Report of EBTA 2016 Research Grant

Effect of Solution Focused Vs. Problem Focused Questions in Neuropsychological Components and Electrophysiological State

Principal Investigator: Jaseem Koorankot, PhD

Asst. Professor in Clinical Psychology
Institute of Mental Health & Neurosciences (IMHANS)
Govt. Medical College Campus, Kozhikode
Kerala, India-673008

Co-investigators: Santhosh K R*, PhD & Z A A Ashraf, PhD**

*Asst. Professor of Psychology
Christ University, Bangalore, India
** Associate Professor of Statistics
Govt. Arts & Science College
Kerala, Kozhikode, India

Research Assistant: Fathima Shabnam, Sidra Abdul Latheef & Aswathy Krishnan

Correspondence: *jaseemclt@gmail.com*, *+91 984610 8817*

Acknowledgment

First of all we would like to acknowledge and thank EBTA for supporting this project, which made this project a reality.

We would like to extend our sincere gratitude to Dr. Krishnakumar, Director, IMHANS, Kozhikode, Mr. Jawad TP, Clinical Psychologist, Human Care Foundation and Mr. Shahul Hameed, Director, Wellness Clinic for helping us to carry out our project activities in their centers and Mr. Anas A for facilitating the project in these centers.

We would also like to thank all participants and others who supported us for completing this project successfully.

Once again thank you all…

Jaseem Koorankot
(On behalf of the team)

Contents

Effect of Solution Focused Vs. Problem Focused Questions in Neuropsychological Components and Electrophysiological State

Abstract

The present study evaluates the difference of solutions focused questioning method from problem focused questioning method, compared to a control group with no questioning, in their effect in bringing a change in the electrophysiological and neuropsychological components and affect among 60 (20 in each group) psychiatric out patients (matched for age and severity of depression) referred to the psychological support, without medication. The measures used were Beck Depression Inventory-II (for screening and matching), Galvanic Skin Response (GSR), Digit Symbol Substitution Test, Trail Making Test, Digit Backward and Forward test, Solution Focused Inventory, and Positive and Negative Affect Scale (PANAS). The change in electrophysiological components brought by solution focused questioning, compared to the other two groups, seemed to be promising, even though the interaction effect had not been significant. Further, the solution focused questioning enhanced the positive affect considerably, with a significant interaction effect while comparing to the other two groups. These results are based on a single instance of questioning. Hence, if the participants are exposed to a recurrent series of solution focused questioning, a considerable change in the electrophysiological components and affect shall be anticipated.

Key words: Solution focused questions, problem focused questions, electrophysiological components, neuropsychological components, Affect

INTRODUCTION

Solution Focused Brief Therapy (SFBT; de Shazer, 1991, 1994) offers different types of solution-focused questions. Within the therapy room, the major role of a Solution Focused Brief Therapist is to elicit preferred future and past successful events from the client, by means of asking an effective solution focused question (McKergow & Korman, 2009), which brings out changes in the client. In this context, it can be assumed that, when the solution focused questions are asked to the client in the therapy room, there could be a parallel shift in the cognitive affective schemata of the client from problem to solution. This shift enhances the cognitive capacity (decision making, planning, problem-solving, set shifting ability, working memory etc.) of the client and the emotional process, which may be leading the client in solution building by taking off the emphasis from the problem. In contrast, in problem-focused therapies, the therapist may also focus on, eliciting the origin, etiology, other determinants of problems, its severity, factors that maintain the problem in the client aiming to take out the client from their problem. While eliciting these problem statuses, there can be a shift from present cognitive affective schemata of the client to more on their problem state, which may result in changes in cognitive capacity and also in the emotional process. Studies show that solution focused questions produce a greater significant increase in psychological components like self-efficacy, positive affect, motivation and goal orientation than problem focused questions (Grant, 2006; Neipp et. al., 2015). However, literature lacks studies on change in neuropsychological components as well as electrophysiological components that happen during the therapy sessions, especially, while the therapist attempts to orient the client from problem-focused orientation to solution-focused orientation.

Importance of Questions in Psychotherapy

Questions are used as a form of intervention. These are more frequently employed than statements or assertions, which can be described as a common feature of approaches like Narrative Therapy (Epston & White, 1992), Brief Therapy (Watzlawick, Weakland & Fisch, 1974), Problem-Solving Therapy (Haley, 1976) and Solution Focused Therapy (de Shazer, 1985).

Psychotherapy has viewed questions as a simple information-gathering tool until recently. However, alternative approaches in psychotherapy have adopted a newer perspective of viewing questions as interventions. Many of the newer interactional therapy models such as systemic, solution-focused, post-modern, narrative or discursive therapies rely extensively on questioning. Though the therapeutic questions used in these therapies are quite different from each other, all those questions assume that the question must lead to a shift in the direction of the therapeutic dialogues in a particular way and thereby achieve the desired behavioral changes. McGee and his colleagues (McGee, Del Vento, & Bavelas, 2005) developed a model describing the relationship between question and answer to demonstrate the effect of questions in psychotherapy. McGee illustrated through his model that the wording of a question can lead the focus the therapeutic conversation in a particular direction. In his model, McGee put forward two central proposals. The first proposal says that therapists' questions contain implicit presuppositions. These suppositions are logically implied assumptions but are unstated. For instance, the question "What made you do it?" contains a presupposition that something made the client do it. On the other hand, asking "What could you have done differently?" presupposes that the client could have done something differently; that is, the client has the ability to choose among alternative actions. The second proposal in his model says that questions are interactional, that is, the presuppositions in the therapeutic questions lead to having an

interactional effect on the client. These presuppositions in the question make the client answer the question in a particular direction. The presuppositions center the client in a specific heading, and by noting the further questions; the client indirectly acknowledges its presuppositions and joins the therapist in investigating its course. McGee (1999), with the help of numerous examples taken from published therapy sessions, explained that the presuppositions implied in questions asked in traditional forms of psychotherapy and questions asked in therapies belonging to the alternative paradigm are different. He emphasized that the choice is left to the practitioner as for how to ask questions so that these questions affect their conversations in the particularly effective way.

Research on Effect of Questions During Therapy Sessions

Several studies have shown that questions can be used as effective tools in changing attitudes comparing to statements (Petty, Cacioppo, & Heesacker, 1981; Swasy & Munch, 1985; Burnkrant & Howard, 1984; Zillerman, 1972; Howard, 1986; Howard, 1990; Howard & Kerin, 1994). For example, in a study by Howard and Kerin (1994) a radio program was completed on the benefits of vitamin supplements with either a statement (Your daily intake of vitamins should really meet your daily needs) or a question (Does your daily intake of vitamins really meet your daily needs?). When the listeners were surveyed on their attitudes towards vitamins more favorable attitudes were noted among the subjects who listened to the version of the program with the question.

In addition to investigating the effectiveness of questions when compared to statements, there have been many studies, which analyzed how the wordings in a question make different impacts. In a study, Loftus and Palmer (1974) found that subjects estimated greater speeds for a question that asked; ‘How fast were the cars moving when they crashed?’ versus a question that replaced crashed with bumped or hit. All the subjects viewed exactly the same accident videotape. However, the presuppositions embedded in

the verb affected their estimates.

Similarly, the impact of changing a word in a question is illustrated by a field experiment conducted by Heritage, Robinson, Elliott, Beckett, and Wilkes (2007). In this study, the physicians asked their patients either "Is there something else you wish to address in the visit today?" or "Is there anything else you wish to address in the visit today?" results indicated that the "something" version led to significantly more concerns than the "anything" version.

Similarly, there have been examinations that exhibited how the focus of a question has distinctive effects. For example, Ross, McFarland, Conway, and Zanna (1983) asked subjects to describe particular events in the later lives of the clinical patients by reading their detailed clinical cases. Then the subjects had to estimate the likelihood of the events in question. Results showed that the probability of the subjects' events was assigned to find the predictive evidence was significantly higher than the probability of the event for which they had not been seeking evidence. It implies that the focus set by the question affected the findings of the subjects. In a lab experiment by Healing & Bavelas (2011), the effects of different forms of questions taken from psychotherapy were tested. The experimenter took an interview of subjects about a difficult task they had just done using a contrasting set of questions. Results took immediately afterward and one week later indicated that questions which had a different focus, but same topic affected the subjects, producing varied viewpoints and behavioral changes.

