THE UNIVERSITY OF HULL

Psychological Change and the Alexander Technique

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By

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Overview

The portfolio has three parts. Part one is a systematic literature review, in which the empirical literature relating to the relationship between body posture and emotion is reviewed. Part two is an empirical paper, which explores psychological change and the Alexander Technique. Part three comprises the appendices.

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Part One

The Relationship between Body Posture and Emotion: A Systematic Review of the Literature.

The Relationship between Body Posture and Emotion: A Systematic Review of the Literature.

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Please see Appendix 3 for the Guidelines for Authors.

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Abstract

Background: Anecdotal evidence and some psychological theories suggest that body posture and emotion are inter-related. As clinical psychologists work with people experiencing emotional difficulties, body posture may have implications for therapeutic work. To date, research in this area has been carried out in many different academic fields, including neurology, social psychology, physiology, and health sciences. This review aimed to summarise research across these fields to review the relationship between emotion and posture.

Methods: Key search terms were used to conduct a systematic literature search and extract relevant articles. These articles were reviewed for quality and content with the use of pro-formas devised for this purpose.

Results: The articles generally had a good quality of presentation, but some studies used a poor sample size and did not adequately consider extraneous factors impacting on the study design. Results demonstrated a relationship between posture and emotion, which is multifactorial, complex, and affected by contextual factors.

Conclusions: The results strongly support the suggestion that body posture and emotions are linked, and that posture can contribute towards the cause and maintenance of distress. Further research should employ robust methodology to develop a clearer evidence base.

The Relationship between Body Posture and Emotion: A Systematic Review of the Literature.

Introduction

The biopsychosocial model, which is recognised as the dominant paradigm in western conceptualisations of physical and mental health and illness, assumes that biological/physiological, psychological, and social factors are interrelated and influence one another to affect wellbeing (Crossley, 2000). Within the field of clinical psychology there is a wealth of research suggesting that there is an interaction between factors which are predominantly physiological and those more psychological. This is a standpoint taken by evidence-based therapies, including cognitive behavioural therapy, which proposes that thoughts, feelings, behaviour, and physiological factors all interact to affect wellbeing (Carr & Mcnulty, 2006). More specifically, research indicates that there is a relationship between body posture and psychological factors. With regards to cognitive processes, autobiographical memory recall has been found to be quicker when there is congruence between posture at the time of memory encoding and at the time of memory retrieval (Dijkstra, Kaschak & Zwann, 2007). Research also suggests that problem solving is faster in a supine position than when standing (Lipnicki & Byrne, 2005). It seems sensible to assume that these findings linking cognition and posture have implications for emotional experience and wellbeing. In support of this, research suggests that relaxation therapies, which alter the muscular system and reduce tension, thereby affecting posture, can be effective at treating anxiety (e.g. Siev & Chambless, 2007).

There is a considerable body of research, which has demonstrated a relationship between balance or postural sway and psychological factors, including anxiety and postural threat (Laufer, Barak, & Chemel, 2006). People with vestibular disorders often

suffer from anxiety (Eagger, Luxon, Davies, Coelho., & Ron, 1992), and postural control in the face of threatening stimuli has been found to be affected by additional factors, including age (Hatzitaki, Amiridis, & Arabatzi, 2004), and sleep quality (Fabbri, Martoni, Espositio, Brighetti & Natale, 2006). There is also evidence that posture affects hormone release, including stress hormones (Mlynarik, Makatsori, Dicko, Hinghoffer-Szalkay & Jezova, 2007). This research indicates a specific link between posture stability and anxiety, which may contribute towards the aetiology or maintenance of balance and anxiety disorders.

Many therapeutic approaches suggest that emotion and posture are psychologically intertwined. Reichian therapy, Gestalt therapy, other body psychotherapies, and alternative therapies have emphasised the importance of working with posture in psychological therapy. Wilhelm Reich located psychological resistance within the body, including the muscle, tissues, and joints. He considered that psychological problems manifest in the physical body and that psychotherapy should break down physiological defence so as to resolve psychological conflicts (Conger, 2005). Gestalt theory places a similar emphasis on the integration of physiological and psychological factors in the development of distress. It emphasises the role of environmental context in shaping human experiences, including body adaptation and defence. The approach suggests that posture is influenced by how the organism's needs are met within this environmental context (Kepner, 2008). Where needs are not met, impulse may be expressed inwardly instead, and held in the body. According to the Gestalt approach, growth of the organism depends on developing an awareness of the body's interaction with the environment, experiencing body processes and developing means of expressing needs, both verbally and through the use of the body (Kepner, 2008).

There are many other approaches in addition to Reichian and Gestalt psychotherapy, which work with body posture to bring about physiological and emotional change. These include the Alexander Technique (Gelb, 2004), Tai Chi (Mills, Allen, & Morgan, 2000), and yoga (Ray et al., 2001). There is some overlap between these approaches and principles of mindfulness[1], including an emphasis on increasing awareness of the body and its tensions. Mindfulness has been shown to be effective in the treatment of psychological problems, including anxiety, depressive symptoms, and chronic pain (Evans et al., 2008; Scherer-Dickson, 2004). The similarities between mindfulness and some body psychotherapies may provide indication that body awareness can interact with emotion, but this is by no means clear. Most therapies working with posture and emotion do not emphasise a scientific approach, and have little evidence base to support their effectiveness at bringing about psychological change. There is, nevertheless, a great richness of anecdotal evidence from a variety of therapeutic models to indicate that there may be a relationship between emotion and posture, which can be considered in therapy to facilitate psychological change.

Popular psychology suggests that nonverbal cues, including posture, are a means of communicating a person's 'true' feelings, and thereby imply a link between posture and emotion (e.g. Pease & Pease, 2004). Such literature offers tips to readers in how to read gesture and posture so as to understand others, with potential to improve interpersonal relationships or further occupational success. Similarly, within the fields of social and cognitive psychology research has investigated factors related to the recognition of nonverbal cues, and has found that emotions can be recognised from body and facial expression (Atkinson, Dittrich, Gemmell, & Young, 2004). This work emphasises what is conveyed by nonverbal cues, and how this communication shapes social interaction (e.g. Edwards, 1999). The research offers important implications for

[1] Mindfulness is a meta-cognitive process which emphasises awareness and paying attention non-judgementally in the present moment (Kabat-Zinn, 1990).

the systemic nature of posture-emotion links. It suggests that an understanding and awareness of postural communication can influence relationships, which potentially could impact upon psychological wellbeing.

In summary, it is largely assumed in the psychological field that there is a relationship between emotion and posture, and there is an abundance of anecdotal evidence to indicate that this is the case. Scientific research in this area, however, has taken place in disparate academic fields, and posture has rarely been the focus of empirical interest in clinical psychology, despite the fact that some psychotherapeutic approaches work directly with posture. There is, nevertheless, some scientific evidence of an interactive relationship between psychological factors and posture. Additionally, research shows that posture can communicate information to others within a social context. A closer examination of the links between posture and emotion may have important implications for the holistic development of psychological theory, and may have potential to inform and enrich a range of psychological therapies.

This literature review aims to bring together research findings in order to address the question, 'what is the relationship between posture and emotion?' Posture is defined here as the holding and positioning of the body. Emotion is considered as a representation of affective and somatic experience (Schweder, 1994). This definition is chosen as it does not perpetuate a mind-body split by defining emotion as a separate component to somatic feeling.

Method

Selecting Studies

An initial pilot search was carried out using a selection of online databases. Search terms related to posture and emotion were tried in various combinations, and

from this, search terms for posture and emotion which elicited articles with appropriate specificity and sensitivity were identified. Inclusion of the word 'body' in the search terms helped to omit some studies that did not address the relationship between body posture and emotion. Following this search, electronic database searches were carried out to select studies for review. Databases were selected, based on information provided on their websites, if they were considered to include journals and articles addressing posture and/or emotion. PubMed, Science-Direct, Web of Knowledge, and the NHS Library, including Medline, Amed, BNI, Embase, PsycInfo, CINAHL, HMIC, and Health Business Elite, online databases were searched. Terms were searched for within the abstracts and titles where possible, and all years of study publication were included in the searches to allow a breadth of articles to be considered for selection. Three terms were used in each search, one related to posture, one related to emotion, and the word "body". Search terms were as follows: ("posture" OR "position" OR "gesture") AND ("body") AND ("emot*" OR "feel*" OR "mood" OR "depress*" OR "sad" OR "anger" OR "happ" OR "joy" OR "surprise" OR "disgust" OR "fear" OR "worry" OR "anx*" OR "panic"). The specific emotions included in the search terms were informed by psychological literature on emotion and chosen on this basis (e.g. Ekman & Davidson, 1994). Synonyms of these emotional labels were used, informed by the initial pilot search, so as to allow sufficient access to a breadth of relevant literature.

The combinations of search-terms as outlined above resulted in forty-five separate searches for each online database. Search matches were followed up and reviewed in relation to their fit with the inclusion and exclusion criteria. Articles which met all of the inclusion criteria and none of the exclusion criteria were selected for review. Articles that included more than one study in the paper were selected for review if at least one of these studies met all the inclusion and none of the exclusion criteria. So as to omit studies focusing on the relationship between posture and the emotional

impact of difficulties in physical functioning, studies including participants with chronic pain or with postural, vestibular, neurological or movement disorders were excluded from the review. Similarly, studies investigating postural recognition, facial expression, and studies that focused on a specific body part were not considered to address adequately the posture of individual participants, and were excluded on this basis. Studies focused on the effects of drugs, related to the development of technology, and animal studies were excluded due to their limited implications for clinical practice. Case studies were excluded due to the limited generalisability of their findings, and studies published in languages other than English were excluded because of risk of translation errors, which might result in misinterpretation.

Inclusion:

- Studies which investigated the relationship between body posture and emotion(s)
- Studies which included variables related to body posture and to emotion
- Studies in which data was collected on the posture and emotion(s) of all participants

Exclusion:

-Studies which focused on postural, or vestibular disorders, dizziness or vertigo

-Studies which included participants with neurological or movement disorders

-Studies which included participants with chronic physical pain

-Emotion or postural recognition studies

-Studies which focused primarily on facial expression

-Studies which focused on a single specific body part or specific body mechanism

-Studies which focused primarily on the effects of drugs

-Studies which focused on the development of technology, such as computer programmes

-Studies published in languages other than English

-Animal studies

-Case studies

A total of 25 articles met the above criteria and were selected for review. Selected articles were scanned for references that might also meet the selection criteria. Eleven references were identified and followed-up. Of these, two studies were selected for inclusion. Twenty-seven articles were selected for review in total.

