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Attention fixation training: training people to form cognitive maps help to control symptoms of panic disorder with agoraphobia

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Abstract

Nine individuals diagnosed with panic with agoraphobia received three elements of Attentional Fixation Training (AFT): Directed attention to the external environment, directed topographical synthesis, and directed orientation in space-time to control characteristics of panic. They then walked a standard 2.5 km route and practiced these elements upon entering one of the five panic-inducing situations: (a) walking alone near a busy street with the examiner following at 20 m, (b) walking alone near a busy street with the examiner out of client's visual field, (c) shopping with the examiner present, (d) traveling on a bus alone, and (e) shopping alone. Heart rate was monitored in each of these five situations. Except for the case of using public transport, heart rate activity decreased to a considerable extent during AFT practice suggesting AFT elements provided a good way to control symptoms of panic in vivo. Results were discussed within the confines of a model suggesting that an attentional deficit, which produces a spatial disorientation disorder that maintains both panic and agoraphobia, can efficiently be overcome by means of all three AFT tools.

Keywords: Attention fixation training; Cognitive maps; Agoraphobia; Spatial orientation

1. Introduction

Panic disorder with Agoraphobia is characterized by recurrent panic attacks accompanied by concern about future attacks, worry about what might happen as

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a consequence of the attack, and/or changes in behavior associated with the attacks (DSM IV, APA). The panic attacks are often triggered when the person is alone and in places perceived as new and/or dangerous (place neophobia). In the face of the new or apparently dangerous, individuals experiencing such attacks often seek and find a talisman, a trusted companion, or another form of safety signal (Clark, 1986; Rachman, 1987). In the midst of an attack, the individual appears all too aware of and unable to control psychophysiological responses such as sweating, increased heart rate, chest pain, and paresthesias. Those experiencing panic attacks almost uniformly report heart palpitations, pounding heart, or accelerated heart rate.

In response to such self-report, many have studied in relations among panic attacks and heart rate (e.g., Margraft & Ehlers, 1988; Hodden & Barlow, 1986). Often the form of panic studied in the laboratory is induced by "artificial" means (e.g., Gorman, Dillon & Fyer, 1985; Margraft & Ehlers, 1988). For some, this raises questions about the external validity of laboratory-based findings. Intuitively, the form and intensity of a panic attack should at least partially depend on the ways in which cognitive structures interact with situational variables (Taylor et al., 1986). Attempts to examine the external validity of laboratory-based findings make use of mobile monitoring equipment to monitor physiological reactions under naturalistic conditions (Margraft, 1990; Freedman, 1989; Freedman, Ianni, Ettedgui & Puthezhath, 1985). Panic attacks occurring in the field do not take place under standardized situations, however. The situational variability inherent in designs gathering data under naturalistic conditions has prompted some to argue that in vivo data gathered from such equipment should be treated, at best, as psychophysiological case studies (Mavissakalian & Michelson, 1982; Taylor, Telech & Havik, 1983).

Moreover, attempts to control such sources of error in naturalistic studies are difficult. A study of heart rate under "real-life" (in vivo) conditions such as shopping or travelling may be thwarted by strategies the person uses to escape or minimize the probability of a panic attack. For example, panic attacks engender an intense desire to escape the unfamiliar/dangerous place, produce a sense of disorganized behavior and cognition and engenders intense avoidance of the places associated with panic attacks (e.g., unfamiliar place or places in which panic attacks have occurred). Each of these factors make it difficult to convince individuals to enter a panic-engendering situation, let alone record the physiology of panic under standardized but naturalistic conditions.

Thus, at one extreme, data from naturalistic designs present no small interpretative difficulties; at another data from highly controlled designs may not well represent the phenomenon of interest. The present study attempts to use a design incorporating strengths from both naturalistic and highly controlled studies. The manipulation in the present study was anchored in a model outlined by Jacobs and Nadel (1985).

Jacobs and Nadel (1985) proposed a model of specific phobia couched within the now well-accepted notion of neural-based multiple learning systems (see e.g., Nadel, 1994; Schacter & Tulving, 1994). These authors pointed to two kinds of learning systems: A *locale* system concerned with spatial maps and spatio-temporal context centered in the hippocampus, and nonhippocampal *taxon* systems, the most important of which is concerned with emotional (fear) memory centered in the amygdala (see e.g., LeDoux, 1993; Metcalfe & Jacobs, 1996,1998). Briefly, these authors argued that one route to a clinically significant problem involves six steps: (1) classical fear conditioning occurs before the anatomical and physiological maturation of the hipppocampal system (e.g., Squire, Cohen & Nadel, 1984); (2) the hippocampal formation matures anatomically and physiologically; (3) severe physiological stress occurs some time after this maturation; (4) the hippocampal formation becomes "disabled" as a result of this stress, (5) simultaneous exposure to stimuli sharing features with those stimuli to which infantile conditioning had occurred and (6) reinstatement of the primitive emotional memories held latent in neural circuits centering on amygdala occurs (e.g., Campbell & Jaynes, 1966; Riccio & Haroutunian, 1979). If all the six of these elements come together in proper temporal order, then an anxiety disorder will appear (see Tataryn, Nadel & Jacobs, 1989; Jacobs, Nadel & Hayden, 1992 for extensions of this model).

