression.

	<i>Dependent variable:</i>						
	(1)	(2)	(3)	O (4)	(5)	(6)	(7)
Intervention	0.356*** t = 3.131	0.342*** t = 2.646	0.285 t = 0.748	0.467** t = 2.251	0.280* t = 1.751	0.306* t = 1.715	0.332** t = 2.581
Male		0.263 t = 1.393					
Intervention*Male		0.058 t = 0.217					
Age			0.001 t = 0.160				
Intervention*Age			0.002 t = 0.195				
Delivery (F2F)				0.085 t = 0.485			
Intervention*F2F				-0.159 t = -0.641			
Supervisory responsibility (SR)					-0.001 t = -1.003		
Intervention*SR					0.001 t = 0.676		
Workshop Size (WS)						0.001 t = 0.130	
Intervention*WS						0.003 t = 0.366	
COVID-19							-0.009 t = -0.034
Intervention*COVID-19							0.083 t = 0.264
Observations	298	298	298	298	298	298	298
R ²	0.032	0.048	0.033	0.033	0.035	0.033	0.033
F Statistic	9.800*** (df = 1; 296)	4.907*** (df = 3; 294)	3.319** (df = 3; 294)	3.387** (df = 3; 294)	3.592** (df = 3; 294)	3.395** (df = 3; 294)	3.306** (df = 3; 294)

Note:

*p<0.1; **p<0.05; ***p<0.01

Table 14 presents results of the effects of the SoS program implementation (i.e., intervention) on the NEO-FFI_3 Domain O. The intervention coefficient is 0.365 (t= 3.131) which denotes that participation in the program increased the levels of Openness by 0.365 points. Such an effect is consistent across all other regression setups meaning the exceptional robustness of intervention results.

Table 15. NEO-FFI-3 Domain A interaction regression.

	<i>Dependent variable:</i>						
	(1)	(2)	(3)	A (4)	(5)	(6)	(7)
Intervention	0.107 t = 1.044	0.053 t = 0.453	0.305 t = 0.886	-0.067 t = -0.368	-0.029 t = -0.204	0.077 t = 0.483	0.022 t = 0.194
Male		0.219 t = 1.293					
Intervention*Male		0.233 t = 0.972					
Age			0.008 t = 1.295				
Intervention*Age			-0.005 t = -0.602				
Delivery (F2F)				-0.622*** t = -4.063			
Intervention*F2F				0.249 t = 1.151			
Supervisory responsibility (SR)					-0.002 t = -1.585		
Intervention*SR					0.002 t = 1.351		
Workshop Size (WS)						0.008 t = 1.433	
Intervention*WS						0.002 t = 0.245	
COVID-19							0.258 t = 1.107
Intervention*COVID-19							0.115 t = 0.410
Observations	298	298	298	298	298	298	298
R ²	0.004	0.033	0.010	0.074	0.012	0.021	0.026
F Statistic	1.090 (df = 1; 296)	3.300** (df = 3; 294)	0.988 (df = 3; 294)	7.868*** (df = 3; 294)	1.237 (df = 3; 294)	2.107* (df = 3; 294)	2.658** (df = 3; 294)

Note: *p<0.1; **p<0.05; ***p<0.01

Table 15 presents results of the effects of the SoS program implementation (i.e., intervention) on the NEO-FFI_3 Domain A. The intervention coefficient is insignificant.

Table 16. NEO-FFI-3 Domain C interaction regression.

	<i>Dependent variable:</i>						
	C						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Intervention	0.134	0.167	0.185	-0.200	-0.039	0.127	0.044
	t = 1.169	t = 1.270	t = 0.480	t = -1.025	t = -0.245	t = 0.719	t = 0.345
Male		0.254					
		t = 1.324					
Intervention*Male		-0.138					
		t = -0.510					
Age			-0.004				
			t = -0.559				
Intervention*Age			-0.001				
			t = -0.138				
Delivery (F2F)				-0.992***			
				t = -6.009			
Intervention*F2F				0.479**			
				t = 2.051			
Supervisory responsibility (SR)					-0.003**		
					t = -2.579		
Intervention*SR					0.003		
					t = 1.544		
Workshop Size (WS)						0.015**	
						t = 2.490	
Intervention*WS						0.0005	
						t = 0.054	
COVID-19							0.602**
							t = 2.340
Intervention*COVID-19							-0.088
							t = -0.285
Observations	298	298	298	298	298	298	298
R ²	0.005	0.012	0.008	0.139	0.027	0.046	0.051
F Statistic	1.366	1.161	0.747	15.781***	2.731**	4.734***	5.222***

Note:

*p<0.1; **p<0.05; ***p<0.01

Table 16 presents results of the effects of the SoS program implementation (i.e., intervention) on the NEO-FFI_3 Domain C. The intervention coefficient is insignificant.

Appendix.

Figure 1. PCL-5 Cohen's d.