Review Procedure

Articles were assessed for content and quality using pro-formas. Pro-formas were informed by the National Institute for Health and Clinical Excellence Guidelines (National Institute for Health and Clinical Excellence, 2007), as these guidelines provide checklists for rating the methodology of a range of research designs. Pro-formas were adapted from these Guidelines in order to address the breadth of the study designs included in the review. Quality was additionally assessed using a scoring system devised for the purposes of systematic reviewing, with a four-point rating scale across four criteria: internal validity, participant selection, scientific rigor of design, and presentation and availability of information. It was considered that a four-point rating would be a means of communicating the quality of the studies simply, and would be uncomplicated enough for comparisons to be made between different studies. The mean from the four quality criteria was calculated to give an overall quality score. All studies

were assessed by one reviewer, and a second reviewer used the quantitative scoring system to assess the quality of a random selection of 10 of the 27 total studies. Inter-rater agreement, the percentage of scores that were rated identically by both reviewers, was calculated at 67.5%. All differences between inter-ratings were of one score, and for this reason, no scores were adjusted following review. See Table 1 for data from the studies, including overall quality scores. See Appendix 4 for a more detailed Quality Review.

Table 1. Data from the studies reviewed

Author, date and quality rating*	Research Question	Participant Characteristics	Study Design	Sample size of groups	Data Collection Method	Analysis	Main Findings	Implications
Mezey & Melville (1960) 1.75*	"To investigate the influence of emotion on the metabolic rate in different postures"	Age 20-69 years 23 female, 19 male 32 psychiatric patients, 10 healthy controls	Quantitative, case-control	32 patients and 10 controls. Divided into 3 groups according to anxiety rating: anxious (n=11), non-anxious (n=17), controls (n=10.	1)Questionnaire for emotional state, rated by psychiatrist 2) Respiratory volume 3)Respiratory rate 4)Galvanic skin resistance	Mean scores for each group compared. Statistical analysis method used is unclear	1) Patients had lower skin resistance than controls 2) Increased metabolism from lying to sitting in all groups 3) Increased metabolism from sitting to standing in controls and non-anxious patients 4) Change in oxygen concentration in expired air from sitting to standing in anxious group.	Suggests that people with state anxiety have less change in metabolism when changing posture than people without state anxiety. This is explained in relation to oxygen use in the body.
Riskind & Gotay (1982) 2*	"To examine whether variations in physical posture can have a regulatory or feedback role affecting motivation and emotion"	All undergraduate students.	Quantitative, case-control	Study 1: 20 Study 2: 20 Study 3: 28 Study 4: 41	Study 1 and Study 2: Emotional measures, and no. of trials in puzzle test Study 3: Depression questionnaire	Unclear	1)Studies 1 and 2 showed that participants in slumped posture were significantly less persistent on learned helplessness test than participants in upright posture, but emotional scores were not significantly difference between the 2 postural groups 2) Study 3 showed that emotions were recognised from postures. 3) Study 4 demonstrated that participants in hunched posture had highest stress and physiological stress ratings. In high threat condition, was significant difference between hunched and relaxed position but no SD in the low threat condition. Where threat and posture were congruent (high threat/slumped) and (low-threat, relaxed) attributions of test performance to the test itself were higher than when threat and posture were incongruent	The findings are argued to support self-perception theory. In study 1 and study 2 participants were more persistent when in an upright posture. In study 3 demonstrated they can recognise emotions from others' postures. In study 4, they experienced more stress in hunched than upright positions. Self-reports showed difference between postures in study 4 but not in studies 1 and 2. It is proposed that this is because in 4 but not in 1 or 2, there was sufficient information to confirm a hypothesis about emotional state.

*Quality ratings are calculated as a mean from 4 separate ratings, on a scale of 0-3.

Table 1. Data from the studies reviewed (continued)

Author, date and quality rating*	Research Question	Participant Characteristics	Study Design	Sample size of groups	Data Collection Method	Analysis	Main Findings	Implications
Riskind (1984) 2*	"Slumped or upright physical postures are not just passive indicators of mental states but can reciprocally affect the mental states and behaviour of an individual." Appropriateness hypothesis: "That physical posture orientations can have specific guiding effects on an individual's self-regulatory and information-processing tendencies"	Undergrad students All male in studies 2 and 3.	Quantitative Case-control Study1: 2(success/failure) x 3(upright/slumped/no manipulation) Study 2: 2 (success/failure) x 2 (upright/slumped) Study 3: 1(failure) x 2 (upright/slumped)	Study 1: 76 Study 2: 51 Study 3: 20 (10 in each condition)	Study 1: Rotter (1966) Internal-External Locus of Control Scale Study 2: Rotter (1966) and affective items of BDI Study 3: Hammen-Krantz Story Completion Question (1979) and Rotter (1966)	Study 1: Unclear Study 2: ANOVA and ANCOVA Study 3: One way ANOVA	Study 1: Success subjects had higher external locus of control in slumped condition than upright. Failure subjects had higher external locus of control when in upright condition than slumped. Study 2: Success subjects were more persistent when had been assigned upright postures than slumped postures. Failure subjects were more persistent when had been assigned slumped postures than upright postures. Success subjects were more depressed when slumped than upright. Failure subjects were more depressed when upright than slumped.	Findings suggest that incongruence between posture and outcome (success/failure) is associated with external locus of control, less persistence, and higher depression than congruence between posture and outcome) Study suggests that these findings support the appropriateness theory and that posture has a role in social regulation
Duclos et al. (1989) 2.25*	Study 1: "To test whether effects of facial expression on emotion are uni-dimensional (i.e. pleasant/unpleasant) or multidimensional (i.e. specific for each emotion) Study 2: "To test whether effects of posture on emotion are uni-dimensional or multidimensional"	Undergrad students 41 female 13 male	Quantitative within-subjects design	54	Rating 8 feelings on visual scale of 0-24.	Three-way mixed ANOVA	1)Fear and anger ratings were significantly higher in the corresponding postures 2)Surprise ratings were significantly higher in the fear posture 3) For self-produced cue group, all 3 ratings were higher in corresponding postures. In situational-cue group, differences were only significant for anger	Findings support the multidimensional rather than the unidimensional theory. Individual differences affect the extent to which postures affect emotional identification. Suggests its important to identify what the factors are which influence people's interpretations.

*Quality ratings are calculated as a mean from 4 separate ratings, on a scale of 0-3.

Table 1. Data from the studies reviewed (continued)

Author, date and quality rating*	Research Question	Participant Characteristics	Study Design	Sample size of groups	Data Collection Method	Analysis	Main Findings	Implications
Fletcher & Fitness (1990) 2.5*	1) "Relationship quality and depression would be related to the positivity of cognitions and emotions" 2) "Relationship quality and depression would be more strongly related to the positivity of nonverbal behaviour than verbal behaviour" 3) "The positivity of ongoing cognitions and emotions would be more closely related to the positivity of verbal behaviour than of nonverbal behaviour"	Heterosexual couples Most were university students	Within-subjects design	NA	Relationship quality measured by questionnaire with six – point Likert scales Short version of the BDI Seriousness of problem on three 7-point semantic scales Coding systems for nonverbal behaviour	Correlations between partners and means+SDs of major variables Correlations between relationship quality ,depression, and selected proximal variables Correlations between observer ratings of verbal and nonverbal behaviour Hierarchical multiple regressions were done with each proximal variable in turn as a dependent measure, to take into account shared variance	1) The observer-rated behaviour was highly correlated between partners with the exception of posture 2) Couples with higher relationship quality and less depression had more positive nonverbal behaviour but not verbal behaviour 3) Couples with higher relationship quality had more positive cognitions but not emotions 4)Posture was more weakly related to emotion/cognitive reports than verbal behaviour but not facial expression or voice tone 5) Significant relationship between relationship quality and posture 6) Depression was related to feelings but not cognitions, whereas relationship quality was related to cognitions but not feelings. When distal variables controlled for, cognitions were unrelated to posture and facial expression.	Results suggest that either posture is the least conscious measure of nonverbal behaviour, or that it is the least relation to psychological processes Results suggested that the cognitions and emotions reported by participants were a results of dyadic processes, rather than intra-individual processes
Maki, Holliday, & Topper (1991) 2.75*	"To investigate the association between fear of falling and postural performance in elderly individuals"	62-96 years (M= 83) 83 female, 17 male Lived at self-care residences Able to stand for 90s, walk 10m, understand verbal instructions, and had no falls one month prior to testing	Quantitative Case control	Unclear	Centre of Pressure body sway Clinical balance performance was videoed and rated on scale of 1-24 by a geriatrician	Two-way ANOVA to investigate the effect of fear of falling and falling history on each balance measure	1) No difference between fear and no-fear conditions for anterior-posterior sway, medial-lateral sway, or for spontaneous eyes-open. 2) Fear group had greater COP displacement than no-fear group in eyes closed spontaneous sway group 3) Fear group had significantly poorer scores in attempting to balance on one leg with eyes open, and a nonsignificant trend with eyes closed. 4)Few tests showed evidence of an association between fall history and balance	The people in the fear condition may have a genuine deterioration in postural control, or this may be a more direct result of anxiety Implies that information processing through sight interacts with anxiety to affect balance.

*Quality ratings are calculated as a mean from 4 separate ratings, on a scale of 0-3.

Table 1. Data from the studies reviewed (continued)

Author, date and quality rating*	Research Question	Participant Characteristics	Study Design	Sample size of groups	Data Collection Method	Analysis	Main Findings	Implications
Rossberg-Gempton & Poole (1993) 2.25*	"That postures would affect emotions and this effect would be independent of the duration of the posture" "Expectancy variables would affect the degree of response but would be unnecessary to elicit emotions"	University students Half female, half male	4x2x2 factorial design with both between-subject (expectancy) and within-subject (posture and time duration variables)	Unclear	Emotional checklist with 8 emotions on a 24-point scale	Repeated measures ANOVA	1) Closed posture significant increased unpleasant emotions, whereas open postures did not. 2) There was no effect of time duration on the size of emotional change 3) There was no interaction between expectation condition, emotion and posture. There was no overall effect for expectancy. 4) There was greatest emotional change for 'interest' and least change for 'fear' 5) There was greater emotional change for closed posture than open posture	Findings suggest that emotions do not map onto a specific posture and that people experience changes in several emotions as a result of an open or closed posture.
Stepper & Strack (1992) 2.5*	Study 1: "Can uninterpreted proprioceptive cues from manipulating body posture influence subjective experiences of pride?" "Is it necessary for the proprioceptive feedback and external stimuli to be presented simultaneously to elicit the emotional experience?" "The posturally induced feeling of pride will be more likely to be reported if the question focuses on the feelings of pride rather than the judgement of pride" Study 2: Does not fit inclusion criteria for review	University students	Quantitative Case-control	99 in total. Unclear how distributed amongst groups	Emotion questionnaire	2(posture) x4 (posture onset) ANOVA	1)Pride was greater if posture was altered at same time as got success feedback, than if was altered at an earlier time 2) Where there was an effect of posture, it was the slumped that differed from the upright and control 3)Proprioceptive feedback influences feelings 4)There was an influence of posture on emotions but not on judgement feelings 5) Participants felt more proud in upright posture than slumped posture only when manipulated posture and success feedback co-occurred.	Demonstrates the importance of context on the relationship between posture and emotion, and suggests that the effect is dependent on when the posture occurs. The research contradicts cognitive theory, as it suggests that a cognitive interpretation of posture or self-perception is not necessary for the posture to impact upon mood.

