CHAPTER 4
RESULTS

4.1 Introduction

This chapter reports the findings and results obtained from the research conducted. They are presented based on the four research questions developed, including reports on 24 hypothesis tests done to examine the effects of treatment, which is the focus of this study.

This chapter is divided into three main parts. The first part deals with reports on the reliability testing and validity of the measurement tool used in this research. In the second section, the researcher presents information on the respondents' demographic background, including an analysis of the descriptive levels and patterns of the three main variables, which are the stages of change, self-efficacy, and decisional balance. The third section reports on the effects of the treatment tests in four conditions (four research objectives) which are: (a) treatment effect of PGT on treatment-naive addicts, (b) treatment effect of PGT on treatment-experienced addicts, (c) treatment effect comparison among treatment-naive and treatment-experienced addicts, and (d) time-delayed effect of PGT on both treatment-naive and treatment-experienced groups. All four types of treatment were measured based on three dependent variables, namely, the stages of change (SoC), self-efficacy (SE), and decisional balance (DB).

4.2 Descriptive analysis

Descriptive analysis was used for this section to report on the respondents' demographic background, stages of change, level of self-efficacy, and decisional balance. The analysis was based on research groups and measurement stage.

4.2.1 Demography

The respondents in this research were represented by 45 individuals (at the pre and post stages) and 43 individuals at the follow-up stage (two participants did not sit for the test after being transferred). In the previous chapter (Chapter 3), the researcher had explained that the selection of respondents for this study was purposeful, as it involved addicts who were at the early stages of rehabilitation or at the early stages of change. However, they were then randomly distributed to research groups. Table 4.1 shows the distribution of respondents according to stages of change and research groups.

As shown in Table 4.1, out of 45 respondents selected to participate in this research, 21 individuals were naive addicts (46.7%) and the rest were experienced addicts (53.3%). In terms of stages of change, the majority of the respondents, that is 28 individuals (62.2%) were at the contemplation stage of change, while 17 respondents (37.8%) were at the pre-contemplation stage of change. Each category of addicts was later distributed randomly into two groups, which were the experimental and control groups, without taking into consideration their stages of change. From 21 naive addicts, 10 were randomly put into the experimental group (3 pre-contemplators and 7 contemplators) and 11 individuals were put into the naive control group (3 pre-contemplators and 8 contemplators). The other 24 experienced addicts were randomly

distributed into two groups, with 12 respondents in the experimental group and 12 respondents in the control group.

Table 4.1

The respondents' distribution across research groups

Groups	Early stages of change		Total
	Pre-contemplation	Contemplation	
Treatment-naive experiment group (PGTN)	3	7	**10**
Treatment-naive control group (CGN)	3	8	**11**
Treatment-experienced experiment group (PGTE)	5	7	**12**
Treatment-experienced control group (CGE)	6	6	**12**
Total	**17**	**28**	**45**

4.2.2 Means and standard deviations of the pretest score

A mean differences test for all three variables according to research groups must be done at the pretest stage to ensure that the actual treatment effects can be measured (to obtain a more accurate answer to the question of interest), to avoid bias in treatment effects, and to ensure the existence of statistical independence between treatment (posttest score) and covariate (pretest score) in the population, particularly when the analysis of covariance (ANCOVA) was conducted (Rausch, Maxwell & Kelly, 2003).

Table 4.2 shows the differences in mean and standard deviation at pretest for each research group, according to the three dependent variables being studied. Descriptive data showed the mean value for all dependent variables such as SoC, SE

and DB as almost similar to one another for each research group. Statistical analysis using the one-way ANOVA test was done to clarify the results.

Table 4.2

Dependent variables scores at pretest across groups

Dependent variables	Group	n	Pretest	
			M	SD
SoC	PGTN	10	9.20	1.22
	CGN	11	8.26	1.52
	PGTE	12	8.32	1.85
	CGE	12	8.00	2.11
SE	PGTN	10	2.81	0.49
	CGN	11	2.96	0.43
	PGTE	12	2.75	0.49
	CGE	12	2.83	0.74
DB	PGTN	10	3.10	0.27
	CGN	11	3.06	0.65
	PGTE	12	2.87	0.49
	CGE	12	3.08	0.34

Table 4.3

One-way ANOVA pretest score for dependent variables

Variables		Sums of Squares	df	Mean square	F	p
SoC	Between Groups	8.72	3	2.90	0.969	0.417
	Within Groups	122.96	41	3.00		
	Total	131.68	44			
SE	Between Groups	0.26	3	0.09	0.274	0.843
	Within Groups	12.77	41	0.31		
	Total	13.03	44			
DB	Between Groups	0.40	3	0.13	0.623	0.604
	Within Groups	8.80	41	0.22		
	Total	9.20	44			

The results obtained can be found in Table 4.3, which shows that there was no significant difference in mean for pretest scores for research groups. The findings from both tests confirmed that comparative tests in the within-group and the between-group could be conducted by using the pretest data to determine the effects of treatment which were tested.

4.2.3 Stages of change (SoC)

Descriptive analysis in this section reports on the distribution of stages of change experienced by all respondents at three levels of measurements with descriptive comparisons made at two situations, namely, the pretest and posttest (pretest as baseline measurement), and the posttest and follow-up test (posttest as baseline measurement) which were obtained in this study. The respondents' distribution in the first comparison (pretest and posttest) of stages of change is shown in Table 4.4 and Table 4.5.

This study focuses only on respondents who were at the two early stages of change, namely, the pre-contemplation and contemplation stages. Therefore, at the level of pretest measurement, all respondents would only be in these two stages.

Table 4.4

Distribution of respondents across SoC at pretest versus posttest

Stages of change	**Pretest**		**Posttest**	
	Frequency	**Percent**	**Frequency**	**Percent**
Pre-contemplation	17	37.8	12	26.7
Contemplation	28	62.2	27	60.0
Action	0	0	6	13.3
Total	**45**	**100.0**	**45**	**100.0**

Table 4.4 shows that there were 17 respondents who were at the pre-contemplation stage (37.8%) and 28 respondents (62.2%) were at the contemplation stage at the pretest level. Measurement was done for the second time on all respondents (posttest) and the results showed that there was a difference in the distribution of stages of change among the respondents. A total of 12 respondents (26.7%) were found to be at the pre-contemplation stage of change, 27 respondents (60.0%) were at the contemplation stage of change, and 6 respondents (13.3%) were at the new stage of change which is known as action stage. The findings show that there was promotion or movement of stages of change between the two periods of measurement.

In order to report these changes in detail, the researcher conducted the crosstabs analysis to identify respondents who have moved in stages of change according to research groups. Analysis of findings as shown in Table 4.5 revealed that the changes (movement from the early stages to later stages of change) only took place among respondents who were in the two experiment groups which were the treatment-naive treatment group (PGTN) and treatment-experienced treatment group (PGTE). Two respondents (20.0%) came from the PGTN group and four respondents (33.4%) were from the PGTE group. The respondents in the control groups (CGN and CGE) were still at the early stages of change at the level of posttest measurement. These findings indicated that the treatment given to the respondents in experiment groups did manage to move the respondents' stages of change. Analysis on the effects of within-group and between-group treatments will be reported in detail in the next section.

Table 4.5

Stages of change crosstabs by groups at pretest and posttest

Groups	Test	Stages of change					
		PC		C		A	
		Fr.	Pct.	Fr.	Pct.	Fr.	Pct.
PGTN (n=10)	Pretest	3	30.0	7	70.0	0	0.0
	Posttest	1	10.0	7	70.0	**2**	**20.0**
PGTE (n=12)	Pretest	5	41.7	7	58.3	0	0.0
	Posttest	1	8.3	7	58.3	**4**	**33.4**
CGN (n=11)	Pretest	3	27.3	8	72.7	0	0.0
	Posttest	4	36.4	7	63.6	0	0.0
CGE (n=12)	Pretest	6	50.0	6	50.0	0	0.0
	Posttest	6	50.0	6	50.0	0	0.0

Note: PC = Pre-contemplation, C = Contemplation, A = Action

The distribution of respondents at the second comparison (posttest and follow-up test) for stages of change is found in Table 4.6 and Table 4.7.

Table 4.6

Distribution of respondents across SoC at posttest versus follow-up-test

Stages of change	Posttest		Follow-up test	
	Frequency	Percent	Frequency	Percent
Pre-contemplation	12	26.7	5	11.6
Contemplation	27	60.0	18	41.9
Action	6	13.3	20	46.5
Total	**45**	**100.0**	**43**	**100.0**

Based on Table 4.6, descriptive analysis results showed that there were obvious changes in the stage of change when the respondents were at the follow-up test level compared to when they were at the posttest level. The majority of the respondents at this level of measurement were at the action stage where it involved 20 individuals (46.5%) compared to six respondents (13.3%) previously. This was

followed by 18 respondents (41.9%) who were at the contemplation stage of change, and five respondents (11.7%) who were at the pre-contemplation stage of change. To illustrate this change in detail, the researcher conducted the crosstabs analysis to identify respondents who moved in the stage of change according to the research groups.

Table 4.7

Stages of change crosstabs by groups at posttest and follow-up-test

Groups	Test	Stages of change					
		PC		C		A	
		Fr.	Pct.	Fr.	Pct.	Fr.	Pct.
PGTN (n=10)	Posttest	1	10.0	7	90.0	2	20.0
	Follow-up test	0	0.0	1	10.0	9	90.0
PGTE (n=12)	Posttest	1	8.3	7	58.3	4	33.4
	Follow-up test	1	8.3	6	50.0	5	41.7
CGN (n=11)	Posttest	4	36.4	7	63.6	0	0.0
	Follow-up test	2	18.1	6	54.6	3	27.3
CGE (n=12)	Posttest	6	50.0	6	50.0	0	0.0
	Follow-up test	2	20.0	5	50.0	3	20.0

Note: PC = Pre-contemplation, C = Contemplation, A = Action; number of respondent in CGE is 10 at follow-up test]

Referring to Table 4.7, results from the descriptive analysis showed that there was movement in the stage of change among respondents in all groups. At the level of follow-up measurement, the majority of the respondents in the PGTN group, or nine respondents (90.0%), were at the action stage of change compared to two respondents or (20.0%) before this. Five (41.7%) of the respondents in the PGTE group were at the action stage of change, compared to four respondents (33.4%) previously. Movement in stages of change also took place in the two control groups CGN and CGE, each with three respondents (27.3% and 20.0%, respectively) at the follow-up level. The results of this analysis revealed that 14 respondents (70.0%) who were at the action

stage of change were among the respondents of the experiment groups, compared to only six respondents (30.0%) who were in the control group. A detailed analysis of the within-group and between-group treatment effects will be reported in the next section.

4.2.4 Level of self-efficacy

The determination of the respondents' self-efficacy stage for the purpose of a descriptive analysis was based on Velicer et al.'s (1990) study which categorized self-efficacy stages into two, known as high efficacy level and low efficacy level. These refer to the value of mean score for the SES scale obtained by the respondents. A high mean score value that goes beyond the theoretical scale mean of 3.0 is categorized as possessing high efficacy level while a mean score value that is lower than 3.0 is categorized as having low self-efficacy. The descriptive analysis in this part reported the distribution of the self-efficacy stage experienced by all respondents at three levels of measurements, with descriptive comparisons made for two situations obtained in this study, namely, the pretest and posttest (pretest as baseline measurement), and posttest and follow-up-test (posttest as baseline measurement). The distributions of the respondents at the first comparison (pretest and posttest) of stages of change are shown in Table 4.8 and Table 4.9.

The results shown in Table 4.8 revealed that at the pre-measurement level, most of the respondents, or 32 individuals (71.1%), were at the low self-efficacy stage, and the respondents with high self-efficacy were reported to be only 13 individuals (28.9%). At the post-measurement level, most of the respondents, or 25 individuals (55.6%) had low self-efficacy, and 20 respondents (44.4%) showed high self-efficacy.

Table 4.8

Distribution of respondents across SE at pretest versus posttest

Level of self-efficacy	Pretest		Posttest	
	Frequency	Percent	Frequency	Percent
Low efficacy	32	71.1	25	55.6
High efficacy	13	28.9	20	44.4
Total	**45**	**100.0**	**45**	**100.0**

In order to get a clearer picture, particularly for the comparisons of the self-efficacy level based on respondents' experimental group, a crosstabs analysis was carried out.