Different Types of Questions in Psychotherapy

Tomm (1988) discussed four different types of questions in Psychotherapy. According to him, there are lineal, circular, strategic and reflexive questions. Lineal questions are used to clarify the sequence of events over time and they focus on client's understanding of the situation. Circular questions are asked in psychotherapy with the

intention to generate a wider contextual understanding for the interviewer. Strategic questions intend to influence the clients in a way to get the clients to adopt the interviewer's ideas as more useful. Reflexive questions aim at mobilizing the clients' own knowledge and competencies with the assumption that client is the expert and change agent in their own life. In addition to this general classification of questions, each therapeutic framework has formulated its very own specific classification of questions.

Implications of Solution Focused Questions

It is the presupposition in questions that distinguish problem solving from solution building questions. Traditional therapies mostly ask questions that include presuppositions about a problem and its development over time. In contrast, solution focused questions presuppose strength and resources of clients. For example, "So what will things look like if you continue to have these problems?" presupposes that the client may continue to have several problems, where as "So what will things look like when you reach your goal?" presupposes that the client possesses the resources to reach his or her goal. Further, in SFBT questions are considered as interventions rather than simple information gathering tools (O'Hanlon & Weiner-Davis, 2003). For example in de Shazer's (1985) 'miracle question'; "If there was a miracle one night while you were sleeping and the problem was gone when you woke up, how would you know? What would be the first thing you would notice?" contains several presuppositions such as the problem might possibly disappear and it will produce observable changes in the world. As de Shazer (1994) wrote, this 'miracle question' is a way to begin building a bridge between therapist and client and is based on the future success of the therapy.

Review of literature included few studies which illustrated the difference between the effects of problem-focused questions and that of solution focused questions. Richmond, Smock, Bischof, and Sauer (2011) conducted two studies, in which they compared

solution-focused and problem-focused intake questions in psychotherapy clinics. The results of the first study indicated that clients who answered a written solution-focused intake form described significantly more solutions and fewer problems than clients who completed a traditional problem-focused form. In the second study, the clients showed significant improvements after a solution-focused intake interview and before initiation of treatment compared to those in the diagnostic interview. These studies revealed that using solution-focused language in intake procedures affect the clients to provide information in a particular way and even lead to pre-treatment change. A randomized study by Grant (2012) analyzed the differences between solution-focused questions and problem focused questions and found out that solution- focused questions resulted in a significantly greater increase in self-efficacy, goal approach, and action steps when compared to problem-focused question.

Effectiveness of Solution Focused and Problem Focused Questions

The whole "problem or solution focused thinking" approach is applicable to a person's everyday challenges. A major part of our decisions and our attitudes towards tasks, problems and upcoming situations can be classified either as problem oriented or solution oriented. Each person has his/ her own on way of approaching a problem. When some focus on the problem or factors contributing to the emerging of the problem (problem focused thinking), others spend time on finding out the possible solutions (solution focused thinking). The way of dealing with a problem, whether it is problem focused or solution focused, determines how effectively and easily a task at hand could be solved.

In solution-focused approach, therapists spend a considerable time for asking questions that elicit thoughts from the clients as for how they can solve the problem in hand, instead of asking ''why'' questions that focus on causes of the problem. The theory

underlying this approach is that we need not know the causes of the problem in order to solve it and move towards our goals. Some solution-focused proponents would argue that exploring on causation might lead to a detrimental effect on the clients (Jackson and McKergow, 2002).

A growing interest is seen in applying the solution-focused approach in nonclinical or non-therapy areas. Bell et al. (2009) used a successful solution-focused intervention used to reduce golfers' putting yips (e.g. jerk in the putting stroke). Visser and Butter (2008) found solution-focused approaches as successful methods to use for organizational coaching and consultancy. Solution-focused approaches to organizational and personal coaching are also found effective (Grant, 2006; Jackson and McKergow, 2002; Szabo and Meier, 2009).

A pilot study by Grant A.M and O'Connor S.A (2010) aimed at examining the impact of problem-focused and solution-focused coaching questions and to find out which approach is more effective. The results indicated that both problem-focused and the solution-focused sessions were effective for enhancing goal approach. However, solution focused group showed significant increases than the problem focused group when the pre-post difference scores were compared. Hence, the solution-focused approach was found to be superior to the problem-focused condition in terms of goal approach. The problem-focused questions were effective at reducing negative affect and enhancing self-efficacy. However, there was no change in positive affect and this finding is in concord with a former study which had found that ones' expressions of problems can be cathartic and reduce negative affect (Pennebaker et al., 1990).

In a past research conducted by Wehr (2009) participants were asked to center on a specific personal problem that would like to be solved. Then one group was asked to generate exceptions to the problem whereas the other group was asked to generate

examples of problems. The participants in the solution-focused group felt significantly better compared to those in the problem-focused group. Similar studies were conducted in the following one week, and participants in the solution- focused group recalled more successful situations in memory recall task and had higher levels of confidence in the ability to deal with the problem when compared to their problem focused counterparts (Wehr 2009).

There are certain principles, which center around the solution focused approach making the approach more of a philosophical shift to deal with clients' problems rather than a series of therapeutic techniques used to focus on solutions producing a change in clients. A collaborative effort by a number of the solution- focused therapists and a part based writing of Milton Erickson, the principles are enlisted as follows:

1. Nurturing the development of solutions can reduce or eliminate problems by taking a functional approach utilizing clients' inner resources.
2. It is easier and more beneficial to construct solutions rather than eliminate problems.
3. It is easier to encourage clients to repeat already established successful behaviour patterns than it is to try to stop or change existing problematic behaviour.
4. Efforts and activities centering around finding solutions are distinctly different from efforts and activities designed to solve problems.
5. The initial elements of solutions can often be found in clients' exceptions to their problems (e.g., times when problems aren't occurring).

In their study involving practitioners working with dysfunctional corporate groups, Priest and Gass (1997) found out that solution- focused facilitation was extremely successful in raising teamwork for dysfunctional corporate groups where as problem-focused facilitation seemed less effective with the same group.

Solution-focused approaches are considered as strength-based approaches that focus

on clients' resilience, strengths, and resources and these are used in order to reach the goal and to enact the purposeful positive change (Grant, 2011).

Cognitive Changes During Therapeutic Questioning

Attempts have been made to explain the effectiveness of psychotherapy in terms of neuropsychological perspective. One explanation is that engaging in a therapeutic relationship may help clients modify neural systems, integrate neural functions, and improve emotional regulation by enhancing cortico-limbic and orbitofrontal development, even during adulthood (Siegel, 1999). Similarly, neuro scientific studies support the contention that brain development and changes over time has an interpersonal foundation (Schore, 2003; Siegel, 1999). Further, Siegel maintains that a combination of emotional and interpersonal factors is primary in the neurological changes associated with symptom reduction or healing. SFBT is said to originate from social constructionism (Cantwell & Holmes, 1994), which claims that the individuals develop ideas of nature of his problems, competence and possible solutions based on their communication with others. Although further research is still needed to continue to explore this, it is reasonable to hypothesize that the interpersonal relationship and the presence of positive emotions aroused from miracle question provide optimal conditions for positive change from a neuropsychological perspective.

Psychotherapy alters the neurochemistry and physiology of the brain by providing a stimulus that leaves a memory trace. It is the study of learning and memory that makes us understand how psychotherapy produces emotional and behavioral changes in patients (Liggan & Kay, 1999).

Psychotherapy is accepted as an effective intervention that has direct effects on the brain, the changes that have been reported are:

1. Changes in cerebral metabolic rates.

2. Alteration in serotonin metabolism

3. Effect on the thyroid axis.

4. Stimulating processes akin to brain plasticity.

Psychotherapies try to enhance patients' functions such as problem-solving capacities, self-representation, and regulation of affective states. The brain areas that are associated with these functions include the dorsolateral prefrontal cortex, ventral anterior cingulate cortex, dorsal anterior cingulate cortex, ventral and dorsal sub regions of the medial prefrontal cortex, posterior cingulate cortex, precuneus, insular cortex, amygdala, and ventrolateral prefrontal cortex. (Frewen et al, 2008)

Examples of how certain therapies under psychotherapies impact brain are described as follows:

Family therapy helps to alter the way in which parents respond to the heritable characteristics of their children so as to positively influence genetic expression. Kandel (1998) suggests that the learning about oneself that occurs in psychotherapy may in itself influence the structure and function of the brain.

Similar decreases in cerebral metabolic rates in the head of the right caudate nucleus are noted while treating OCD with both behavior therapy and fluoxetine (Baxter et al, 1992). PET and SRE measures of local cerebral metabolic rates for glucose showed the same response in reaction to the two different treatments.