*Quality ratings are calculated as a mean from 4 separate ratings, on a scale of 0-3.

Table 1. Data from the studies reviewed (continued)

Author, date and quality rating*	Research Question	Participant Characteristics	Study Design	Sample size of groups	Data Collection Method	Analysis	Main Findings	Implications
Maki & McIlroy (1995) 2*	To explore the influences of attention distraction and physiological arousal on the control of postural sway	Males with no experience of balance testing, without disorders that might affect postural control	Within-subjects	39 in total	Skin conductance measured by electrodes Respiratory movements by changes in trunk circumference Centre of posture measured by force plates Present Affect Reactions Questionnaire	Repeated measure ANOVA assessed the effect of task and the time interval. Post hoc orthogonal contrasts were used where ANOVA showed significant differences.	Anxious participants leaned forward more than non-anxious participants in all tasks. The difference was significant in the maths task. The degree of leaning was correlated with the level of physiological arousal.	It is suggested that forward leaning is related to the flight/fight reaction and is a result of physiological arousal. The authors propose that physiological arousal may affect the influence of attention on postural control.
Yardley, Britton, Lear, Bird, & Luxon (1995) 2*	Hypothesis is that agoraphobia is on a spectrum. People with less severe and more situational agoraphobia will have balance problems.	Controls: 13 female, 7 male Clinical (with panic and agoraphobia): 27 female, 9 male,	Case-control	Control: 20 Clinical: 36	-Vertigo Symptom Scale -Body Sensations Questionnaire -Agoraphobia Cognitions Questionnaire -Mobility Inventory for Agoraphobia -State-Trait Anxiety Inventory -Panic Attack Questionnaire -Various tests of audiovestibular and balance function	T-tests Rank correlations between variables Multiple hierarchical regression	No significance between groups in the audiovestibular tests There were highly significant differences between groups in the posturographic tests For the panic/phobic group, there was no correlation between vestibular abnormality and self-report measures, whereas the posturographic results correlated with most self-report measures. After controlling for anxiety, there was still a significant relationship between postural instability and Mobility Inventory scores.	Findings overall suggest that postural instability is related to agoraphobic avoidance. It is suggested that instability in this population is related to perceptual motor-skill difficulties, rather than organic balance or vestibular disorders.

*Quality ratings are calculated as a mean from 4 separate ratings, on a scale of 0-3.

Table 1. Data from the studies reviewed (continued)

Author, date and quality rating*	Research Question	Participant Characteristics	Study Design	Sample size of groups	Data Collection Method	Analysis	Main Findings	Implications
Schelde (1998) 2.25*	Hypothesis: "That major depression is characterised by a significant reduction of social interaction"	Diagnosis of major depressive disorder Inpatients at a psychiatric ward 5 female, 6 male	Longitudinal	NA	Observations recorded on score sheets	Wilcoxon matched-pairs signed-rank test Cluster analysis was performed to identify associations between behaviours	Social interaction increased significantly over the duration of hospital stay. Body mobility and social occupation also increased. Cluster analysis identified 3 clusters: 1) Recovery behaviours 2) Depressive behaviours: non-specific gaze and arms touch 3) Depressive behaviours: No mouth movements and 5 markers of social inactivity	It is suggested that Clusters 2 and 3 reflect two types of depression: Type 1: Not social, not self-active Type 2: Not social, self-active.
Hennig, Friebe, Krämer, Böttcher, & Netter (2000) 2.5*	"To investigate the influence of upright position on cortisol" To investigate "whether posture related increases in cortisol are stress-induced"	Male, without diseases, not smokers or drinkers	Between subjects design 6 conditions	24 participants in total. 4 assigned to each of the 6 groups	Blood pressure and heart-rate measured Saliva measured by Sarstedt Salivette Emotional states questionnaire. including 13 items on positive-negative affectivity, wakefulness-tiredness, and arousal-relaxation	Repeated measures ANOVA with 2 dependent variables (posture and time point) Paired sample T test for comparing postures One-way ANOVA for comparing stress experiences Pearson correlations between cortisol and cardiovascular measures, and also between stress and cortisol	1) In the upright condition, cortisol increased over each 20 min interval, whereas in the sitting and supine condition, cortisol decreased over each 20 min interval. 2) In the upright condition, heart-rate increased over the 20 min interval, whereas there were no heart-rate changes in the sitting and supine conditions 3) There was a decrease in systolic blood pressure for all conditions but more so for supine and upright than sitting. 4) There was a significant decreased of diastolic blood pressure for the supine position compared to other positions. 5) There is little relationship between affect scores and cortisol levels. Anxiety scores are slightly higher in upright condition, followed by supine, then sitting condition.	The results imply that when cortisol levels are measured, body posture should be controlled for. It is known that different populations adopt different postures, for example, agoraphobics spend more time than controls in supine position. This has implications for their cortisol levels.

*Quality ratings are calculated as a mean from 4 separate ratings, on a scale of 0-3.

Table 1. Data from the studies reviewed (continued)

Author, date and quality rating*	Research Question	Participant Characteristics	Study Design	Sample size of groups	Data Collection Method	Analysis	Main Findings	Implications
Garvin, Trine & Morgan (2001) 2.5*	1) "To evaluate the influence of autogenic relaxation, hypnosis, and quiet rest on selected affective states and oxygen uptake" 2) "To evaluate the influence of body position on these same outcome measures"	Relaxation group participants had got a grade A in a relaxation course. Hypnosis group scored highly on a test of hypnotisability	Case-control	45 in total. 15 in each of 3 groups	Profile of Mood States (POMS) State-Trait Anxiety Inventory (STAI) Oxygen uptake by a Rayfield Metabolic Interface System	Three way ANOVA with repeated measures, followed by Fisher LDD post hoc.	There was an effect of time. STAI and POMS scores were significantly lower after 5 minutes following intervention, but not 60 mins after intervention. Oxygen uptake increased significantly for the hypnosis group at minutes 15-20 of the induction. There was no effect of condition for any of the measures.	Findings suggested that quiet rest, relaxation, and hypnosis all reduce anxiety levels in healthy participants.
Perna et al. (2001) 2.25*	Hypothesis: "Balance function might play a role in the development of agoraphobia and that respiratory reactivity might influence this process"	All in control group have panic disorder, half of which have agoraphobia too. No other psychiatric, neurological, or balance disorder	Case-control	19 in each group	-Panic Associated Symptoms Scale (PASS) -The Fear Questionnaire -The Sheehan Disability Scale -The Dizziness Handicap Scale -Body sway measured by sensors on movable platform -State-Trait Anxiety Inventory (STAI) -Panic Symptom List -Visual Analogue Scale for Anxiety	Posturography scores were subdivided into normal and abnormal groups. Then, ANOVA, MANOVA, Chi-square, Spearman Rank were carried out to assess differences between groups. Fishers test with Bonferroni Correction was applied to compare the abnormal posturographic scores with the normal patients and controls. Spearman Rank Correlation with Bonferroni correction was used to assess correlations between gas reactivity and posturographic measures.	In many of the posturographic measures, there were significant differences between healthy controls and those with panic disorder. In the eyes opened and neck extension conditions, PD participants scored significantly higher for body sway velocity and length. There was a significant difference between the high and low abnormality groups for PASS and PASS-avoidance scores, particularly in the eyes-closed condition. In the eyes-open condition, there was a significant difference between the high and low abnormality groups for PASS anticipatory anxiety. There was no significant difference between the high and low abnormality groups for gas reactivity, and no significant relationship between gas reactivity and agoraphobic avoidance.	-Two potential explanations are provided. Firstly, it may be that balance depends on a system network, which involves vision, and a dysfunction of this network can then lead to agoraphobia. Secondly, abnormal posture may occur as a result of change in postural strategy because of panic. -Dizziness could induce fear and avoidant behaviour, or fear may cause vestibular abnormality. The direction of causality requires further research.

*Quality ratings are calculated as a mean from 4 separate ratings, on a scale of 0-3.

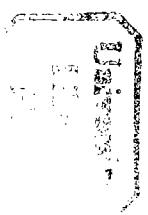
Table 1. Data from the studies reviewed (continued)

Author, date and quality rating*	Research Question	Participant Characteristics	Study Design	Sample size of groups	Data Collection Method	Analysis	Main Findings	Implications
Wada, Sunuga & Nagai (2001) 1.75*	"Does state anxiety affect the postural sway of college students not pathologically anxious?"	Female. No symptoms of dizziness, insomnia, or neurological disorder	Case control	Unclear	Device measuring body's centre of gravity, length, mean velocity, and the area of body sway	T-tests	*Anterior-posterior axis:* In the 'eyes open' condition, low frequency body sway was significantly higher in the anxious group than the non-anxious group, and high frequency body sway was significantly higher in the non-anxious group than the anxious group. For mid frequency, there was no significant difference between the anxious and non-anxious groups. *Left-right axis (eyes open)*: No difference in body sway between the anxious and non-anxious groups. *Eyes closed condition (anterior-posterior and left-right):* No significant difference between the anxious and non-anxious group	It is suggested that the vestibular system is involved in low frequency body sway, whereas the somatosensory system is involved in high frequency body sway. Results suggest that the relationship between the visual system and the vestibular and somatosensory system is affected by anxiety.
Adkin, Frank, Carpenter, & Peysar (2002) 2.25*	-"To examine the influence of fear of falling or postural threat on the organisation of posture and voluntary movement during a rise to toes task in healthy young adults" -Hypothesis: "that when rising to the toes under a greater threat to posture, the timing and magnitude of the Anticipatory Postural Adjustment and voluntary movement would be altered"	Half female, half male. People with neurological, balance, or muscoskeletal disorders were excluded	Within-subjects design	NA	-Physiological arousal was measured by skin conductance electrodes which were averaged across each trial and compared with the level in seating condition -Perceived confidence in ability to balance (0-100%) -Postural stability ratings (0-100%) -Perceived anxiety levels (16 item questionnaire on a 9-point scale) -Centre of Pressure and Centre of Mass were measured by various methods	-Two way repeated ANOVA for skin conductance, and each COP, COM, and EMG measure in relation to postural threat and trial -One way repeated measure ANOVA for confidence, anxiety and stability measures in relation to level of postural threat -Bonferroni post hoc comparisons for any significant main effect of postural threat and trial -Chi-square to investigate how unsuccessful rise-to-toes task was related to postural threat and level of trial	-There was a significant effect of postural threat on skin conductance, confidence, anxiety, and stability -The initial position of the COP and COM was moved further back in the most threatening condition -In the most threatening postural conditions, the magnitude of anticipatory postural adjustments were smaller -Most threatening postural condition had more unsuccessful rise to toes attempts than the other conditions -There was a trial main effect for the COP/COM measures, specifically between trial 1 and trials 2-5 -In the high threat condition, more time was taken to carry out the task than in the low threat condition.	It is suggested that anxiety and arousal may be modulators of postural control. It seems important to consider what makes situations of high postural threat

*Quality ratings are calculated as a mean from 4 separate ratings, on a scale of 0-3.