Kállai (1989) independently extended the model to suggest that the characteristics of panic disorder, most particularly the excessive stress generated during a panic attack and agoraphobic avoidance, may produce conditions that ensure a continuation of repeated panic attacks and avoidance. Specifically, Kállai (1989) proposed that in the midst of a panic attack or agoraphobic avoidance the person (a) attends to the "inner" feelings of anxiety and fear and thereby (b) fails to form a cognitive map of the environment in which the event occurs and thereby (c) fails to encode a spatial context or temporal coherence to the experience (e.g., the experience is not encoded as in the "here and now", Nadel & Jacobs, 1996). As a result, the person does not contextualize the experience, or become familiar with places and things triggering panic or agoraphobic avoidance, instead, he or she simply experiences the extreme reaction controlled by the critical taxon systems and triggered by a neophobic response (see above).

Based on this idea, Kállai (1989) designed Attention Fixation Training, an intervention that, under laboratory conditions, effectively alleviated symptoms of Panic Disorder with Agoraphobia. Kállai trained clients to use three specific skills to produce relief from symptoms of panic and agoraphobia. First, by teaching the client to monitor the external environment, the client also ceases to monitor triggering stimuli emanating from the cognitive and physiological milieu. Second, by teaching the client to form a cognitive map of the extant environment, the client becomes familiar with and may habituate to environmental complexes that trigger panic attacks or agoraphobic avoidance. Third, by teaching the client to anchor an experience in the here and now, the client provides both spatial context and temporal coherence to the experience. In so doing, he or she integrates current experience with past and anticipated future experiences.

Kállai (1989) reported that extensive training in each of these areas produced dramatic changes in physiological and avoidance behavior level when practiced by clients diagnosed with panic disorder with agoraphobia. Although the results of the initial study were promising, they were obtained under highly controlled conditions. The purpose of the present study is to examine client responses to this intervention under semi-naturalistic conditions while monitoring activity in each of four separate constellations: Affective (emotion), Cognitive (thought), Behavioral (action), and Physiological (Jacobs et al., 1992).

A well-accepted method for collecting clinical data under semi-naturalistic conditions involves recording activity while the participant engages in a "free walk". Mavissakalian and Michelson (1982), for example, compared heart rate measures for individuals diagnosed as agoraphobic and individuals carrying no diagnosis during a structured 1.5 mile 'street walk'. Those in the Agoraphobia group showed significantly higher heart rates than those in the Control group during the walk. This difference was not due to situational cues enhancing heart rate but was rather due to higher resting heart rates in the Agoraphobia group. A "standard walk" methodology has emerged from this semi-naturalistic design. In this method, each participant covers a standardized route while providing affective, behavioral, cognitive, and physiological data. The method facilitates an examination of both a naturalistic analysis of and the assessment of programmatic interventions targeting panic disorder with agoraphobia.

Although studies using the standard walk have consistently detected higher resting heart rates in individuals diagnosed with panic disorder with agoraphobia (PDA) than in controls (e.g., Hodden & Barlow, 1986; Roth & Telech, 1986), when this factor is controlled, those suffering PDA react to the conditions presented during standardized walk with significant increases in heart rate and blood pressure. The response is both subjective and a physiologically measurable (Woods & Charney, 1987). In addition, acceleration in heart rate and blood pressure triggered during a standardized walk has been detected. Jennings (1986) argued that such changes indicate both the initiation and termination of intense monitoring (attention). Similarly, Lacey (1967) and Graham and Clifton (1966) reported that a decrease in heart rate is associated with facilitation in the reception of stimuli. Hare and Blevings (1975) reported that pictures triggering a strong subjective fear also triggered heart rate acceleration in phobic patients, but triggered heart rate deceleration in a control group. At a related level, heart-rate deceleration appears to accompany the Orienting Response and stimulus exploration whereas heart-rate acceleration accompanies defensive reactions and stimulus avoidance (e.g., Hugdahl, 1981.). Consistent with these data, Andreassi (1995) has argued that heart-rate deceleration is associated with an 'opened attentional stance' whereas heart-rate acceleration is associated with a 'closed attentional stance'. We shall therefore use heart-rate deceleration as an indicator of monitoring of individual external stimuli, triggers, and the stimulus complex.