Cognitive therapy seems to influence thyroid hormone levels in people suffering from major depression (Joffe et al, 1996). Striking decreases in thyroxine was noted among patients responding to cognitive behavior therapy, while an increase in thyroxine was noted among non-responders. In another study involving depressed patients, it was found that cognitive therapy produced biological changes in sleep architecture which were identical to the changes produced by antidepressant medication (Thase et al, 1998)

Positive Affect and Working Memory

Throughout SFBT, the therapist helps the client to build positive expectations and goals. By asking the miracle question and by describing the miracle experience a positive affect is induced within the client. Grant (2012) in his study compared the effects of problem focused versus solution focused questions and the results implied that solution focused questions significantly reduced participants negative affect and significantly increased positive affect. The positive state induced by the therapy equips the client with better reasoning and analyzing skills. There is a number of studies which examined the link between positive affect and working memory. In such an experiment, participants are induced into a positive or negative mood and then are asked to perform some cognitive tasks. Many of those studies showed that mood induction leads to a change in cognitive task performance (Darke, 1988; Elliman, Greene, Rogers, & Finch, 1997).

Whereas in a problem focused therapy, much attention is focused on understanding the client's problem, its causes, and development. When the clients are continuously questioned about the problem, their memory part of the brain with respect to the problem is activated and thereby possibly inducing a negative affect within the client. This negative affect is often associated with decreased performance. For example, in a study done by Cheng & Holyoak (1985), the negative mood has been shown to affect performance negatively on tests of problem-solving, working memory, and attention. Several other studies show that mild happy feelings, induced in everyday ways that people often encounter in the course of their daily lives, promote effective thinking and problem solving that allows the person to respond to the situation in its complex context.

Relationship Between Body Conductance and Psychophysiological State

The skin conductance response, also known as the electrodermal response (and in older terminology as "galvanic skin response"), is the phenomenon of skin being a better

conductor of electricity when introduced to either external or internal stimuli that are physiologically arousing.

It is the autonomic nervous system that determines the activity of the perspiratory glands. The autonomic nervous system has two major subunits, namely the parasympathetic nervous system and the sympathetic nervous system and the sympathetic nervous system controls the perspiratory glands, making them a good pointer for inner strain and stress. The sympathetic nervous system responds to stress stimuli by activating the "emergency functions" of the body and brings it to a state of heightened responsiveness. These functions include rising pulse, blood pressure and glucose level in the blood. With these changes, the "wet hands" affect the electro dermal measurement. Once the threatening situation is over, the parasympathetic nervous system dominates and levels of the pulse, blood pressure and glucose begin to fall. The body then enters a rest state to allow recuperation, and the hands become dry again. The increased activity of the perspiratory glands through a stimulus is clearly seen through the associated increase in skin conductance.

The mechanism underlying is as follows. Human skin has the property of electrical conductivity and offers resistance to current. The resistance and conductivity are inversely proportional, that is, when the resistance decreases, conductivity increases. Normal skin (in a calm mood) has high resistance and low conductivity. During stress, blood flow to the skin increases and blood vessels becomes permeable to form sweat; this process removes heat from the body through the evaporation of sweat. Therefore, to remove sweat easily, the resistance of the skin decreases and is associated with an increase in electrical conductivity. This aspect is used in the circuit. That is, skin's resistance and conductivity are directly proportional to the emotional state.

Description of Desired Future

When clients describe the future they would like to have, even though they see no possibility of it happening, the description, because of its detailed nature, is no longer just an imagined possibility, it becomes an experience in itself. During this description, a person experiences that future and so becomes a person with those experiences, a person with hope. It is possible, therefore, that the experience of co-creating a detailed description is a potent therapeutic intervention in itself, the conversation being the *thing* rather than 'about' the thing (Iveson & McKergow, 2016). Self-imagination is found to have a positive impact on prospective memory (Grilli & McFarland, 2011). Prospective memory is responsible for remembering to perform a task at a future point in time. Thus the positive description of 'miracle' in SFBT helps the client with better monitoring of environmental cues to initiate or continue an action.

Aim and Objectives

The present study primarily aims at understanding if there is any significant difference in electrophysiological (Galvanic Skin Response-GSR) and neuropsychological components (attention, working memory, processing speed, planning, set shifting ability etc) during when the therapist attempts to take the clients (with depression), in problem focused mental schema and solution focused mental schema. Also, the study attempts to understand the changes in their affect, solution focused orientation, and also their subjective rating of distress while bringing the clients (with depression) in problem focused mental schema and solution focused mental schema.

METHOD

Sample

The sample was collected from psychiatric outpatient units of Government Medical College, Human Care Foundation and Wellness Clinic. Clients who were referred for psychological support, without medication, matched with age and severity of depression were taken for the study. The 60 participants were randomly divided equally (20 in each group) into three groups. One group (Group C) was kept as the delayed experimental group and the other two were, Problem Focused Group (Group A) and Solution focused Group (Group B). Clients with, severe state, other psychiatric co morbidity and neurological conditions were excluded from the study.

Measures

1) Beck Depression Inventory-II
2) Galvanic Skin Response (GSR)
3) Solution Focused Inventory
4) Positive and Negative Affect Scale
5) Trial Making Test (TMT)
6) Digit Backward and Forward Test (DST)
7) Coding (Digit Symbol Substitution Test)

Procedure

After fixing the matching criteria, the first referral was allotted to Group A (problem focused group), the second referral was allotted to Group B (solution focused group) and the third allotted to Group C (delayed experimental group). This process of allotting sample randomly continued, till 60 participants. The data collection procedure was conducted through 5 steps.

Step I: Introduction, Rapport Building and educating the participant about the Testing Process and GSR Administration.

After a brief introduction, consent was taken from the client and a workable rapport was established. In the introduction, the process of data collection was explained and made understood about the GSR. Following this, GSR was attached to the fingers of the participant and initial reading (GSR1) on the GSR machine was noted. In this step, Beck Depression Inventory –II was administered to understand the severity of depression in the participants of all groups.

Step II - Getting the Description of the Problem and GSR Measurement

In this step, the participants of each group were asked to either write or tell a problem/ issue which is disturbing the person presently and for which they have visited the psychologist for treatment. 5 to 10 minutes were allotted to each participant for the same. After the discussion of the concerned issue, the GSR reading was noted (GSR2).

Step III–Pre-test

The following set of tools was conducted on each participant of every group.

a) Solution Focused Inventory
b) Positive and Negative Affect Scale
c) Trial Making Test (TMT)
d) Digit Backward and Forward Test (DST)
e) Coding (Digit Symbol Substitution Test)

After completion of all 5 tools, the GSR reading (GSR3) was noted.

Step IV - Administration of Problem-Focused Questions (Group A) Vs. Solution-Focused Questions (Group B) and the Delayed Experimental Group (Group C)

In this step, the participants were either asked problem-focused (Group A) questions or solution-focused questions (Group B). The Delayed experimental group

(Group C) was asked to wait for 20 minutes and GSR reading (GSR 4C) was noted.

The problem-focused questions are the following: (for Group A)

a) *"How long has this been a problem for you?"*

b) *"When did it start?"*

c) *"How this is a problem for you and how it is hampering your life?"*

d) *"What are your thoughts when you are into this problem?"*

e) *"How do you feel when you have these thoughts?"*

f) *"Did you ever have similar problems in the past?"*

g) *"Do you think, this problem will hamper your future?"*

After PF Questions the GSR reading (GSR4) was noted.

The solution-focused questions are the following :(for Group B)

| Miracle Question

"Imagine that this night you go to sleep and while you are sleeping a sort of 'miracle' happen and the problem you have just described is solved. Describe in as much detail as possible how you would notice the next morning that this 'miracle' has happened. What would you be doing differently?"

The other questions are:

a) *"How would you understand when you solve the problem?"*

b) *"Describe some steps you could take to start towards solving this problem"*

c) *"Can you tell me your thoughts, which you will be having when you solve this problem?"*

d) *"Can you tell me how would you feel, when you solve your problems?"*

e) *"How do you express your feeling when you solve your problems?"*

f) *"Can you describe your future when you solve this problem?"*

After SF Questions the GSR reading (GSR4) was noted.

Step V: **Post-test.**

In this step, the participants of each group was asked to complete the following 5 tools

1. Solution Focused Inventory
2. Positive and Negative Affect Scale
3. Trial Making Test
4. Digit Backward and Forward Test
5. Digit Symbol Substitution Test

After completion of the above tools, the GSR reading (GSR reading 5) was noted.

