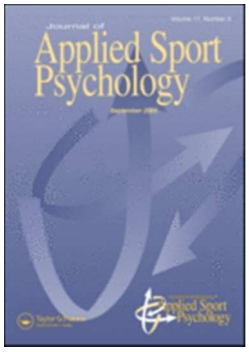

The Effects of Eye Movement Desensitization and Reprocessing (EMDR) on Prospective Imagery and Anxiety in Golfers

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Abstract

In this study we make a novel contribution by examining the effects of an Eye Movement Desensitization and Reprocessing (EMDR) intervention on detrimental prospective imagery in four amateur golfers, using a single-case multiple-baseline across-participants design. Post-intervention, all participants reported reduced negative imagery effects; participants 1, 3, and 4 showed reduced cognitive anxiety, participants 1 and 4 reduced somatic anxiety, and participant 3 positively relabeled somatic anxiety experiences. Social validation data demonstrated EMDR to be perceived positively and effective in delivering notable changes. Consultancy experiences of using EMDR in golf are discussed and areas for future researchers and applied practitioners outlined.

Key words: Anxiety, single-case methodologies, applied sport psychology, intervention, social validation.

The Effects of Eye Movement Desensitization and Reprocessing (EMDR) on Prospective Imagery and Anxiety in Golfers

Memories of traumatic past events have been found to be associated with intrusive images of feared future experiences in clinical research (Brewin, Gregory, Lipton, & Burgess, 2010), and in athletes who experienced performance anxiety (Engelhard et al., 2012; Engelhard et al., 2011). More specifically, research highlights that up to 60% of athletes with performance anxieties have an inability to stop mental images of poor performance, potentially leading to reduced self-confidence and increased anxiety symptoms (e.g., Hanton, Mellalieu, & Hall, 2004). Accordingly, exploring the efficacy of techniques seeking to deliver effective control over prospective negative imagery is important in applied practice and research. Indeed, one technique which has the potential to positively affect prospective imagery is Eye Movement Desensitization and Reprocessing (EMDR). Moreover, EMDR is a psychotherapeutic technique used to address traumatic memories and imagery, with a strong clinical and research evidence-base in being effective for Post Traumatic Stress Disorder (PTSD), obsessive compulsive disorder, anxiety, and depression issues (Foa, Keane, Friedman, & Cohen, 2008).

In EMDR, situations and triggers linked to past, present and future concerns are identified, and target symptoms are rated as emotional and physical experiences along with negative self-referencing statements (Solomon & Shapiro, 2008). Processing involves the therapist sitting facing and alongside the client, who is asked to watch the therapist's fingers moving rapidly and rhythmically from side to side across the client's range of eye movement in sets of 12-24 movements at an approximate frequency of two left-right cycles per second (Shapiro, 1989). The client is supported in "noticing" experiences during therapy, similar to the process of mindfulness, aiding development of a sense of mastery and self-efficacy related to the traumatic incident, with more adaptive interpretations and imagery being

reinforced using bilateral eye movements, typically at a slower frequency (Oren & Solomon, 2012).

Two dominant hypotheses have been proposed to explain bilateral stimulation effects caused by eye movement (Oren & Solomon, 2012). First, eliciting an "orienting response", where a reduced arousal neurobiological state, similar to Rapid Eye Movement (REM) sleep, may cause dysfunctional memories to be linked to more adaptive memory networks (Stickgold, 2002). Second, dual attention processing might disrupt working memory, with effects on emotionality of imagery and memory. Both hypotheses have considerable supporting evidence, and may interactively support the therapeutic effects of EMDR (see Oren & Solomon, 2012), with symptoms of single incident trauma typically resolving within 2-3 sessions (Shapiro, 2012). Although eye movements are the most commonly delivered form of bilateral stimulation, hand taps and auditory tones have also been used where clients are visually impaired or cannot tolerate eye movements.

Underpinning EMDR, Adaptive Information Processing (AIP) theory proposes that healthy adjustment requires that new experiences are linked with emotions, before being stored in neural memory networks with associated learning or experience (Solomon & Shapiro, 2008). Chronically traumatic experiences may remain unprocessed, typically stored in implicit memory with associated physical sensation and emotional experience isolated from new learning and influence (Stickgold, 2002). Lying outside conscious control, implicit memory may be re-activated by experiences, leading to reflexive behavioral responses. For example, a rugby player who received a crashing tackle on taking the ball from the kick-off, might experience images of being tackled again, producing anticipatory anxiety and avoidance of the catch. In EMDR physiologically stored perceptions are processed from implicit, into episodic, then semantic memory (Solomon & Shapiro, 2008), de-coupling the memory from the emotional distress.

Whilst the majority of EMDR research has reported the efficacy of interventions in retrospective imagery and past trauma, data also reveals EMDR to be effective in prospective imagery. To illustrate, Engelhard et al. (2011) used eye movements in both analogue and field studies to reduce the impact of flash-forwards imagery in student volunteers. Furthermore, in a clinical setting, Romain (2013) reported the use of EMDR in two clients with "flash-forwards", where despite effective EMDR processing of past trauma, future oriented imagery remained active until processed specifically therefore supporting the need for further study of the role of flash-forwards experiences.

The extant literature on EMDR in sport is limited, and thus research, which has been undertaken, has typically explored two main areas. First, EMDR in standard form has been shown to be beneficial for traumatized athletes. For example, female gymnasts with psychological difficulties following injury or falls, or due to "debilitating repetitive thought process", showed reduced cognitive and somatic anxiety and increased self-confidence after three EMDR sessions, with effects maintained 90-days after the intervention (Arnold, 2004). Similarly, state anxiety and heart rate were reduced after three EMDR sessions in swimmers reporting distressing past swimming experiences (Graham & Robinson, 2007).

Second, EMDR has been combined with graded exposure to treat performance blocks, or the "yips" in sport, conceptualizing such difficulties as a form of anxiety (Bennet & Maynard, 2016). Processing memories of painful life events, reframing negative cognitions and reducing anxiety levels in two athletes led to an improved ability to execute the movement required. Similarly, performance enhancement protocols have used EMDR in business and sport (Foster, 2012; Foster & Lendl, 1995; Gracheck, 2011). This form of EMDR places greater emphasis on present performance, goal realization and self-actualization, adopting techniques from the field of sport psychology including goal-setting, arousal control and imagery however to date little empirical exploration exists.