As outlined above, Attentional Fixation Training involves training modules designed to increase monitoring of specific environmental stimuli and relations among those stimuli. One useful measure of the success of such training can be found in heart rate records taken during a standardized walk. An untrained client should show heart-rate acceleration to any and all triggering stimuli (or stimulus arrays) encountered during a standardized walk (Öst, 1990) and, because an untrained client monitors internal stimuli extensively (e.g., Clark, 1986), little or no heart-rate deceleration to any set of environmental stimuli. Conversely, because successful Attentional Fixation Training turns monitoring focus from internal to external stimuli, we expect a well-trained client to show heart-rate deceleration to a wide variety of environmental stimuli (or stimulus arrays) encountered during a standardized walk. In addition, because successful Attentional Fixation Training should produce an integration of spatial and temporal aspects of current experience, and the formation of a cognitive map, we expect little or no heart-rate acceleration to any set of environmental stimuli encountered during a standardized walk.

2. Method

2.1. Participants

Nine participants were selected from a list of individuals waiting to receive treatment for panic disorder with agoraphobia. We selected individuals with high panic frequency and significant place avoidance (e.g., shopping, public transportation, or strange places). In addition, each of these participants had at least a one-year history of panic disorder with agoraphobia. Three men and six women were recruited. Age ranged from 27–39 years. To evaluate the severity of the patients' symptoms, the rate of self-reported avoidance and panic symptoms were compared to the Hungarian normal subjects' standardized scores (see Table 1).

Independent examinations of the participants' heart rate revealed normal heart rate and form in eight of the individuals and tachychardia in one. Although six of the participants had received a cardiological workup due to perceived problems associated with the heart, each received a negative diagnosis for organic problems. None of the participants were taking beta-blockers or other drugs that might influence heart rate during the study.

Table 1
Characteristics of study subjects

Subjects	Gender	Age	Education level[a]	Panic score[b]	Avoidance score[c]
1.	M	36	II.	110	243
2.	M	34	II.	99	223
3.	F	38	III.	109	258
4.	F	32	II.	112	250
5.	F	28	I.	117	253
6.	F	39	II.	88	225
7.	F	36	II.	100	234
8.	F	27	II.	105	242
9.	M	31	III.	87	247

[a]College or university = I, secondary school = II, public elementary school = III,
[b]Earlier reported data in normal control group /N = 200 Ss /panic symptoms scores /assessed by DSR III-R list, scale from 1 to 7 /mean = 30.7., SD = 8.63,
[c]Phobic avoidance /assessed by FSS Arrindell 1982, scale from 1 to 7 /mean = 198.5., DS = 27.7 (Kállai et al., 1995).

2.2. Procedure

2.2.1. Standardized walk

The standardized walks occurred on a street during working hours under normal weather conditions (temperature ranged from $-4°C$ to $18°C$). Each client, accompanied by an experimenter, familiarized him or herself with a standardized 2.5 km walking route, which began at the Outpatient Clinic and after the standardized walk ended at the starting point. The route typically required one to one and one-half hours to complete. The map of the walking route can see on the map 1. The numbered points indicate the locations at which AFT was practiced: (1) Escorted walking, (2) Unescorted walking, (3) Unescorted travel, (4) Escorted shopping, (5) Unescorted shopping (see below for a detailed description of each of these situations).

Each client wore a photoplethismographic device concealed under his or her coat. The concealed device, a Minolta Polsox-7 photoplethismograph sampled heart rate at 5 s intervals. Clients could walk easily, naturally, and without calling attention to oneself while wearing the device. Although sometimes out of sight, an experimenter remained close to the client throughout the standardized walk. The experimenter's task was to follow the clients' movements as well as to communicate with the clients' activity via a lapel microphone attached to a two-way radio and a tape recorder. The experimenter provided the client with 'on-line' instructions via the radio as well as the start and finish times of the standardized walk — all of which was recorded.

2.2.2. Attentional fixation training

All clients received Attentional fixation training immediately after the first Standardized Walk while engaged in vivo activities. The training consisted of three training modules:

(1) Directed attention to the external environment. The object of this exercise was to train clients to monitor object arrays in the dynamic environment continuously. This is, of course, what most of us do without specific training. In contrast, many individuals with unexpected panic attacks continuously monitor their own thoughts and physiological reactions to the expense of the environment. Often these individuals needed intense training, including modeling the specific strategy, to learn to monitor to the external environment closely (Kállai, Kóczán, Molnár, Szabó & Varga, 1995). After successful training, some clients reported increases in positive and relaxing affect, which generalize broadly.