RESULTS

Before proceeding to test the hypotheses, a one way ANOVA is done to find out if there is a significant difference in solution focus, affect, and attention with respect to the groups during the pre-assessment phase. The result is summarized in Table 1.

Table 1:

One way ANOVA that shows the difference in the solution focus, affect, and attention with respect to groups, during pre-assessment phase (N=60)

Pre-test measures	Groups	Sum of Squares	Mean Square	F
Solution Focus	Between	1208.23	604.12	1.72
	Within	20005.70	350.98	
Positive Affect	Between	292.13	146.07	2.32
	Within	3589.20	62.97	
Negative Affect	Between	289.43	144.72	1.91
	Within	4326.30	75.90	
Trail Making-A Time	Between	1348.30	674.15	1.40
	Within	27375.35	480.27	
Trail Making-B Time	Between	5414.43	2707.22	1.28
	Within	120853.80	2120.24	
Digit Span	Between	9.73	4.87	1.06
	Within	261.25	4.58	
Digit Symbol	Between	17.50	8.75	0.06
	Within	8181.75	143.54	

Not Significant

The groups [problem focused, solution focused and control] do not differ significantly in the solution focus, affect and attention (Table 1). This indicates that the three groups are homogenous in solution focus, affect and attention.

A series of 5 GSR [nominally coded as GSR1, GSR2, GSR3, GSR4, and GSR5] measures have been repeatedly measured in all the three groups, during the time of experimentation. To find out if there is a difference in GSR1, between the groups, one way ANOVA is conducted. The result is summarized in Table 2.

Table 2:

One way ANOVA that shows the difference in GSR1 with respect to the groups (N=60)

Groups	Sum of Squares	Mean Square	F
Between	655.03	327.52	0.005
Within	358802	62947.78	

Not Significant

The gsr1 measure did not differ significantly with respect to the groups (Table 2). This is an indication that the three group had been almost homogenous in the initial score of GSR

Interaction effect in galvanic skin response

To find out if Problem Focused Questioning group, Solution Focused Questioning group and Control group have a significant interaction effect in Galvanic Skin Response, mixed multifactor repeated measures ANOVA is conducted. The result is summarized in table 3.

(PTO)

Table 3:

Mixed Multifactor repeated measures ANOVA that shows if Problem Focused Questioning group, Solution Focused Questioning group and Control group have a significant interaction effect in Galvanic Skin Response (N=60).

Groups	GSR	Mean	SD	F	hp^2	Interaction Effect F	hp^2
Problem Focused	GSR1	215.85	274.35	2.16	0.10	0.44	0.032
	GSR2	223.55	258.22				
	GSR3	303.20	307.45				
	GSR4	264.00	308.58				
	GSR5	311.80	318.90				
Solution Focused	GSR1	208.30	175.43	8.97**	0.32		
	GSR2	237.60	183.33				
	GSR3	313.25	203.85				
	GSR4	307.10	200.95				
	GSR5	370.05	226.89				
Control	GSR1	214.60	287.75	0.33	0.02		
	GSR2	220.70	231.62				
	GSR3	258.15	285.59				
	GSR4	208.50	159.37				
	GSR5	239.05	228.66				

**p<0.01

Mixed multifactor repeated measures ANOVA indicated that the interaction effect is not significant. Hence, the problem focused question group, the solution focused question group and control group experienced somewhat similar galvanic skin responses during the experimental/control situation. Referring to the results of each group, problem focused question group and control group cannot make a significant effect on the GSR scores of the participants. Solution focused questions were effective (hp^2=0.32, F=8.97, p<0.01), indicating a significant difference in GSR scores. But this did not reflect on the significance of the interaction effect. A graphical representation of the mean difference between the three groups in different levels of GSR measures is in figure 1.

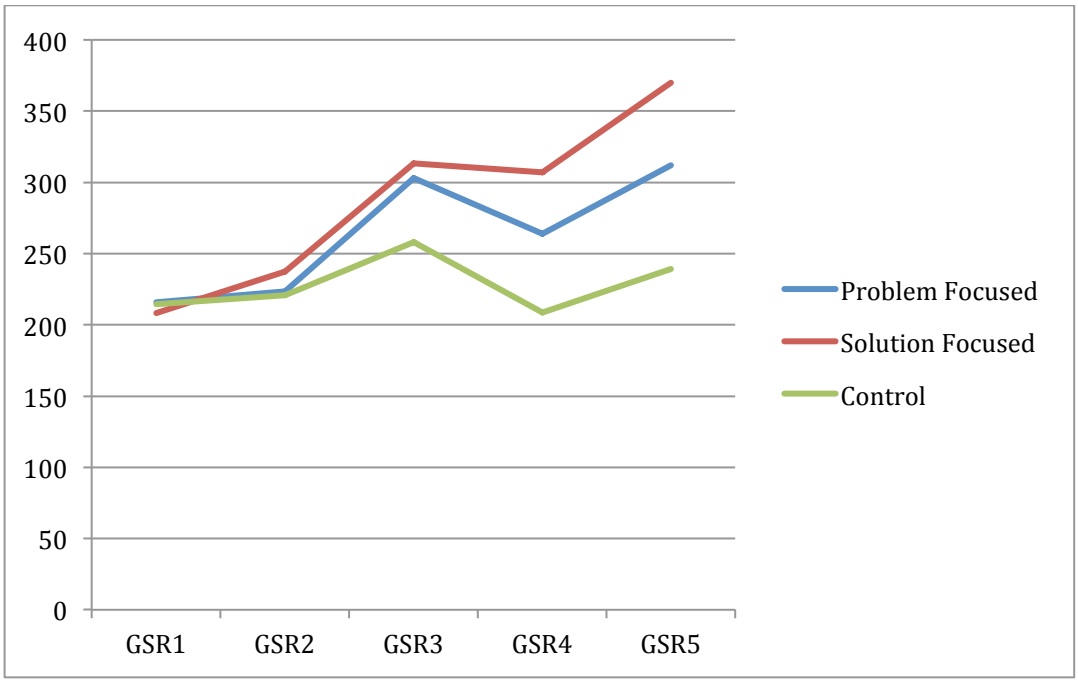

Figure 1: *Difference in GSR measures with respect to group*

The figure (1) indicates that the three groups differed in galvanic skin responses. The highest variation occurred in solution focused questioning group. In problem focused questioning group also, variations occurred. Much variation is not there in control group.

Interaction effect in solution focus

To find out if Problem Focused Questioning group, Solution Focused Questioning group and Control group have a significant interaction effect in Solution Focus, mixed multi factor ANOVA is conducted. The result is summarized in table 4.

(PTO)

Table 4:

Mixed Multifactor ANOVA that shows if Problem Focused Questioning group, Solution Focused Questioning group and Control group have a significant interaction effect in Solution Focus

Group	Solution Focused Inventory	Mean	SD	F	hp^2	Interaction effect F	hp^2
PF	Pretest	44.05	08.13	1.725	0.083	0.108	0.004
	Post-test	42.75	07.25				
SF	Pretest	54.9	30.71	0.287	0.015		
	Post-test	51.75	10.41				
Control	Pretest	47.95	06.62	1.174	0.058		
	Post-test	46.9	06.95				

Not Significant

Mixed multi factor ANOVA indicated that the interaction effect is not significant (Table 4). Hence, the problem focused question group, the solution focused question group and control group responded almost alike to solution focused inventory during pre-test and post test. A graphical representation of the mean difference between the three groups in the scores of pre-test and post test is in figure 2.