Table 1. Data from the studies reviewed (continued)

Author, date and quality rating*	Research Question	Participant Characteristics	Study Design	Sample size of groups	Data Collection Method	Analysis	Main Findings	Implications
Cheyne (2002) 2.75*	Study 1: Compare positions during sleep paralysis (SP) and normal sleep for individuals reporting SP Compare positions during normal sleep for people with and people without SP. Study 2: Examine the relationship between timing of SP and positional effects, and of the effects of position and timing on the intensity of SP hallucinations. Hallucinations will be more intense when waking up and in the middle of sleep than when falling asleep.	Study 1: Psychology undergrad students, approx a third of which reported SP Study 2: People filled in questionnaire on Internet	Between subjects correlational	Study 1: 415 students Study 2: 5284 Internet respondents	Questionnaire about sleep positions In Study 2: Waterloo Unusual Sleep Experiences Scale	Study 1: Chi-Square Study 2: Chi-Square, Cramer's, ANOVA, ANCOVA, Bonferroni	Significant relationship between lying in the supine position and SP Supine positions were more frequent amongst those reporting SP at the middle or end of sleep than those with SP at the beginning No effects of SP position on frequency of SP or intensity of hallucinations or fear Weak correlations showing that hallucinations and fear were more intense at the beginning and middle of sleep than the end	Possible explanations are: That REM sleep in the supine position causes a greater likelihood of SP That SP is a disorder of transition from sleep to wake, where one is unable to inhibit REM.
Bolmont, Gangloff ,Vouriot, & Perrin (2002) 2*	To examine whether in healthy subjects, mood states and anxiety could affect the ability to use inputs from the 3 sensory systems (vestibular, visual, somatosensory) and motor postural control to maintain balance.	Male students with no history of psychological, orthopedic, vestibular, or neurological disorder	Correlational	NA	Profile of Mood States (POMS) State-Trait Anxiety Inventory (STAI) Mean degrees of body sway are related to maximum theoretical stability	Friedman analysis of variance for repeated measures Correlations measured by Pearsons correlation coefficient	During the course of the study there were improvements in mood but no changes in anxiety During the course of the study there were some improvements in balance ability for the vestibular systems but not the somatosensory and visual systems Correlations between vestibular system and both anxiety and mood Positive correlation between use of vestibular input and Vigour Negative correlation between global MCT performance and 2 POMS factors. This correlation was with forward, but not backward movements.	Findings suggest that mood and anxiety may affect all three of the somatosensory, visual, and vestibular systems to maintain balance. Results also suggest that low mood but not anxiety influences global MCT performance



*Quality ratings are calculated as a mean from 4 separate ratings, on a scale of 0-3.

Table 1. Data from the studies reviewed (continued)

Author, date and quality rating*	Research Question	Participant Characteristics	Study Design	Sample size of groups	Data Collection Method	Analysis	Main Findings	Implications
Hillman, Rosengren, & Smith (2003) 2.25*	-Aim "to examine the influence that pictures, which varied in affective content, would have on postural behaviour" -Hypothesis 1: "That COP would reflect approach-withdrawal behaviour -Hypothesis 2: "That pleasant pictures would elicit inhibition of eye-blink reflex and higher valence and arousal rating, while unpleasant pictures would elicit potentiation of the eye-blink reflex and lower valence and higher arousal ratings" -Hypothesis 3: "Females show greater withdrawal from unpleasant pictures and males show greater approach to pleasant pictures"	University students. Half female, half male	Within subjects design	36 in total. 2 (Sex) x 3 (valence) x 6 (time) mixed design ANOVA with repeated measures	Self-assessment manikin (SAM) to measure arousal and valence of pictures Eye blink measured by 32-channel Neuroscan Synamps amplified and Acquire software COP data collected by a Kistler forceplate	Mixed and repeated measures ANOVAS. For all tests, post hoc tests were conducted using univariate ANOVAS and paired sample T-tests with Tukey's HSD.	Female participants showed greater movement away from unpleasant pictures across time, which was not found for male participants. Females exhibited greater movement away from the unpleasant pictures than males. In the anterior-posterior direction Greater startle response for unpleasant images than neutral or positive images Males rated pictures across all categories as more pleasant than females rated them.	Findings suggest sex differences in withdrawal from unpleasant stimuli, which may be socioculturally linked. Finding that approach behaviour was not elicited by pleasant pictures may be due to methodological factors, but more research is needed to investigate this further.
Carpenter, Frank, Adkin, Paton, & Allum (2004) 2*	"To determine how increased anxiety influence the muscular and biomechanical responses of healthy young adults to unexpected rotations of the support surface"	University students without neurological or orthopedic disorder	Within-subjects design	NA	EMG recordings Balance questionnaire Anxiety questionnaire	.2x6 within subjects ANOVA T-test with Bonferroni correction Repeated measures ANOVA	-Postural threat had a significant influence on balance confidence, confidence to avoid a fall, anxiety, and perceived stability. -Participants had larger amplitude of balance-correcting responses in the high threat condition for all muscles analyses -In high threat condition, there was a decreased onset latency of deltoid responses -In high threat condition there was a reduced magnitude of COM displacement and reduced angular displacement of leg, pelvis, and trunk. -Leg and trunk muscles had changes in amplitude but not timing, whereas arm muscles had earlier and larger muscle responses when postural anxiety increased.	Findings suggest that anxiety may increase the likelihood of falling in older adults and people with balance disorders More research is needed to understand the link between physiological and psychological, and the causality link between anxiety and balance.

*Quality ratings are calculated as a mean from 4 separate ratings, on a scale of 0-3.

Table 1. Data from the studies reviewed (continued)

Author, date and quality rating*	Research Question	Participant Characteristics	Study Design	Sample size of groups	Data Collection Method	Analysis	Main Findings	Implications
Agargun, Boysan & Hanoglu (2004) 1.5*	"To examine the relationship between sleeping positions, dream characteristics, and subjective sleep quality in normal subjects"	No history of psychiatric, alcohol, sleep, or neurological disorder People who sleep primarily on one side of their body	Between subjects design correlational	41 right sleepers 22 left sleepers	Interview Dream emotions quantitative rating Pittsburgh Sleep Quality Index (PSQI)	Fisher exact test T-test	No difference between right-side and left-side sleepers in terms of recall frequency, vividness, or bizarreness. Higher rate of nightmare sufferers in left-side than right-side sleepers In terms of dream emotion, relief/safety was the only one of 18 that was significant, and was higher in right-side than left-side sleepers. From the PSQI, sleep quality, habitual sleep efficacy, daytime dysfunction, and global scores were significantly lower in right-hand sleepers than in left-side sleepers.	Findings suggest that dreaming and sleep quality can be affected by body posture during sleep. In particular, right-side sleepers show some signs of higher sleep and dreaming quality than left-side sleepers. The reasons for this are unclear
Ohno, Wada, Saitoh, Sunaga, & Nagai (2004) 2.75*	To examine "whether anxiety is correlated with the parameters of balance control in healthy college students"	College undergraduates. No symptoms of anaemia, dizziness, insomnia, or neurological disorders	Within subjects correlational	NA	State-Trait Anxiety Inventory (STAI) Postural sway measured by a processor attached to platform	Pearson's correlation analysis and Fisher's Test	There was a significant correlation between change in state anxiety and change in enveloped area of body sway and body sway on the antero-posterior axis with eyes open.	It is suggested that state anxiety primarily affects visual input during standing, as the effect of anxiety was only in the eyes-open condition.
Azevedo et al. (2005) 2.5*	"When confronted with unpleasant stimuli, participants will show a more immobile posture than when exposed to pleasant or neutral stimuli" "When confronted with unpleasant stimuli, participants will show a greater, sustained heart rate deceleration than when exposed to pleasant or neutral stimuli"	Male students without psychiatric, neurological, or orthopedic disease, and not taking medication	Within-subject design	NA	Centre of Pressure measured by force platform computation Picture arousal and valence was measured by SAM 9-point scale	3 (neutral, unpleasant, pleasant) x 6 (order of blocks) mixed design ANOVA with Greenhouse Geisser correction. One way ANOVAs for neutral, unpleasant, and pleasant with subjective ratings of valence and arousal. Post hoc tests by Tukey's HSD.	-There was less body sway in unpleasant block compared with the neutral and pleasant blocks, which remained 20 seconds after presentation. -There was a significantly greater frequency of body sway during the unpleasant block, compared to the pleasant block. -There was bradycardia during the unpleasant blocks compared to the neutral and pleasant blocks. -Pleasant and unpleasant pictures were rated as more arousing than neutral pictures. For valence, the unpleasant pictures were significantly difference from the pleasant and neutral pictures.	-It is suggested that, as in the fear of falling literature, the unpleasant block elicited a defensive reaction, involving postural stiffness, less mobility, and bradycardia. -The fear responses corresponded with reported valence, but not arousal, suggesting that it is valence which triggers the defensive system

*Quality ratings are calculated as a mean from 4 separate ratings, on a scale of 0-3.