Table 4.9

Level of self-efficacy crosstabs by groups at pretest and posttest

Group	Test	Level of Self-efficacy			
		Low		High	
		Fr.	Pct.	Fr.	Pct.
PGTN (n=10)	Pretest	7	70.0	3	30.0
	Posttest	8	80.0	2	20.0
PGTE (n=12)	Pretest	9	75.0	3	25.0
	Posttest	2	16.7	10	83.3
CGN (n=11)	Pretest	7	63.6	4	36.4
	Posttest	8	72.7	3	27.3
CGE (n=12)	Pretest	9	75.0	3	25.0
	Posttest	7	58.3	5	41.7

An analysis of the results in Table 4.9 showed that the majority of the respondents were at the low self-efficacy stage of between 63.6% and 75.0% at the pre-measurement level. At the post-measurement level, there was an increase in the self-efficacy stages among respondents who were in the PGTE and CGE groups and each was at 83.3% and 41.7% respectively, compared to 25.0% at the pretest level. As

for the two naive addicts groups (PGTN and CGN), the opposite occurred where self-efficacy decreased to 20.0% and 27.3% respectively, compared to the measurements for pretest (30.0% and 45.5%, respectively).

The distribution of the respondents for the second comparison (posttest and follow-up test) of the self-efficacy level is shown in Table 4.10 and Table 4.11.

Table 4.10

Distribution of respondents across SE at posttest versus follow-up test

Level of self-efficacy	**Posttest**		**Follow-up test**	
	Frequency	**Percent**	**Frequency**	**Percent**
Low efficacy	25	55.6	17	39.5
High efficacy	20	44.4	26	60.5
Total	**45**	**100.0**	**43**	**100.0**

The distribution of changes in the self-efficacy level during the follow-up test found in Table 4.10 showed that the majority of the respondents (26 respondents or 60.5%) possessed high self-efficacy compared to the previous score where only 44.4% respondents had high self-efficacy at the posttest measurement. In order to get an insight into this distribution according to the research groups, a crosstabs analysis was applied. The results of the analysis are shown in Table 4.11.

Based on Table 4.11, the comparative results for the self-efficacy level of the experimental groups at the follow-up and the posttest measurement levels showed that all respondents from the four groups experienced changes in their self-efficacy level where the majority ended up being at a higher level of self-efficacy, that is, at 60.0% in PGTN group, 66.7% (PGTE group), 54.5% (CGN group), and 60.0% (CGE group). PGTE showed a decline in the self-efficacy level at 16.6% during the follow-up test level. An analysis of treatment within-group and between-group effects was carried

out to identify the changes in detail and the reports are discussed in the following section.

Table 4.11

Level of self-efficacy crosstabs by group at posttest and follow-up test

Group	Test	Level of Self-efficacy			
		Low		High	
		Fr.	Pct.	Fr.	Pct.
PGTN (n=10)	Posttest	8	80.0	2	20.0
	Follow-up test	4	40.0	6	60.0
PGTE (n=12)	Posttest	2	16.7	10	83.3
	Follow-up test	4	33.3	8	66.7
CGN (n=11)	Posttest	8	72.7	3	27.3
	Follow-up test	5	45.5	6	54.5
CGE (n=12)	Posttest	7	58.3	5	41.7
	Follow-up test	4	40.0	6	60.0

Note: Number of respondents in CGE at follow-up test is 10

4.2.5 Level of decisional balance

The determination of the respondents' decisional balance level in the descriptive analysis is based on the CSAT (1999) which categorized the addicts' decisional balance into two levels known as pros of drug use (cons to behavioral change), and cons of drug use (pros to behavioral change). The total mean scores for both pros and cons subscales obtained would determine the respondents' level of decisional balance. If the value of the mean score of pros of drug use is higher than the value of the mean score of cons of drug use, the respondents would be categorized as being at the level of decisional balance pros of drug use. On the other hand, if the value of the mean score of cons of drug use is higher, the respondents would be at the level of decisional balance cons of drug use.

The descriptive analysis of this section will report on the distribution of decisional balance levels experienced by all respondents at three measurement levels, with descriptive comparisons made for two situations, namely pretest and posttest (pretest as baseline measurement), and posttest and follow-up test (posttest as baseline measurement) which were obtained from this study. The distribution of the respondents at the first comparison (pretest and posttest) of the decisional balance is found in Table 4.12 and Table 4.13.

The results of the analysis as found in Table 4.12 showed that at the pretest, majority of the respondents, or 23 respondents (51.1%), were at the level of pros of drug use, compared to 22 respondents (48.9%) who were at the cons of drug use. At the posttest, there was an increase in the decisional balance level among the respondents, which meant that 35 respondents (77.8%) were at the cons of drug use compared to 10 respondents (22.2%) who were at the pros of drug use. This meant that the majority of the respondents changed to promote behavior changes.

Table 4.12

Distribution of respondents across DB at pretest versus posttest

Level of decisional balance	**Pretest**		**Posttest**	
	Frequency	**Percent**	**Frequency**	**Percent**
Pros of drug use	23	51.1	10	22.2
Cons of drug use	22	48.9	35	77.8
Total	**45**	**100.0**	**45**	**100.0**

In order to obtain more specific analysis results, particularly in examining the distribution of decisional balance levels based on research groups, the researcher carried out the crosstabs analysis. The results obtained are shown in Table 4.13. They indicated that at the pretest, the majority of the respondents who were at the level of

pros of drug use were in the naive addicts group (PGTN and CGN) at 70.0% and 63.6%, respectively. On the other hand, the majority of the respondents in the two groups of experienced addicts (PGTE and CGE) had a decisional balance stage of cons of drug use, at 58.3% and 66.7%, respectively. At the posttest, all groups showed changes in the decisional balance levels where the majority were at the decisional balance level of cons of drug use. All respondents in PGTE group were at the cons of drug use, followed by respondents who were in the CGN groups (8 respondents, or 72.7%) and the PGTN group (7 respondents, or 70.0%). There was no change recorded among the respondents in the CGE group. The results of an analysis conducted on the effects of the treatment on the within-group and the between-group are reported in the next section in order to view the changes in detail.

Table 4.13

Level of decisional balance crosstabs by groups at pretest and posttest

Group	Test	Level of decisional balance			
		Pros of drug use		Cons of drug use	
		Fr.	Pct.	Fr.	Pct.
PGTN (n=10)	Pretest	7	70.0	3	30.0
	Posttest	3	30.0	7	70.0
PGTE (n=12)	Pretest	5	41.7	7	58.3
	Posttest	0	0.0	12	100.0
CGN (n=11)	Pretest	7	63.6	4	36.4
	Posttest	3	27.3	8	72.7
CGE (n=12)	Pretest	4	33.3	8	66.7
	Posttest	4	33.3	8	66.7

The distribution of the respondents at the second comparison (posttest and follow-up test) of decisional balance stages is shown in Table 4.14 and Table 4.15. As featured in Table 4.14, the results of the analysis showed that there was a slight change in the decisional balance among the respondents. In contrast, at the posttest,

the number of respondents who were pros of drug use increased to 13 respondents (30.2%) and the number of respondents who were at the cons of drug use stage decreased to 30 respondents (69.8%) at the follow-up test. Nevertheless, the analysis results showed that the majority of respondents still have the decisional balance level of cons of drug use (pros to behavioral change).

Table 4.14

Distribution of respondents across DB at post- vs follow-up-test

Level of decisional balance	**Posttest**		**Follow-up test**	
	Frequency	**Percent**	**Frequency**	**Percent**
Pros of drug use	10	22.2	13	30.2
Cons of drug use	35	77.8	30	69.8
Total	**45**	**100.0**	**43**	**100.0**

Table 4.15

Level of decisional balance crosstabs by group at posttest and follow-up test

Group	**Test**	**Level of decisional balance**			
		Pros of drug use		**Cons of drug use**	
		Fr.	**Pct.**	**Fr.**	**Pct.**
PGTN (n=10)	Posttest	3	30.0	7	70.0
	Follow-up test	4	40.0	6	60.0
PGTE (n=12)	Posttest	0	0.0	12	100.0
	Follow-up test	1	8.3	11	91.7
CGN (n=11)	Posttest	3	27.3	8	72.7
	Follow-up test	4	36.4	7	63.6
CGE (n=12)	Posttest	4	33.3	8	66.7
	Follow-up test	4	40.0	6	60.0

Note: Number of respondents in CGE at follow-up test is 10

In order to gain more specific results, crosstabs analysis was done to identify the changes that took place according to the research groups. Results obtained are listed in Table 4.15. The results of the analysis, shown in Table 4.15, are indicative of

the decisional balance levels at the follow-up test that occurred in all groups. Nevertheless, the change detected was minor. The majority of the respondents still have the decisional balance level of cons of drug use, represented by 91.7% from the respondents in PGTE group, 63.6% from the respondents in CGN group, and 60.0% each from the respondents in PGTN and CGE groups. The detailed analysis of the differences in the effects of treatment for the within-group and the between-group is reported in the next section.

4.3 Treatment effect of PGT

This section reports the results of the data analysis done in order to answer the four main research questions and 24 research hypotheses which were developed, and they are (a) treatment effect of PGT on treatment-naive addicts, (b) treatment effect of PGT on treatment-experienced addicts, (c) treatment effect comparison among treatment-naive and treatment-experienced addicts, and (d) time-delayed effect of PGT on both treatment-naive and treatment-experienced groups. The effects of treatment were examined through the triangle of dependent variables, namely, the stages of change (SoC), level of self-efficacy (SE), and level of decisional balance (DB). Two hypotheses were developed to test the effects of treatment on each dependent variable.

To examine the effects of treatment and their differences between pretest and posttest for each independent variable and research group tested, two methods were used, as mentioned in Chapter 3. These were the within-subject design and the between-subject design. Through the designs of within-subjects, the purpose of the analysis was to examine the effects of treatment by making comparisons between two levels of tests (pretest and posttest) for each variable in the same research group. The

two types of statistical methods applied were repeated measure ANOVA followed by post hoc using Bonferroni's multiple comparisons tests (Dimitrov & Rumrill, Jr., 2003; Rausch, Maxwell & Kelley, 2003; Kinnear & Gray, 1997) for independent variables SoC, SE and DB (hypotheses 1a, 2a, 3a, 4a, 5a, 6a, 10, 11, 12, 13, 14, and 15).

In addition, through the design between-subjects, the purpose of analysis was to examine the effects of treatment by making comparisons in the posttest for each variable among the two research groups, which were the experiment and control groups. The statistical methods used was the analysis of covariance (ANCOVA) which was followed by Benferroni's post-hoc tests of multiple-comparisons (Dimitrov & Rumrill, Jr., 2003; Rausch, Maxwell & Kelley, 2003; Kinnear & Gray, 1997) for dependent variables such as SoC, SE and DB (hypotheses 1b, 2b, 3b, 4b, 5b, 6b, 7, 8, 9, 16, 17 and 18).

4.4.1 Treatment effect on treatment-naive addicts

Six hypotheses were developed to test the effectiveness of psychoeducational group therapy (PGT) on treatment-naive addicts using the triangle of dependent variables, namely, the SoC, SE and DB. Two hypotheses were created for each variable, where one hypothesis was used to test the effects of the treatment in terms of within-subject designs (e.g. 0_{1PGTN} - 0_{2PGTN}) and another hypothesis was used to test the effects of the treatment on the between-subject design (e.g. 0_{2PGTN} - 0_{2CGN}).

The first two hypotheses were developed to test the effects of psychoeducational group therapy on treatment-naive addicts (PGTN) from the aspect of stages of change (SoC). Hypothesis 1a uses the within-subject design (0_{1PGTN} - 0_{2PGTN}) and hypothesis 1b uses the between-subject design (0_{2PGTN} - 0_{2CGN}).

Hypothesis 1a: There is no significant difference of SoC between pre and post

Hypothesis 1b: There is no significant difference of SoC between post-PGTN and post-CGN

Descriptive analysis of comparisons between SoC mean scores was done at all levels of tests (pre-, post- and follow-up test) as shown in Table 4.16 which indicate that there was an increase in the value of SoC mean score from pretest to posttest, and posttest to follow-up-test for the experiment groups. However, for the control group, the value of mean decreases from pretest to posttest, and it increases from posttest to follow-up test. To view any significant differences between the SoC mean for each group (within-group and between-group), repeated measures of ANOVA and ANCOVA tests were done.

Table 4.16

Within-group means and standard deviations of SoC for treatment-naive group

		Pretest		**Posttest**		**Follow-up test**	
Group	**n**	*M*	*SD*	*M*	*SD*	*M*	*SD*
PGTN	10	9.20	1.22	9.90	1.51	12.13	1.26
CGN	11	8.26	1.52	8.12	1.74	9.73	2.23

The analysis utilized the one-way repeated measures ANOVA test to examine the effects of PGT on the increase in stages of change (SoC) in experimental groups (PGTN), as illustrated in Table 4.17. The research found that there was a significant difference between SoC mean scores [$F(2,18) = 18.77$, $p < 0.05$] as a whole among all three levels of tests. This means that the psychoeducational group therapy had affected the naive addicts' stages of change in a drug rehabilitation centers.