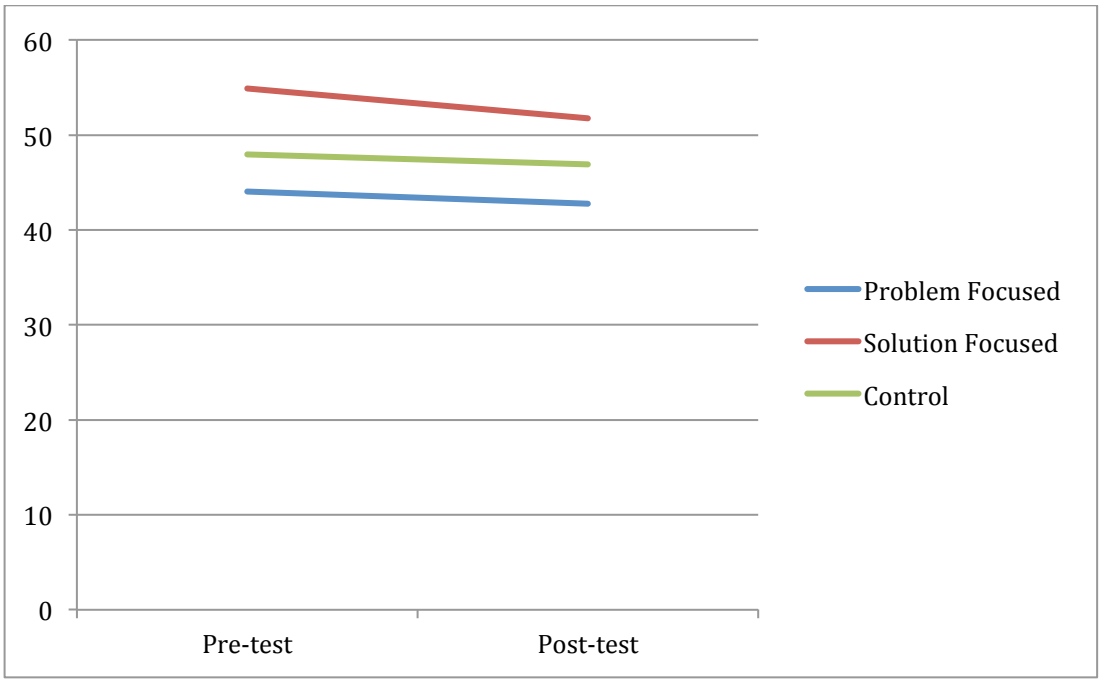

Figure 2: Difference in Solution Focused inventory measures with respect to group and their interaction effect.

Interaction effect in positive and negative affect

To find out if Problem Focused Questioning group, Solution Focused Questioning group and Control group have a significant interaction effect in Positive Affect, mixed multi factor ANOVA is conducted. The result is summarized in Table 5.

Table 5:

Mixed Multifactor ANOVA that shows if Problem Focused Questioning group, Solution Focused Questioning group and Control group have a significant interaction effect in Positive Affect

Group	Positive Affect	Mean	SD	F	hp^2	Interaction effect F	hp^2
PF	Pretest Post-test	26.7 25.35	8.77 8.53	1.94	0.09		
SF	Pretest Post-test	32.1 34.95	6.85 8.44	7.94*	0.30	4.89*	0.029
Control	Pretest Post-test	29.2 29.85	8.07 9.18	0.56	0.03		

*p < .05

Mixed multi factor ANOVA indicated that there is a significant interaction effect (hp^2=.029, F=4.89, p<.05) among problem focused question group, the solution focused question group and control group in Positive Affect pretest and post test(Table 4). Hence, there is a difference in positive affect with respect to groups. Considering the groups, solution focused questioning group indicated a significant variation (hp^2=0. 30, F=7.94, p<.05) from pretest to post test in positive affect. A graphical representation of the mean difference between the three groups in the scores of pre-test and post test is in figure 3.

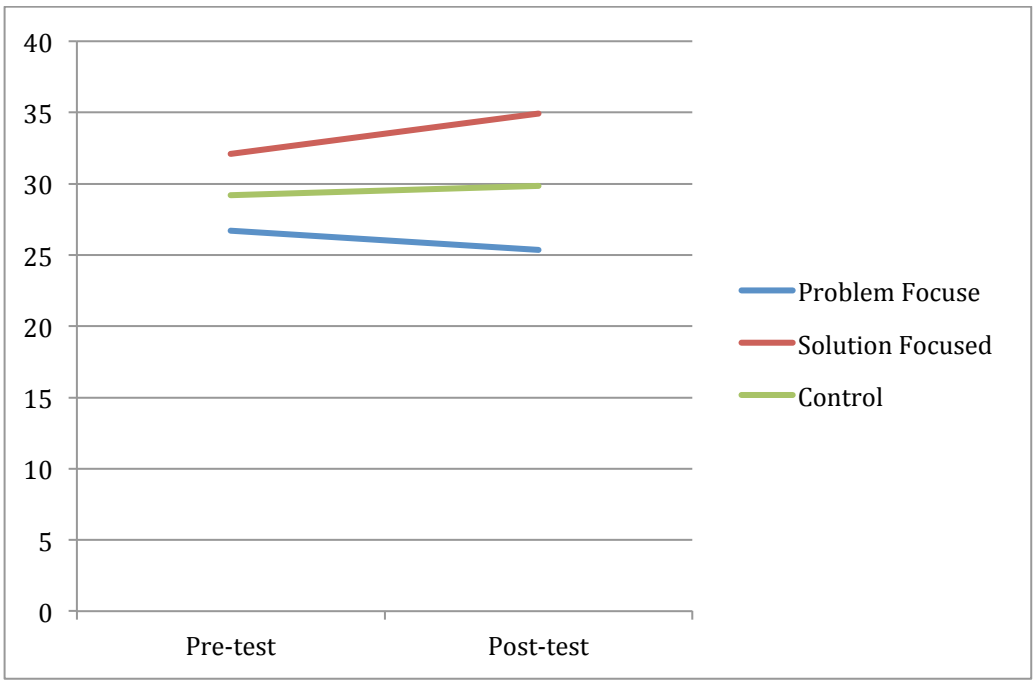

Figure 3: Difference in Positive Affect with respect to group and their interaction effect.

To find out if Problem Focused Questioning group, Solution Focused Questioning group and Control group have a significant interaction effect in Negative Affect, mixed multi factor ANOVA is conducted. The result is summarized in Table 6.

Table 6:

Mixed Multifactor ANOVA that shows if Problem Focused Questioning group, Solution Focused Questioning group and Control group have a significant interaction effect in Negative Affect

Group	Negative Affect	Mean	SD	F	hp^2	Interaction effect F	hp^2
PF	Pretest	29.65	8.13	4.939*	0.206	1.936	0.064
	Post-test	28.25	8.05				
SF	Pretest	24.35	7.67	8.02*	0.297		
	Post-test	20.00	7.75				
Control	Pretest	26.20	10.13	8.481**	0.309		
	Post-test	23.75	9.74				

*p < 0.05, **p<0.01

Mixed multi factor ANOVA indicated that the interaction effect is not significant (Table 4). Hence, the problem focused question group, the solution focused question group and control group responded almost alike to negative affect during pre-test and post test. In all the three groups, pre-test differs significantly from post test.A graphical representation of the mean difference between the three groups in the scores of pre-test and post test is in figure 4.

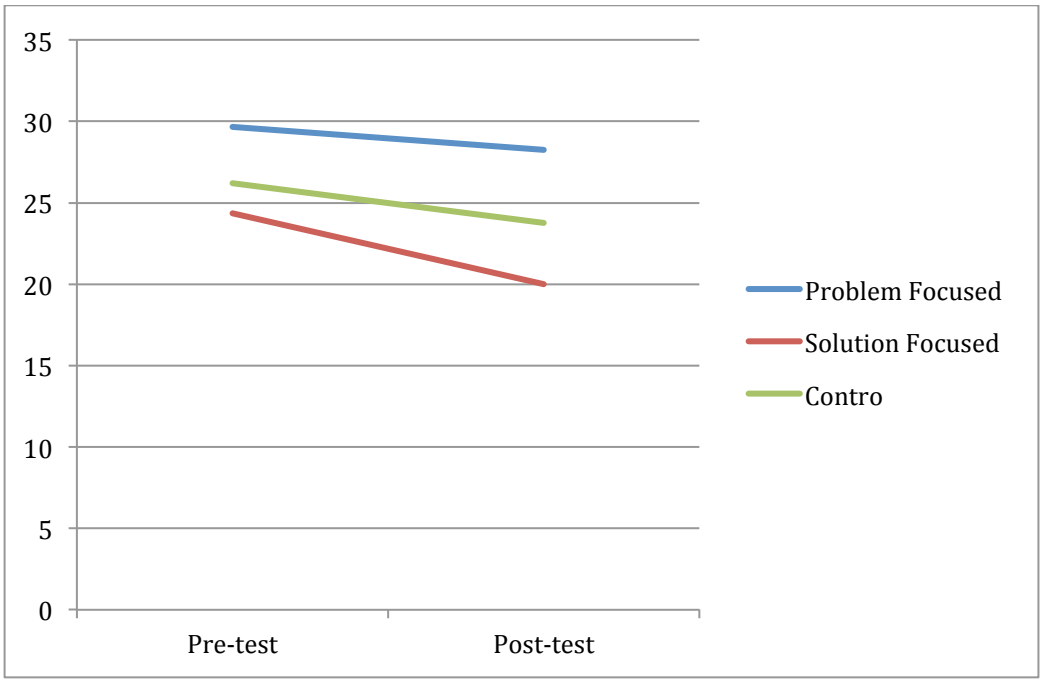

Figure 4: Difference in Negative Affect with respect to group and their interaction effect

Interaction effect in Trail Making Test Time

To find out if Problem Focused Questioning group, Solution Focused Questioning group and Control group have a significant interaction effect in Trail Making Test A Time, mixed multi factor ANOVA is conducted. The result is summarized in Table 7.