Table 1. Data from the studies reviewed (continued)

Author, date and quality rating*	Research Question	Participant Characteristics	Study Design	Sample size of groups	Data Collection Method	Analysis	Main Findings	Implications
Gregersen (2005) 1.75*	To identify differences in how anxious and non-anxious groups manifest the behaviours of facial expression, gaze behaviour, body gesture, and posture, in an anxiety-provoking situation	Half anxious, half non-anxious about foreign language learning	Case-control	4 in each of 2 groups	Facial movement, gazing behaviour, and posture recorded from tape-recorded interview with teacher	Comparison of raw data	*Facial movement*: Non anxious participants moved facial features more, blinked less, and smiled more than anxious participants. *Gazing behaviour:* Non anxious participants looked up and down more but looked on each occasion for shorter duration, looked at interviewer more, and closed eyes less, than anxious participants *Posture*: Non-anxious participants sat forward more, used more gestures, fidgeted less, folded arms less, bounced and tapped feet and limbs less, and nodded head more, than anxious group.	These findings may help foreign language teachers to identify anxiety in students, which may help guide their behaviour
Galeazzi, Monzani, Gherpelli, Covezzi, & Guaraldi (2006) 2.5*	"In healthy subjects, not only levels of anxiety and depression, but also negative feelings associated with body image and weight, would correlate to posturographic indices of stabilization when the subject is exposed to a full-length mirror image or his or her body"	Medicine students with no psychiatric, balance, vestibular, neurological, or visual disease. 46 female, 20 male	Within-subjects design	All participants in 3 conditions	Body Cathexis Scale Body Uneasiness Test State-Trait Anxiety Inventory Beck Depression Inventory	Repeated measures ANOVA to test posture between conditions. Partial correlation coefficients were used to test correlations between psychometric scores and postural stability.	Body sway was significantly greater in eyes closed than eyes open or eyes mirror, and significantly higher in eyes open than in eyes mirror. There was a significant effect of anxiety and body concerns on the stabilisation effect of eyes mirror compared with eyes open	The results suggest that visual input affects postural stability, and that a mirror has a stabilising effect on posture. Anxiety and body concerns reduce the extent of a mirror stability effect.

*Quality ratings are calculated as a mean from 4 separate ratings, on a scale of 0-3.

Table 1. Data from the studies reviewed (continued)

Author, date and quality rating*	Research Question	Participant Characteristics	Study Design	Sample size of groups	Data Collection Method	Analysis	Main Findings	Implications
Roberts & Arefi-Afshar (2007) 2.5*	"That participants of both genders would be more productive and feel better about themselves after receiving success feedback in the upright posture but women would not experience these positive after-effects to the same degree as men"	Undergraduate students 47 female, 23 male	Between subjects 2 (sex) x 2 (posture) design	47 in female group, 23 in male group.	Raven's Progressive Matrices Right Now Mood Questionnaire Progressive Matrices and Math Satisfaction Questionnaires Math Test Ergonomic Posture Check	2x2 MANOVA on the 15 moods from the Right Now Mood Questionnaire ANOVA for sex x posture for Satisfaction Questionnaire 2x2 MANOVA for the Maths Test ANOVA for sex x posture for Math Test Satisfaction Questionnaire	*Mood ratings*: Women were significantly more worried than men, and men significantly more relaxed than women Ratings for Discouraged, Content, Tense, Ashamed, and Angry, were rated more highly (more negatively) in the slumped position than the upright position. *Satisfaction Questionnaire:* Men in upright condition thought they had performed better than those who were slumped, whereas women in the upright condition thought they had performed worse than those who were slumped. *Maths Test:* Men were more accurate in the upright posture than the slumped. Women were more accurate in the slumped than the upright. Men achieved higher maths scores in the upright posture than the slumped. There was no significant difference for women. *Math Test Satisfaction:* Men felt better about their performance in the upright posture than the slumped posture. Women felt better about their performance in the slumped posture than the upright posture.	It may be that men rely more on internal physiological data to determine their affect than women do. It may be that women felt exposed and self-conscious in the upright posture, compared with the slumped posture.
Lipnicki & Byrne (2008) 2*	It is suggested that negative affect will be less intense when lying down than standing up	16 female, and 4 male volunteers Scored within the normal range on a screening of the STAI	Within-subjects 2(Task) x 2 (posture) design	All 20 participants completed tasks in all conditions	Short form of the STAI 0-10 scale for psychological stress measure Mental arithmetic task difficult scale of 0-10 Heart-rate was measure with a Finapres 2300 Blood Pressure Monitor	Repeated Measures ANOVA	State Anxiety: Anxiety was higher immediately after the maths task than at baseline or after recovery. Baseline anxiety scores were higher in the standing than in the supine condition in the task group but not in the control group. Psychological Stress: Ratings were higher immediately after the maths task than at baseline or after recovery Heart Rate: This was significantly greater when standing than when in supine, for both groups. Heart rate reactivity to the maths task was significantly greater when supine than when standing.	-Findings appear to suggest that participants had anticipatory anxiety in the task group but not the control group. -Findings are discussed in relation to baroceptor load but there are other possible explanations for the findings. -There are implications for research involving brain scans, which often involve the supine position.

*Quality ratings are calculated as a mean from 4 separate ratings, on a scale of 0-3.

Results

The majority of reviewed studies used experimental design methods to consider the relationship between individuals' postures and emotions. Many studies looked specifically at the relationship between postural stability and anxiety. Other studies investigated how the adoption of different postures affects emotional states, including anxiety, pride, and depression. A minority of studies took a more contextual approach and looked at how posture, as a means of nonverbal communication, can interact with emotion. Another minority focused on unconscious states, looking at the relationship between sleeping position and emotion.

Study Quality

The majority of the articles reviewed included comprehensive coverage of method, results, and discussion sections. Some studies lacked a clear hypothesis, though research aims were made explicit in the majority of studies, with methodology following from these aims. Most reported the p values of results, discussed statistical significance, and displayed results creatively with good use of graphs and tables. The implications of studies were discussed and clinical relevance was generally clear. Some of the articles could have been improved by better use of subheadings in the text but in most cases, articles were logically structured.

Some studies made appropriate use of participant selection, with consideration of participant characteristics, co-morbidities, and groups taken from comparable populations. In other studies, these were not sufficiently considered, particularly psychological and demographic factors, which may have confounded results. In the majority of studies, participants were university students, and it can not be ascertained

whether results from such studies are representative of the general population. In many articles, method of participant recruitment was also unclear, restricting the opportunity to evaluate the studies' validity. Most studies included a sample size which appeared to be sufficient. However, statistical power calculations were only mentioned in one of the articles, raising the possibility that some studies did not have sufficient participant numbers for conclusions to be valid.

Scientific rigor of study design was overall the weakest area of quality, though some studies addressed this well. Some studies included control groups, whereas others did not include this condition when it would have added to the strength of the study. Randomisation and allocation concealment was sometimes not evident from the articles but in other studies was well accounted for. Some studies made efforts to make the study blind. Generally, appropriate outcome measures were used to address the aims of the study, but this was variable. In some cases, outcome measures were devised by the researchers with no discussion of the validity of the measures.

Postural Stability

Anxiety and posture.

Six articles were concerned primarily with the effects of anxiety and emotion on postural balance in normal participants. Azevedo et al. (2005) found that, when viewing images of mutilation, participants had a greater frequency but lower amplitude of oscillation movements than when viewing positive or neutral images. Wada, Sunuga and Nagai (2001) compared the body sway of participants with high and low state anxiety scores, in eyes-closed and eyes-open conditions. In the eyes-open condition, the anxious group had significantly more low-frequency body sway than the

non-anxious group, and significantly less high-frequency body sway than the non-anxious group, in the antero-posterior direction. Similarly, Ohno, Wada, Saitoh, Sunaga and Nagai (2004) found a correlation between state anxiety and both the enveloped area of body sway[2] and the length of body sway on the antero-posterior axis in an eyes-open condition. These findings indicate that there is a relationship between anxiety and postural control. As there were no significant differences in body sway between anxious and non-anxious participants in the eyes-closed condition, findings appear to suggest that the visual system is involved in balance control when standing, and becomes disrupted during states of high anxiety.

When participants are asked to maintain balance on a moving platform, there is indication that the somatosensory and vestibular systems are involved. Bolmont, Gangloff, Vouriot and Perrin (2002) manipulated test conditions to control independently for the somatosensory, visual, and vestibular systems[3], and found that anxiety and mood influences balance through all three systems. The studies suggest that the three systems involved in balance control can also interact with anxiety and with mood in healthy participants. Maki and McIlroy (1996) found a similar interaction when participants were asked to carry out tasks, altering their arousal and attention, in quiet standing conditions. Participants with a high level of somatic state anxiety, leaned forward and showed alteration in the foot muscles when in a high arousal condition, compared with a low arousal condition, or participants with lower state anxiety. This finding was suggested to be a related to the flight response provoked from situations of threat. A study by Hillman, Rosengren, and Smith (2004) looked into gender differences in response to affective images. Unpleasant images resulted in larger startle responses

[2] Enveloped area of sway is a measure of net sway, involving sway in the anterior, posterior, and lateral directions (Hall & Brody, 2004).

[3] The vestibular, somatosensory, and visual systems are the three systems recognised to be involved in detecting movement and responding to this by postural adjustment. The vestibular system detects internal body movements, such as head orientation. The somatosensory system detects and responds to external information, such as the nature of moving surfaces (Zasler, Katz & Zafonte, 2006).

than the pleasant or neutral images, in both genders. There was, however, a greater tendency for females to move in the posterior direction in response to unpleasant images compared with males. Males rated images from all groups as more pleasant than females rated them. Results therefore suggest that there are gender differences in perceived emotional threat, but under threat, there are commonalities in postural response across participants.

Fear of falling and posture.