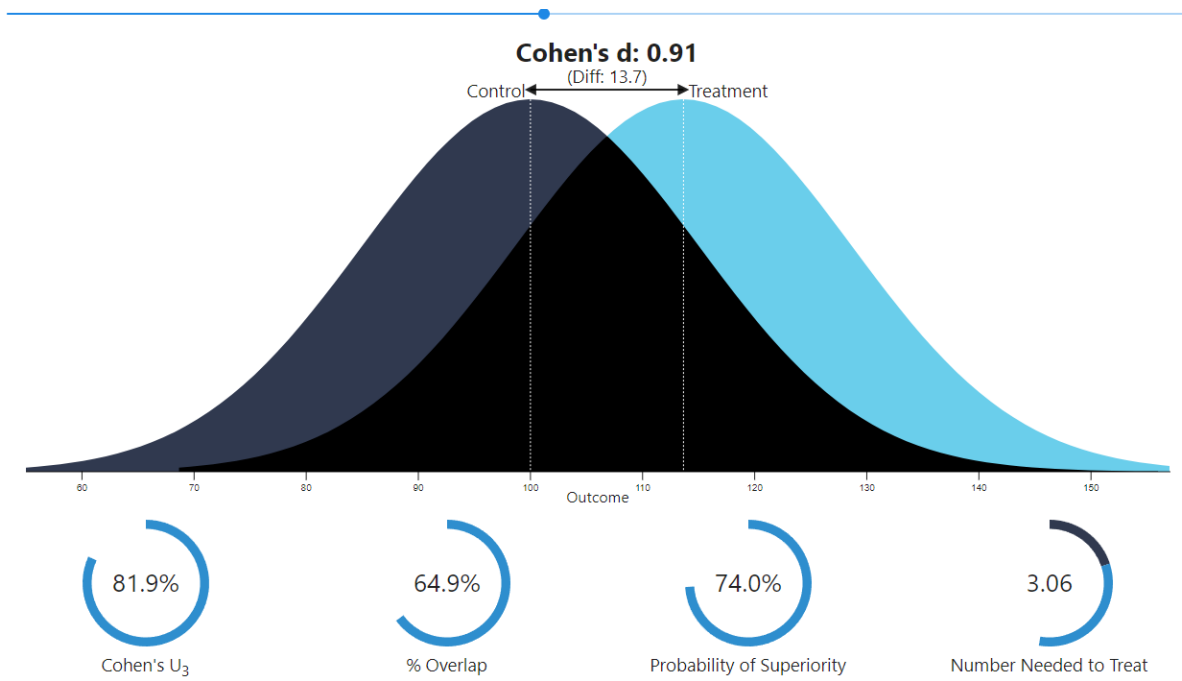


Figure 2. CSA-2 Productive Coping Cohen's d.

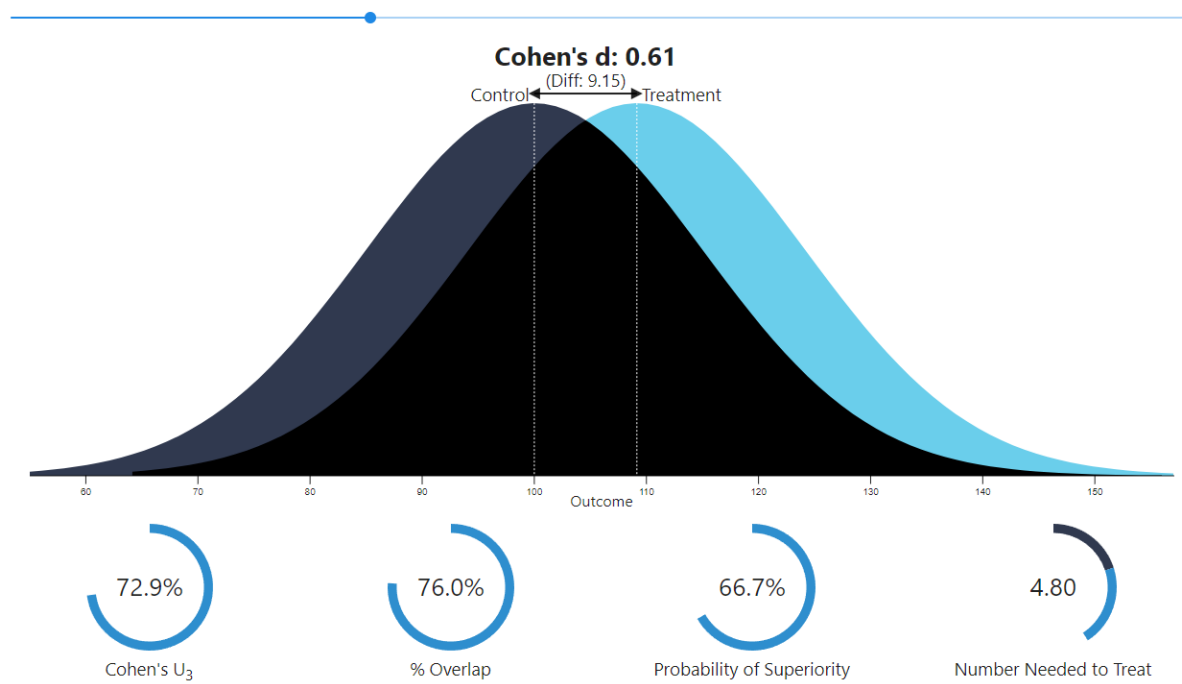


Figure 3. CSA-2 Non-productive Coping Cohen's d.

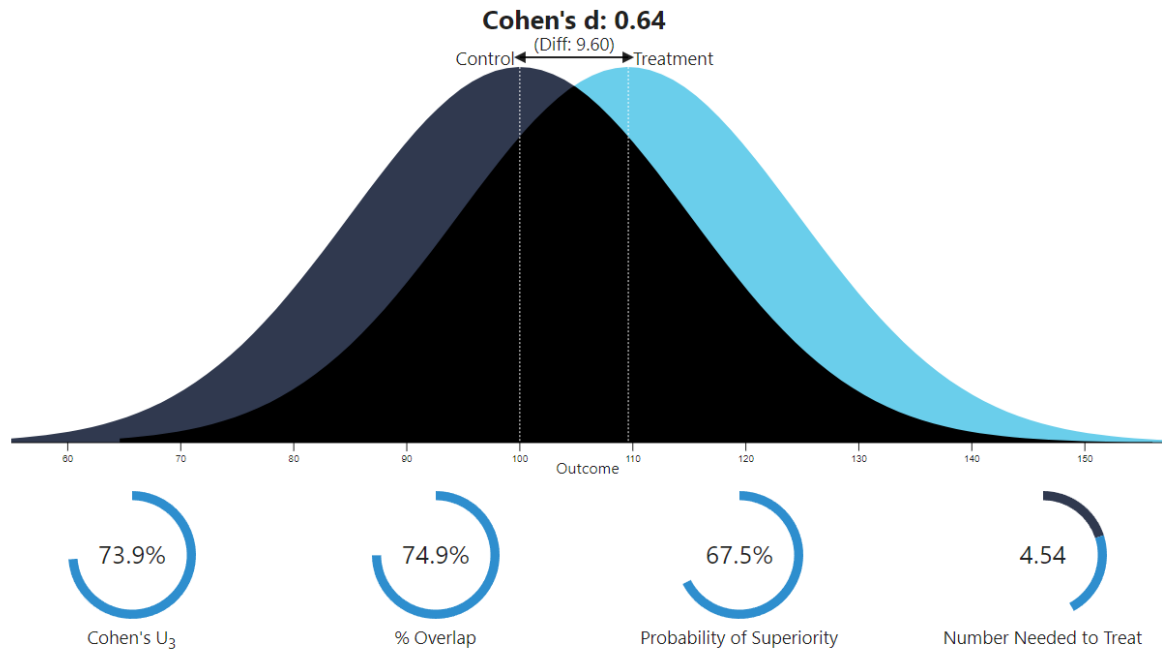


Figure 4. CSA-2 Problem Solving Coping Cohen's d.