(2) Directed topographical synthesis. The object of this exercise was to train the client to anchor ongoing experience in current space. Training for this module included exposure to objects and scenes that occurred spontaneously during uncontrolled in vivo experience. The training was not accompanied by any conspicuous acts. It is worth noting that these people suffered a characteristic agoraphobic attentional deficit. Their cognitive map of an extant context is crippled, rigid, and therefore does not represent correctly the actual situation. The person in part lives in the past, so he/she feels her/his acts to be both unnatural and inadequate. The person does not locate him or herself in the present and actual spatial context. An example of this can

be found in a dialogue between the therapist (Th) and the patient (p): Th: "We are here behind a high bracket in the supermarket. We cannot see the main entrance and we have not looked out to the town. I ask you to orient toward and describe where we could find the entrance, the parking lot behind the wall of this supermarket, and point toward the highest building of the town". The patient then answers. Th: "Yes, (or correction) now this is the place where we are standing. You are standing here not only in the supermarket but on the west part of the town. On the left you can find the main building and on right you can find the parking lot." and so on. The above-mentioned and other interpretation of this kind considering events of immediate environment might be called the technique of topographical synthesis method.

(3) Directed orientation in space–time. The object of this exercise was to train client to anchor both emotional and autobiographical memories in space–time. The therapist asked for reports of external positive goal objects and encouraged the client to "free associate": That is, to recall memories connected, in one way or another, to these objects. Thus, the positive goal object is actually explored by the patients both in physical space and through memory. For example, an apple tree might invoke a pleasurable memory of his mothers' garden; a color on a wall of house might invoke a memory of the color of a treasured boat and so on. In addition, The client was asked to locate these "freely associated memories" in space–time — that is, to retrieve the spatio-temporal context of the thoughts associated with the positive goal objects. Finally, the therapist encouraged the client to fantasize about the circumstances under which the client might again encounter these "goal objects". This was done to teach the client that environmental objects *and their past and future associates* are what constitute emotional meaning. By encouraging the client to practice anchoring extant experience within the experienced past and the speculative future, the therapist attempted to integrate disassociated emotional memories into an ongoing spatio-temporal context.

The modules were administered while the clients entered five panic-generating situations during the Standardized walk:

1. *Escorted walking*. The client walked near a busy street while the experimenter followed at a distance of 20 yards providing the one-way instructions via two-way radio.
2. *Unescorted walking*. The client walked near a busy street while experimenter followed but remained out of the client's line of sight. Again, the experimenter provided on-line instructions via the two-way radio.
3. *Escorted shopping*. The client shopped in a 350 m^2 two-floor supermarket. The experimenter escorted the client and provided face-to-face on-line instructions.
4. *Unescorted travel*. The client traveled on a crowded bus alone from one bus stop to the next. Instructed before get on.
5. *Unescorted shopping*. The client shopped alone in a 400 m^2 two-floor supermarket. The experimenter followed but remained out of contact with the client.

The experimenter followed the client along the 2.5 km route. When the client arrived at the first situation (escorted walk), the client received instructions to enter the situation and use *turning attention to positive external objects* as a coping mechanism. When the client entered the second situation (unescorted walk) they were instructed to use *directed orientation in space–time*. Upon entering the third situation (escorted shopping), they were instructed to use *directed topographical synthesis*. Upon entering the fourth situation (unescorted travel), they were instructed to use *directed orientation in space–time*. When they entered the final situation (unescorted shopping), they were instructed to use *directed topographical synthesis*.

As with the standardized walk, each client wore a concealed Minolta Polsox-7 photoplethismograph sampled heart rate at 5 s intervals under his or her coat.

Physical activity was recorded 'on-line' using an audiotape made by the participant. In addition, the client reported affective and cognitive data via the two-way radio. Finally, the experimenter recorded directly observed behavioral data (e.g., getting on a bus, resting, meets a friend, talking to a friend, coughing while waiting for a bus, waiting for a red light, entering the supermarket, finding a shopping basket, leaving the market, etc.).

Data were recorded throughout the 2.5 km standardized walk, but only the data taken from the five panic-generating situations are reported here. These data were broken into two blocks. The first block, a 30–s baseline heart rate was taken beginning the moment the client entered the panic-inducing situation. Following a 90–s preparatory phase, which permitted the client to reach the place in which he or she was to begin practicing an AFT module, no heart rate data were taken. The second block immediately followed the 90–s preparatory phase. During this block, the clients practiced an AFT module and heart rate data were taken for 120–180 s. Table 2 illustrates the AFT modules practiced in the presence of the panic-generating situations.

The purpose of the data analysis was to determine (a) if practicing an AFT module counteracted increases in heart rate brought about by entering a panic-inducing situation and (b) if practicing an AFT module counteracted the avoidance strategies normally practice by people diagnosed with panic disorder with agoraphobia. Individual ratios between the heart-rate data obtained during the first and second block of each panic-inducing situation were analyzed using the Friedman two-way ANOVA. Post-hoc tests were conducted using the Wilcoxon matched-pairs signed ranks test. Type 1 error rate was set at 0.05 for all statistical decisions.