Table 4.17

Repeated measures ANOVA of SoC means for PGTN

Variables	Source	df	Mean square	F	p	Observed power
SoC	Time	(2,18)	23.39	18.77	0.00*	1.00

*p<0.05

In order to determine which level of tests contributed to the significant comparative results, Table 4.18 (test of within-subject contrasts) illustrated that the comparisons between pre and posttests [F (1,9) = 1.88, p > 0.05] was not significant, and post-follow-up tests [F = (1,9) = 17.54, p < 0.05] were significant. As for post-hoc Bonferroni's paired multiple-comparison tests of SoC mean scores for PGTN, it showed that the differences in mean between the pretest and posttest was small and not significant (mean difference (I-J) = 0.70, SD = 0.51, p > 0.05), whereas the mean differences between posttest and follow-up-test was high and significant (mean difference (I-J) = 2.23, SD = 0.53, p < 0.05). This indicated that there was no increase in scores for stage of change at the pre and post levels. Thus, hypothesis 1a is accepted.

Table 4.18

Test of within subjects contrasts

Time	df	Mean square	F	p	Observed power
Pre vs post	(1,9)	4.90	1.88	0.20	0.23
Post vs follow-up	(1,9)	49.66	17.54	0.00*	0.96

*p < 0.05

ANCOVA analysis was used to test the differences in PGT treatment's effects towards the increase in SoC among the groups (PGTN and CGN) by controlling the SoC pretest's mean scores (covariate).

Table 4.19

Analysis of covariance for SoC as a function of group, using a pretest as a covariate

Source	df	Mean square	F	p
Pretest	1	8.94	3.84	0.07
Group	1	8.06	3.46	0.08
Error	18	2.33		

*$p < 0.05$

Based on descriptive analysis in Table 4.16, results show that the value of PGTN posttest means topped the mean value for CGN posttest. ANCOVA results as found in Table 4.19 indicated that there was no significant difference among the groups in SoC mean [$F(1,18) = 3.46$, $p > 0.05$). Results show that by controlling the pretest mean scores, PGT did not influence SoC's change among the naive addicts group. Therefore, hypothesis 1b is accepted.

Trend analysis uses the plot method in repeated measures ANOVA test for all three levels of measurement (pre-, post-, and follow-up test) as shown in Figure 4.1. Trend analysis of mean comparisons from one pre point to post SoC point shows the increase in SoC mean for PGTN group as compared to decline in mean for CGN group. Nevertheless, both groups do not show any significant increase or decrease.

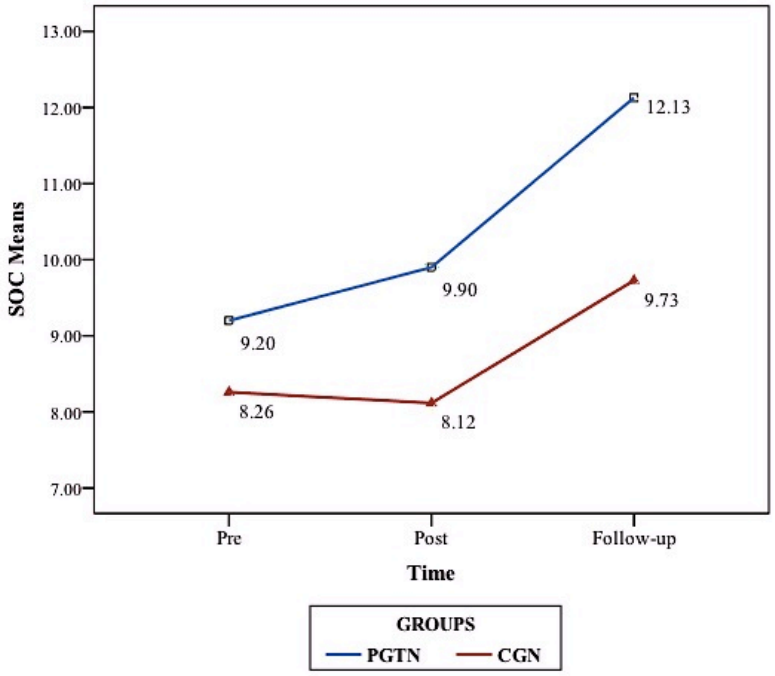

Figure 4.1. Between-group comparative SoC means analysis of trend

Both hypotheses 1a and 1b which tested the effect of psychoeducational group therapy on naive addicts using ANOVA and ANCOVA analysis proved that the treatment was not effective in increasing the stage of change for the naive addicts who were at the early stages of change.

Furthermore, the next two hypotheses were developed to test the effect of psychoeducational group therapy on treatment-naive addicts (PGTN) in terms of the self-efficacy (SE) level. Hypothesis 2a utilized the within-subject design (0_{1PGTN} - 0_{2PGTN}) and hypothesis 2b used between-subject design (0_{2PGTN} - 0_{2CGN}).

Hypothesis 2a: There is no significant difference of SE between pre and post

Hypothesis 2b: There is no significant difference of SE between post-PGTN and post-CGN

Descriptive analysis of SE mean scores was done at all levels of tests (pre-, post- and follow-up tests) as listed in Table 4.20 which shows an increase in the value of SE mean score from pretest to posttest, and posttest to follow-up-test for experiment groups. As for the control group, the mean score value declined from pretest to posttest, but increased from posttest to follow-up test. To view any significant differences in SE mean for each group (within-group and between-group), repeated measures ANOVA and ANCOVA tests were conducted.

Table 4.20

Within-group means and standard deviations of SE for treatment-naive group

		Pretest		**Posttest**		**Follow-up test**	
Group	**n**	*M*	*SD*	*M*	*SD*	*M*	*SD*
PGTN	10	2.81	0.49	2.88	0.73	3.27	1.00
CGN	11	2.96	0.43	2.80	0.68	3.38	0.91

Analysis using the one-way repeated measures ANOVA test to examine the effects of PGT on the increase in self-efficacy (SE) stages in the experiment group (PGTN) is shown in Table 4.21, and results show that there was no significant difference between SE mean scores [$F(2,18) = 1.83$, $p > 0.05$] as a whole among all three levels of tests. This means the psychoeducational group therapy did not provide any effect in increasing self-efficacy stages of naive addicts in drug rehabilitation centers. Post-hoc test of Bonferroni which paired multiple-comparisons of SE mean scores for these results also did not show any significant differences. The SE mean scores between pretest and posttest, and between posttest and follow-up test was also insignificant. Hence, hypothesis 2a is accepted.

Table 4.21

Repeated measures ANOVA of SE means for PGTN

Variables	Source	df	Mean square	F	p	Observed power
SE	Time	(2,18)	0.63	1.83	0.19	0.33

*p<0.05

ANCOVA analysis was used to examine the differences between PGT treatment's effects on the increase in SE among groups (PGTN and CGN) by controlling the SE pretest mean scores (covariate). Based on descriptive analysis in Table 4.20, results pointed out that the value of mean for PGTN posttest was bigger than the value of CGN posttest mean scores.

Table 4.22

Analysis of covariance for SE as a function of group, using a pretest as a covariate

Source	df	Mean square	F	p
Pretest	1	0.674	1.379	0.26
Group	1	0.104	0.213	0.65
Error	18	2.33		

*p < 0.05

ANCOVA test results as featured in Table 4.22 showed that there were no significant differences among groups in SE mean [F (1,18) = 0.213, p > 0.05). These results indicated that by controlling the pretest mean scores, PGT did not influence the SE change among the naive drug addicts group. Thus, hypothesis 2b is accepted.

Trend analysis using the plot method in repeated measures ANOVA tests for all three levels of measurement (pre-, post-, and follow-up test) is shown in Figure 4.2. Trend analysis of comparisons between the means from the pre to the post SE indicated an increase in SE mean for the PGTN group compared to the decline in

mean for the CGN group. However, the two groups did not show any significant increase or decrease.

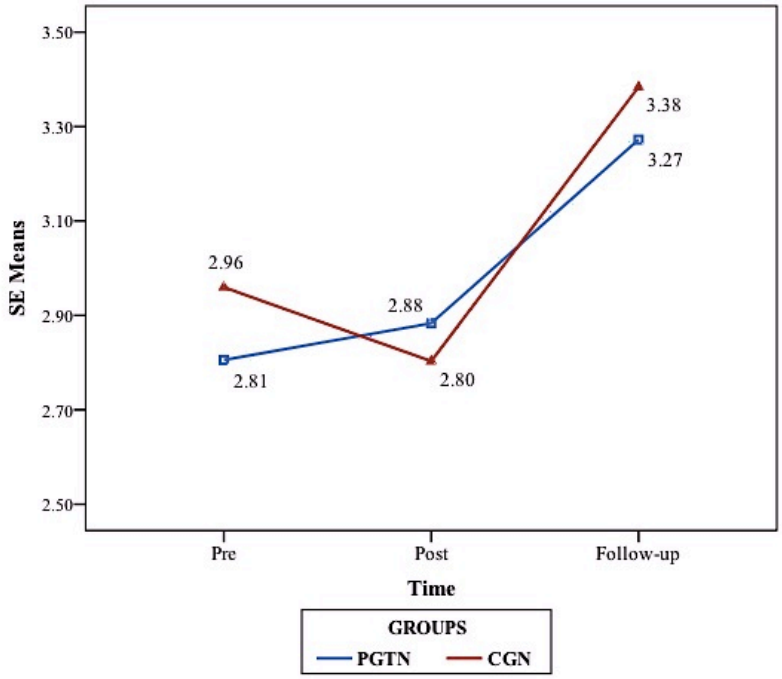

Figure 4.2. Between-group comparative SE means analysis of trend

Both hypotheses 2a and 2b which tested the effects of psychoeducational group therapy on naive addicts using the analysis methods of ANOVA and ANCOVA proved that this treatment was not effective in increasing the self-efficacy level of naive addicts who were at the early stages of change.

The third two hypotheses were created to examine the effect of psychoeducational group therapy on treatment-naive addicts (PGTN) for the decisional balance (DB) level. Hypothesis 3a applied the within-subject design (0_{1PGTN} - 0_{2PGTN}) and hypothesis 3b used the between-subject design (0_{2PGTN} - 0_{2CGN}).

Hypothesis 3a: There is no significant difference of DB between pre and post

Hypothesis 3b: There is no significant difference of DB between post-PGTN and post-CGN

Descriptive analyses of DB mean score comparisons were carried out at all levels of measurement tests (pre-, post- and follow-up tests) as shown in Table 4.23.

Table 4.23

Within-group means and standard deviations of DB for treatment-naive group

		Pretest		**Posttest**		**Follow-up test**	
Group	**n**	*M*	*SD*	*M*	*SD*	*M*	*SD*
PGTN	10	3.11	0.27	3.70	0.37	3.61	0.66
CGN	11	3.06	0.65	3.07	0.43	3.43	0.55

The results showed that there was an increase in the value of DB means score from pretest to posttest, but declined from posttest to follow-up test for the experiment group. As for the control group, the mean score value increased from the pretest to posttest, and from posttest to follow-up test. In order to view any significant differences in DB mean for each group (within-group and between-group), repeated measures ANOVA and ANCOVA tests were performed.

The results of the analysis using one-way repeated measures ANOVA test to examine the effects of PGT on the increase in the decisional balance (DB) stages in the experiment group (PGTN) are found in Table 4.24, which shows that there was a significant difference between DB mean scores [$F(2,18) = 6.47$, $p < 0.05$] as a whole at the three levels of tests. This shows that psychoeducational group therapy affects the naive addicts in promoting their decisional balance level in drug rehabilitation centers.

Table 4.24

Repeated measures ANOVA of DB means for PGTN

Variables	Source	df	Mean square	F	p	Observed power
DB	Time	(2,18)	1.04	6.47	0.01*	0.85

*p<0.05

To determine the level of tests, which contributed to the result of significant differences, Table 4.25 (test of within-subject contrasts) shows that comparisons between pre and posttests [F (1,9) = 13.81, p < 0.05] was significant, and between posttest and follow-up test [F = (1,9) = 0.29, p > 0.05] was not significant. Bonferroni's post-hoc multiple-comparisons DB mean scores for PGTN also showed that the mean differences between a pretest and posttest were significant (mean difference (I-J) = 0.60, SE = 0.16, p < 0.05), while the mean differences between posttest and follow-up test were low and not significant (mean difference (I-J) = 0.09, SE = 0.16, p > 0.05). This shows that there was an increase in decisional balance stages at the pre and post levels.

Table 4.25

Test of within subjects contrasts

Time	df	Mean square	F	p	Observed power
Pre vs post	(1,9)	3.54	13.81	0.01*	0.91
Post vs follow-up	(1,9)	0.07	0.29	0.60	0.08

*p < 0.05

ANCOVA analysis was used to test the differences in the effects of PGT treatment on the DB increase in groups (PGTN and CGN) by controlling the DB pretest mean score (covariate).