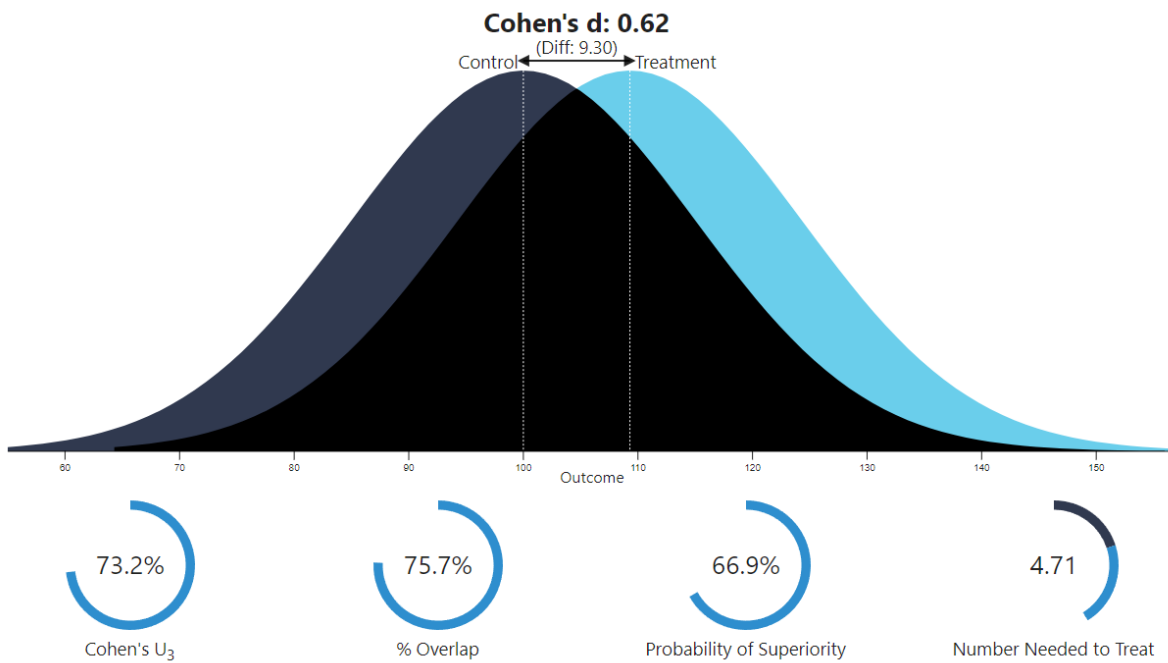


Figure 5. NEO-FFI-3 Domain N Cohen's d.

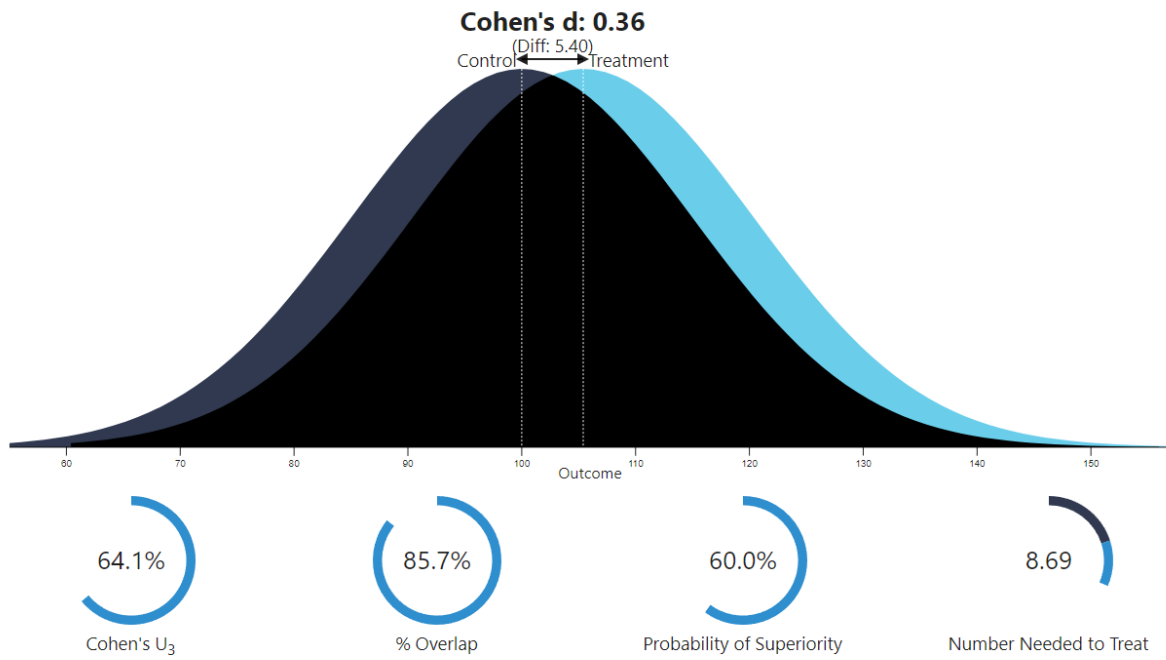


Figure 6. NEO-FFI-3 Domain E Cohen's d.