Table 7:

Mixed Multifactor ANOVA that shows if Problem Focused Questioning group, Solution Focused Questioning group and Control group have a significant interaction effect in Trail Making Test A Time

Group	**TMTAT**	**Mean**	**SD**	**F**	**hp^2**	**Interaction effect F**	**hp^2**
PF	Pretest	40.10	14.66	10.97**	0.366	0.898	0.031
	Post-test	30.65	12.13				
SF	Pretest	40.50	16.35	7.00**	0.269		
	Post-test	33.50	14.87				
Control	Pretest	50.35	30.96	6.07**	0.242		
	Post-test	35.75	18.52				

**p < .01

Mixed multi factor ANOVA indicated that the interaction effect is not significant (Table 4). Hence, the time taken for trail making test A by the problem focused question group, the solution focused question group and control group are almost alike during pre-test and post test. In all the three groups, pre-test differs significantly from post test.A graphical representation of the mean difference between the three groups in the scores of pre-test and post test is in figure 5.

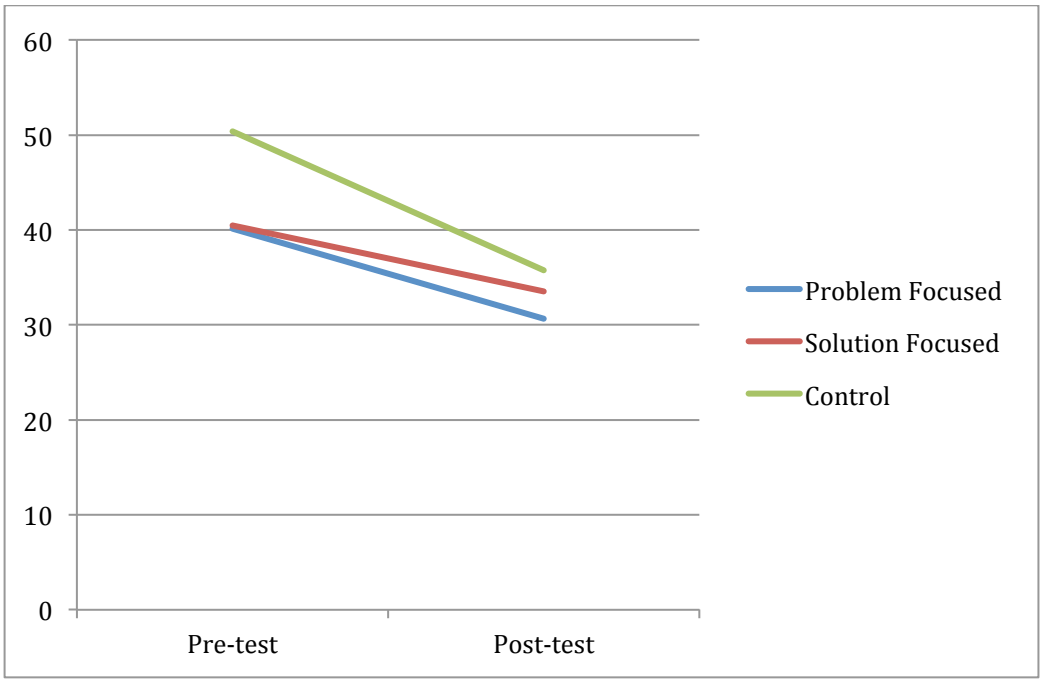

Figure 5: Difference in TMTAT with respect to group and their interaction effect

To find out if Problem Focused Questioning group, Solution Focused Questioning group and Control group have a significant interaction effect in Trail Making Test B Time, mixed multi factor ANOVA is conducted. The result is summarized in Table 8.

Table 8:

Mixed Multifactor ANOVA that shows if Problem Focused Questioning group, Solution Focused Questioning group and Control group have a significant interaction effect in Trail Making Test B Time

Group	**TMTBT**	**Mean**	**SD**	**F**	**hp^2**	**Interaction effect F**	**hp^2**
PF	Pretest	68.80	21.62	1.212	0.06		
	Post-test	59.75	35.69				
SF	Pretest	91.75	47.60	2.62*	0.121	0.137	0.005
	Post-test	76.55	42.74				
Control	Pretest	83.60	60.23	2.98*	0.136		
	Post-test	70.60	38.14				

*$p < 0.05$

Mixed multi factor ANOVA indicated that the interaction effect is not significant (Table 4). Hence, the time taken for trail making test B by the problem focused question

group, the solution focused question group and control group are almost alike during pre-test and post test. In solution focused question group and control group, pre-test differs significantly from post test.A graphical representation of the mean difference between the three groups in the scores of pre-test and post test is in figure 6.

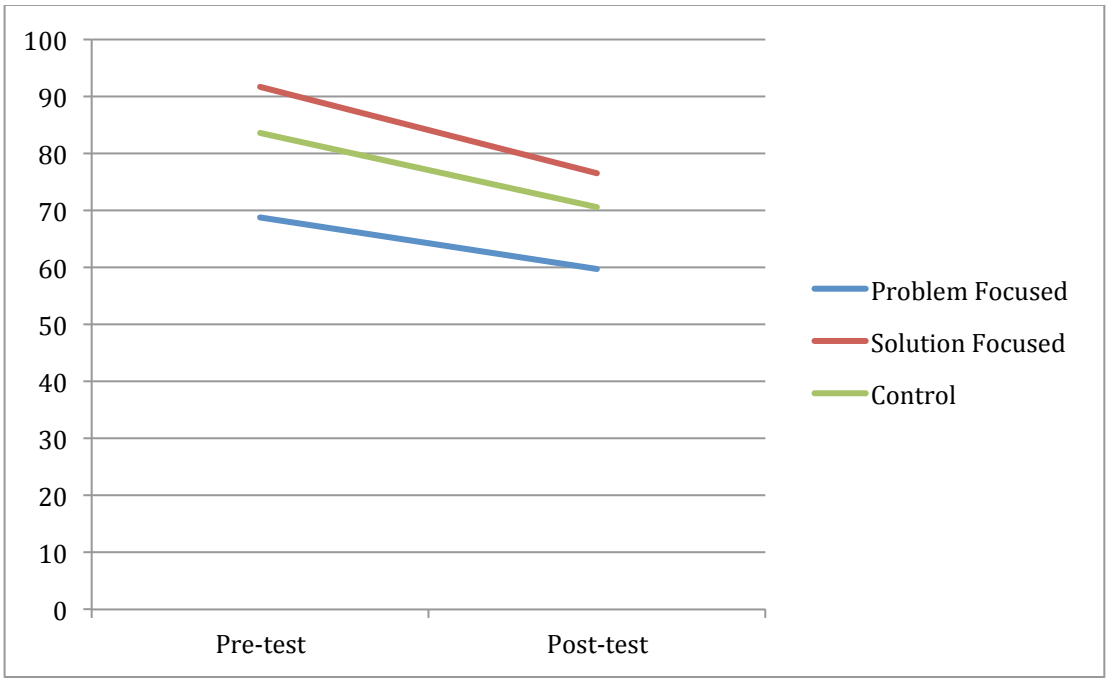

Figure 6: Difference in TMTBT with respect to group and their interaction effect

Interaction effect in digit span attention

To find out if Problem Focused Questioning group, Solution Focused Questioning group and Control group have a significant interaction effect in Digit Span attention, mixed multi factor ANOVA is conducted. The result is summarized in Table 9.

Table 9:

Mixed Multifactor ANOVA that shows if Problem Focused Questioning group, Solution Focused Questioning group and Control group have a significant interaction effect in Digit Span attention

Group	**Digit Span**	***M***	***SD***	**F**	**hp^2**	**Interaction effect F**	**hp^2**
PF	Pretest	10.55	2.67	0.884	0.044		
	Post-test	10.75	2.51				
SF	Pretest	9.65	1.90	0.192	0.01	0.29	0.01
	Post-test	9.75	1.94				
Control	Pretest	9.75	1.74	1.109	0.055		
	Post-test	10.15	2.28				

Not significant

Mixed multi factor ANOVA indicated that the interaction effect is not significant (Table 4). Hence, the problem focused question group, the solution focused question group and control group responded almost alike to digit span test during pre-test and post test. A graphical representation of the mean difference between the three groups in the scores of pre-test and post test is in figure 7.