Given sport performance is shaped by a number of related psychological factors, including self-efficacy (Moritz, Feltz, Fahrbach, & Mack, 2000), pre-competition anxiety and the influence of (negative) imagery (e.g., Hanton et al., 2004; Nordin & Cumming, 2005), EMDR has the potential to modify the effects of negative experience(s) and imagery. However, to date no published work exists on the area of future oriented imagery in sport. Therefore, the purpose of this study was to add to the extant literature by exploring the effects of EMDR on negative prospective imagery in a sample of amateur golfers. Based on the extant clinical literature, we hypothesized that a brief series of standard protocol EMDR sessions would alter imagery meaning and effects, and that addressing such imagery would reduce cognitive and somatic anxiety.

Method

Participants

Four competitive golfers, who reported experiencing troubling prospective imagery related to their golf, were recruited through local Golf Clubs, and provided informed consent. Typical imagery issues included a picture of a particular shot repeatedly going into trees at a narrowing of the course, or the golfer being ridiculed by other golfers for hitting a poor drive. Participants were aged 15- 62 (M = 44.5; SD = 20.4), playing experience ranged from 9-42 years (M = 26.25; SD = 17.17), with handicaps between 3 and 14 (M = 6.5; SD = 3.87), two with experience at Interprovincial competition (approximately Interstate, or Regional representation).

Experimental Design

A single-subject, multiple-baseline across-participants design was used (Barker, McCarthy, Jones, & Moran, 2011). The baseline phase lasted until the first of three EMDR sessions began (range 9-32 days; M = 18.25; SD = 10.56). The intervention and follow-up phases lasted 18-55 days (M = 39.75; SD = 15.90). Data collection included 4-7 baseline

phase competition measures (M = 5; SD = 1.41) and 5-7 intervention phase measures (M = 5.75; SD = 0.96) across the four participants.

Measures

Participants were instructed to complete the study measures (typically taking no more than 10-minutes) 45-60 minutes prior to play, without referring to previous scores, considering only how they felt at that time.

The Competitive State Anxiety Inventory-2R (CSAI-2R). The CSAI-2R has shown a good fit with the factors of somatic and cognitive anxiety, and positively worded self-confidence (Cox, Martens & Russell, 2003), stronger psychometric properties than previous versions (CFI = .95, NNFI = .94, RMSEA = .054) and acceptable internal consistency (Cognitive Anxiety α = .75; Somatic Anxiety α = .85; Cox et al., 2008).

Impact of Future Events Scale (IFES). The IFES measures the impact of prospective negative imagery, associated avoidance and hyper-arousal (Deeprose & Holmes, 2010). In dysphoric participants, the IFES has shown significant relationships between mood scores and the importance of prospective imagery. The measure requires participants to identify three future events (either positive or negative) they have been thinking about over the previous 7 days, to encourage a focus on personally meaningful issues, then a rating of 24 statements about the imagined future events (such as "I believed my thoughts about the future would definitely happen and would become real"), on a 5-point scale from "Not at all" (0), to Extremely (5; Deeprose, Malik, & Holmes, 2011). The IFES has delivered an acceptable test-retest reliability co-efficient of r = .73, p < .001, n = 48. Internal consistency of the IFES Total Score yielded a Cronbach's alpha = 0.87 (reported as good), indicating that scale items are measuring the same construct, intrusive prospective imagery (Deeprose et al., 2011).

Social Validation Questionnaire. The social significance of an intervention will be reflected in the value and acceptability of goals, procedures and effects for clients and

significant others supporting them (Page & Thelwell, 2013). Social validation measures are typically used in single case research to understand participants' experiences. Therefore, 6-8 weeks after data recording, a 16 item on-line questionnaire (available from the first author) explored the impact of negative imagery on participants' golf game and self-confidence; the ease of completion of questionnaires; impact and perceived value of the EMDR intervention, and whether EMDR contributed to any change in performance. Two additional open response questions examined participants' experiences of EMDR, and general comments on the research process. The questionnaire was administered using a proprietary on-line survey tool.

Intervention

Following university ethical approval, informed consent (and Assent from one minor), a mental health history and screening interview was undertaken with volunteers by the lead author (a UK accredited psychiatrist). The screening interview took place to ensure first that prospective negative imagery had a perceived substantial negative impact on their game, causing anxiety-related symptoms, and second that none of the candidates had a history of significant personal trauma, nor met criteria for current mental health diagnosis. The lead author has undertaken Level I and II EMDR training in the UK, and has an array of experiences in clinical psychiatry. In keeping with single-case methodology in sport psychology (see Barker et al., 2011), once baseline results showed relative consistency or a negative trend (e.g., worsening imagery or anxiety), three EMDR sessions were delivered at weekly intervals. During the first session, the participant was guided through the "safe place" procedure (named as "control place" for the athlete), to ensure that in the event of any unexpected trauma or dissociative response occurring, the participant had a safe way of dealing with this. Each participant was asked to identify specific problematic prospective imagery, which was then processed according to EMDR protocol, beginning with processing

of any previous "trauma" or triggers, before the prospective imagery itself was processed. In session, ratings were taken of Subjective Units of Distress (SUDS) related to the problem imagery, to ensure first that the target imagery was significant enough to merit intervention, and second to monitor responses to EMDR. Typically, SUDS will move from 7-8/10 to 2-3/10 or lower. Similarly, Views of Cognition (VoC), rating belief in an alternative desirable positive cognition was used to ensure that negative beliefs were replaced with more adaptive ones. In session ratings did not contribute to formal analysis. Participants were then asked to take note of any issues or changes which arose between sessions. Where prospective imagery had improved, this was discussed with the athlete, exploring the meaning of this and any subsequent change in play. Likewise, variation or emergence of new imagery was explored alongside associated meaning, before processing using EMDR. To capture as many competitions as possible, rating scales were continued for competitions between and after EMDR sessions, terminating approximately four weeks after the final intervention.

Three of the four golfers (participants 2, 3, and 4) returned measures for the competition immediately prior to commencement of EMDR showing notably less negative imagery and lower anxiety. Related to the timescale for data collection, interventions occurred when clubs were hosting competitions marking the start of a National holiday. The three (adult) golfers reported that although competitive, these matches were associated with less stress, and greater enjoyment. This clearly impacted on the percentage of non-overlapping data (PND) analysis, a method which is vulnerable to the influence of outlying results and other external factors (Shadish & Rindskopf, 2007). In view of the significant effects these outlying results would have had on data analysis, a decision was made to continue data interpretation excluding the single result for each of the three golfers.