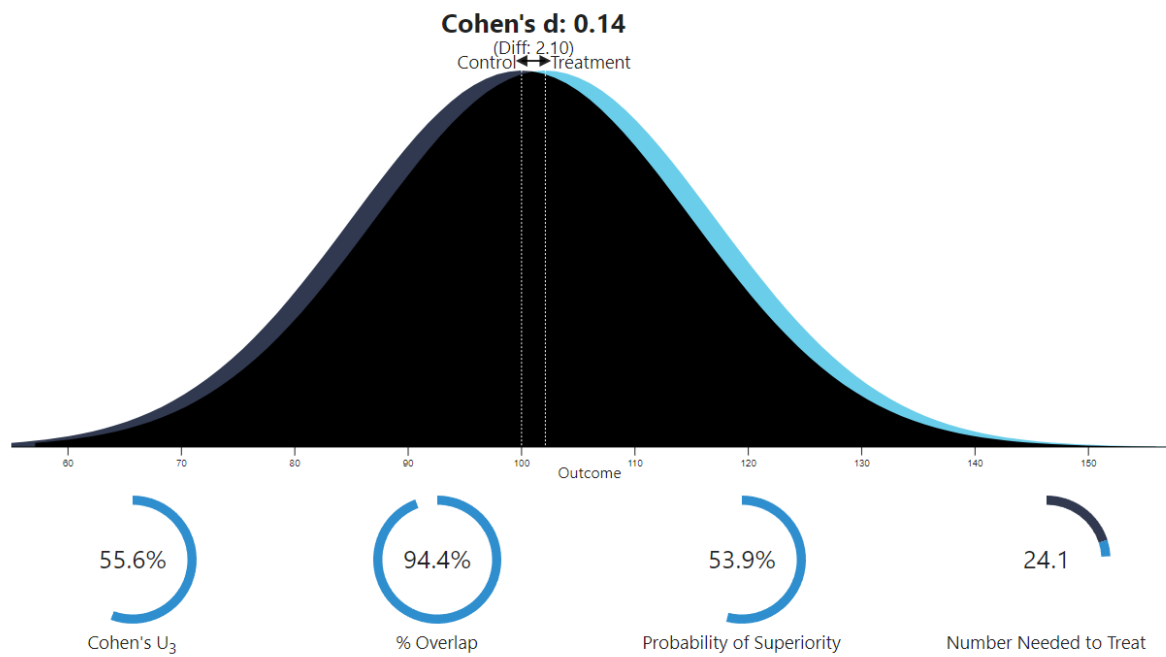


Figure 7. NEO-FFI-3 Domain O Cohen's d.

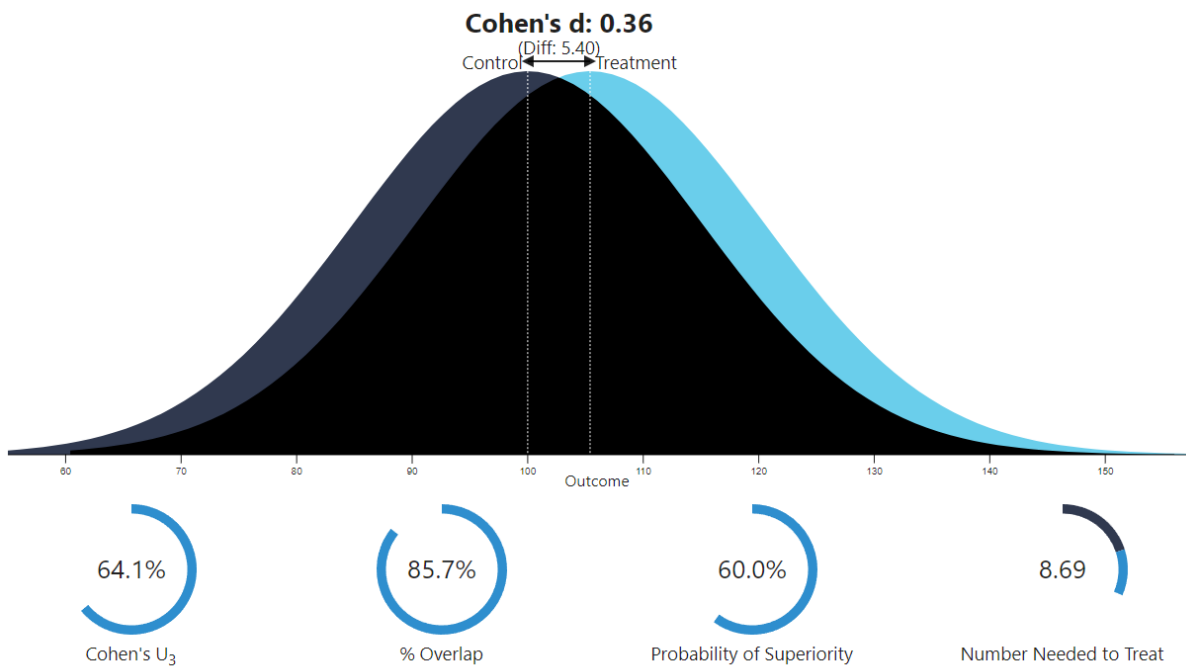


Figure 8. NEO-FFI-3 Domain A Cohen's d.

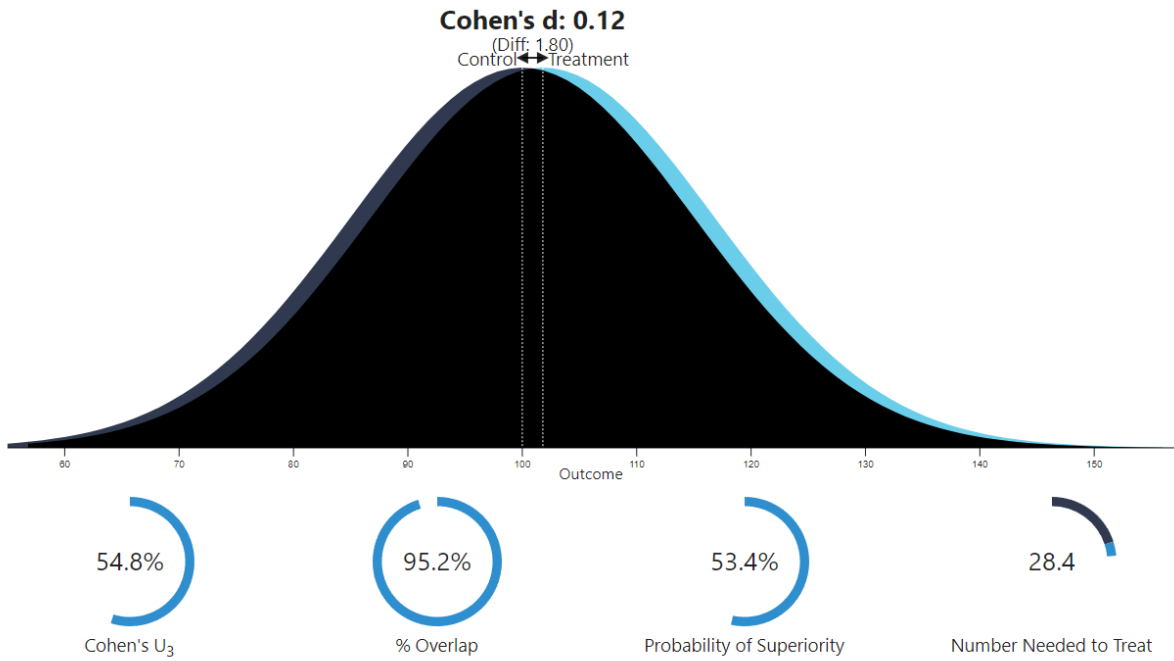


Figure 9. NEO-FFI-3 Domain C Cohen`s d.