Three studies looked more specifically at the effects of fear of falling on postural control. All found that fear of falling had an effect on posture. Maki, Holliday, and Topper (1991) found that elderly participants with fear of falling had a greater Centre of Pressure[4] displacement than the non fear group, in an eyes-closed spontaneous sway condition. They also found that participants with a fear of falling had significantly poorer balance on one leg than the non fear group in an eyes-open condition. Two studies have manipulated the height at which participants stood, so as to alter the degree of postural threat. Carpenter, Frank, Adkin, Paton, and Allum (2004) found that in the high threat condition, elderly participants responded to unexpected movements with greater leg and trunk muscle movements than in the low threat condition. In the high threat condition, there was also greater and faster muscle response in the arms. In another study in which participants carried out a rising to toes task, (Adkin, Frank, Carpenter, & Peysar, 2002), the high threat condition resulted in a reduced rate and magnitude of postural adjustments and voluntary movements. In this condition, participants took a greater amount of time to complete the task, and there were a higher number of failed attempts in the task. It is unclear whether participants with a fear of

[4] Centre of Pressure is a measure of the distribution of weight. It is the centre of the distribution of force (Voight, Hoogenboom, & Prentice, 2006).

falling have an abnormality in postural control per se or whether it is a more direct result of anxiety. Adkin et al. (2002) found that fear of falling affected postural adjustments, and it may follow from this that fear of falling affects postural control in other circumstances. Similarities between postural responses from fear of falling and anxiety more generally (Maki & McIlroy, 1996) indicate that anxiety quite broadly has potential to affect balance. There is some indication that anxiety can affect postural stability differently with eyes-closed to eyes-open (Maki, Holliday, & Topper, 1991; Ohno et al., 2004), which may suggest that the interaction is at least partially mediated by the visual system.

Balance and trait anxiety/psychiatric states.

There is some evidence that people with symptoms of agoraphobia and panic disorders have impaired balance function both when positioned standing on a moving platform (Yardley, Britton, Lear, Bird & Luxon, 1995) and on a static platform (Perna et al., 2001). In a static condition, participants with panic/agoraphobia had significantly greater body sway velocity and length than controls (Perna et al., 2001). On a moving platform, participants with panic/agoraphobia had six times the rate of postural abnormality than controls (Yardley et al., 1995). Balance abnormality in anxious populations has been found to correlate positively with anxiety avoidance scores (Perna et al., 2001), even when anxiety is controlled for (Yardley et al., 1995). In an eyes closed condition, imbalance correlates with anticipatory anxiety (Perna et al., 2001). These findings further support the suggestion that visual processing may contribute towards balance disturbances in people with anxiety. In further support of the role of the visual system in balance control, Galeazzi, Monzani, Gherpelli, Covezzi and Guaraldi (2006) found that looking into a mirror resulted in less body sway than in an eyes open

or an eyes closed condition. This stabilisation effect was influenced by anxiety and body image concern scores, with the finding of an inverse relationship between stabilisation scores and anxiety/body image concern scores. This seems to suggest that body mirroring can affect postural stability, and this is affected by body image.

Effect of Posture on Emotion

Uni vs. multidimensional models.

Most studies investigating the effect of posture on emotion have focused on specific emotions and postures, most notably, anxiety, and depressed mood. Two studies have looked into whether it is most appropriate to link specific emotions with specific postures, or whether it is better to consider the postural-emotion relationship more broadly. Duclos et al., (1989) found that participants who were put into specific postures, and then self-reported their feelings, matched specific postures with specific feelings. This finding provided evidence for the theory that specific postures are associated with specific emotions, rather than that postures relate to more general positive or negative affective states. In contrast to this, however, Rossberg-Gempton and Poole (1993) found that there was some crossover in emotional self-reports following the adoption of open and closed postures. There was greater emotional change following the adoption of closed postures than open postures, and closed postures increased a range of unpleasant emotions, whereas open postures did not. It may be that the difference between the findings of Duclos et al. and Rossberg-Gempton and Poole are due at least in part to the differences in specificity of the postural conditions. In Duclos et al.'s study, postures found to be specific to particular emotions were adopted, whereas in Rossberg-Gempton and Poole's study there were only two

postural conditions. The findings therefore may suggest that when specific postures are adopted, specific emotions may result, whereas when posture is more generally defined, the emotional response is somewhat more ambiguously categorised.

Anxiety/stress.

There is some evidence of a link between posture and physiological symptoms of anxiety. Mezey and Melville (1960) found that control and non-anxious participants showed an increase in metabolism when moving from lying to sitting, and again from sitting to standing. In contrast, anxious participants showed an increase in metabolism when moving from lying to sitting, but no further increase when moving from sitting to standing. There were differences in patterns of oxygen extraction between the anxious and non-anxious groups, which may be the cause for these differences in metabolism, implying that anxious participants breathe in less than non-anxious participants when moving from sitting to standing, perhaps as a result of anxiety in a standing posture. Hennig, Friebe, Krämer, Böttcher, and Netter (2000) found that cortisol levels were higher in a standing condition than a sitting or lying condition. The study did not find an effect of posture on self-reports of emotion, which may in part have been because anxiety levels were low across all postural conditions, resulting in a floor effect. However, findings may suggest that hormonal indicators of emotion, and experiences of emotion, do not necessarily occur simultaneously, following change in posture.

Findings suggest that posture can affect anxiety, but only when participants actively engage with the environment and/or when there is some level of external threat. When participants were asked to carry out a task which poses low threat to the self, there was no significant difference between the effect of a hunched vs.

upright posture on emotion (Riskind & Gotay, 1982) and when participants were in a no-task condition, there was no difference between whether participants were standing or lying down (Lipnicki & Byrne, 2008). In contrast, when participants completed a maths task which posed some threat to self, self-reports of anxiety and stress were significantly higher when participants were standing, than when lying down (Lipnicki & Byrne, 2008). There is indication that when threat is contradicted by positive feedback on test performance, upright posture results in more positive mood (Riskind, 1984; Roberts & Arefi-Afshar, 2007), greater pride (Stepper & Strack, 1993), a more internal locus of control (Riskind, 1984), and a greater task persistence (Riskind & Gotay, 1982; Riskind, 1984) than a slumped or hunched posture.

The effect of posture on emotion when participants are in a high threat condition, not contradicted by positive feedback, seems to be more complex. Riskind and Gotay (1982) found that participants in a hunched position reported higher stress ratings than participants in an upright position, when they were told that their test performance was correlated highly with intelligence. In contrast, Riskind (1984) found that participants in a hunched position when given failure feedback have greater task persistence, less depression, and greater internal locus of control, than participants in an upright posture. It seems that in a high threat condition, a hunched posture intensifies the feeling of threat, but also results in an internal locus of control, which leads to greater persistence and more positive mood, than people in an upright posture. As an upright posture seems to have a positive effect on psychological wellbeing when receiving positive feedback but has the opposite effect in a high threat condition, it seems that congruence between emotional experience and posture is important, rather than posture per se.

There is evidence that individual and contextual factors interact with the effect of posture on emotion. Studies suggest that there are individual differences in

tendency to attribute mood more from posture or from external information (Duclos et al., 1989). There is also some evidence for gender differences in the effects of posture on emotion. Roberts and Arefi-Afshar (2007) found that when given success feedback, women in the upright condition thought they had performed worse than women in the hunched position, whereas the reverse was true for men. Similarly, women performed better in the maths task and felt more positively about their performance when in a slumped position than in an upright position, whereas men performed better and felt more positively about their performance in the upright position than the slumped position.

The effect of posture on emotion also seems to be affected by the presence and timing of test feedback. Stepper and Strack (1993) found that participants given positive feedback felt prouder in an upright position than a slumped position, but only when posture and feedback occurred simultaneously, not when posture was altered before feedback was given. One study considered the longer term effects of posture on emotion. Garvin, Trine, and Morgan (2001) conducted a study with participants in conditions of receiving relaxation, hypnosis, or rest, in seated or supine position. They found that all interventions reduced anxiety after 5 minutes but that this result did not continue after 60 minutes. Posture had no effect on the effectiveness of the interventions in improving mood and reducing anxiety.

Interaction between Posture and Emotion

Nonverbal communication.

The sections above have discussed the relationship between the posture and emotion of individuals. However, individuals live within a context and have

relationships with other people. As postures are observable by others, the relationship between posture and emotion potentially has implications for relationships. Three studies have concentrated on the relationship between emotion and the communicative role of posture. Fletcher and Fitness (1990) asked heterosexual couples to discuss issues of relational conflict with their partner and then watch back a video of the conversation, stopping it when they recalled having a thought or feeling at that point during the interaction. Participants also completed questionnaires of relationship quality and depression, and were asked to complete rating scales about verbal and nonverbal behaviour during the interaction. Results demonstrated that couples with higher relationship quality and less depression had more positive nonverbal communication, though not verbal communication, than couples with lower relationship quality and higher depression. Specifically in relation to the postural component of nonverbal communication, findings showed a significant relationship between relationship quality and posture during the interaction. When relationship quality was controlled for, no relationship between posture and emotion/cognitive reports were found, but there was a relationship between observer ratings of verbal reports and emotion/cognitive reports. These findings may suggest that posture is related to stable psychological properties of a relationship, more than specific thoughts or feelings from an interaction. Therefore, posture within an interaction may indicate the overall quality of the relationship but can not reliably predict more immediate reports of cognitions and feelings, in couples' discussions of conflict.

Relationships have also been found between posture and stable measures of anxiety and depression. Gregersen (2005) compared the nonverbal behaviour of anxious and non-anxious foreign language students in an interview with a foreign language teacher. Several differences were found between the groups. Anxious participants, more frequently than non-anxious participants, folded their arms, bounced and tapped feet

and limbs, leaned back, and fidgeted. In contrast, non-anxious participants sat forward, used more gestures, folded hands, and nodded their heads more than anxious participants.

Schelde (1998) compared the nonverbal behaviour of depressed patients over the period of stay in a psychiatric inpatient ward. In parallel with decreased score on measures of depression, there was an increase of social interaction, body mobility, and social occupation. Despite these changes, however, there was little change in body posture over the course of the stay. Overall, findings appear to suggest that posture correlates with stable emotional and psychological states, but correlates poorly with specific interactional factors. This may be partly because posture is less amenable to verbal expression (Fletcher & Fitness, 1990), however, Schelde (1998) found that posture changed less over time than other behavioural markers of depression, indicating that posture can remain relatively stable even after psychological change has occurred.

Sleep.

In addition to the studies looking at the relationship between posture and emotion in conscious states, two articles looked at the relationship between sleeping position and emotion. Cheyne (2002) found that participants who reported incidents of sleep paralysis were more likely to sleep in a supine position than in a prone position, or on one side. They were particularly likely to experience sleep paralysis when in a supine position at the middle or end of sleep. There was no effect of sleep position on intensity of hallucination or fear but there were some weak correlations showing that hallucinations and fear were more intense at the beginning and middle of sleep than at the end. It may be that REM sleep in the supine position increases the likelihood of sleep paralysis, but this is not conclusive. Agargun, Boysan and Hanoglu (2004)

compared normal participants with a preference for sleeping on their right side with those preferring to sleep on their left side. They found that participants who prefer to sleep on their left side have a greater rate of nightmares, poorer sleep quality, habitual sleep efficiency[5], and daytime dysfunction than right-side sleepers. Right-side sleepers reported more feelings of relief and safety than left-hand sleepers. These findings extend the literature by suggesting that there is an interaction between body posture and emotion, in non-conscious, as well as conscious, states.