Treatment of Data

Reflecting the divergent literature on the value of visual and statistical analysis in single case research, a mixed-methods approach was taken, using statistical analysis to complement visual inspection of the data. Typically, if both methods of analysis indicate that a treatment effect has occurred, this enhances confidence in the validity of the intervention (Barker et al., 2011). Ottenbacher (1986) proposed guidelines whereby single-case data can be analyzed using parametric tests, once certain assumptions are met. To illustrate, lag-1 autocorrelation tests were carried out on all data (baseline and intervention data were combined due to numbers of data points available) using the A-B model tests. No significant autocorrelation was identified for the data.

Following tests to confirm normality, baseline and intervention phase means, standard deviation, and effect sizes for each phase change were calculated (Barker et al., 2011). Independent samples t-tests were then used to examine differences in phase means for each participant.

Results

Impact of Future Events

Following EMDR, scores across baseline and follow-up phases (Figure 1), indicated that all participants experienced a reduction in the impact of prospective imagery on the IFES. PND was 100% for participants 1 and 4, 40% for participant 2, and 57.1% participant 3. Research indicates that a suggested that 70% PND indicated intervention effectiveness (Scruggs & Mastropieri, 1998). All Participants showed a reduction in mean IFES scores with effect sizes of 29.9 (large), 1.36, 1.36 and 2.24 (medium) respectively (see Table 1). All four participants reported reductions in IFES scores, reaching statistical significance for participant 1 (Mean Difference =14.95; $t_{(1, 7)} = 4.35$; $p < .01$), and participant 4 (Mean Difference =19.5; $t_{(1,7)} = 4.07$; $p < .01$).

Cognitive Anxiety

A substantial reduction in cognitive anxiety (CA) was seen in participants 1 and 4, with PND of 100% for participant 1, and 83% in participant 4. With the most significant drop in IFES score and despite moving up to Interprovincial competition, golfer 1 reported a statistically significant improvement in CA (mean difference in phase CA scores = 6.25; ES = 4.23 large; $t_{(1,7)}$= 5.12*;* $p < .001$). Participant 4 also showed a statistically significant reduction in CA (Mean Difference = 6.0; ES = 3.6 large; $t_{(1, 7)}$= 3.00*;* $p <.05$).

In contrast participants 2 and 3 showed no significant change in CA over the intervention period. Participant 2, with higher average baseline somatic and cognitive anxiety scores than other participants, reported significant personal difficulties and team conflicts during the research period. Negative imagery and anxiety related to golf performance increased intermittently during this phase and were processed in EMDR sessions with apparent benefit (indicated by reduced SUDs in session). During EMDR the golfer began to make connections between events effecting his personal life and golf performance, and to begin to build on positive past experience and his contribution as a team player.

Somatic Anxiety

A trend towards reduced SA was seen in participants 1 and 4 (PND 60% and 83% respectively), of moderate (ES = 1.41) and large (ES = 3.6) Effect Size. Reduction in mean difference in golfer 4 reached statistical significance ($t_{(1,7)}$= 2.81*,* $p <.05$). Although participants 2 and 3 showed no significant improvement in SA ratings, participant 3 reported an awareness of the increasing pressure as the season progressed, moving through qualification rounds. In keeping with past research, participant 3 found a level of physical arousal to be necessary for optimal performance, interpreting this as signifying his readiness to perform (Jones & Hardy, 1990). Processing negative imagery led this player to re-label

emotions more positively, for example describing his arousal before a particular shot as being ready for a challenge, rather than hampered by anxiety.

In sum, data indicated that following EMDR, all four golfers reported reduced impact of prospective imagery, which was statistically significant for participants 1 and 4. Indeed, the same golfers reported statistically significant reductions in cognitive anxiety. Somatic anxiety demonstrated a reducing trend in participants 1 and 4, statistically significant for participant 4.

Social Validation

All participants agreed or strongly agreed that addressing the effect of imagery on their golf was important to managing anxiety and golf performance. Although one golfer acknowledged having had concerns about EMDR prior to commencement of the study, none felt that EMDR had caused any problems. All agreed or strongly agreed that EMDR had helped them deal with imagery in their golf, and all reported that they would recommend EMDR to golfers who had psychological difficulties with their game. Three of the four confirmed that they still used EMDR techniques in their game (e.g., recalling positive imagery), noting improvements in their mental game after EMDR. Two reported "some improvement" in handicap, one a "definite improvement". Commenting on why change in performance might have occurred, one responded: "I used positive imagery and my control place to help me when I felt pressure during competitive rounds". Another replied: "Framing the positive images to a safe place allows bad thoughts to leave".

Discussion

We add to the extant EMDR in sport literature by examining the effects of EMDR on negative prospective imagery in amateur golfers. To this end, this study is the first to explore the application of EMDR on prospective imagery in a sport. Supporting the first of our hypotheses, we found that following three EMDR sessions, all four golfers experienced

reductions in the negative effects of prospective imagery, in keeping with previous clinical research (Romain, 2013). Importantly, during EMDR, the therapist asks the client to recall the troubling image and identify negative emotions, sensations and beliefs. All four golfers identified negative core beliefs including fears of failure and ridicule, which were processed according to EMDR protocol, before further processing of negative imagery until resolved (Shapiro, 2012). For example, one golfer reported prospective images of his shot going "out-of-bounds", where the course narrowed. He was able to recall an image of this happening in previous rounds, associated with frustration and embarrassment. During EMDR, the old memory and associated negative beliefs were processed, before addressing prospective imagery. The golfer reported that following processing, the image of the course changed until he could see only the fairway beyond, not the obstacle itself. Anxiety related to the image reduced significantly in session with reduction in IFES apparent for the duration of the follow up. This example illustrates the importance of past experience and interpretation of events, and may help explain varying responses to the intervention.

Although three sessions of EMDR appeared to be effective in reducing the impact of imagery, personal meaning and associations may require further processing. For example, the use of EMDR in trauma has shown improvement in both cognitive and somatic symptoms (Shapiro, 1989), however more sessions (>3) might be required for the effects to be maintained. Following EMDR, trauma imagery and avoidance generally improve more than anxiety and withdrawal, potentially related to re-traumatization (e.g., Blake, Abueg, Woodward, & Keane, 1993). To illustrate, as the golfers continued to be exposed to their own "traumas" this may have contributed to the apparently greater effects on cognitive over somatic anxiety, and underscores the importance of processing all emotional and cognitive associations wherever possible. These associations would be expected to shape the athlete's appraisal of both anxiety/arousal and related imagery and should be amenable to specific

processing using EMDR. It may also be that physiological symptoms (identified as anxiety) remains conditioned by competition, even after the psychological aspects of the "trauma" have been processed. These symptoms would be beneficial if labeled as facilitative as in elite athletes (e.g., Jones & Hardy, 1990; Rees, Ingledew, & Hardy, 2005). Perceived control as part of the three dimensional model of anxiety has been shown to have significant effects on sport performance (Cheng, Hardy, & Woodman, 2011), and therefore it may be that negative future imagery impacts significantly upon athletes' perceptions of control and coping.