Table 4.26

Analysis of covariance for DB as a function of group, using a pretest as a covariate

Source	df	Mean square	F	p
Pretest	1	0.005	0.027	0.87
Group	1	2.019	11.850	0.00*
Error	18	0.170		

*p < 0.05

Based on the descriptive analysis in Table 4.23, the results indicated that the posttest PGTN value of pretest means topped the CGN value of mean scores. ANCOVA results of analysis are shown in Table 4.26, which indicated that there was a significant difference among the groups in DB mean [F (1,18) = 11.85, p < 0.05). The results showed that by controlling pretest mean scores, psychoeducational group therapy influenced the DB stages of change among the naive drug addicts. The magnitude of treatment effect or effect size of PGT to the group is large (*d* = 1.46) based on the Cohen's d calculation.

Trend analysis using the plot method in repeated measures ANOVA test for all three measurements levels (pre-, post-, and follow-up test) are shown in Figure 4.3. Trend analysis of comparisons between the pre points to other mean comparisons from pre to post DB point showed an increase in DM mean for the PGTN and CGN groups. The increase in DB mean was more significant in the PGTN group which showed that the decisional balance stage improved after the treatment.

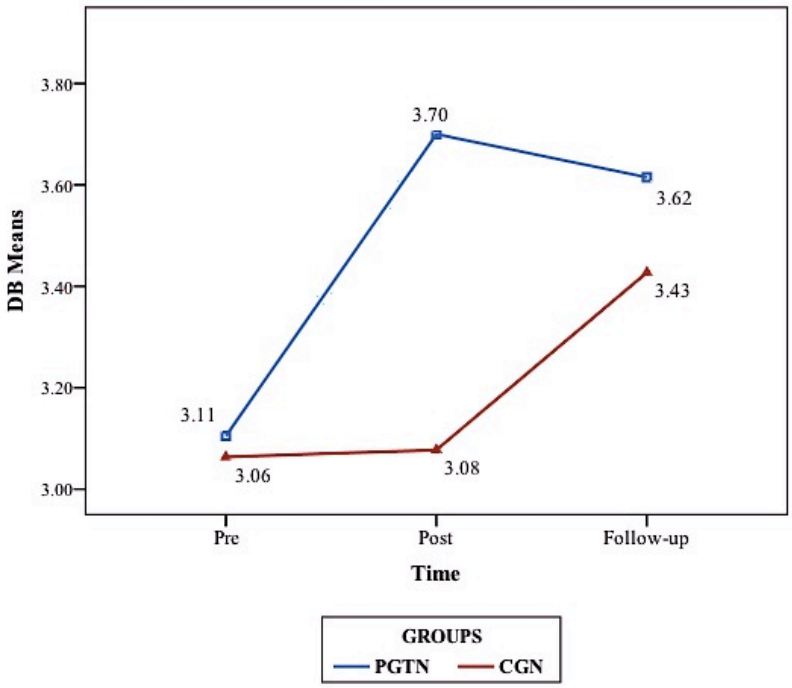

Figure 4.3. Between-group comparative DB means analysis of trend

Both hypotheses 3a and 3b, which tested the effects of psychoeducational group therapy on naive addicts used ANOVA and ANCOVA methods of analysis showed that the treatment was effective in improving the decisional balance stage among the naive addicts who were at the early stages of change. Therefore the both hypotheses are rejected.

4.4.2 Treatment effect on treatment-experienced addicts

Six hypotheses were developed to test the effectiveness of psychoeducational group therapy (PGT) on treatment-experienced addicts based on three independent variables, namely, the SoC, SE and DB. Two hypotheses were formed for each variable, which one hypothesis was for testing the effect of treatment in terms of its within-subject design (e.g. 0_{1PGTE} - 0_{2PGTE}) and one more hypothesis was for testing the effectiveness of treatment based on between-subject design (e.g. 0_{2PGTE} - 0_{2CGE}).

The following first two hypotheses were formed to examine the effects of psychoeducational group therapy on treatment-experienced addicts (PGTE) in terms of the stages of change (SoC). Hypothesis 4a applied the within-subject design (0_{1PGTE} - 0_{2PGTE}) and hypothesis 4b used the between-subject design (0_{2PGTE} - 0_{2CGE}).

Hypothesis 4a: There is no significant difference of SoC between pre and post

Hypothesis 4b: There is no significant difference of SoC between post-PGTE and post-CGE

Descriptive analysis of differences in SoC mean scores was done at all levels of tests (pre-, post- and follow-up test) and this can be found in Table 4.27 which shows there was an increase in the value of SoC mean from pretest to posttest, and from posttest to follow-up test for the experiment group. As for the control group, the value of mean was stable from pretest to posttest, and increased from posttest to follow-up test.

Table 4.27

Within-group means and standard deviations of SoC for treatment-experienced group

		Pretest		**Posttest**		**Follow-up-test**	
Group	**n**	*M*	*SD*	*M*	*SD*	*M*	*SD*
PGTE	12	8.32	1.85	10.37	1.78	10.67	2.13
CGE	12	7.99	2.10	7.99	1.91	10.08	2.61

In order to observe the significant differences in the SoC means for each group (within-group and between-group), repeated measures ANOVA and ANCOVA tests were done. The results of the analysis using one-way repeated measures ANOVA to test the effects of PGT on the increase in the stages of change (SoC) in experiment

group (PGTE) are shown in Table 4.28, The research found that there was a significant difference between the SoC mean scores [F (2,22) = 8.97, p < 0.05] as a whole among the three different levels of tests. This indicates that psychoeducational group therapy had an effect on the increase of experienced addicts' stage of change in rehabilitation centers.

Table 4.28

Repeated measures ANOVA of SoC means for PGTE

Variables	Source	df	Mean square	F	p	Observed power
SoC	Time	(2,22)	19.56	8.97	0.00*	0.95

*p<0.05

To determine which level of tests contributed to the significant differences in the analysis, Table 4.29 (tests of within-subject contrasts) shows that the comparisons between pre and posttests [F (1,11) = 16.33, p < 0.05] was significant, and between pretest and post-follow-up test [F = (1,11) = 1.06, p > 0.05] was not significant.

Table 4.29

Test of within-subjects contrasts

Time	df	Mean square	F	p	Observed power
Pre vs post	(1,11)	50.31	16.33	0.00*	0.96
Post vs follow-up	(1,11)	1.06	0.19	0.67	0.07

*p < 0.05

Post-hoc paired multiple-comparisons test by Bonferroni showed that the SoC mean score for PGTE also indicated that the mean difference between pretest and posttest was high and significant (mean difference (I-J) = 2.05, SD = 0.51, p < 0.05),

while the mean difference between posttest and follow-up test was low and not significant (mean difference (I-J) = 0.23, SD = 0.69, $p > 0.05$). This shows that there was a difference in the stage of change scores at the pre and post levels.

ANCOVA analysis was used to investigate the differences in the effects of PGT treatment on the increase of the SoC among the groups (PGTE and CGE) by controlling the SoC pretest mean scores (covariate). Based on the descriptive analysis available in Table 4.27, results showed that the value of the PGTE posttest mean was higher than the CGE value of the pretest mean scores. ANCOVA's results as found in Table 4.30 indicates that there were significant differences between groups in the SoC mean [$F(1,21) = 9.72$, $p < 0.05$). This shows that by controlling the pretest mean scores, the PGT affected the change in the SoC among the experienced drug addicts. Comparative post-hoc test of Bonferroni's multiple-comparisons validated the significant differences in mean (I-J) = 2.23, SD = 0.73, $p < 0.05$). The magnitude of treatment effect or effect size of PGT to the group is large ($d = 1.25$) based on the Cohen's d calculation.

Table 4.30

Analysis of covariance for SoC as a function of group, using a pretest as a covariate

Source	df	Mean square	F	p
Pretest	1	8.17	2.57	0.12
Group	1	30.91	9.72	0.00*
Error	21	3.18		

*$p < 0.05$

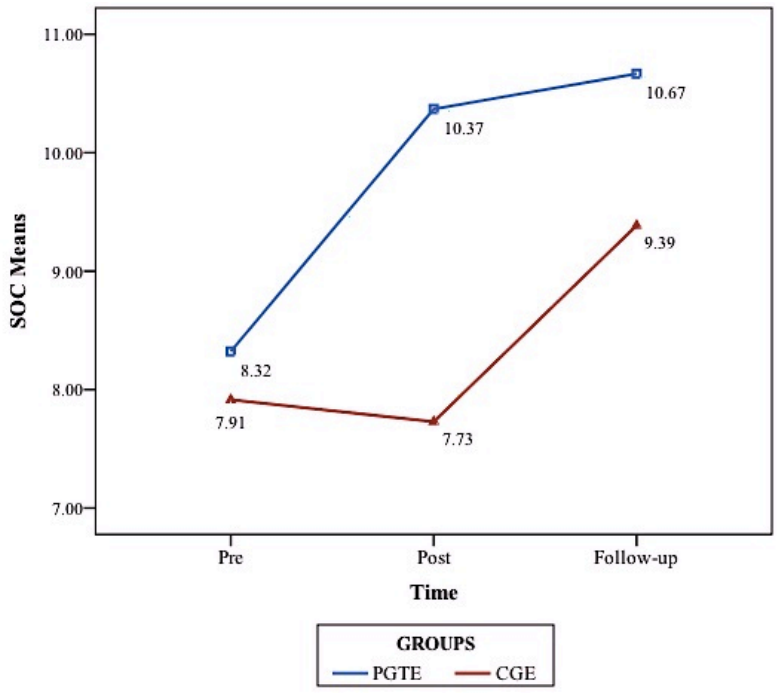

Figure 4.4. Between-group comparative SoC means analysis of trend

Trend Analysis used the plot method in repeated measures ANOVA test for all three levels of measurement (pre-, post-, and follow-up test) and the results are shown in Figure 4.4. Comparative trend analysis from pre-point to post-SoC displays indicated an increase in the SoC mean for the PGTE group compared to the decline in the CGN group's mean. The increase in the SoC mean was more significant in the PGTE group which exhibited the improvement in the SoC stage after the treatment.

Both the 4a and 4b hypotheses which tested the effects of psychoeducational group therapy on experienced addicts used the ANOVA and ANCOVA methods to prove that the treatment was effective for the addicts, who were at the early stage of change, to promote their changes. Therefore, the both hypotheses are rejected.

In addition, another two hypotheses were developed to test the effects of psychoeducational group therapy on treatment-experienced addicts (PGTE) for self-efficacy (SE) level. Hypothesis 5a applied the within-subject design (0_{1PGTE} - 0_{2PGTE}) and hypothesis 5b utilized the between-subject design (0_{2PGTE} - 0_{2CGE}).

Hypothesis 5a: There is no significant difference of SE between pre and post

Hypothesis 5b: There is no significant difference of SE between post-PGTE and post-CGE

Comparative descriptive analysis for SE mean scores was done at all levels of tests (pre-, post- and follow-up test) as featured in Table 4.31 which shows the increase in the value of the SE mean score from pretest to posttest, but declined from posttest to follow-up-test for the experiment group. As for the control group, the mean score value increased from pretest to posttest, and from posttest to follow-up test. In order to view any significant differences in the SE mean for each group (within-group and between-group), repeated measures ANOVA and ANCOVA were carried out.

Table 4.31

Within-group means and standard deviations of SE for treatment-experienced group

		Pretest		**Posttest**		**Follow-up-test**	
Group	**n**	*M*	*SD*	*M*	*SD*	*M*	*SD*
PGTE	12	2.75	0.49	3.33	0.51	3.20	0.74
CGE	12	2.83	0.74	2.90	0.71	3.12	0.93

Analysis using the one-way repeated measures ANOVA test to examine the effects of PGT on the increase in the self-efficacy (SE) stage in the experiment group (PGTE) can be found in Table 4.32. The results obtained from *Mauchly's Test of Sphericity* were significant and they showed that the *df* coordination for one-way ANOVA test must be completed. Based on the new *df* after the coordination, the findings showed that there was no significant difference in the SE mean score [$F(1.25,13.72) = 3.94$, $p > 0.05$] as a whole in all three levels of tests.

Table 4.32

Repeated measures ANOVA of SE means for PGTE

Variables	Source	df	Mean square	F	p	Observed power
SE	Time	(1.25, 13.72)	1.74	3.94	0.06	0.50

*p<0.05

Nevertheless, the Test of Within-Subjects Contrasts (see Table 4.33) revealed that the results from the comparisons made between the pre and post [F (1,11) = 31.71, p < 0.05] were significant, and post-follow-up [F = (1,11) = 0.29, p > 0.05] tests results showed that they were not significant.

Table 4.33

Test of within-subjects contrasts

Time	df	Mean square	F	p	Observed power
Pre vs post	(1,11)	3.91	31.71	0.00*	1.00
Post vs follow-up	(1,11)	0.18	0.29	0.60	0.08

*p < 0.05

The results in the Test of Between-Subject Effects table [F(1,11) = 690.46, p < 0.05] verified the differences in the two levels of tests (pre versus post) as illustrated in the above Table 4.34. This indicates that there were differences in the self-efficacy level between the pre and posttests levels among experienced addicts.