Discussion and Implications

There is overall a wealth of research supporting a relationship between body posture and emotion. Research suggests that all three of the balance systems: somatosensory, visual, and vestibular, can interact with emotion, and people who are anxious or low in mood are more likely to show signs of postural instability. This finding occurs both for somatic and emotion anxiety, for participants on moving and still platforms, and across a range of anxiety 'types,' including fear of falling, agoraphobia, and general state anxiety. Further research is needed to understand further how balance pathways interact with anxiety. The link between visual impairment, fear of falling, and postural stability, is one area which may be particularly important, considering the high levels of falls in older adult populations (Tinetti, Speechley, & Ginter, 1998). Research should also look into the causal relationship between balance abnormality and clinical psychological problems, including agoraphobia and avoidance behaviours. Indication that mirroring can stabilise or destabilise balance, depending on body image, suggests that self-concept may be one factor which interacts with the effect of anxiety on posture. The involvement of emotion other than anxiety would also be of

[5] Habitual sleep efficiency is the amount of time spent between falling asleep and waking the next morning that is spent asleep (Martin, 2003).

interest to research further. This is particularly so as it is known that there are high levels of co-morbidities between anxiety and other psychological problems, such as depressive disorders (Simon & Rosenbaum, 2003).

Research evidence suggests that posture can affect feelings of anxiety, depression, and pride. There is some indication that congruence between emotion and posture increases internal locus of control, improves mood, and increases task persistence. This finding would suggest that taking up a 'positive' posture does not improve wellbeing per se. Instead, it may suggest that an awareness and acknowledgement of posture has a positive impact on wellbeing and motivation. This provides support for awareness-based therapies, such as Gestalt and mindfulness approaches. Studies demonstrate that the postural-emotion relationship is dependent on a range of contextual factors, including gender, time congruence between posture and external information, and opportunity for interpretation of situational vs. self cues. Further research could look in more depth at the role of these contextual factors in modulating the effect of posture on emotion. For example, research could consider whether there is an interaction between such contextual factors, and could look how personality factors and trait emotions affect the posture-emotion relationship. Such research may have implications for psychological therapies. Factors that interact with the posture-emotion relationship could be considered in formulation of clients' problems, and could help therapists to identify the occasions and methods by which working with clients' posture could help therapy to progress.

On a systemic level, it has been found that posture correlates more with stable distal psychological measures than immediate interpersonal emotions. This suggests that, counter to popular body language literature, posture may relate more to background psychological factors than to immediate interactions in a social context. Furthermore, there is some indication that posture does not change noticeably even

when psychological change occurs. The relationship between stable measures of posture and psychological factors has many implications for clinical psychology, and would benefit from a great deal more research.

The Interactive Cognitive Subsystems (ICS) model is an information-processing framework which can account for the current findings and the complexities of the posture-emotion relationship. According to the ICS model (Teasdale & Barnard, 1993) information is coded at the Acoustic, Visual and Body state level and is developed into more complex coding systems. Information from the Body state is transferred to the Implicational code, which represents the highest level of meaning, including one's core beliefs, values, and emotions. The transference of information between the Body state and the Implicational level can be seen to illustrate the relationship between posture and emotion, whereby posture affects the meaning one makes of one's experiences, and this meaning affects the coding of somatic information. The model can explain, therefore, how posture can affect emotion, and how emotion can affect posture. As information is coded first on a sensory level and is developed from this into higher order meaning, the model is able to explain how contextual factors and subtleties can affect the posture-emotion relationship in different places in the information-processing system, and can impact on wellbeing through this means. Clinical psychologists could use the ICS model in the context of the current findings to consider in formulation how clients' habitual postural patterns are related to their psychological difficulties. This could involve being aware of how therapists' impressions of clients are affected by clients' postures, and how postures are related to the nature of dialogue in therapy. Following from this, it may be that interventions could focus on increasing clients' awareness of their postures, the meaning this holds for them, and how altering posture affects them psychologically. Further research could consider more specifically whether these habitual postures, if not worked with, can increase the chances of relapse or holding

back therapeutic change. As research suggests that posture can communicate information about one's emotional state within a social context, it may be that the postures of therapists as well as clients have implications for therapeutic change. Research could consider how therapists' postural habits interact with clients' posture and may affect the therapeutic relationship. Therapists may choose to use their own posture to help inform their work with clients, for example, in awareness-based therapies, therapists' awareness of their posture may draw attention to relevant material which could become part of dialogue with clients.

It is well documented in psychological research that there is a relationship between sleep and psychological wellbeing (e.g. Hamilton, Nelson, Stevens, & Kitzman, 2007). The finding that sleep posture can affect sleep experience and dream quality adds to the literature by suggesting that there is an impact of posture on emotion in non-conscious states. Future research could look into the relationship between psychological wellbeing and sleep posture, and consider how adjusting sleep posture affects quality of sleep. Findings may help to inform sleep hygiene strategies for people with sleeping and emotional difficulties.

In summary, it is apparent that there are considerable links between posture and emotional factors. Findings suggest that psychotherapeutic approaches may benefit both from a greater consideration of how posture contributes towards the aetiology and maintenance of emotional difficulties, and from applying these considerations to therapeutic interventions with clients. The majority of the research has used experimental methodology and looked specifically at anxiety. Further research could consider the relationship between posture and other emotions. Qualitative research looking into the experiences of participants may also offer valuable insight into the subjectivity of the relationship between posture and emotion, which may help inform clinical practice.

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Part Two.

Psychological Change and the Alexander Technique

Psychological Change and the Alexander Technique

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Abstract

Objectives: The Alexander Technique (AT) is a complementary therapy and holistic approach, which aims to improve psychological and physical well-being. Very little research has assessed the effectiveness of the AT at bringing about psychological change. This exploratory study aims to investigate the psychological impact of learning and practising the AT, and how AT pupils understand the processes underpinning this impact.

Design: A qualitative, phenomenological approach was taken to explore participants' experiences.

Methods: Ten semi-structured interviews were conducted with participants who had experience of learning and practising the AT. The interviews were transcribed and analysed using Interpretative Phenomenological Analysis (IPA) (Smith & Osborn, 2008).

Results: Participants described a wide range of psychological changes as a result of learning the AT, including increased self-awareness, calm, confidence, balance, presence, and ability to detach from problems. The process of learning the AT was rewarding but, for many participants, was also challenging.

Conclusions: The psychological benefits of the AT are understood in relation to established psychological and psychotherapeutic models. Further considerations and implications for future research are discussed.

Psychological Change and the Alexander Technique

Introduction

There is a growing body of evidence to suggest that complementary therapies can help improve physical health (e.g. NICE, 2009), but the evidence for their effectiveness at improving psychological wellbeing is much less well-researched. It has been suggested that there is an incompatibility between complementary therapeutic approaches and the positivist emphasis in clinical psychology (Hughes, 2008), meaning that the holistic assumptions of complementary therapies contrast with scientific focus in clinical psychology (Hughes, 2008). This may suggest that therapeutic goals stemming from these two approaches are contradictive. However, it is noted that both complementary therapies and psychotherapies are heterogeneous in philosophy and approach, suggesting that there may be room for complementary therapies to be used within ideologically similar psychotherapies. As government initiatives intend to improve access to psychological therapies (IAPT, 2009) while also emphasising patient choice in their access to healthcare (Darzi, 2009) it seems important to find out how alternative approaches may be effective at improving psychological wellbeing. Potentially, such approaches could be used either in combination with, or as an alternative to, existing psychological therapies.

Alexander Technique (AT) is a psychophysical technique, developed by F.M. Alexander, which concentrates on altering the relationship between body and mind through cognitive instruction and the re-education of movement (Gelb, 2004). It focuses on developing awareness of body habits and corrects poor use of the body by inhibiting faulty patterns and directing the self to improved body use. Research suggests that the AT has physiological benefits, including reductions in chronic pain (Little et al., 2008), improvements in breathing (Austin & Ausubel, 1992), reduced disability in people with

Parkinson's disease (Stallibrass, 1997) and improved balance (Dennis, 1999). In the AT literature, there is documentation of psychological benefits (e.g. STAT, 2009), however, the psychological impact of learning and adopting the AT remains largely unexplored by empirical research.

Alexander is said to have claimed that what many psychoanalysts aim for, the Alexander lesson achieves (Barlow, 2002). The limited research which has gone some way to investigate the accuracy of this claim has provided evidence that the AT can improve psychological wellbeing. Participants with Parkinson's Disease had reduced depressive symptoms and improved body concept scores post AT intervention (Stallibrass, Sissons, & Chalmers, 2002) and, in a separate study, the AT was used by 27 out of 28 participants six-months after lessons ended (Stallibrass, Frank, & Wentworth, 2005), suggesting that the AT may have long-term benefits. Participants reported that they used the technique to help them relax, cope with panic and stress, and increase energy, control and social confidence (Stallibrass et al., 2005). Though these participants were solely people with Parkinson's disease, there is considerable anecdotal evidence to suggest that there are mental health benefits in other populations (e.g. STAT student survey, 2006; Gelb, 2004).

If there are psychological benefits to the AT, there remain questions over how these improvements occur. Similarities between the AT and some psychological therapies go some way to answering this question. Table 1 illustrates some of the key similarities between the AT and four therapeutic approaches, in terms of their theoretical assumptions and the methods they employ.

Table 1. Similarities between the AT and psychological approaches

	AT	Gestalt psychotherapy[6]	Body psychotherapy[7]	Mindfulness[8]	Cognitive-behavioural therapy[9]
Assumptions of approach					
Here-and-now focus	Yes	Yes	Varies	Yes	No
Relational and environmental context is important	Yes	Yes	Varies	Yes	Varies
Holism: Body and mind are integrated	Yes	Yes	Yes	Yes	No
Method					
Attention to sensory experience	Yes	Yes	Yes	Yes	No
Increase holistic awareness of self	Yes	Yes	Yes	Yes	No
Alter posture	Yes	Yes	Yes	No	No
Prevent habitual patterns of behaviour	Yes	Yes	No	No	Yes
Use of cognitive directions	Yes	No	No	No	Yes
Use of touch	Yes	Varies	Yes	No	No

The approaches in Table 1. are integrated in some psychological therapies. In particular, mindfulness and cognitive-behavioural therapies are combined in dialectical-behaviour therapy (Linehan, 1993), acceptance and commitment therapy (Hayes,

[6] Gestalt psychotherapy originates from the humanistic-existential field of psychology. It is an approach rather than a set of techniques, which focuses on experimentation, creativity, and spontaneity. The goal of therapy is awareness (Clarkson, 2004)

[7] Body psychotherapy refers to a set of therapies that use the body and body process, such as through the use of language, touch, transference, kinaesthetic awareness, and emotional expression (Conger, 1994).