In keeping with other single-case research (Barker et al., 2011), this work was subject to certain limitations. Time limits on data collection (such as timetable for thesis completion, athletes' competition and availability schedules) meant that extraneous factors may have exerted greater effect on phase data, which would have been minimized had baseline and intervention/follow-up phases been further extended. In practice, greater flexibility in the scheduling of EMDR, where more individual allowance for processing to occur may be helpful in shaping further intervention and the responses to this. Furthermore, in this study, we relied wholly on self-report measures with which to determine intervention efficacy and effectiveness. Indeed, the use of objective measures such as golf scores or handicap change, would have provided further contextual information along with exploration of the performance benefits of EMDR in sport. Finally, we appraise that data have been collected from amateur level golfers and therefore generalizing findings to professional golfers may be problematic. To this end, we support recent calls in applied sport psychology to explore research opportunities with elite and or professional athletes when possible (Barker, Mellalieu, McCarthy, Jones, & Moran, 2013).

As EMDR should be seen as an integrative therapeutic technique rather than simply a form of "desensitization" it should be stressed that the process belongs most effectively as part of a holistic assessment and intervention program for the athlete. Although the four

golfers in this research were each motivated to seek help, cautiously optimistic about the procedure, and had been screened for previous mental health difficulties, it was noted that in processing key target imagery, previous experience (small "t" trauma) invariably became important, requiring that negative self-belief and associated affect had to be processed in parallel. The potential for previously unresolved trauma to be uncovered remains, and must be explained carefully to potential participants. EMDR training and accreditation requires the practitioner to be a licensed Mental Health Practitioner, or senior student or Intern on an approved mental health course (EMDR International Association; http://www.emdria.org). The practice of EMDR in sport therefore remains the purview of those with clinical Mental Health experience, and given the potential for previous trauma to re-emerge, informed consent and safe de-escalation strategies remain essential to safe and effective EMDR practice. The "therapeutic" potential however appears to be meaningful given the experiences of the golfers in this study. To illustrate, once engaged in the process, the participants enthusiastically provided often vivid examples of imagery and facilitative anxiety with which to work, suggesting that EMDR could be a useful adjunct to many areas of performance enhancement. Indeed, Bennett and Maynard (2016) noted the value of EMDR, stressing the importance of a multi-disciplinary approach, involving athlete, clinician and coach/support team.

This study is the first to explore the effects of EMDR on the deleterious effects of negative prospective imagery in sport, specifically here in golf, however future researchers might extend this work in other sport settings. As well as using EMDR to diminish the effects of flash-forwards imagery, the Performance Enhancement protocol (Foster & Lendl, 1995) could be explored as a counterbalance to prospective negative imagery, assisting the athlete in developing or enhancing awareness of personal strengths or coping strategies as an aid to future performance. As confidence in individuals' abilities to use imagery is linked to

cognitive imagery effectiveness (Short, Tenute, & Feltz, 2005), it would be practically useful to determine the effects of EMDR in enhancing imagery skills. EMDR use in situ, particularly where exposure and environmental equivalence occur (Holmes & Collins, 2001), and where self-administered EMDR would be feasible (Artigas & Jarero, 2009), are areas worthy of further study.

In this study we have highlighted how EMDR may reduce the deleterious effects of negative future oriented imagery in sport, demonstrating the potential for directly reduced perceived impact, as well as cognitive and somatic anxiety measures. The participants' reports of social validity and acceptability underscore the potential for this intervention to play a valuable role in addressing the performance limiting effects of "flash-forward" imagery.

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Table 1. Phase Means, Standard Deviations and Effect Sizes (* = Medium ES; ** = Large ES).

	Baseline Av	Baseline SD	Intervention Av	Intervention SD	Effect Size
Participant 1					
Somatic Anxiety	14.5	1.92	11.8	2.78	1.41*
Cognitive Anxiety	15.75	1.5	9.4	2.07	4.23**
Impact Future Events	44.75	0.5	29.8	6.76	29.9**
Participant 2					
Somatic Anxiety	20.6	2.07	21.8	3.03	-0.58
Cognitive Anxiety	19	1.1	18	1.23	0.91*
Impact Future Events	56.5	2.43	53.2	4.6	1.36*
Participant 3					
Somatic Anxiety	13.75	3.4	15	3.56	-0.07
Cognitive Anxiety	11.4	1.89	11.71	2.69	1.08*
Impact Future Events	34.5	8.39	25.86	7.1	1.03*
Participant 4					
Somatic Anxiety	14.67	1.53	9.17	3.13	3.6**
Cognitive Anxiety	14	1.73	8	3.16	3.46**
Impact Future Events	54	8.72	34.5	5.82	2.24**

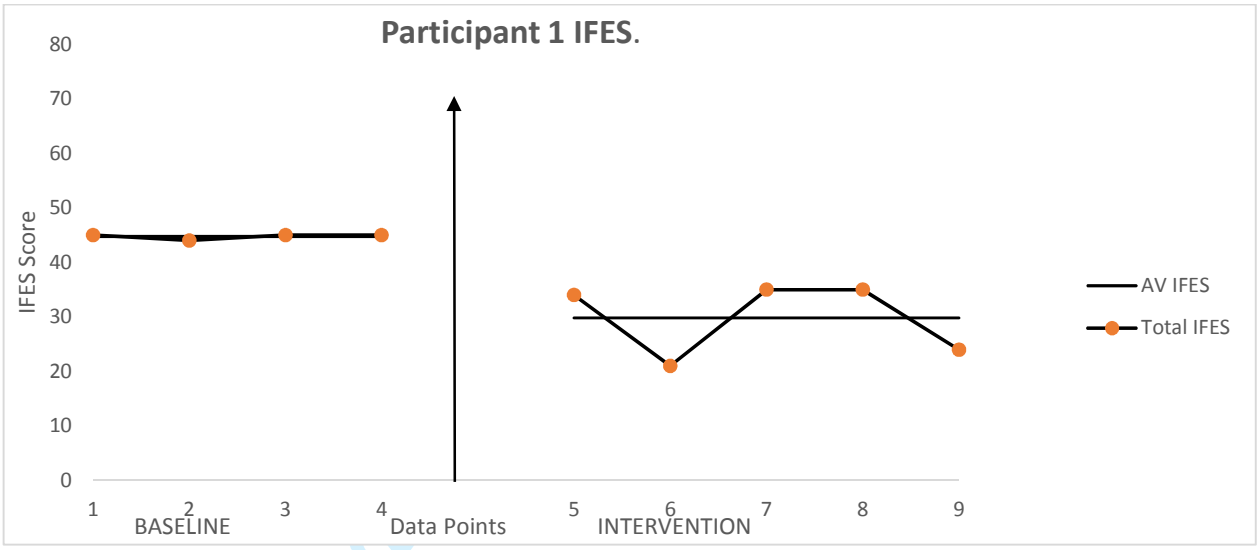
Figure Captions.