ANCOVA analysis was used to test the differences in the PGT treatment effects on the increase in SE among the groups (PGTE and CGE) by controlling the SE mean score for pretest (covariate). Based on the descriptive analysis shown in Table 4.31, the results indicated that the value of the PGTE posttest mean was higher

than the CGE posttest mean value. ANCOVA results as featured in Table 4.34 indicated that the pretest factor (covariate) provided effects to the experiment group factor [F (1,21) = 27.74, $p < 0.05$), even though the variant value in each research group did not show any difference as seen in the Levene test results [$F(1,22) = 2.23$, $p > 0.05$] which showed the result as not significant (variants for independent variables which crossed each dependent variables group in the same research population were the same), and they fulfilled the conditions for ANCOVA tests.

The ANCOVA test results indicated that there was a significant difference in SE mean between groups [$F(1,21 = 8.25$, $p < 0.05$]. This finding means that by controlling the pretest mean score, PGT influences the SE change among experienced addict groups. The results for this research were supported by Bonferroni's paired multiple-comparisons for SE score between PGTE and SE groups, which showed that their differences were significant [mean difference (I-J) = 0.49, $p < 0.05$].

Table 4.34

Analysis of covariance for SE as a function of group, using a pretest as a covariate

Source	df	Mean square	F	p
Pretest	1	4.74	27.74	0.00*
Group	1	1.41	8.25	0.01*
Error	21	1.17		

*$p < 0.05$

The results in the Univariate Tests table (see Table 4.35) showed that as a whole, there was a significant difference in the paired comparison findings [$F(1,21) = 8.25$, $p < 0.05$] which means that, by controlling the pretest score, there was a major effect of the treatment for the independent variable (SE). This indicates that the PGT

treatment had an effect on the experiment group, which consisted of experienced addicts, when compared to the control group of experienced addicts. The magnitude of treatment effect or effect size of PGT to the group is medium or moderate (d = 0.61) based on the Cohen's d calculation.

Table 4.35

Univariate Tests

	Sum of square	df	Mean square	F	p
Contrast	1.409	1	1.409	8.25	0.01*
Error	3.586	21	0.171		

*p < 0.05

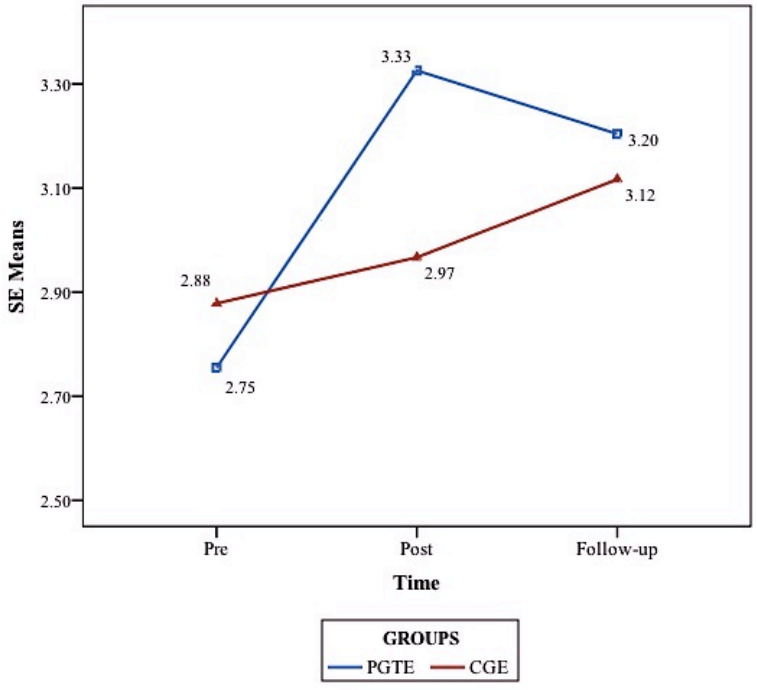

Figure 4.5. Between-group comparative SE means analysis of trend

Figure 4.5 features a trend analysis using the plot method in repeated measures ANOVA tests for all three levels of measurement (pre-, post-, and follow-up test)..

Comparative SE mean analysis of trend for SE pre to post point showed an increase in the SE mean for PGTE and CGN groups. The SE mean increase was more significant in the PGTE group, which showed the improvement in the SE stage after the treatment.

Both hypothesis 5a and 5b were developed to test the effects of psychoeducational group therapy on experienced addicts, by using ANOVA and ANCOVA methods to show that the treatment is effective in improving the self-efficacy stage of experienced addicts who are at the early stages of change. Therefore, the both hypotheses are rejected.

The third pair of hypotheses were formed to examine the effects of psychoeducational group therapy on treatment-experienced addicts (PGTE) for the decisional balance (DB) level. Hypothesis 6a used the within-subject designs (0_{1PGTE} - 0_{2PGTE}) and hypothesis 6b utilized the between-subject design (0_{2PGTE} - 0_{2CGE}).

Hypothesis 6a: There is no significant difference in DB between pre and post

Hypothesis 6b: There is no significant difference in DB between post-PGTE and post-CGE

A descriptive analysis of the DB mean score comparison was done for all levels of test (pre-, post- and follow-up test) as listed in Table 4.36. This descriptive analysis of mean comparison (Table 4.36) shows that there was an increase in the value of the DB mean score from pretest to posttest, but that it declined from posttest to follow-up-test for the experiment group. As for the control group, the value of the mean score increased from pretest to posttest, and declined from posttest to follow-up-test.

Table 4.36

Within-group means and standard deviations of DB for treatment-naive group

		Pretest		Posttest		Follow-up test	
Group	**n**	*M*	*SD*	*M*	*SD*	*M*	*SD*
PGTE	12	2.87	0.49	3.25	0.26	3.20	0.51
CGE	12	3.08	0.34	3.20	0.28	3.00	0.79

In order to view the significant differences in the DB mean for each group (within-group and between-group), repeated measures ANOVA and ANCOVA tests were done. An analysis using the one-way repeated measures ANOVA test to examine the effects of PGT on the increase in the decisional balance (DB) stages in the experiment group (PGTE) was done. The findings (shown in Table 4.37) reveal that there was a significant difference in DB means score [$F(2,18) = 6.47$, $p < 0.05$] as a whole among all three tests.

Table 4.37

Repeated measures ANOVA of DB means for PGTE

Variables	**Source**	**df**	**Mean square**	**F**	**p**	**Observed power**
DB	Time	(2,22)	0.512	2.64	0.09	0.47

*p<0.05

To determine the effect at each level of paired comparisons, Table 4.38 (tests of within-subject contrasts) indicates that mean differences between pre- and posttests [$F(1,11) = 5.90$, $p < 0.05$] were significant, and between post- and follow-up tests [$F = (1,11) = 0.10$, $p > 0.05$] are not significant.

Table 4.38

Test of within-subjects contrasts

Time	df	Mean square	F	p	Observed power
Pre vs post	(1,11)	1.76	5.90	0.03*	0.60
Post vs follow-up	(1,11)	0.04	0.10	0.76	0.06

*p < 0.05

The Test of Between-Subject Effects table [F (1,11) = 1,966.28, p < 0.05] clarifies the results between the paired comparisons (see Table 4.39). This indicates that there was an increase in the decisional balance stage at the pre- and post-test among experienced addicts. Thus, hypothesis 6a is rejected.

Table 4.39

Test of between-subject effects

	Df	Mean square	F	p
Intercept	1	115.84	1966.28	0.00*
Error	11	0.06		

*p < 0.05

An ANCOVA analysis was used to examine the differences between the PGT treatment effects on the increase in the DB among groups (PGTE and CGE) by controlling the DB pretest scores (covariate). The descriptive analysis in Table 4.36 shows that the posttest mean of the PGTE group is higher than the posttest mean of the CGE group. The ANCOVA analysis as found in Table 4.40 indicates that there was no significant difference in DB means between the groups [F (1,21) = 0.82, p > 0.05). Such results indicate that, by controlling the pretest mean score, the DB change

among the experienced addicts who are in the treatment and control groups is the same. Therefore, hypothesis 6b is accepted.

Table 4.40

Analysis of covariance for DB as a function of group, using a pretest as a covariate

Source	df	Mean square	F	p
Pretest	1	0.14	1.94	0.18
Group	1	0.06	0.82	0.38
Error	21	0.07		

*p < 0.05

A trend analysis using the plot method in the repeated measures ANOVA test for all three levels of measurement (pre-, post-, and follow-up test) is found in Figure 4.6. The trend analysis for mean comparisons from the DB pre point to the post shows an increase in the the DB mean for both PGTE and CGN groups. The increase in the DB mean is more significant in the PGTE group, which shows the improvement in the SE stage after the treatment. From the perspective of mean value comparisons, both increases in mean are not too different between the groups.

Both hypothesis 6a and 6b, which examined the psychoeducational group therapy on the experienced addicts, used the ANOVA and ANCOVA analysis method and showed that the treatment was effective in enhancing the decisional balance stage among experienced addicts who are undergoing treatment, but the change was not significantly different among the experienced addicts in the control group.

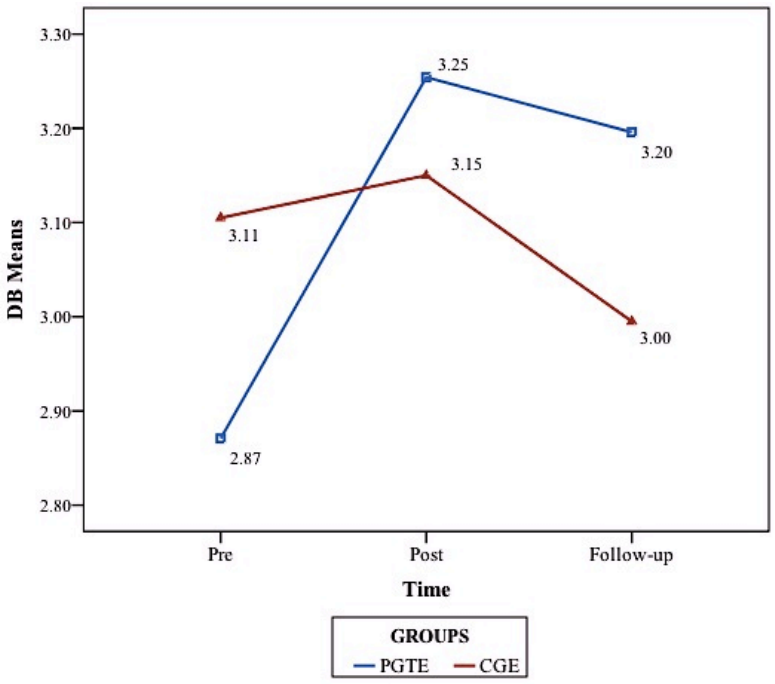

Figure 4.6. Between-group comparative DB means analysis of trend

4.4.3 Treatment effect comparison among treatment-naive and treatment-experienced addicts

Three hypotheses were developed to examine the comparisons of the effectiveness of psychoeducational group therapy (PGT) among the treatment-naive addicts group and treatment-experienced addicts for three independent variables, namely, the SC, SE and DB. The test deign used was the between-group design (e.g. 0_{2PGTN} - 0_{2PGTE}) which compared the post mean of each of the independent variables SoC, SE and DB.

Hypothesis 7: There is no significant difference of SoC between post-PGTN and post-PGTE

Hypothesis 8: There is no significant difference of SE between post-PGTN and post-PGTE

Hypothesis 9: There is no significant difference of DB between post-PGTN and post-PGTE

The comparative analysis for the SoC mean for both experiment groups is shown in Table 4.41 which indicates that at the post test level, the SoC mean differences for PGTN and PGTE (mean difference (I-J) = 0.47) was too small. After the mean was adjusted, the difference was still very small (mean difference (I-J) = 0.89).

Table 4.41

Adjusted and unadjusted group means and variability using pretest as a covariate

		Unadjusted		**Adjusted**	
Group	**n**	*M*	*SD*	*M*	*SE*
PGTN	10	9.90	1.51	9.67	0.49
PGTE	12	10.37	1.78	10.56	0.45

ANCOVA analysis was used to examine the differences in the PGT treatment effects on the SoC increase among the groups (PGTN and PGTE) by controlling the SoC mean score for the pretest (covariate).

Table 4.42

Analysis of covariance for SoC as a function of group, using a pretest as a covariate

Source	df	Mean square	F	p
Pretest	1	11.84	5.17	0.04*
Group	1	4.01	1.75	0.20
Error	19	2.29		

*p < 0.05

The ANCOVA results, as seen in Table 4.42, indicates that even though the pretest factor (covariate) affected the factor control group [F (1,19) = 11.84, $p < 0.05$], there was no significant difference among the groups in the SoC mean [F (1,19) = 1.75, $p > 0.05$]. Paired comparison results (Bonferroni) verify the analysis that the comparison made was insignificant as a whole [mean difference (I-J)= 0.89, SE = 0.67, $p > 0.05$). All in all, the results indicate that by controlling the pretest mean score, PGT did not affect the SoC change among the naive and experienced drug addicts groups. Therefore, hypothesis 7 is accepted.