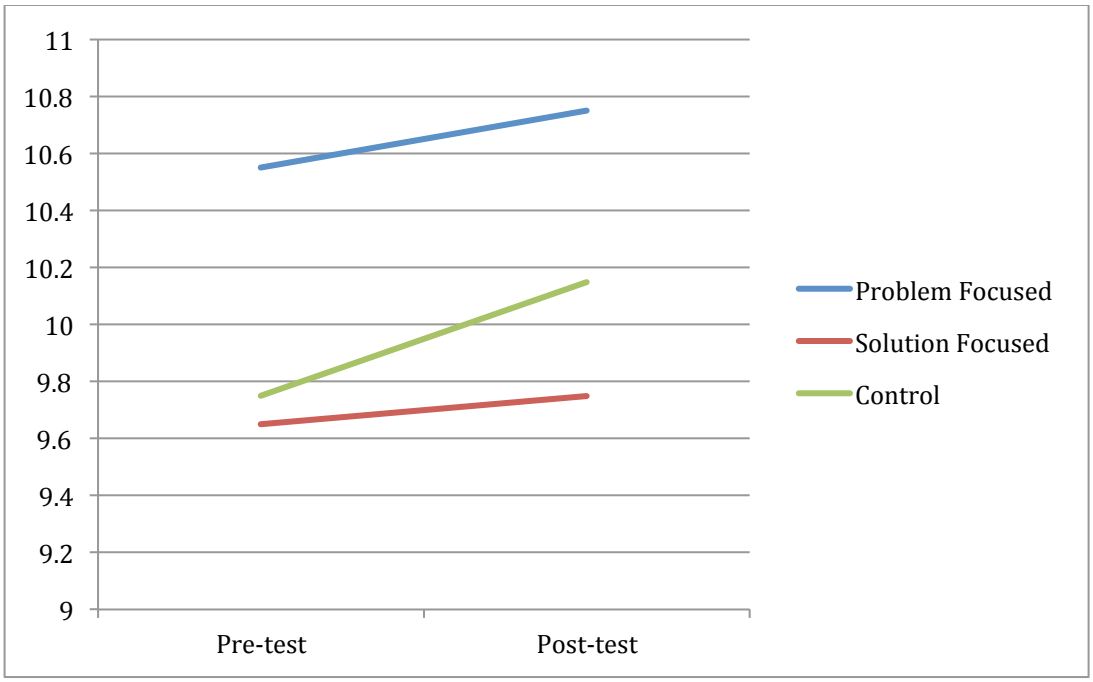

Figure 7: Difference in digit span test with respect to group and their interaction effect

Interaction effect in digit symbol coding

To find out if Problem Focused Questioning group, Solution Focused Questioning group and Control group have a significant interaction effect in Digit symbol coding, mixed multi factor ANOVA is conducted. The result is summarized in Table 10.

Table 10:

Mixed Multifactor ANOVA that shows if Problem Focused Questioning group, Solution Focused Questioning group and Control group have a significant interaction effect in Digit symbol coding

Group	**Coding**	***M***	***SD***	**F**	**hp^2**	**Interaction effect F**	**hp^2**
PF	Pretest	47.00	11.34	15.522**	0.45	0.115	0.004
	Post-test	51.90	11.73				
SF	Pretest	45.75	12.30	18.448**	0.49		
	Post-test	51.00	11.96				
Control	Pretest	46.00	12.28	17.301**	0.48		
	Post-test	50.45	12.66				

**$p < 0.01$

Mixed multi factor ANOVA indicated that the interaction effect is not significant (Table 4). Hence, in digit symbol coding, problem focused question group, the solution focused question group and control group performed almost alike during pre-test and post test. In all the three groups, pre-test differs significantly from post test. A graphical representation of the mean difference between the three groups in the scores of pre-test and post test is in figure 5.

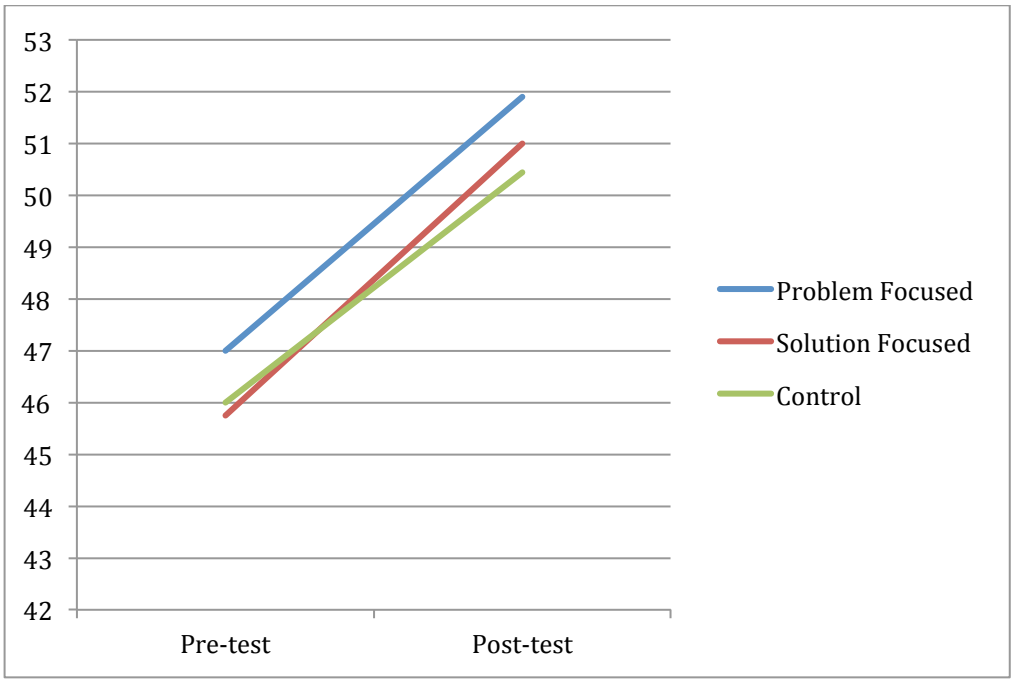

Figure 7: *Difference in Coding with respect to group and their interaction effect*.

CONCLUSION

The present study was an attempt to identify the changes in neuropsychological components as well as electrophysiological components that happen during the therapy sessions, while the therapist attempts to orient the client from problem-focused orientation to solution-focused orientation. Questions, compared to statements, are referred to as the effective tools in changing attitudes. Among the questions themselves, the focus of the questions has distinctive effects. Hence, solution focused questions differ from problem focused questions. Questions that are solution focused in nature presuppose strength and resources of clients. As per the findings of Richmond et al (2011), clients who answered a written solution-focused intake form described significantly more solutions and fewer problems than clients who completed a traditional problem-focused form. This has been substantiated by many other similar studies (Grant, 2012). An intriguing element in this is that one does not need to know the etiology of a problem in order to construct solutions. This leads to the growing interest in applying solution focused approach in nonclinical as well as, recently, in the clinical therapeutic areas.

One of the main advantages of the solution focused question is its direction toward the desired future. In the case of problem focused questioning, the client's explanation ponders over the occurrences and experiences in the past; how the problem originated, how it persisted, and how is its status until s/he faces the psychotherapist. In the case of solution focused questioning, when clients describe the future, instead of just an imagined possibility, they experience that future and so becomes a person with those experiences, a person with hope. Self-imagination is found to have a positive impact on prospective memory (Grilli & McFarland, 2011). Prospective memory is responsible for remembering to perform a task at a future point in time. This strong future orientation makes solution-focused approaches, strength-based approaches. Positive emotions derived out of these

future orientations have the potential to provide optimal conditions for positive change in a neuropsychological perspective.

The aims of the present study were to find if there had been any significant difference in electrophysiological (Galvanic Skin Response-GSR) and neuropsychological components (attention, working memory, processing speed, planning, set shifting ability etc) during when the therapist attempts to take the clients (with depression), in problem focused mental schema and solution focused mental schema. The study was also an attempt to understand the changes in their affect, solution focused orientation, and also their subjective rating of distress while bringing the clients (with depression) in problem focused mental schema and solution focused mental schema.