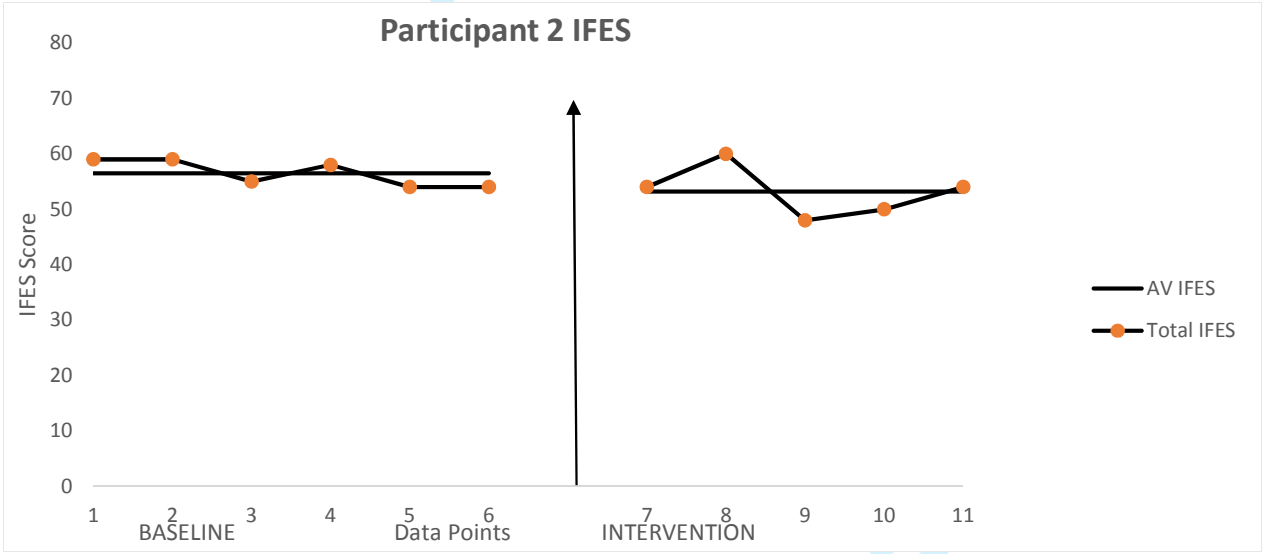
Figure 1. Impact Future Events Scores across Baseline and Intervention/Follow-up Phases

Figure 2. Cognitive Anxiety Scores across Baseline and Intervention/Follow-up phases.

Figure 3: Somatic Anxiety scores across Baseline and Intervention/Follow-up phases

Figure. 1.