Table 2

Situation	1. Escorted walk	2. Unescorted walk	3. Escorted shopping	4. Unescorted travel	5. Unescorted shopping
Module	Directed attention to the external environment	Directed orientation in space–time	Directed topographical synthesis	Directed orientation in space–time	Directed topographical synthesis

3. Results

The clients' heart rate varied between 74 and 116 bpm during the baseline measure. Although heart rate often exceeded 100 bpm when the client entered the panic-inducing situations, no client interrupted or resigned from the experiment. During debriefing, each client reported the experiment was largely successful ('therapeutic) for them.

Fig. 1 illustrates the data obtained during the escorted walk. During this phase of the study, clients practiced turning attention to positive external objects. The results illustrated in the figure suggest that heart rate remained stable for all clients while they simultaneously practiced the AFT module and walked by a busy street with an escort following at a distance. Moreover, it appears that additional training produced a decrease in heart rate in the presence of this panic-inducing situation. The Friedman chi-square = 22.50, $P < 0.05$ ANOVA. Post-hoc Wilcoxon matched-pairs signed ranks tests detected a significant decrease from baseline at the 25th, 30th, 35th, 45th, 50th, 55th, and 60th s of exposure to the panic-inducing situation ($Z = -1.96$; -2.36; -2.31; -2.19; -2.10; -2.24; -2.54).

Fig. 2 illustrates the data obtained during the unescorted walk. During this phase of the study, clients practiced directed orientation in space–time. The results illustrated in Fig. 2 suggest the heart rate remained stable or diminished for all clients as they struggled with street traffic fear, walked alone, and practiced directed orientation in space–time. The Friedman chi-square = 23.85 ANOVA. Post-hoc Wilcoxon matched-pairs signed ranks tests detected a significant decrease from baseline at the 20th, 25th, 30th, 35th, 40th, 45th, 50th, 55th, and 60th s of exposure to the

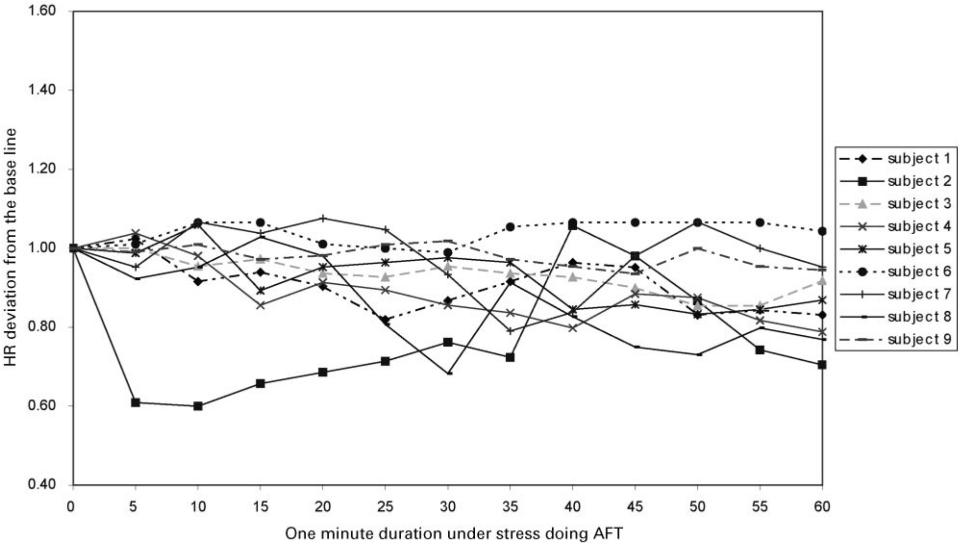

Fig. 1. Walking with examiner doing turning of attention to positive object.

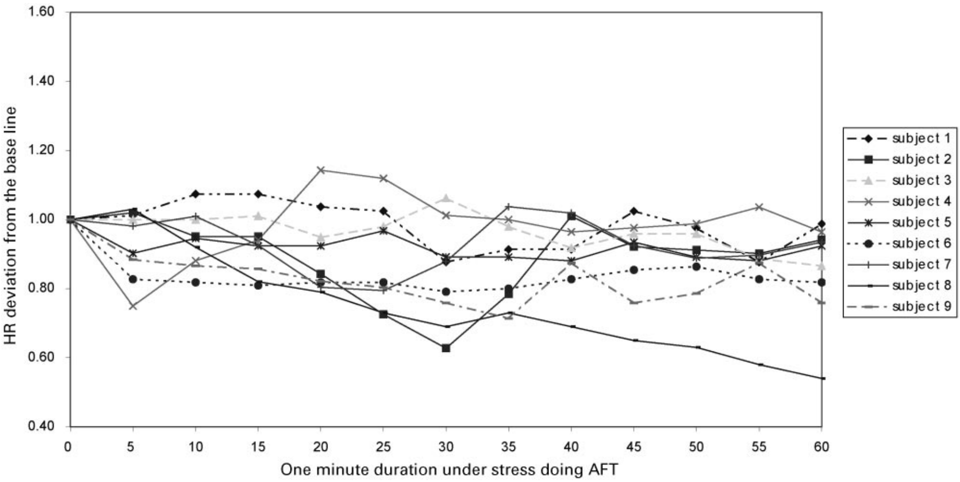

Fig. 2. Walking without examiner doing place-time activation.