Findings indicated no significant interaction effect between the problem focused question group, the solution focused question group and control group in their galvanic skin responses during the experimental/control situation. Referring to the results a little more specifically, solution focused questions seems to have brought a significant change in GSR scores. Hence, the interaction effect in electrophysiological components exists, even though not at a significant level, in an instance of questioning. Speculatively, in a recurrent series of questioning, there can be a considerable increase in the significance of the interaction.

Digit span and digit symbol coding got enhanced almost equally in all the three groups. In the case of the time for trail making test A and b, all the three groups showed a similar depreciation. This indicates that all the participants in all the three groups showed almost equal attention, working memory, processing speed, planning, set shifting ability etc. In digit symbol coding, solution focused group improved better than the other two groups. If more instances of questioning occur, a considerable change in the neuropsychological components of the solution focused questioning group shall be

anticipated. There is an interaction between the three groups in some of the neuropsychological components, but not at a significant level. To identify more about the interaction, more instances of questioning have to be implemented.

Further the results showed a significant interaction effect between problem focused question group, the solution focused question group, and control group in positive affect. Positive affect in the solution focused group got enhanced considerably when compared to the other two groups. They experienced a common deviance in negative affect. But, the participants in the solution focused group experienced a significant enhancement in positive affect, even in a single instance of questioning. Hence, it can be assumed that the more the instances of solution focused questioning, the more will be the positive affective experiences in the clients, during the therapy sessions.

REFERENCES

Baxter, L. R., Schwartz, J. M., & Bergman, K. S. (1992). Caudate glucose metabolic rate changes with both drug and behaviour therapy for obsessive-compulsive disorder. *Archives of General Psychiatry, 49*, 618-689.

Burnkrant, R., & Haward, D. (1984). Effects of the use of introductory therotical questions versus statements on information processing. *Journal of Personality and Social Psychology, 27*, 1218-1230.

Cantwell, P., & Holmes, S. (1994). Social Construction: A paradigm shift for systamatic theraphy and training. *Australian and Newzland Journal of Family Theraphy*, 17-26.

Cheng, P., W, & Holyoak, K. (1985). Pragmatic reasoning schemas. *Cognitive Psychology, 17*, 391-416.

Darke, & Shane. (1988). Anxiety and working memory capacity. *Cognition and Emotion, 2*(2), 145-154.

Deshazer, S. (1985). Keys to solution in brief therphy.

Deshazer, S. (1994). Words were originally magic.

Elliman, N. A., Green, M. W., Rogers, P. J., & Finch, G. M. (1997). Processing efficiency theory and the working memory system: The role of anxiety. *In Proceedings of British Psychological Society, 5*, 125-125.

Frewen, P., Dozois, D., & Lanius, R. (2008). Neuroimaging studies of psychological interventions for mood and anxiety disorders: empirical and methodological review. *Clin Psychology Rev., 28*, 228-246.

Gabbard, G. O. (2000). A neurobiologically informed perspective on psychotherapy. . *Br J Psychiatry, 177*, 117-122.

Grant, A. M. (2006). "Making positive change: A randomized study comparing solution-focused vs .problem-focused coaching questions". *Journal of Systemic Therapies, 31*(2), 21-35.

Grant, A. M., & O'Connor, S. A. (2010). The differential effects of solution-focused and problem-focused coaching questions: A pilot study with implications for practice. *Industrial and Commercial Training.*

Grant,, A. M. (2011). The Solution-focused Inventory: A tripartite taxonomy for teaching, measuring, and conceptualizing solution-focused approaches to coaching. *CoachingPsychologist, 7*(2), 98-106.

Grilli, M. D., & McFarland, C. P. (2011). Imagine that: Self-imagination improves prospective memory in memory impaired individuals with neurological damage. *Neuropsychological Rehabilitation, 21*, 847-859.

Healing, S., & Bavelas, J. (2011). can questions lead to change? An analogue experiment. *Journal of Systamatic Therapies, 30*(4), 30-47.

Heritage, J., Robinson, J. D., Elliot, M. N., Beckett, M., & Wilkes, M. (2007). Reducing patients' unmet concerns in primary care: The difference one word can make. *Journal of general Internal Medicine, 22*(10), 1429-1433.

Howard, D. (1986). Question effects on information in advertising. *Unpublished doctoral dissertation*.

Howard, D. (1990). Rhetorical question effects on 284 message processing and persuasion: The role of information availability and the election of judgement. *Journal of Experimental Social Psychology, 26*, 217-239.

Howard, D., & Kerin, R. (1994). Question effects on question generation and mediation of attitude change. . *Psychological Reports, 75*, 209=210.

Iveson, C., & Mckergow, M. (2016). Brief Theraphy: Focused Description Development. *Journal of Solution Focused Brief Theory*.

Jackson, P. Z., & McKergow, M. (2002). The Solutions Focus: The SIMPLE Way to Positive Change. *Nicholas Brealey*.

Jackson, P. Z., & McKergow, M. (2002). The Solutions Focus: The SIMPLE Way to Positive Change. *NicholasBrealey*.

Joffe, R., Segal, Z., & Singer, W. (1996). Change in thyroid hormone levels following response to cognitive therapy for major depression. *American Journal of Psychiatry,, 153*, 411-413.

Kandel, E. R. (1998). A new intellectual framework for psychiatry. *American journal for Psychiatry, 155*, 457-469.

Liggan, D. Y., & Kay, J. (1999). “some neurobiological aspects of psychotherapy: a review. *The Journal of Psychotherapy Practice and Research, 8*, 103-114.

Loftus, E. F., & Palmer, J. C. (1974). Reconstruction of automobile destruction: An example of the interaction between language and memory. *Journal of Verbal Learning and Verbal Behaviourt, 13*, 585-589.

McGee, D., Del, V. A., & Bavelas, B. J. (2005). An international model of questions as theraputic interventions. *Journal of Marital and Family Theraphy, 31*, 371-384.

McGee,, D. (1999). Constructive questions. How do therapeutic questions work?Unpublished doctoral dissertation, Department of Psychology. *Unpublished doctoral dissertation, Department of Psychology University of Victoria*.

Neipp, M. C., Beyebach, M., Nuñez, R. M., & Martínez-González, M. C. (2015). The effect of solution-focused versus problem-focused questions: a replication. *Journal of Marital an Family Process, 42*(3), *525-535.*

O'Hanlon, B., & Weiner-Davis, M. (2003). In Search of Solutions: A new directions in psychotherapy(rev.ed.).

Petty, R., Cacioppo, J., & Heesacker, M. (1981). Effects of rhetorical questions on persuasion: A cognitive response analysis. *Journal of Personality and Social Psychology, 40*, 432-440.

Priest,, S., & Gass, M. (1997). "An examination of 'problem solving' versus 'solution focused' facilitation styles in a corporate setting",. *The Journal of Experiential Education, 20*(1).

Richmond, C. J., Jordon, S. S., Bischof, G. H., & sauer, E. M. (2014). Effects of solutio-focused versus problem-focused intake questions on pre-treatment change. *Journal of systamatic Therapies, 33*(1), 33-47.

Ross, M., McFarland, C., Conway, M., & Zanna, M. (1983). Reciprocal relation between attitudes and behaviour reacll: Committing people to newly formed attitudes. *Journal of Personality and Social Psychology, 45*(2), 257-267.

Schore, A. N. (2003). Affect regulation and disorders of the self.

Sieger, D. J. (1999). The devoloping mind: Toeard a neurobilogy of interpersonal experience.

Swasy, J., & Munch, J. (1985). Examining the target of reciever elaborations: Rhetorical question effects on source processing and persuasion. *Journal of Consumer Research, 1985*, 877-886.

Thase, M. E., Fasiczka, A. L., & Berman, S. R. (1998). Electroencephalographic sleep profiles before and after cognitive behaviour therapy of depression. *Archives of General Psychiatry, 55*, 138-144.

Tomm, K. (1988). Interventive interviewing: Part III. Intending ton ask lineal, circular, Stratergic, or reflexive questions? Family Process. *27*, 1-15.

Visser, C., & Butter,, R. (2008). ‘‘The effectiveness of solution-focused working in coaching and consultancy''. *Gedrag en Organisatie*.

Wehr, T. (2009). ‘‘The phenomenology of exception times: qualitative differences between problem-focused and solution-focused interventions''. *Applied Cognitive Psychology*.

Zillerman,, D. (1972). Rhetorical elicitation of agreement in persuasion. *Journal of personality and social psychology, 21*, 159-165.