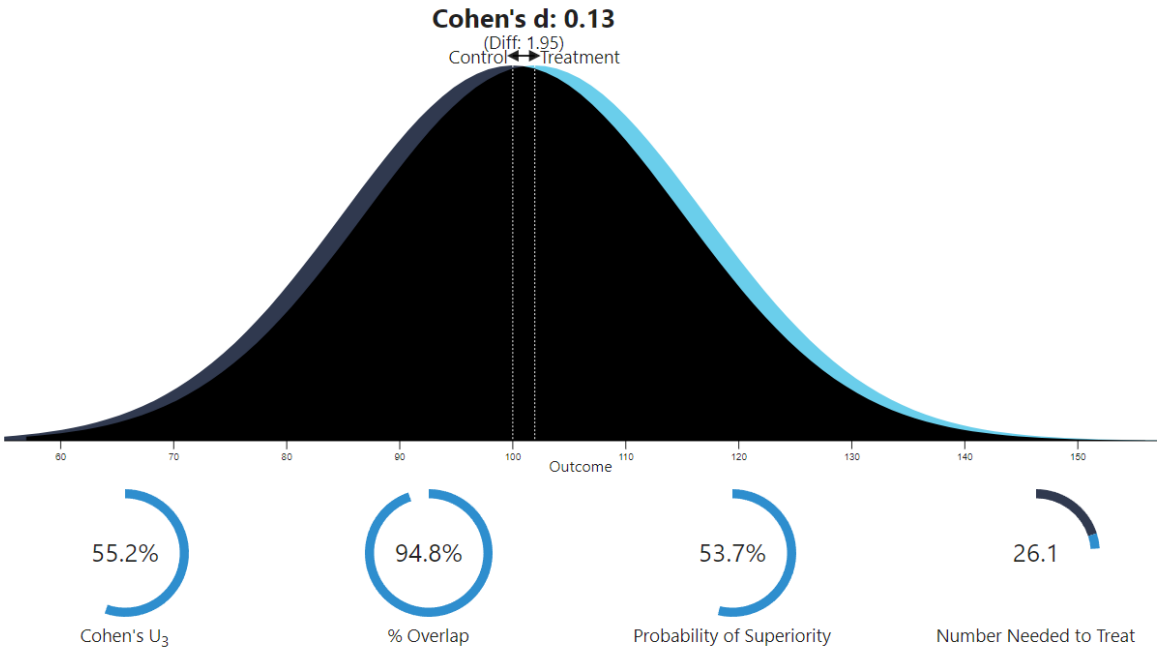


Figure 10. PCL-5 distribution histogram.

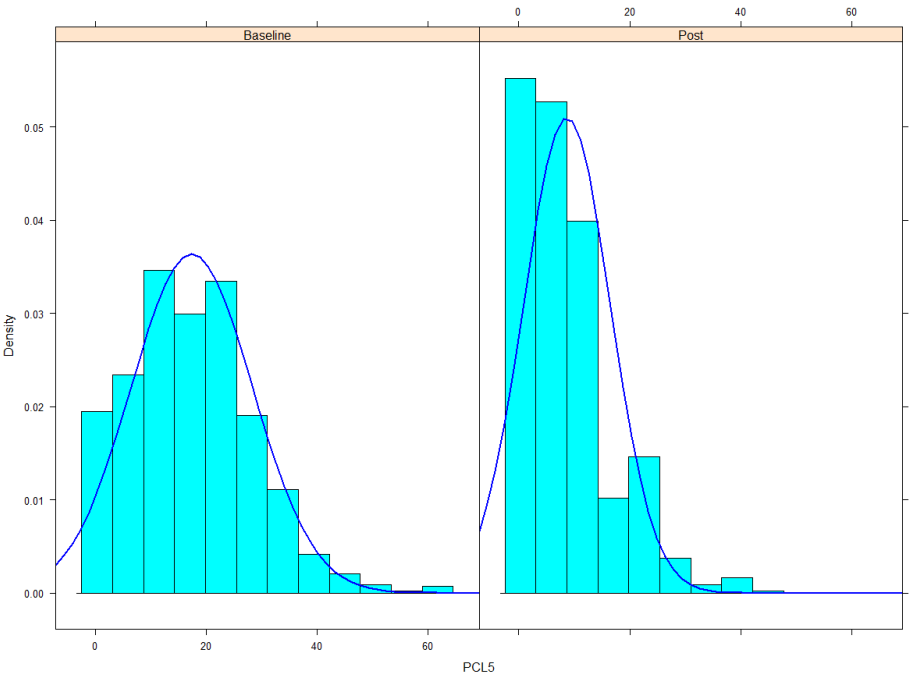


Figure 11. CSA-Productive Coping distribution histogram.