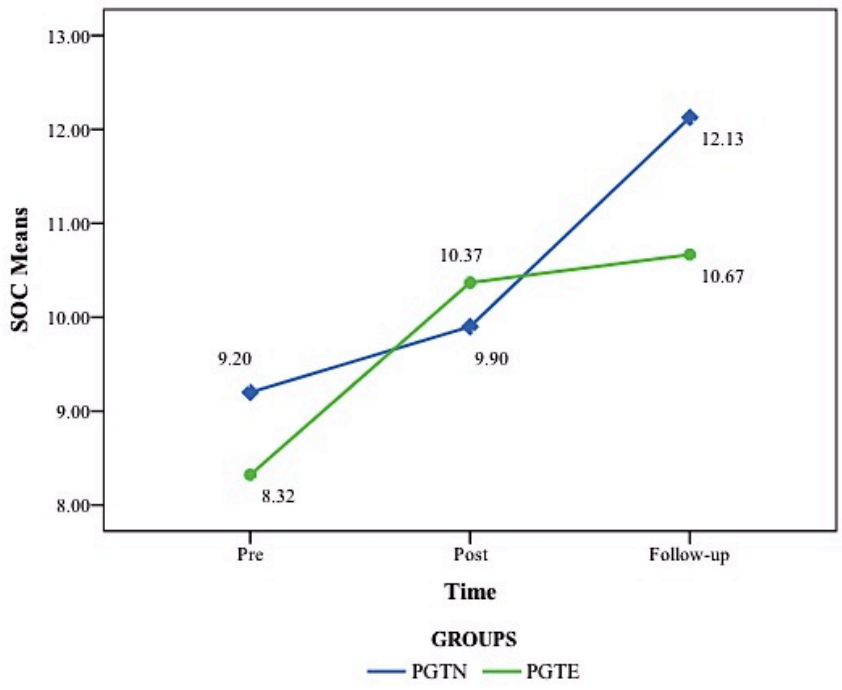

Figure 4.7. Between-group comparative SoC means analysis of trend

Trend analysis, which used the plot method, through repeated measures ANOVA test for all three levels of measurement (pre-, post-, and follow-up test) for the PGTN and PGTE groups, is shown in Figure 4.7. The comparative mean trend analysis from the pre to post SoC points indicates an increase in the SoC mean for the PGTE and PGTN groups. The SoC mean increase was more significant in the PGTE

group, showing an improvement in the SoC stage after the treatment was completed, compared to the PGTN group.

For testing hypothesis 8, the SE comparative mean analysis for both research groups is shown in Table 4.43 where the data deals with the SE mean differences for both groups at the level of posttest, before and after the adjustment. ANCOVA analysis was used to examine the differences in the effects of PGT treatment on the increase of the SE among the groups (PGTN and PGTE) by controlling the SE pretest mean score (covariate).

Table 4.43

Adjusted and unadjusted group means and variability using pretest as a covariate

		Unadjusted		**Adjusted**	
Group	**n**	*M*	*SD*	*M*	*SE*
PGTN	10	2.88	0.73	2.86	0.16
PGTE	12	3.33	0.51	3.34	0.15

The ANCOVA test results, featured in Table 4.44, shows that there was significant difference among groups in the SE mean [$F(1,19) = 4.82$, $p < 0.05$], and the pretest score factor contributed to the main effects to the posttest SE scores [$F(1,19) = 10.48$, $p < 0.05$]. The results of the (Bonferroni) paired comparison validate the data obtained that there were significant comparisons in general throughout the tests [mean difference (I-J)= 0.48, SE = 0.22, $p < 0.05$).

Table 4.44

Analysis of covariance for SE as a function of group, using a pretest as a covariate

Source	df	Mean square	F	p
Pretest	1	2.73	10.48	0.00*
Group	1	1.26	4.82	0.04*
Error	19	0.44		

*p < 0.05

The results shown in the Univariate Tests table [F (1,19) = 4.82, p < 0.05] support the fact that there was a major effect of the group dependent variables on the increase in the self-efficacy stage after the variable's pretest score was controlled in the research population (see Table 4.45). These findings show that by controlling the pretest score, PGT influenced the change in the self-efficacy stages among the naive and experienced addict groups. The experienced addicts were found to have higher self-efficacy compared to the naive addicts after the treatment was completed. The magnitude of treatment effect or effect size of PGT to the group is large (d = 0.94) based on the Cohen's d calculation. Thus, hypothesis 8 is rejected.

Table 4.45

Univariate Tests

	Sum of square	**df**	**Mean square**	**F**	**p**
Contrast	1.26	1	1.26	4.82	0.04*
Error	4.95	21	0.26		

*p < 0.05

The results of the trend analysis using the plot method through repeated measures ANOVA tests for all three levels of measurement (pre-, post-, and follow-up

test) for PGTN and PGTE are shown in Figure 4.8. Comparative mean trend analysis from the SoC pre to post points indicates an increase in the SE mean for the PGTE and PGTN groups. The SE mean increase was more significant in the PGTE group, which shows an improvement in the SoC stage upon the completion of the treatment, compared to the PGTN group. This shows that the effects of the treatment promoted higher increase in self-efficacy in the PGTE groups compared to the PGTN groups.

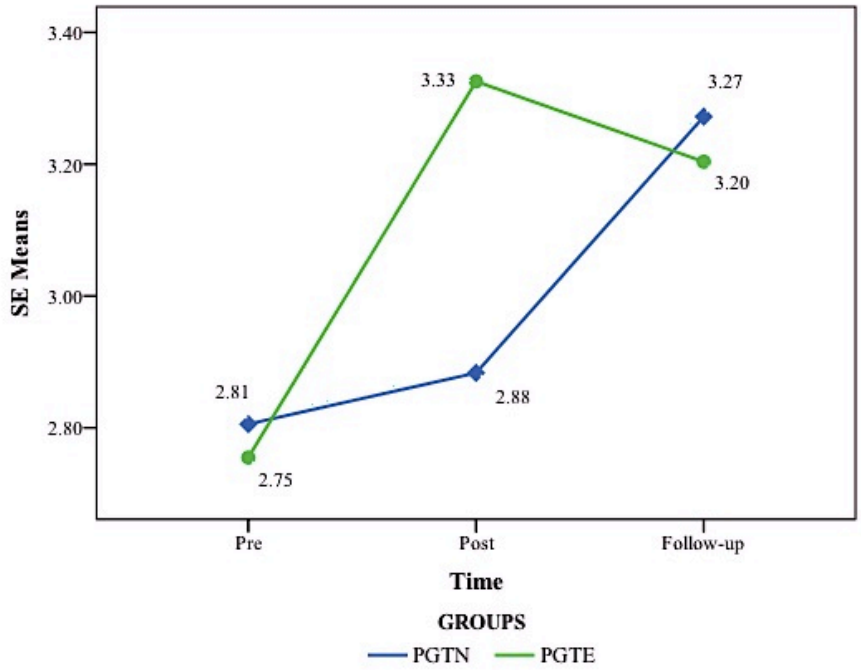

Figure 4.8. Between-group comparative SE means analysis of trend

For testing hypothesis 9, comparative analysis of the DB mean for both groups (see Table 4.46) shows SE mean differences when both of them were at the posttest level, before and after the adjustments. ANCOVA analysis was used to examine the differences in the effects of PGT treatment on the increase of SE among the groups (PGTN and PGTE) by controlling the DB pretest mean score (covariate).

Table 4.46

Adjusted and unadjusted group means and variability using pretest as a covariate

		Unadjusted		Adjusted	
Group	**n**	*M*	*SD*	*M*	*SE*
PGTN	10	3.70	0.37	3.71	0.11
PGTE	12	3.25	0.26	3.25	0.10

The ANCOVA results, featured in Table 4.47, shows that there was a significant difference among the groups in the DB mean [$F(1,19) = 10.00$, $p < 0.05$], and the pretest score factor did not affect the posttest DB scores [$F(1,19) = 0.07$, $p > 0.05$]. Paired comparative (Bonferroni) test validates the fact that results obtained from the analysis indicated that there was a significant paired comparison as a whole [mean difference (I-J)= 0.46, SE = 0.15, $p < 0.05$].

Table 4.47

Analysis of covariance for DB as a function of group, using a pretest as a covariate

Source	df	Mean square	F	p
Pretest	1	0.01	0.07	0.79
Group	1	1.05	10.00	0.01*
Error	19	0.10		

*$p < 0.05$

These results indicate that by controlling the pretest score, PGT influenced the change in the decisional balance stage among the naive and experienced drug addicts groups. The naive addicts possessed a better decisional balance stage compared to the experienced addicts after the treatment was completed. The magnitude of treatment

effect or effect size of PGT to the group is large (d = 1.22) based on the Cohen's d calculation. Thus, hypothesis 9 is rejected.

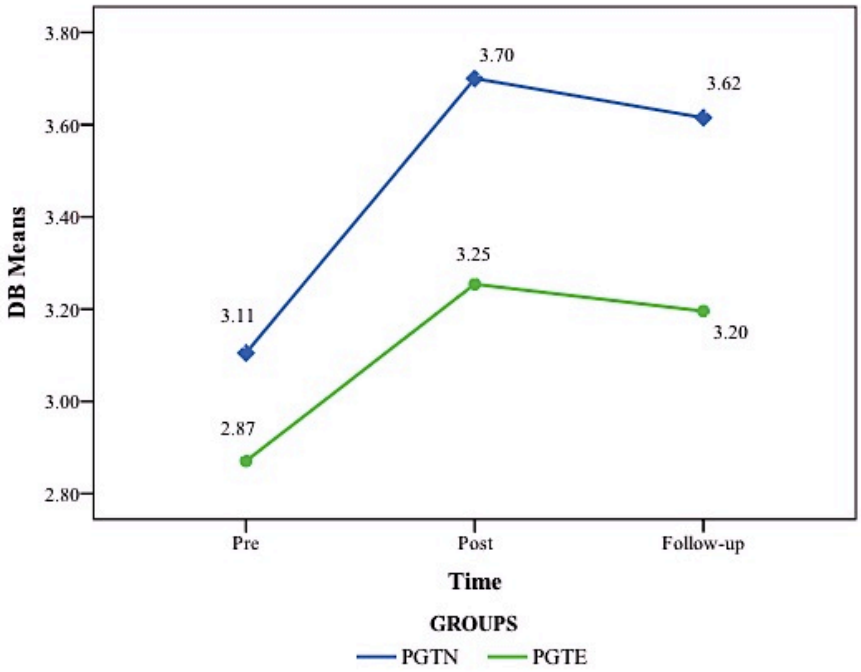

Figure 4.9. Between-group comparative DB means analysis of trend

The results of the trend analysis using the plot method through repeated measures ANOVA tests for all three levels of measurement (pre-, post-, and follow-up test) for PGTN and PGTE groups are detailed in Figure 4.9. Trend analysis of mean comparisons from the DB pre to post points shows an increase in the DB mean for PGTE and PGTN. An increase in the DB mean was more significant in the PGTN group which exhibits the improvement in the DB stages upon the completion of the treatment, compared to the PGTE group. This indicates that the effects of treatment in enhancing the decisional balance stage was higher in PGTN compared to the PGTE group.

4.4.4 Time-delayed effects on treatment-naive and treatment-experienced addicts

In order to investigate the time-delayed effects on psychoeducational group therapy (PGT) on the respondents, nine hypotheses were developed. The first three hypotheses were formed to examine the time-delayed effects of PGT treatment on naive addicts and the next three were used to examine the comparisons of time-delayed effects on PGT treatment among the research groups.

Another three hypotheses were created to examine the time-delayed effects to psychoeducational group therapy treatment on the naive addicts. The effects were tested based on three dependent variables, namely, the stages of change (SoC), self-efficacy (SE) and decisional balance (DB). The design applied in this research is known as the within-subject design ($0_{2PGTN} - 0_{3PGTN}$) which sought the differences in the mean between posttest and follow-up test for all dependent variables measured in this study.

Hypothesis 10: There is no significant difference of SoC between post and follow-up

Hypothesis 11: There is no significant difference of SE between post and follow-up

Hypothesis 12: There is no significant difference of DB between post and follow-up

The results of the post-hoc test from Bonferroni's paired multiple-comparison on the SoC as a dependent variable can be found in Table 4.18 which indicates that there was a significant difference between post and follow-up SoC mean [$F(1,9) = 17.54$, $p < 0.05$] as well as significant repeated measures ANOVA tests [$F(2,18) =$

23.39, $p < 0.05$] (Table 4.17). This only means that there were time-delayed effects for the naive addicts group in terms of change in the stages of change. Psychoeducational group therapy treatment provides continuous effects even after the treatment had stopped for three months. Hence, hypothesis 10 is rejected.