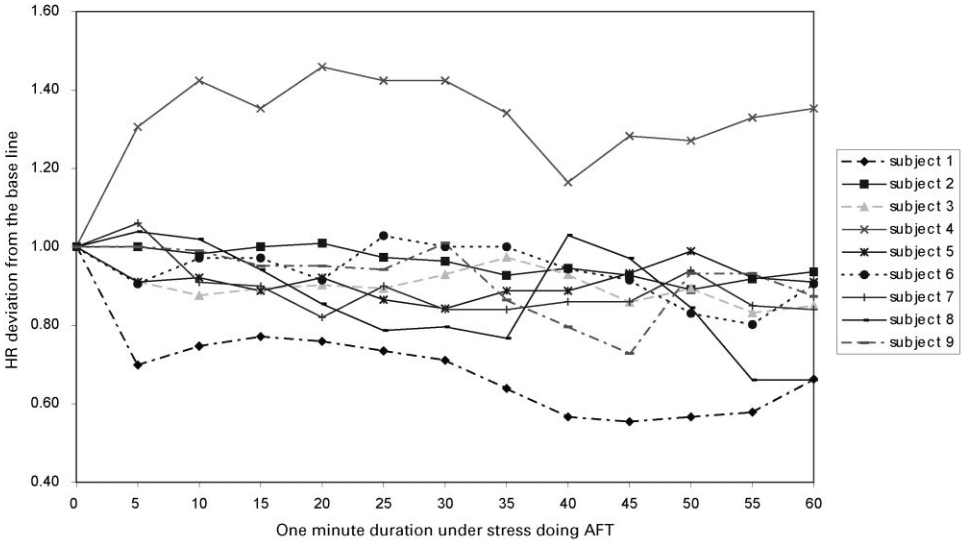

Fig. 3. Shopping with examiner doing topographical analysis.

panic-inducing situation ($Z = -2.07; -2.01; -2.31; -2.24; -2.31; -2.48; -2.66; -2.55; -2.66$).

Fig. 3 illustrates the data obtained during escorted shopping. During this phase of the study, clients, accompanied by the experimenter, practiced directed topographical synthesis (cognitive mapping). The results illustrated in Fig. 3 suggest that, in contrast to the general pattern, the heart rate of one client increased considerably while

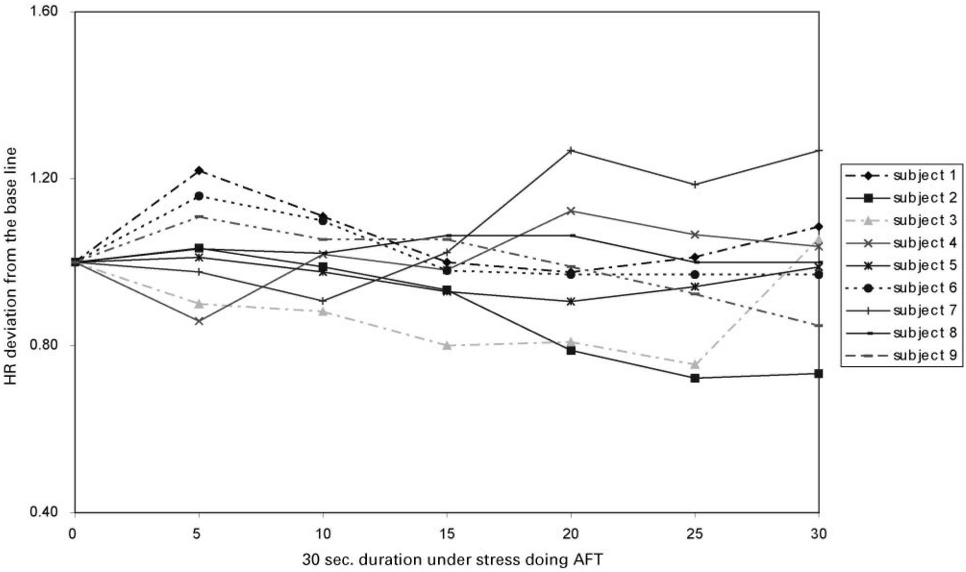

Fig. 4. Public transport without examiner doing place-time activation.

shopping and practicing the AFT module in this situation. This may be because he permanently resides in a small village where shopping does not mean going to a supermarket such as that used here. For him, practicing the AFT module did not appear to affect heart rate. Nonetheless, heart rate remained stable or diminished for all clients but this one as they struggled with fear of shopping while practicing topographical synthesis. The Friedman chi-square $= 30.38$ ANOVA. With this the outlying data included, post-hoc Wilcoxon matched-pairs signed ranks tests detected a significant decrease from baseline at the 45th and 50th s of the intervention ($z = -1.95; -1.95$).