Participant 1 IFES.
IFES Score
80
70
60
50
40
30
20
10
0
1
2
3
4
5
6
7
8
9
BASELINE
Data Points
INTERVENTION
AV IFES
Total IFES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IFES Score
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60
50
40
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20
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1
2
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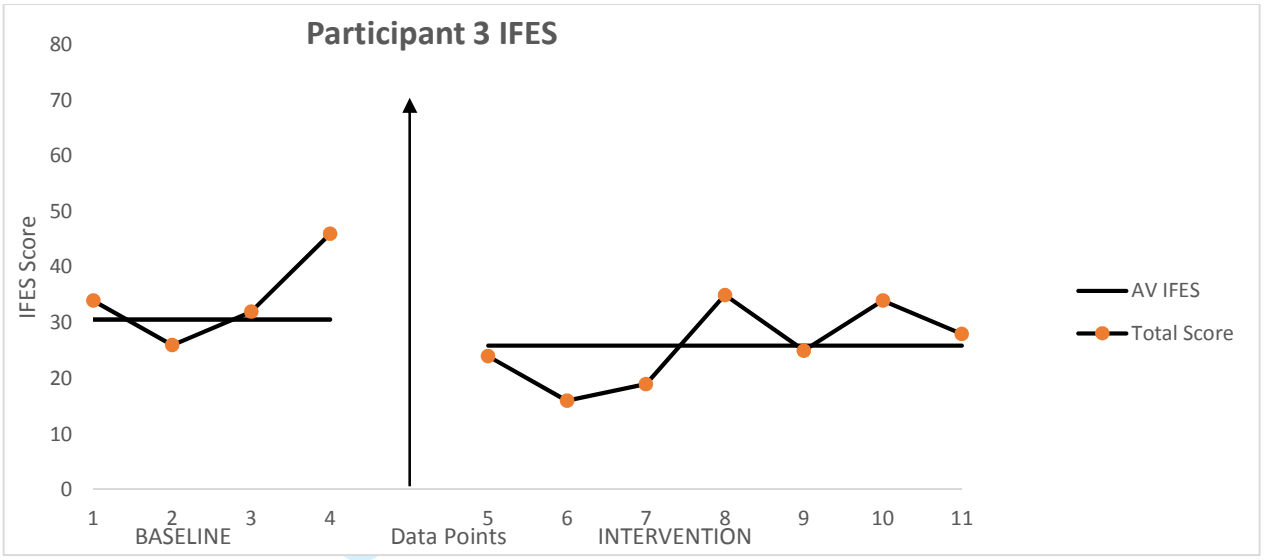
7
8
9
10
11
BASELINE
Data Points
INTERVENTION
AV IFES
Total IFES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IFES Score
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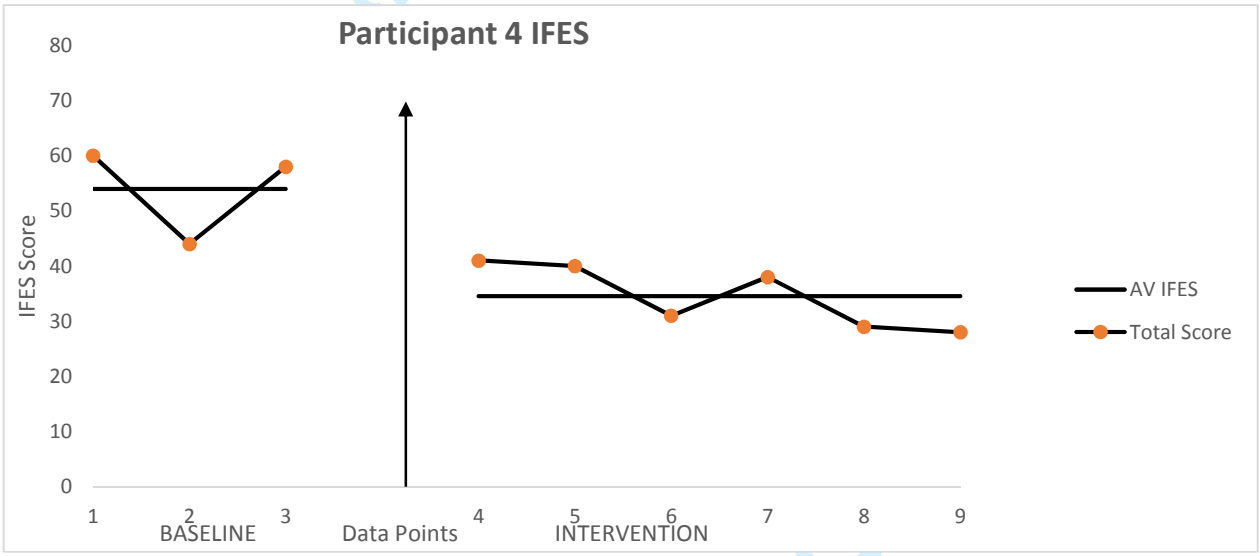
70
60
50
40
30
20
10
0
1
2
3
4
5
6
7
8
9
10
11
BASELINE
Data Points
INTERVENTION
AV IFES
Total Score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IFES Score
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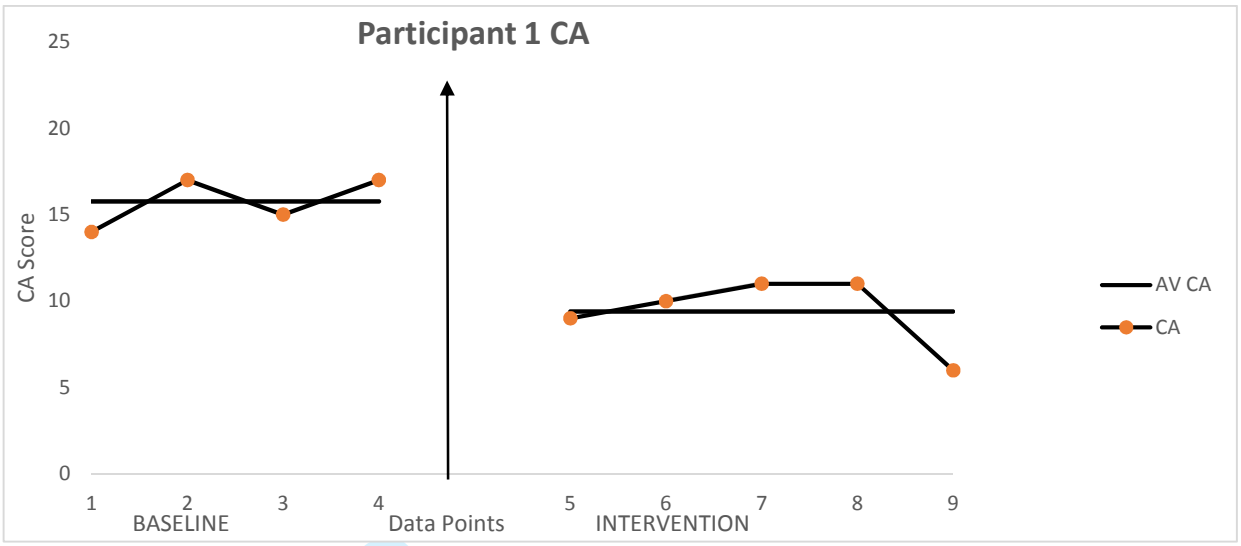
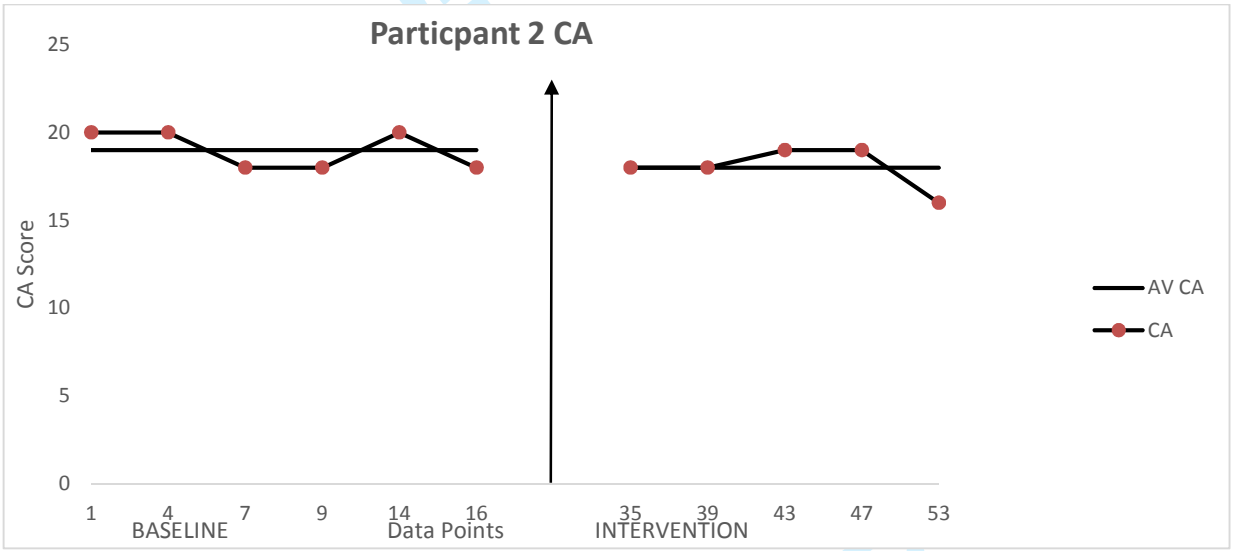
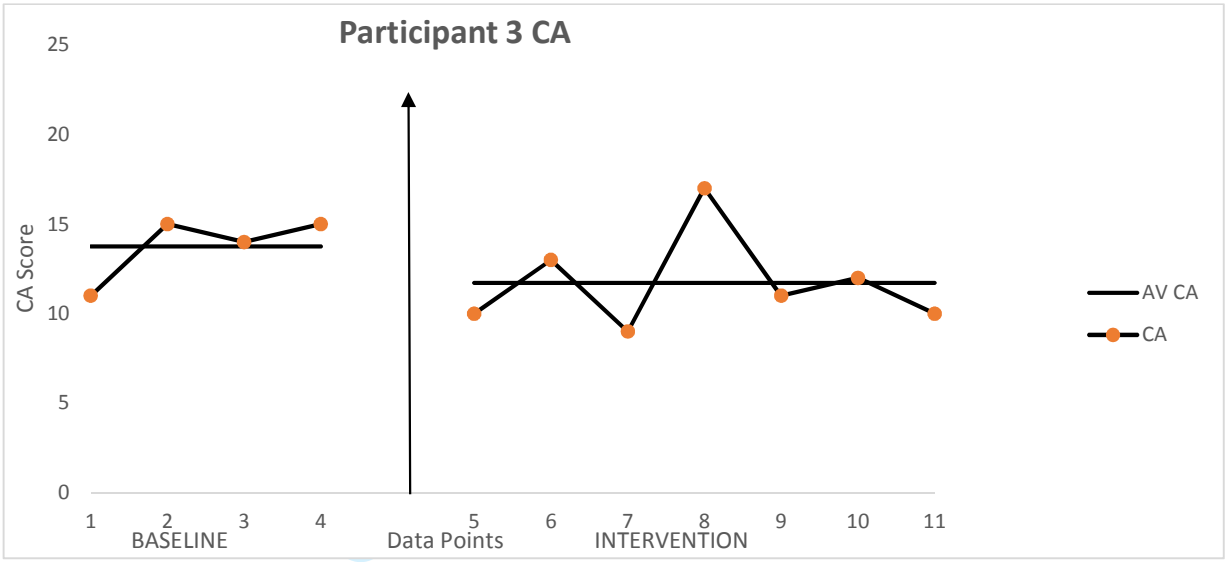
70
60
50
40
30
20
10
0
1
2
3
4
5
6
7
8
9
BASELINE
Data Points
INTERVENTION
AV IFES
Total Score