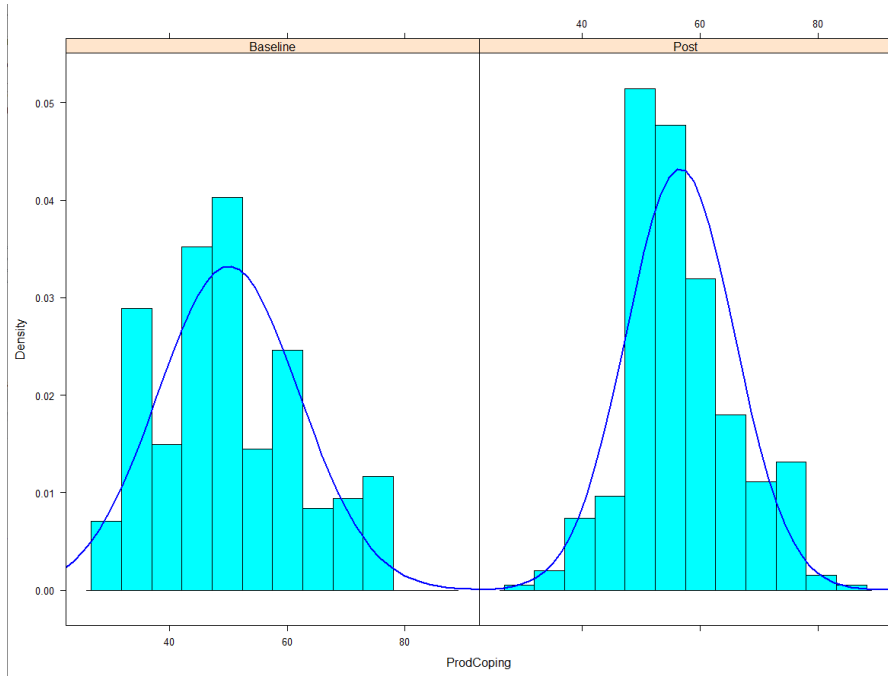


Figure 12. CSA-Non-Productive Coping distribution histogram.

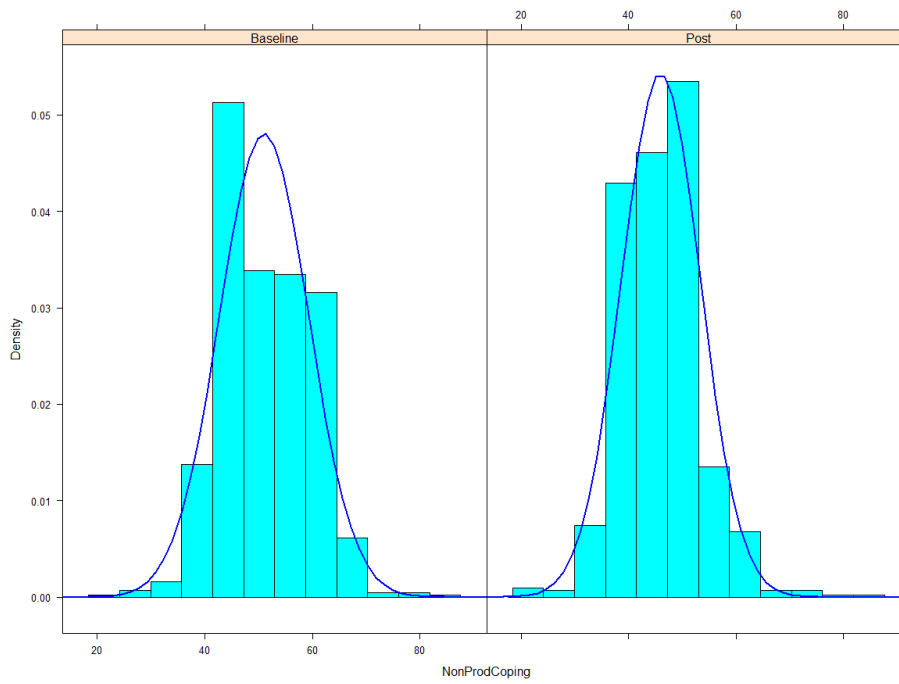


Figure 13. CSA-Problem Solving Coping distribution histogram.

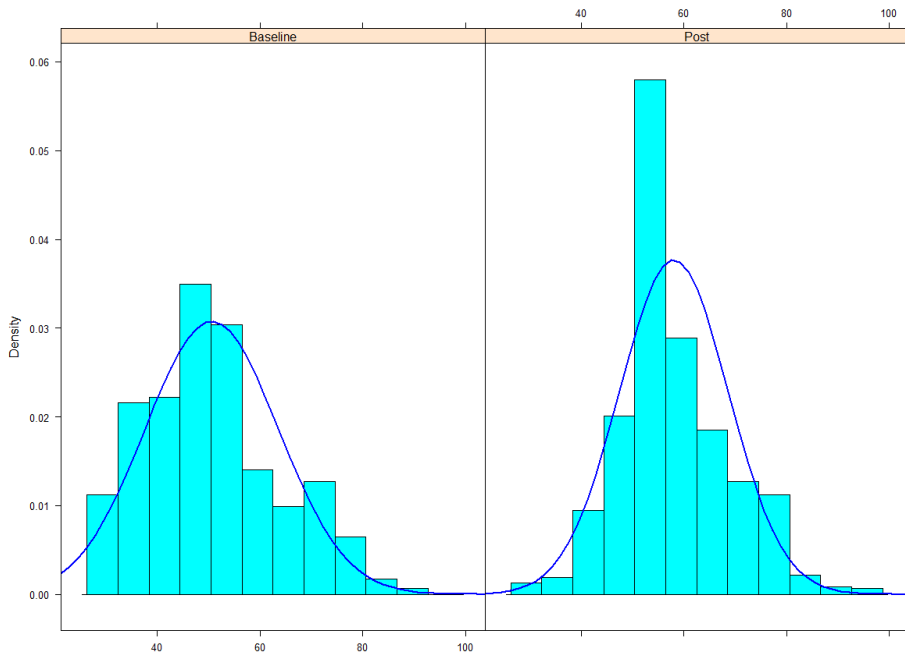


Figure 14. NEO- Neuroticism distribution histogram.