Fig. 4 illustrates the data obtained during the unescorted travel. During this phase of the study, clients practiced directed orientation in space–time. Unfortunately, travel from one bus stop to the next was, on the overage, only 30 s. This did not provide enough time to adequately practice Directed orientation in space–time. The director chose the short ride to avoid leaving the client completely out of reach, and therefore in fear of a panic attack, for a prolonged period of time. This safety precaution did not leave enough time for the client to implement completely the AFT module during the bus ride. Thus, the results illustrated in Fig. 4 suggest the heart rate remained about the same for all clients as they rode the bus by themselves, only partially implementing directed orientation in space–time. The Friedman chi-square $= 3.69$ n.s.

Fig. 5 illustrates the data obtained during unescorted shopping. During this phase of the study clients shopped alone while practicing directed topographical synthesis (cognitive mapping). Entering this panic-inducing situation apparently triggered increased heart rate. Nonetheless, when the AFT module was employed, however,

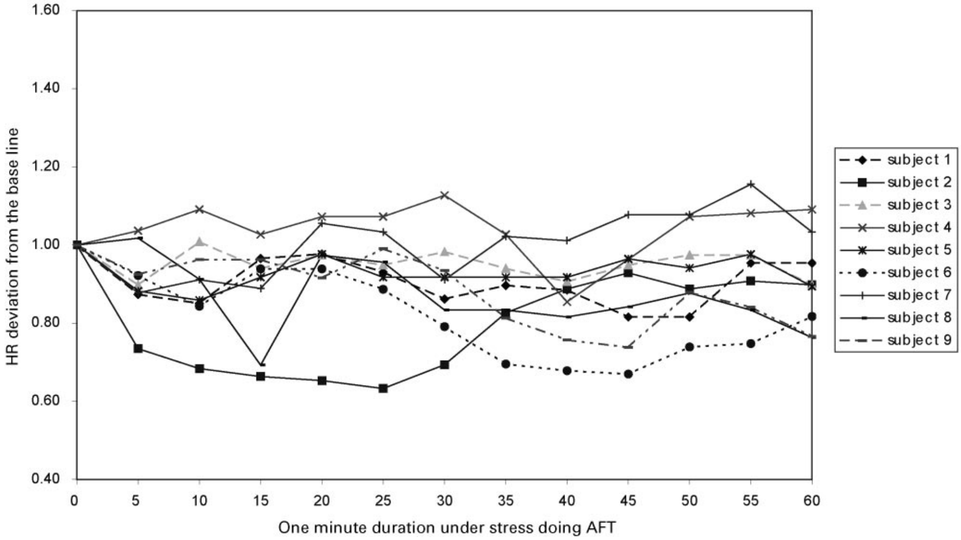

Fig. 5. Shopping without examiner topographical analysis.

heart rate stabilized and apparently decreased over time. The statistical analysis was compatible with this interpretation. The Friedman chi-square $= 22.28$, $P < 0.05$ ANOVA. Post-hoc Wilcoxon matched-pairs signed ranks tests detected a significant decrease from baseline at the 5th, 10th, 15th, 30th, 35th, 40th, 45th, and 60th s of exposure to the panic-inducing situation ($Z = -2.31; -2.01; -2.48; -1.95; -2.31; -2.54; -2.13; -2.01$).

4. Discussion

The data reported above indicate that a diminution in heart rate occurs when a client practiced an AFT module in four of the five panic-inducing situations. The use of the Turning of attention to external objects module produced a significant reduction in heart rate in one panic-inducing situation, the directed topographical synthesis module produced significant heart rate reductions in two panic-inducing situations, and the directed orientation in space–time module produced significant heart rate reductions in one of two panic-inducing situations. It is true that four individuals in the unescorted travel condition showed clear increases in heart rate while exposed to the panic-inducing situation. This result, however, was obtained under highly restricted temporal (30 s) and spatial (traveling on a crowded bus) conditions. We suggest that increased practice with the AFT module could obviate this problem, but, as yet, we have no data to support the suggestion. Thus, although other interpretations are available, we suggest the well-practiced use of any one of the AFT modules may serve as an effective coping mechanism in panic-inducing situations.

In our view, these results were obtained by overcoming a selective neglect of exteroceptive spatial stimuli, which, by preventing automatic forms of spatial orientation and attention, played a critical role maintaining panic disorder with agoraphobia. To explain this more fully requires us to back up and take a broader view of panic disorder with agoraphobia

Gaining control of heart rate, particularly an ability to prevent heart rate acceleration or even produce heart rate deceleration, is an effective way to control or reduce the physiological state associated with panic attack. It is known that heart rate deceleration is produced by an increase in focal attention to external cues (e.g., Lacey & Lacey, 1970). It appears that, when heart-rate deceleration is achieved, cortical sensitivity rises while the viscera becomes less sensitive (Simons, Öhman & Lang, 1979).