The SoC mean trend analysis (see Figure 4.1) from pro to follow up points indicates that there was a tendency for SoC to increase for both PGTN and CGN. The increase in the SoC mean for the PGTN group was more significant and higher than for the CGN group. This indicates that the effects of psychoeducational group therapy remained longer and kept on increasing.

For hypothesis 11, the results of Bonferroni's post-hoc paired multiple-comparisons on SE variable shows that there was no significant difference between the SE post and follow-up [$F(1,9) = 2.35$, $p > 0.05$] and repeated measures ANOVA test also yielded insignificant results [$F(2,18) = 1.83$, $p > 0.05$] (Table 4.21). This shows that there were no time-delayed effects for the naive addicts group in terms of the self-efficacy stages. The effects of psychoeducational group therapy remained and lingered for three months after the treatment was given. Therefore, hypothesis 11 is accepted.

The analysis of the trend for the SE mean (see Figure 4.2) from the post to follow-up points shows an inclination towards an escalation for PGTN and CGN. The SE mean increase for the CGN group was more significant and higher than for the PGTN group. Thus, this means that psychoeducational therapy lasted longer and did not differ according to groups.

In addition, for hypothesis 12, the results of Bonrefforni's post-hoc paired multiple-comparisons on the DB variable are shown in Table 4.25 and they indicate that there was no significant difference between the DB post and follow-up mean [F

(1,9) = 0.29, p > 0.05] even though there is a significant difference found in ANOVA tests [F (2,18) = 6.47, p < 0.05] (Table 4.24). Results obtained show that there was no time-delayed effects for the naïve addicts in terms of the decisional balance level. Psychoeducational group therapy lasted longer and remained for three months after the completion of the treatment. Therefore, hypothesis 12 is accepted.

DB mean analysis of trend (see Figure 4.3) from the post to follow-up points shows an inclination towards a decrease for PGTN compared to an increase for CGN. The DB mean value for PGTN at the follow-up measurement level was still higher compared to CGN. The decrease in mean value indicates that the psychoeducational group therapy did not last long after the addicts completed their treatment.

The next three hypotheses were formed to test the time-delayed effects on psychoeducational group therapy on the experienced addicts. These effects were tested based on the three dependent variables, which are the stages of change (SoC), self-efficacy (SE) and decisional balance (DB). The within-subject design was chosen ($0_{2PGTE} - 0_{3PGTE}$) to seek the differences between the post and follow-up means for each independent variable measured in this study.

Hypothesis 13: There is no significant difference of SoC between post and follow-up

Hypothesis 14: There is no significant difference of SE between post and follow-up

Hypothesis 15: There is no significant difference of DB between post and follow-up

The results from Bonferroni's post-hoc paired multiple-comparisons (Table 4.29) show that there was no significant difference between the post and follow-up means for SoC variable [F (1,11) = 0.19, p > 0.05] even repeated measures ANOVA

test was significant [F (2,22) = 8.97, $p < 0.05$]. These findings indicate that there were no time-delayed effects for the experienced addicts in terms of changes in the stages of change. The psychoeducational therapy in terms of the stages of change lasted and remained for three months from the completion of the treatment. Thus, hypothesis 13 is accepted.

Analysis trend of the SoC analysis trend (see Figure 4.4) from the post to follow-up point shows that there was an inclination towards PGTE and CGE. An increase in the SoC mean for CGE group was more significant compared to the PGTE group. The value of the SoC mean for the PGTE group was still higher compared to the CGE group. These indicate that the effects of psychoeducational group therapy lasted longer and kept on increasing.

The results of Bonferroni's post-hoc paired multiple-comparisons tests (Table 4.33) indicate that there was no significant difference between the post and follow-up means for the SE variable [F (1,11) = 0.29, $p > 0.05$] and repeated measures ANOVA tests also not significant [F (1.25, 13.72) = 3.94, $p > 0.05$] (Table 4.32). Overall, the findings show that there was no time-delayed effect for the experienced addicts group from the aspect of the self-efficacy stages. The effects of psychoeducational group therapy on the self-efficacy level changes were prolonged and remained for three months after the treatment was completed. Thus, hypothesis 14 is accepted.

The SE mean analysis of trend (see Figure 4.5) from the post to the follow-up points shows a tendency to decline for PGTE and an increase for CGE. The SE mean value for PGTE was higher than for CGE. The decrease in the SE mean for PGTE means that psychoeducational group therapy did not work for long after the addicts had completed their treatment.

Post-hoc paired multiple-comparisons by Bonferroni (Table 4.38) shows that there was no significant difference in the post and follow-up tests of DB [F (1,11) = 0.10, p > 0.05] as well as repeated measures ANOVA test was found to be non-significant [F (2,22) = 2.64, p > 0.05] (Table 4.37). This means that there were no time-delayed effects on the experienced addicts group from the aspect of the decisional balance stage. The effects of psychoeducational group therapy on the change of decisional balance stage were prolonged and remained for three months after the treatment was given. Thus, hypothesis 15 is accepted.

The DB mean analysis of trend (see Figure 4.6) from the post to follow-up point shows an inclination towards a decline for the PGTE and CGE groups. The decline in the DB mean for the CGE group appeared to be more prominent and higher compared to that for the PGTE group. The decrease indicates that the effects of psychoeducational group therapy did not last and kept on decreasing after the treatment had ended.

The last three hypotheses were formed to examine the comparisons on time-delayed effects on psychoeducational group therapy on the naive and experienced addicts. They tested for any differences in change among groups during the follow-up measurement or from the level of pretest to follow-up test (do the groups change differently from the pretest to the follow-up?). The effects were tested on three dependent variables, namely, the stages of change (SoC), self-efficacy (SE) and decisional balance (DB). The design used was known as the between-subject design ($0_{3PGTN} - 0_{3PGTE}$), which sought the difference among the follow-up means for each dependent variable measured in this study by controlling the pretest mean.

Hypothesis 16: There is no significant difference of SoC in follow-up-test between PGTN and PGTE

Hypothesis 17: There is no significant difference of SE in follow-up-test between PGTN and PGTE

Hypothesis 18: There is no significant difference of DB in follow-up-test between PGTN and PGTE

The results of the ANCOVA test for group differences on the follow-up are illustrated in Table 4.48.

Table 4.48

ANCOVA and pairwise comparison confidence intervals

Effect (PGTN to PGTE)	**ANCOVA Covarying Pretest**		
	Lower	**Upper**	**Width**
SoC	-0.510	2.585	3.095
	F (1,19) = 1.97, p = 0.18		
SE	-0.739	0.862	1.601
	F (1,19) = 0.03, p = 0.87		
DB	-0.171	0.939	1.110
	F (1,19) = 2.10, p = 0.16		

*p < 0.05

The results obtained show that there was no significant difference between the PGTN and PGTE groups at the level of follow-up measurement for SoC [F (1,19) = 1.97, p > 0.05], SE [F (1,19) = 0.03, p > 0.05], and DB [F (1,19) = 2.10, p > 0.05]. The results are indicative of the presence of differences in time-delayed effects between PGTN and PGTE group for the stages of change, self-efficacy and decisional balance. Thus, hypotheses 16, 17 and 18 are accepted. Analysis of trend for both groups for SoC, SE and DB variables (see Figure 4.7, 4.8 and 4.9) indicates that the mean differences between these two groups were too small and insignificant.

4.4 Further analysis

Two further analyses were conducted in this study. The first was the descriptive analysis of how far psychoeducational group therapy promoted the respondents' change individually in terms of movement of stages of change (how effective was the treatment to motivate the change), enhancement of self-efficacy, and the process of decision making (cons to drug use or pros to change). Secondly, inference analysis was used to make comparisons of the effects of treatment on dependent variables SoC, SE and DB. The second analysis was done in two situations: first, between-subject design in the original group (first test), and second, within-subject and between-subject designs in new research group by merging the two experiment groups (PGTN and PGTE) into one (experiment group) and merging the two control groups (CGN and CGE) into one (control group) for the second and third tests.

4.5.1 Treatment effect across groups

This analysis was conducted to provide details of the change movement of each respondent in the research groups after they had completed the treatment (PGTN and PGTE groups), and of the comparisons with the control groups (CGN and CGE) at the post-measurement level for three variables, namely, the SoC, SE and DB. Table 4.49 shows the results of the descriptive analysis for the stages of change variable (SoC).

The results indicate that 14 respondents succeeded in advancing to a higher level of stage of change during the posttest measurement. These 14 respondents comprised 10 respondents (71.43%) from the experiment group, and 4 respondents (28.57%) from the control group. Another 26 respondents maintained at the same

stage of change, represented by 12 respondents (46.15%) from the experiment group and 14 respondents (53.85%) from the control group, while 5 respondents dropped one stage lower, a situation which is referred to as 'recycling'. All of these 26 respondents belonged to the control group. From the aspect of advancing to a later stage of change, 12 respondents (85.71%) moved to another stage of change (pre-contemplation to contemplation, or contemplation to preparation/action), and 2 respondents (14.29%) advanced two stages higher (pre-contemplation to preparation/action).

Table 4.49

Status of SoC level of the respondents at posttest

Group	Recycling	Maintained	Moved one stage ahead	Moved two stages ahead
PGTN	0	6	4	0
PGTE	0	6	4	2
CGN	2	8	1	0
CGE	3	6	3	0
Total	**5**	**26**	**12**	**2**

Table 4.50 shows the results obtained in the analysis of the change in the readiness to change total score (RTC), which determines the status of the respondents' stages of change. The results show that 29 respondents (64.44%) experienced an increase in RTC score, while 3 respondents (6.67%) maintained their status, and 13 respondents (28.89%) experienced a decline in score. From this total, the majority of an increase in the RTC total score occurred in the experiment group, represented by 17 respondents (or 58.62%), compared to 12 individuals (or 41.38%) in the control group. In respect of a decline in score, the majority was from the control group, represented by 9 respondents (69.23%), in contrast to the experiment group which had

4 respondents (30.77%) who showed some decline in scores. The range of scores between the two groups was also different; the experiment group had minimum and maximum total scores, which were higher compared to the control group during posttest measurement.

Table 4.50

Respondents' RTC scores at posttest

Group	Decreased	No change	Increased	Minimum RTC scores	Maximum RTC scores
PGTN	4	1	5	7.86	13.00
PGTE	0	0	12	5.86	12.57
CGN	5	1	5	5.00	10.43
CGE	4	1	7	3.71	10.86
Total	**13**	**3**	**29**	**-**	**-**

This descriptive analysis confirms that psychoeducational group therapy was successful in promoting the addict to a higher stage of change (at least one stage ahead), that is, at 71.43% compared to 28.57% for the control group, and it increased the readiness to change (RTC) score to 58.62%, compared to the control group at 38%.

The experimental group PGTE showed the best performance in movement of the stage of change, since 50.0% of the respondents moved at least one stage ahead and 100.0% of the respondents experienced an increase in the RTC score. This was followed by the experiment group PGTN, where 40.0% of the respondents moved at least one stage ahead and 50.0% respondents reported an increase in the score. Next was the control group CGE, where 25.0% of the respondents moved at least one stage ahead and 58.33% respondents reported an increase in the RTC score. Last was the

control group CGN, where 9.10% of the respondents moved at least one stage ahead and 45.5% respondents reported an increase in the RTC score.

Table 4.51 shows the descriptive analysis results obtained for the self-efficacy (SE) variable.

Table 4.51

Status of SE level of the respondents at posttest

Group	Recycling to low SE	Maintained		Moved to high SE
		Low	High	
PGTN	2	6	1	1
PGTE	0	2	3	7
CGN	3	5	1	2
CGE	1	6	2	3
Total	**6**	**19**	**7**	**13**

The results indicate that 13 respondents (28.89%) succeeded in achieving a higher self-efficacy stage at the posttest measuring level, followed by 26 respondents (57.78%) who maintained the same self-efficacy stage, and 6 respondents (13.33%) who dropped to the lower self-efficacy stage, referred to as 'recycling'.

Of the 13 respondents who successfully moved up to a self-efficacy stage, the majority (8 respondents or 61.54%) were from the experiment group. Among these 13 respondents, the highest number (7 respondents or 53.85%) came from the PGTE group, followed by the CGE group (3 respondents or 23.08%), the CGN group (2 respondents or 15.38%), and the PGTN group (1 respondent or 7.69%), in that order.

As for the 6 respondents who moved a stage lower in self-efficacy, 4 respondents (66.67%) were from the control group, while the remaining 2 respondents (33.33%) were from the experiment group.