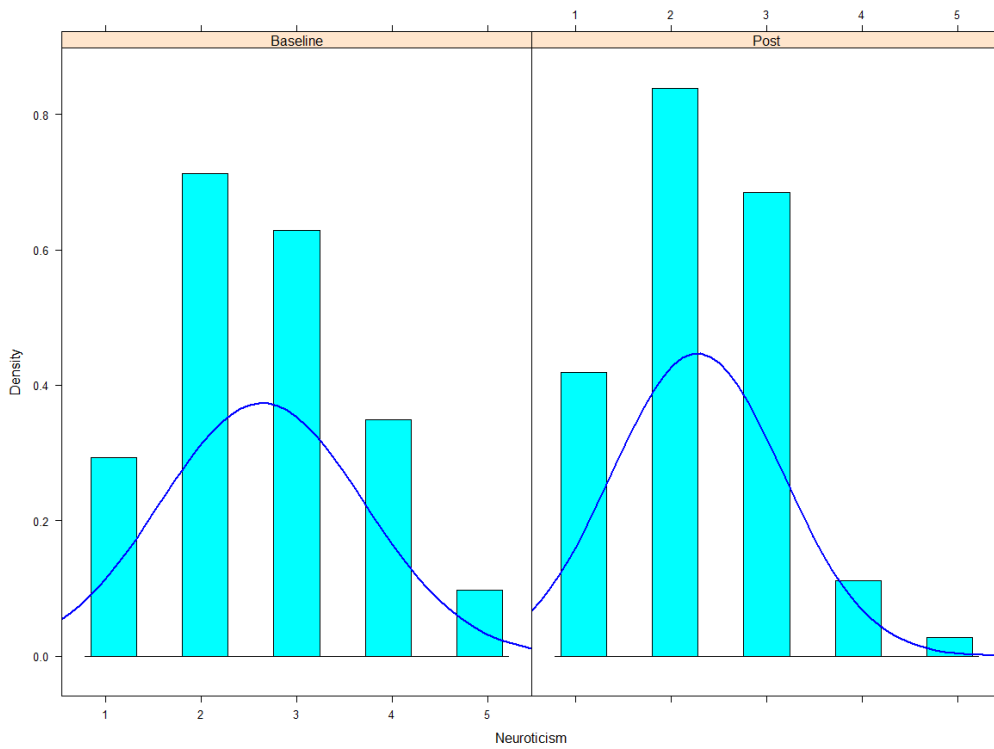


Figure 15. NEO-Extraversion distribution histogram.

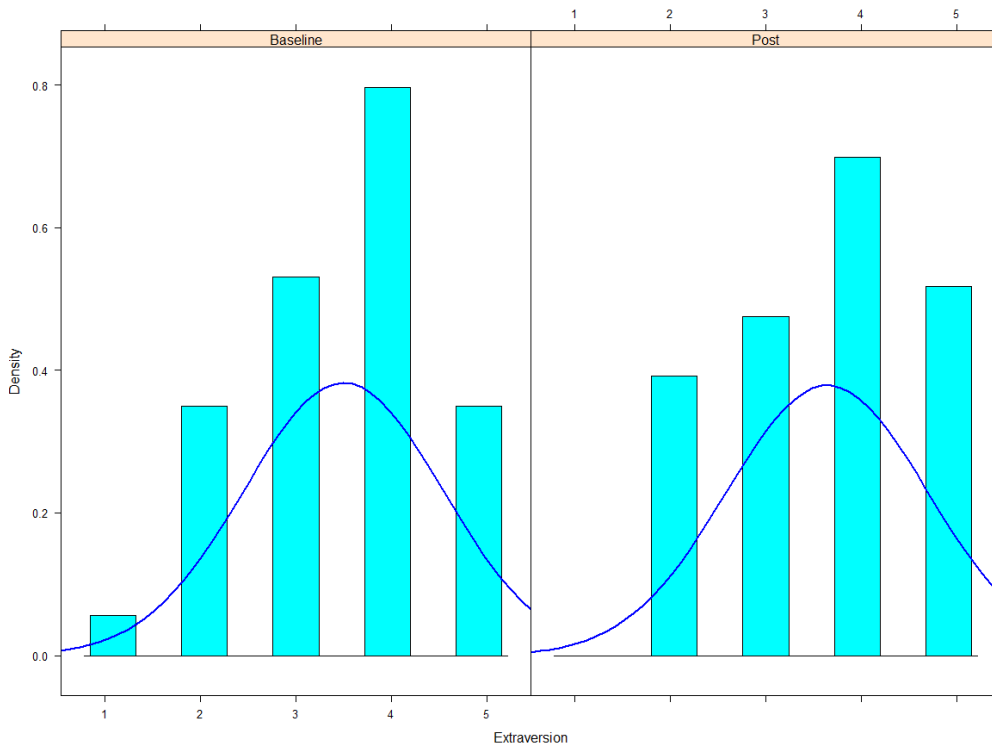


Figure 16. NEO- Openness distribution histogram.

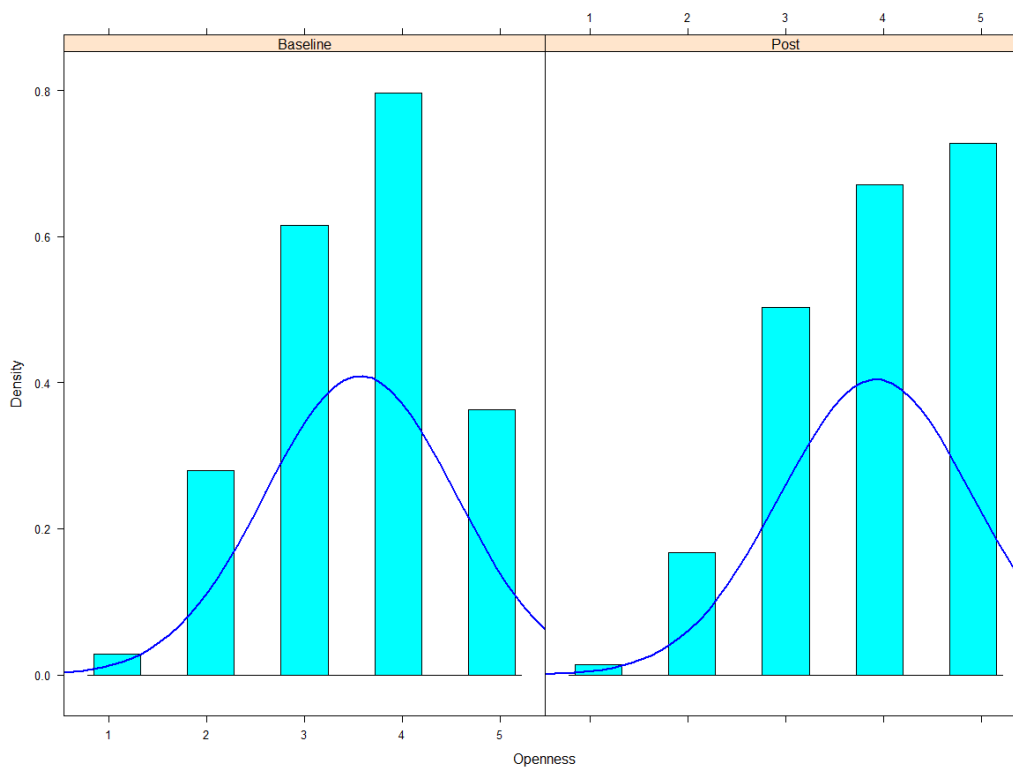


Figure 17. NEO- Agreeableness distribution histogram.