This change in sensitivity appears to be accompanied by a change in attention from the "internal" to the external world. By actively training attentional strategies, AFT reconstructs this condition, and in so doing 'normalizes' an apparently disregulated attentional system.

The AFT procedure requires the client to acquire an increased awareness of an attentional deficit and a determination to do something about it. With this in place, clients may develop a number of volitional strategies enabling them to improve attention to and exploration of previously unattended external space. This intervention resembles rehabilitation programs consisting of systematic exercises designed to encourage individuals suffering traumatic brain injuries to explore space. For example, such a program, developed by Pizzamiglio, Antonucci, Judica, Montenero, Rozzano and Zoccolotti (1992) and named Provoking and automatic reorientation of attention trains patients suffering unilateral neglect to focus on the distal cues of spatial arrays in the environment. The purpose of such a program is to substitute a learned attentional strategy for normally automatic forms of spatial orientation and attention (Gainotti, 1996). To the extent that such training is effective, one might claim that such controlled attentional reorientation helps the client to obtained information necessary to reconstruct "informationally deprived" cognitive structures. Similarly, this retraining program, which lies at the center of our Attentional Fixation Training, focuses on training clients to orient toward and attend to exteroceptive events — events that include both proximal and distal cues — in the specific situations that trigger panic and agoraphobic avoidance. In so doing, the practice of AFT sets conditions in which the client (a) cannot avoid fear-inducing environments by ignoring them because they must continuously attend to both internal and external spatial arrays, to allocentric and egocentric references, (b) receives information which can be provided to neural modules devoted to spatial representation (e.g., Jacobs & Nadel, 1985; Nadel & Jacobs, 1996), (c) which then may be used as stimuli in classical extinction or inhibition processes.

Thus in our view, panic disorder with agoraphobia involves disregulated interactions within physiological, emotional, cognitive, and behavioral systems and within a suprasystem composed of interactions among these constellations (Jacobs et al., 1992; Kállai, 1989; Kállai et al., 1995; Metcalfe & Jacobs, 1996,1998). Although one might re-regulate the suprasystem in a multitude of ways, we have chosen to intervene the cognitive level. Viewed from this level, panic is maintained by a functional and selective neglect of exteroceptive stimuli and situations, which renders automatic forms of spatial orientation and attention ineffective. This functional neglect limits the effect of automatic attention as well as that of controlled attentional processes. AFT fixates attention on the panic-inducing elements of the external environment, on memories associated with those elements of the external environment, and on both temporal and topographical analyses of those elements. With this in hand, controlled attention processes (re) familiarizes the given panic-inducing contexts. In so doing, an emotional reorientation toward these places may occur.

5. Summary

The impact of three Attention Fixation Training (AFT) modules, directed attention to the external environment, directed topographical synthesis and directed orientation in space–time, on the heart rate of nine individuals carrying a panic disorder with agoraphobia diagnosis in separate five panic-inducing situations was examined. In four of the five panic-inducing situations, practicing an AFT module produced a significant decrease both panic anxiety and heart rate. These results are compatible with the assertion that trait and state components of anxiety are accompanied by stress-induced disturbances of attention which prevent information processing necessary for the improvement of clinical symptoms (Jacobs & Nadel, 1985; Nadel & Jacobs, 1996). This disturbance maintains phobic avoidance by preventing attention to environmental cues and directing attention to interoceptive cues and the avoidance of novelty. Thus, perception of real space is peripheral and representations of space dependent upon this perception are distorted. AFT described here, permits the control panic attacks using a process similar to that which is automatically applied in everyday life.

6. Conclusion

The therapeutic effect of Attention Fixation Training on the attention allocation from egocentric reference to allocentric space in panic disorder with agoraphobic subjects has not yet been sufficiently supported for the practice. At present the effect of the AFT may only constitute a part of the therapeutic repertoire. Longitudinal empirical studies are needed to decide the load of this maneuver. Our therapeutic experience suggests that AFT, as a part of the therapeutic method, is accepted by the patients and after a short training session led by the therapist, they are able to apply the method on their own without the therapist's control in several potentially threatening situations. A previous study of panic disorder with agoraphobia, generalized anxiety and normal control subjects, (Bata, 1996) found that generalized anxiety and normal control subjects do not have specific heart-rate response to the five panicogenic situations detailed in the Procedure. Further, in these groups no significant HR deceleration was experienced during the AFT. Based on our experimental data, we can suggest that the positive effect of the attention allocation from egocentric reference to allocentric space — a specific characteristic feature of panic disorder with agoraphobia — should be considered not only in therapeutic practice but in the research into the behavioral and cognitive elements of panic disorder with agoraphobia as well.

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