Figure 2.


Participant 1 CA
CA Score
25
20
15
10
5
0
1
2
3
4
5
6
7
8
9
BASELINE
Data Points
INTERVENTION
AV CA
CA


Particpant 2 CA
CA Score
25
20
15
10
5
0
1
4
7
9
14
16
35
39
43
47
53
BASELINE
Data Points
INTERVENTION
AV CA
CA


Participant 3 CA
CA Score
25
20
15
10
5
0
1
2
3
4
5
6
7
8
9
10
11
BASELINE
Data Points
INTERVENTION
AV CA
CA

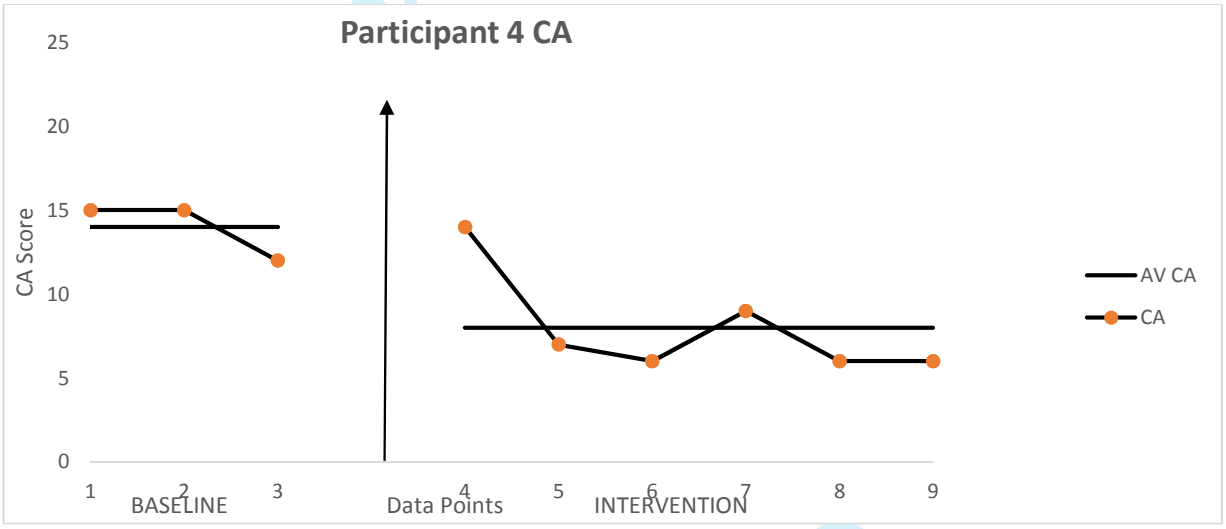
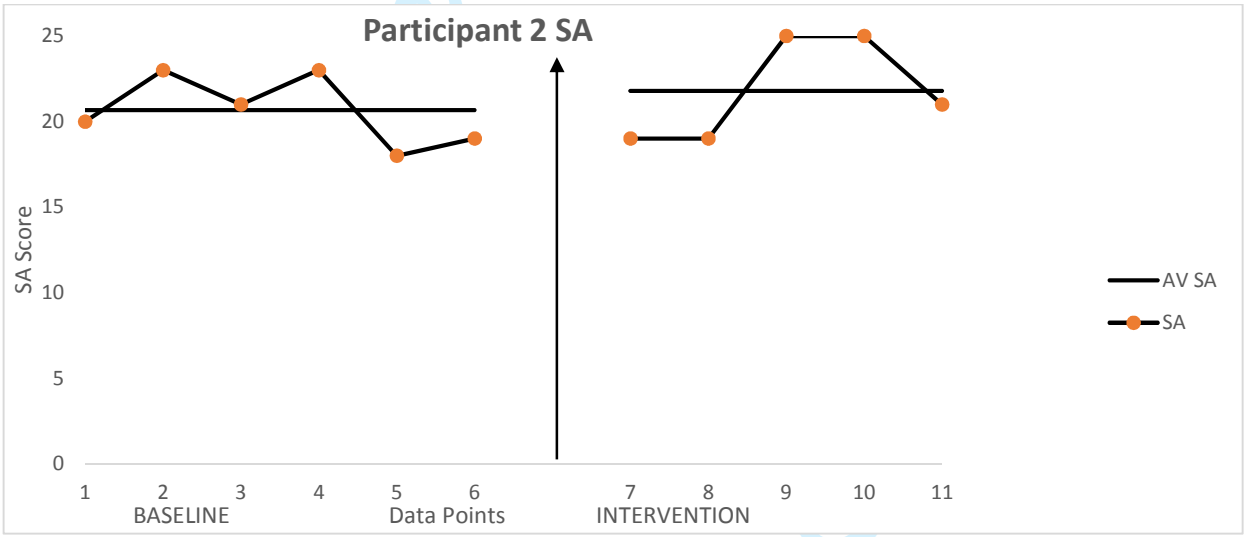