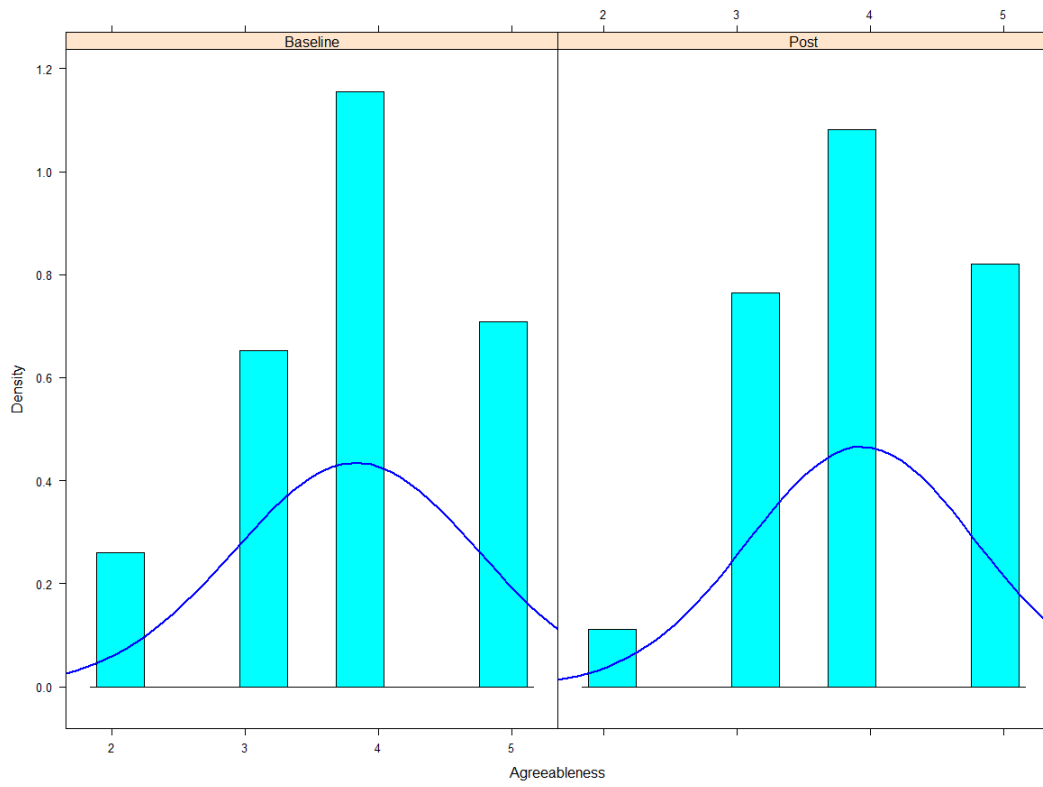


Figure 18. NEO- Conscientiousness distribution histogram.

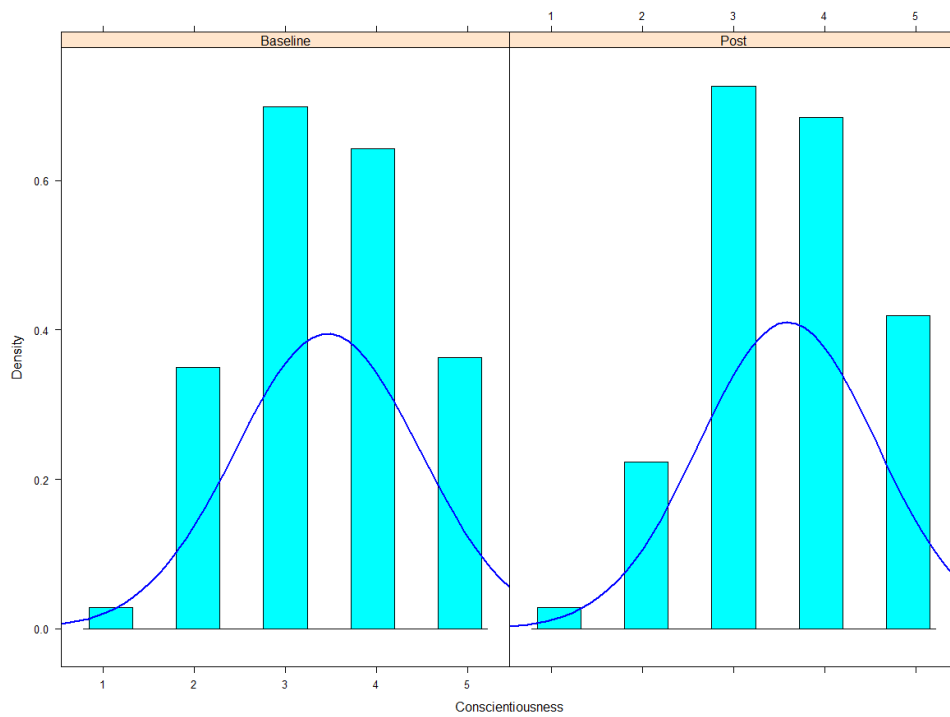


Table A1. F-test to compare the variances of two samples from normal populations.

	F-stat (1)	95 % CI (2)
PCL-5	1.96***	[1.70; 2.26]
CSA. Productive Coping	1.69***	[1.46; 2 1.94]
CSA. Non-Productive Coping	1.27***	[1.10; 1.47]
CSA. Problem-Solving Coping	1.49***	[1.30; 1.72]
NEO. Neuroticism	1.43**	[1.03; 1.97]
NEO. Extraversion	0.98	[0.71; 1.35]
NEO. Openness to experience	0.97	[0.70; 1.34]
NEO. Agreeableness	1.15	[0.83; 1.59]
NEO. Conscientiousness	1.08	[0.78; 1.4]

Note: Column 1 shows F-statistics to compare the variances of two samples from normal populations. Column 2 shows 95% confidence intervals. ***p < 0.01, **p < 0.05, *p < 0.1