The majority of the respondents (14 respondents or 53.84%) who maintained their self-efficacy stage were from the control group, compared to 12 respondents (46.16%) from the experiment group. The control group also had 11 respondents (57.89%) who were at the low self-efficacy stage compared to 8 respondents (42.11%) in the experiment group.

Table 4.52 shows the analysis of the change in the SE score obtained from the study.

Table 4.52

Respondents' SE scores at posttest

Group	Decreased	No change	Increased	Minimum SE scores	Maximum SE scores
PGTN	5	0	5	2.22	4.39
PGTE	0	0	12	2.56	4.22
CGN	7	1	3	1.78	3.89
CGE	4	1	7	2.06	4.67
Total	**16**	**2**	**27**	**-**	**-**

The results of the analysis show that the majority of the respondents, or 27 respondents (60.0%), experienced an increase in the SE score, where 17 respondents (62.96%) were from the experiment group and 10 respondents (37.04%) were from the control group. Respondents from the PGTE experiment group showed an increase in the SE score (which was higher than those of the other groups' scores) that involved 12 respondents (100.0%), followed by the CGN group (7 respondents or 58.33%), the PGTN group (5 respondents or 50.0%), and the CGN group (3 respondents or 27.27%), in that order. In terms of the decline in the SE score, the majority came from the control group (11 respondents or 68.75%) compared to 5 respondents (31.25%) from the experiment group. The range of scores between the

two groups was different where the experiment group had both higher minimum and maximum scores when compared to the control group at the post measurement level.

This descriptive analysis confirms that psychoeducational group therapy has succeeded in promoting the addicts' change to a higher stage of self-efficacy among those who were in the experiment group (8 out of 22 respondents or 36.36%), compared to the control group that reported 21.74% (5 of 23 respondents), and enhanced the self-efficacy score (SE) by as much as 77.27% of the respondents, compared to the control group which reported 43.48%. The PGTE experiment group demonstrated higher performance in self-efficacy enhancement at 58.33% where the respondents moved to high self-efficacy and 100.0% respondents experienced SE score increase, followed by the results from the CGE control group (where 25.0% of the respondents moved to high self-efficacy and 58.33% of the respondents experienced an increase in the SE score), the PGTN experiment group (10.0% of the respondents moved to high self-efficacy and 50.0% of the respondents reported an increase in SE score), and the CGN control group (27.27% respondents moved to high self-efficacy and 27.27% respondents experience an increase in SE score).

Table 4.53 features the results of the descriptive analysis obtained for the decisional balance (DB) stages. The data show that the majority of the respondents (28 respondents or 62.22%) had similar decisional balance when compared to 15 respondents (33.33%) who changed to the decisional balance stage that is cons of drug use, and 2 respondents (4.45%) changed to the decisional balance stage that is pros to drug use (recycling). As for the respondents who advanced and moved to a later stage of decisional balance (cons to drug use), 10 respondents (66.67%) were among the experiment group compared to 5 respondents (33.37%) from the control group. The PGTE group shows a significant change, represented by 5 respondents (50.0%) who

changed to a decisional balance stage that is higher, followed by the PGTE group (5 respondents or 41.67%), the CGN group (4 respondents or 33.33%) and the CGE group (1 respondent or 8.33%), in that order.

Table 4.53

Status of DB level of the respondents at posttest

Group	Recycling to pros of drug use	Maintained		Moved to cons of drug use
		Pros	Cons	
PGTN	1	2	2	5
PGTE	0	0	7	5
CGN	0	3	4	4
CGE	1	3	7	1
Total	**2**	**8**	**20**	**15**

Table 4.54 shows the results of the analysis of the change in the DB score. The results indicate that most respondents (34 individuals or 75.56%) experienced the increase in the DB score compared to the respondents who exhibited a decrease in score (9 respondents or 20.0%), and 2 (4.44%) remained the same. Most of the respondents (20 individuals or 58.82%) who exhibited the increase in score were from the experiment group, and these 20 respondents consisted of 10 respondents (100.0%) from the PGTN group and 10 respondents (83.33%) from the PGTE group. In comparison, out of the 14 respondents (or 41.18%) from the control group. 8 respondents (72.73%) were from the CGE group and 6 respondents (54.55%) from the CGN group. The range of score between the two groups was also different whereby the experiment group collected minimum and maximum scores that were higher when compared to the scores of the control group during the post measurement.

Table 4.54

Respondents' DB scores at posttest

Group	Decreased	No change	Increased	Minimum DB scores	Maximum DB scores
PGTN	0	0	10	2.90	4.40
PGTE	2	0	10	2.80	3.65
CGN	4	1	6	2.30	3.55
CGE	3	1	8	2.85	3.65
Total	**9**	**2**	**34**	**-**	**-**

This descriptive analysis shows that psychoeducational group therapy was effective in enhancing the decisional balance stage among the drug addicts who participated in it, by as much as 45.45% (10 of 22 respondents) compared to the control group which had only 21.74% (5 of 23 respondents). Treatment was also found to be successful in enhancing the decisional balance score among respondents who were in the experiment group, which was at 90.91% (20 of 22 respondents) in contrast with the control group, which stood at 60.87% (14 of 23 respondents).

The experiment group PGTN showed the highest increase in decisional balance stages, since 50.0% of respondents moved to high decisional balance (cons to drug use) and 100.0% respondents experienced an escalation in the DB score. This was followed by experiment group PGTE, where 41.67% respondents moved to high decisional balance and 83.33% respondents experienced an increase in DB score. Next was the control group CGN, where 36.36% respondents moved to high decisional balance and 54.55% respondents experienced an increase in DB score). As for the CGE control group, 8.33% of the respondents moved to a high decisional balance and 66.67% experienced the increase in the DB score.

4.5.2 Treatment effect comparison

Inference analysis was done to obtain new explanations on how different results are achieved in the hypotheses testing which was conducted. Previous results revealed that psychoeducational group therapy was not effective in enhancing the stages of change and self-efficacy for treatment-naive addicts (hypotheses 1a and 2a), but it was effective in improving their decisional balance stages (hypothesis 3a). The results also showed that the treatment was found to be effective in enhancing the stages of change, self-efficacy, and decisional balance for treatment-experienced addicts (hypotheses 4a, 5a, and 6a).

Two inference tests were carried out for this purpose. First, MANOVA test was used to test the effectiveness of treatment on three variables, namely, the SoC, SE and DB, at two levels of measurement (pre and post) among drug addicts who were in the experiment group. The second test, MANCOVA, was conducted to examine the comparisons between the effects of treatment on the variables (the SoC, SE and DB) among the study groups and treatment history, with controlling the pretest scores.

Table 4.55 shows the results of MANOVA tests, which were used to test the effectiveness of psychoeducational group therapy in enhancing the addicts' motivation (SoC, SE and DB) by applying the pre and post measurement.

Table 4.55

Multivariate tests

Effect	Value	F	Hypothesis df	Error df	p
Intercept	0.996	1619.356	3.00	19.00	0.00*
Pre post	0.654	11.961	3.00	19.00	0.00*

*p < 0.05

Multivariate Pillai's Test table (Within Subjects) shows that there was a significant difference in the main effects of pre and posttest variable [F (3,19) = 11.96, $p < 0.05$]. This indicates that there was a significant difference between the pre and post tests, which means that psychoeducational group therapy was effective in enhancing motivation as a whole.

Table 4.56

Univariate tests

Effect	**Measure**	**df**	**Means square**	**F**	**p**
Prapasca	SoC	1	22.654	14.158	0.00*
	SE	1	1.322	8.458	0.01*
	DB	1	2.530	18.198	0.00*
Error	SoC	21	1.600		
	SE	21	0.156		
	DB	21	0.139		

*$p < 0.05$

The Univariate test analysis (see Table 4.56) further shows that there were significant effects of pre and post independent variables on all dependent variables in the study, namely SoC [F (1,21) = 14.16, $p < 0.05$], SE [F (1,21) = 8.46, $p < 0.05$] and DB [F (1,21) = 18.20, $p < 0.05$]. This shows that psychoeducational group therapy was significantly effective in enhancing respondents' stages of change (min: pretest = 8.72, posttest = 10.16), the self-efficacy stages (min: pretest = 2.78, posttest = 3.12), and the decisional balance stages (min: pretest = 2.97, posttest = 3.46).

In order to identify and compare the effects of psychoeducational group therapy between the experiment and control groups, the researcher applied the MANCOVA tests and the results are shown in Table 4.57.

Table 4.57

Multivariate tests

Effect	Value	F	Hypothesis df	Error df	p
Intercept	0.470	10.648	3.00	36.00	0.00*
SoC pretest	0.120	1.636	3.00	36.00	0.20
SE pretest	0.292	4.939	3.00	36.00	0.01*
DB pretest	0.032	0.391	3.00	36.00	0.76
TreatHis	0.189	2.797	3.00	36.00	0.054
Group	0.358	6.698	3.00	36.00	0.00*
TreatHis*Group	0.237	3.720	3.00	36.00	0.02*

*p < 0.05

Multivariate Pillai's Test results show that there were significant effects of group independent variables [F (3,36) = 6.70, p < 0.05] and controlled variable of SE pretest [F (3,36) = 4.94, p < 0.05] on the three dependent variables (SoC, SE and DB). However, there were no effects of the independent variable the history of addiction [F (3, 36) = 2.80, p > 0.05] and controlled variable for SoC [F (3,36) = 1.64, p > 0.05] and DB pretest [F (3,36) = 0.39, p > 0.05] on the dependent variables (SoC, SE and DB). These results indicate that as a whole, groups were the main factors that influenced the effects of the treatment.

The between-groups analysis results (Test of Between-Subject Effects) (see Table 4.58) show that there were significant effects of group independent variables on two dependent variables in the study, which are the SoC [F (1,38) = 12.76, p < 0.05] and the DB [F (1,38) = 8.72, p < 0.05], while group independent variables did not have any effect on the SE [F (1,38) = 3.20, p > 0.05]. The effects of group to dependent variable SoC was at 0.383 (R squared) and DB stood at 0.373 (R squared).

These effects indicate that group variables contributed as much as 38.3% to the changes in SoC and 37.3% changes in DB. Bonferroni multiple-comparison tests were used to verify these results.

Table 4.58

Univariate tests

Source	Dependent Variables	df	Means square	F	p
Group	SoC	1	36.668	12.760	0.00*
	SE	1	1.031	3.206	0.08
	DB	1	1.010	8.721	0.01*
Error	SoC	38	2.874		
	SE	38	0.322		
	DB	38	0.116		

*p < 0.05
a. R Squared = .383
b. R Squared = .381
c. R Squared = 3.73

4.5 Chapter summary

This chapter discussed in detail the research findings obtained which were divided into three main sections, namely, the reliability and validity of the instruments, the descriptive analysis of the research, and the examination of the effects of treatment. The results show that almost all the instruments have a satisfactory value of reliability and validity. The descriptive analysis showed that there was a promotion of the respondents' motivation at all levels of measurement levels, and the pretest scores of all the independent variables were the same and not significant. The homogeneity condition for each statistical test conducted was also

fulfilled. As for the effects of treatment, the statistical tests results indicated that 14 hypotheses were accepted and 10 were rejected.

In short, this study proved that psychoeducational group therapy is effective in enhancing the motivation of treatment-naive addicts in terms of the decisional balance stages (hypothesis 3a), but it is not effective when it comes to the movement of stages of change and the increase in self-efficacy (hypotheses 1a and 2a). As for the treatment-experienced addicts, psychoeducational group therapy treatment is effective in enhancing the motivational level where all three variables measured showed significant increase (hypotheses 4a, 5a, and 6a). As for the comparisons between groups, the differences in the effects of treatment occurred for the self-efficacy stage variable (treatment-experienced addicts was better than treatment-naive addicts) and decisional balance (treatment-naive addicts was better than treatment-experienced addicts), while for the stages of change variable, both groups showed no significant difference. In terms of time-delayed effect, the effects of treatment were found to last long and remained for three months at the follow-up test for both groups (post and follow-up test scores showed no significant difference). Only the treatment-naive addicts showed effects of time-delay for the stages of change variable, that is, the post and follow-up measured scores showed significant differences. As for the comparisons between groups, results show that there was no significant difference between two groups for all three dependent variables.

In order to strengthen the research findings, the researcher carried out an additional descriptive and inference analysis. The descriptive analysis results showed that psychoeducational group therapy treatment has an effect on the addicts' motivation and there is an increase in score measured for both research groups. Additional inference analysis is done by combining the two experiment groups as a

new experiment group and two control groups are combined as a new one. The results obtained indicate that psychoeducational group therapy is effective in enhancing the motivation level of the respondents in respect of the SoC, SE and DB as a whole. For the differences between groups, the results obtained show that there were significant effects among the groups for two main variables, which are the SoC and DB, which means that there was a significant difference between the experiment and control groups in SoC and DB. The SE variable was not significantly different between the two groups.