Participant 4 CA
CA Score
25
20
15
10
5
0
1
2
3
4
5
6
7
8
9
BASELINE
Data Points
INTERVENTION
AV CA
CA

Figure. 3.


Participant 1 SA
SA Score
25
20
15
10
5
0
1
2
3
4
5
6
7
8
9
BASELINE
Data Points
INTERVENTION
AV SA
SA


Participant 2 SA
SA Score
25
20
15
10
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0
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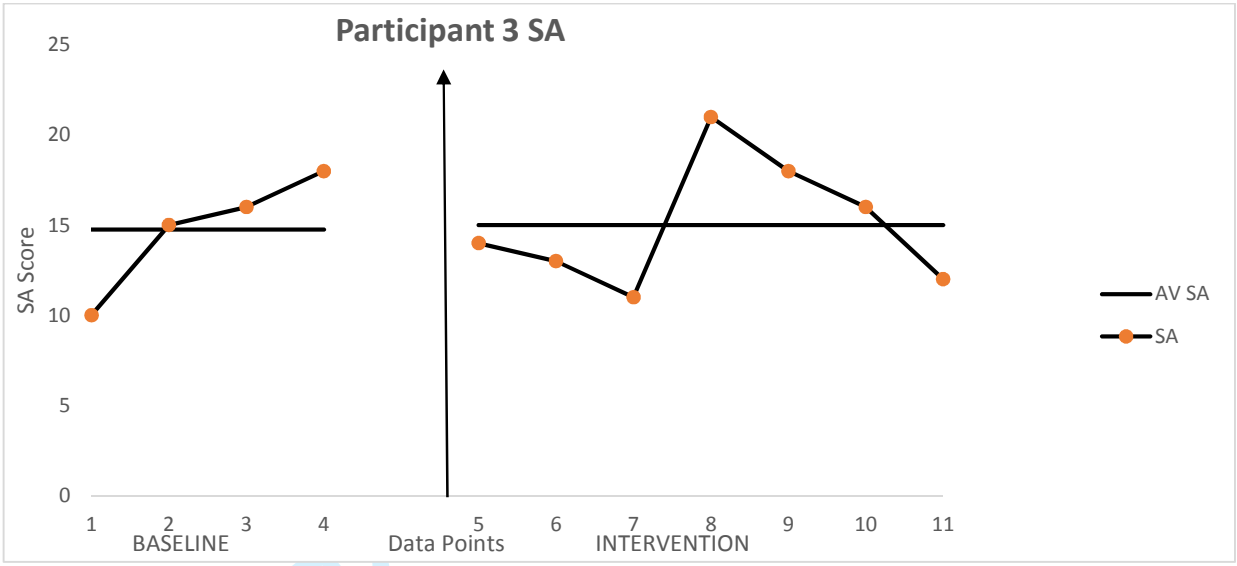
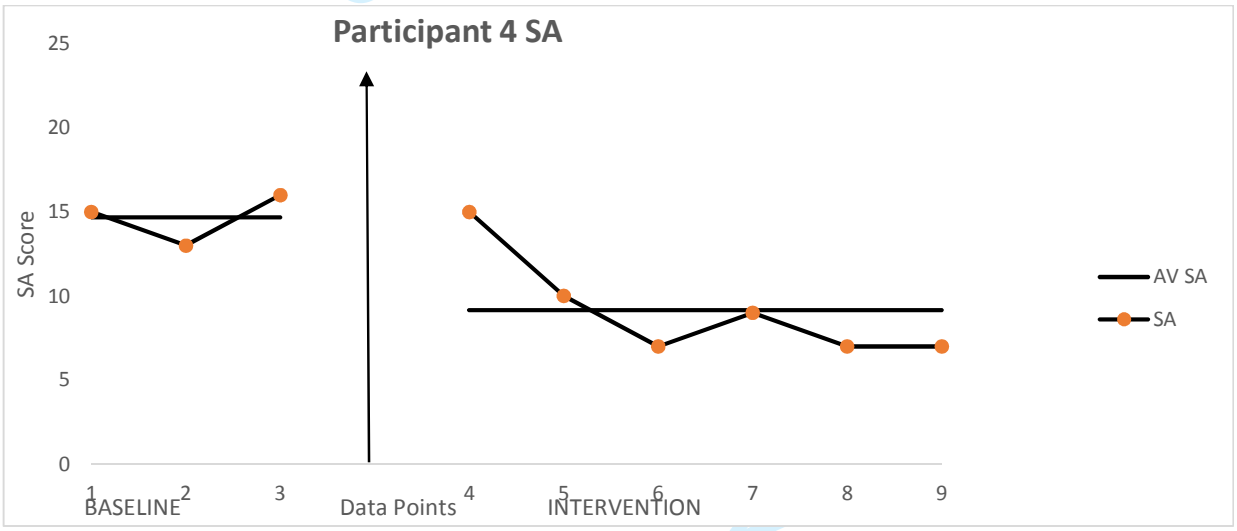
3
4
5
6
7
8
9
10
11
BASELINE
Data Points
INTERVENTION
AV SA
SA


Participant 3 SA
SA Score
25
20
15
10
5
0
1 2 3 4 5 6 7 8 9 10 11
BASELINE
Data Points
INTERVENTION
AV SA
SA


Participant 4 SA
SA Score
25
20
15
10
5
0
1 2 3 4 5 6 7 8 9
BASELINE
Data Points
INTERVENTION
AV SA
SA