[8] Mindfulness has its origins in Zen Buddhism (Johanson & Kurtz, 1991). It can be defined as "paying attention in a particular way: on purpose, in the present moment, and non-judgmentally" (Kabat-Zinn, 1994).

[9] Cognitive-behavioural therapy involves helping clients to replace problematic thoughts and behaviours with more adaptive cognitive and behavioural strategies and ways of interacting with others (Carr & Mcnulty, 2006).

Strosahl, & Wilson, 1999), and mindfulness-based cognitive therapy (Segal, Williams, & Teasdale, 2002). The AT can be considered to incorporate some, though not all, components of mindfulness. The technique emphasises the importance of pausing before making a movement, of concentrating on the process of the movement rather than the end-goal, and of being aware of the body and the environment, adapting movement to optimise function. This emphasis on awareness in the present moment, and attention to and switching between stimuli experienced through the senses is a central part of mindfulness (e.g. Linehan, 1993). However, the AT involves evaluating the use of one's body, whereas, mindfulness approaches suggest that information obtained through the senses should be accepted and allowed to pass through consciousness without judgement. It can, therefore, be concluded that the AT encompasses aspects of mindfulness, but differs on its evaluative component. The AT differs further from mindfulness-informed therapies in that it does not attempt to restructure cognitive patterns and does not involve the use of behavioural strategies to improve wellbeing. Nevertheless, the finding that the AT shares some of the elements of Gestalt, body, and mindfulness-informed cognitive therapies supports research suggesting that there is a relationship between posture and emotion (e.g. Perna et al., 2001; Riskind, 1984). As there is evidence to suggest that these therapies improve psychological wellbeing (e.g. Evans et al., 2008; Teasdale et al., 2000), it seems likely that the AT may offer some psychological benefits through similar processes.

The AT uses a one-on-one approach, involves touch, and focuses on body-mind disturbance, which may suggest that psychological processes occur between teacher and pupil during lessons. However, one difference between the AT and many psychotherapies, is that the AT does not emphasise the teacher-pupil relationship (Mowat, 2006), whereas in psychotherapy, the relationship is of fundamental importance and has been found to be the greatest predictor of therapeutic effectiveness

(Norcross, 2002). It is unknown how participants experience the relationship with their teacher, and how this impacts upon the outcome of their lessons.

In summary, there is an indication in the literature that the AT has psychological benefits, but to date there is little research to support this claim. If learning the AT can improve psychological well-being, then there are implications for psychological therapies. Firstly, finding out more about how the AT improves well-being may help to develop psychological knowledge and understanding of the processes involved in psychological growth. Secondly, there may be potential for principles of the AT to be used within therapy, or for therapy and the AT to be used in combination. This study was a starting point from which to explore the psychological impact of the AT, and the process involved in learning it. Two research questions were developed and addressed in the study:

-What are Alexander Technique pupils' experiences of the psychological impact of the technique on their lives?

-How do AT pupils account for the means by which the Alexander Technique has a psychological impact?

Method

Background and Participants

An interview-based pilot study was carried out with AT teachers, which elicited information about their pupils' experiences of the AT. Teachers were selected from the STAT-approved list of teachers (STAT, 2009) if they were known, through word of mouth, to have considerable experience teaching pupils, or if they were thought to be

particularly knowledgable with regards to the psychological benefits of the AT (see Appendices 6 and 7). Information from the pilot study was used to shape the interview questions and the inclusion criteria in the main part of the study with AT pupils. Teachers considered that pupils often do not attribute psychological findings to the AT and, for this reason, inclusion criteria specified that participants must have had at least fifteen AT lessons and have been learning the AT for more than three months. Participants were recruited via flyers advertising the study, which were given to them by their teachers (see Appendix 8). Ten participants were recruited, and were pupils of four teachers practising in Yorkshire. Nine participants were female and all described their ethnicity as white-British. Ages ranged from 38 to 63 years with a mean age of 53.9 years. Reasons for starting the AT included pain reduction, improving singing performance, improving posture, reducing stress and tension, and personal growth. Five participants reported some history of mental health problems, which in most cases were described as mild and transient in nature.

Ethical Considerations

The study was reviewed and given ethical approval by a university ethics board (see Appendix 9). All participants gave their informed consent to participate in the study. They were debriefed afterwards and given contact details to contact should they have any follow-up questions or wish to withdraw from the study.

Data Collection and Analysis

Interviews in the main part of the study were semi-structured, so as to address the research questions, and cover topics of most relevance to individual participants in

more detail (Smith, 2008). The interview questions and forms can be found in Appendix 10. Interviews lasted approximately an hour. Interview content was taped, transcribed, and analysed using Interpretative Phenomenological Analysis (IPA) (Smith & Osborn, 2008). Qualitative research was chosen due to the exploratory nature of the research, and IPA in particular was chosen due to its focus on experience, which was considered to be compatible with psychotherapeutic approaches. A central aim of the study was to generate a richness of data, which could be explored so as to highlight the complexities and subtleties of people's experiences. The analysis process occurred as follows:

- The transcripts were read through several times so that the author became familiar with the data.
- Themes were identified according to the experiences denoted by the data and these were recorded on the transcripts.
- When themes had been created from the entire data set, connections were looked for between different themes, and these connections were clustered together accordingly.

The analysis process involved immersion in the data, and a lengthy process of grouping and regrouping data according to themes, which were, in turn, modified according to their fit with the data. It is recognised that IPA is a subjective methodology, and the themes emerging from the data are affected by the researcher and her role in the interview and the analysis procedure. To help identify how the researcher impacted upon the data, a reflective diary was kept throughout the research process. The quality of the analysis was checked through the researcher's attendance at a peer IPA group, where the meaning of the data and thematic ideas were discussed with other IPA researchers. The coherence of the themes was checked by a researcher with experience

in conducting IPA. The quality of the study was supported by triangulation methodology. Teachers' perspectives on the psychological change of AT pupils, gathered in the pilot study, shared commonalities with the themes and results in the main study.

Results

Six themes were developed from the transcripts, in which participants describe the psychological impact of learning the AT, and how they understand the processes underpinning the impact. Participants described an increase in *awareness*, and reported *letting go* of unwanted interpersonal and intrapersonal patterns, which led to a feeling of *lightness, balance, and presence* in their bodies. This gave participants a sense of *control and confidence*, which helped them to take responsibility for themselves, and opened up new possibilities. Participants experienced *situations of wellbeing* when practising the AT, but these experiences were often difficult to verbalise. *Teachers' expertise and the ease of the pupil-teacher relationship* were fundamental in helping participants to learn and develop.

Awareness

All participants reported that learning the AT had increased their awareness of their body. Many participants also considered that the AT had increased their awareness more broadly, including self-awareness of thoughts and feelings, enabling them to make appraisals of the best way to act.

> C: I would say I'm more in-tuned to the way I feel... I'm also more aware of what's right and wrong for me, more so than what I was before

Self-awareness helped participants to become more comfortable in being themselves, including their body, feelings, beliefs, and values.

> P: Yes I think I feel more comfortable in my in my body... I sort of understand it a bit more

For some participants, there was a sense that increased awareness led them to have a different relationship with the world around them. In the following section, *E* describes this process. She reports that she *has* to be aware, which implies that it requires conscious effort. She suggests that the awareness leads to a passive process of becoming genuinely different in the world. This she attributes to an internalisation of altered thought patterns.

> E: There is a sense of having to *be* different in the world, having to be, well you *are* different in a way, once you know something you can't un-know it and so you have to *be aware*. being aware, thinking about (pause) your positions, head-neck, back and all of that stuff Because, you know, you learn you hear things over and over again so they become part of your thinking

Several participants provided examples of how awareness led to a sense of acceptance, which seemed to involve alterations in thinking pattern. Following from the previous extract, in the next extract, *E* explains how increased awareness and decreased physical pain, led her to reappraise and alter her behaviour. Rather than making decisions based on what she can and cannot do, as had been the case when she had pain, she had begun to make decisions based on what she does and does not *want* to do.

> E: I think its really about reclaiming what you used to do... I'm accepting some things are going to take longer rather than not being able to do them... the reason I don't do them now isn't because I don't, its more to do with that I don't want to.

Letting Go

Participants' increased awareness of what they did and did not want, helped them to let go of unwanted thoughts and feelings, particularly anger and anxiety. In the following extract, *A* describes having a different relationship with worried thoughts than she had in the past. The difference seemed to have come about through changes in her appraisal of the worry. By becoming more welcoming of the thoughts, paradoxically, she is more able to let them go. This has helped her to reduce rumination, which has helped her to sleep and to gain confidence in her work.

> A: I can control those negative thoughts more now. I still get them but I feel better about them yeah. I can let things go...
>
> Researcher: Okay, so letting things go.
>
> A: Yes, not churning things round, which I used to do...I'm sleeping better as a result of it as well

One key concept of the AT is releasing, which means letting go of tension so as to allow the self to be energised for action (Leibowitz & Connington, 1990). Most participants described releasing as a physiological process, however, many conceptualised it more holistically, as physiological and emotional. Several participants found that the AT had helped them to let go of habitual problematic responses to other people, which had improved interpersonal relationships.

> C: Now, instead of letting things upset me it's like 'okay', do you know what I mean, take it on board and let it go

For almost all participants, the process of releasing and letting go had positive effects on their wellbeing but allowing release to occur was difficult, particularly for participants who were emphatic of the benefits of letting go.

> B: Letting go, I knew was the logic to it
>
> Researcher: Yeah
>
> B: The practice is very different LAUGH It's hard to do. Very few people just surrender, and I don't think I was, I'm still not surrended totally

The main way participants understood this difficulty was that the process of letting go is counter-intuitive to learned patterns of trying harder. For some, letting go could evoke powerful feelings, including anger, sadness, fear, and vulnerability. In the following extract, *H* describes some of the complexities encountered at times of muscular release, including a tendency to find distractions; an observation which is later attributed to fear of releasing fully.

> Researcher: So it's about letting emotion emotions go or feelings go
>
> H: Yeah but I think its its its (pause) not having any attachment to them... its really hard to do and things come into my mind, I think its like any kind of distraction at all you know, I might start thinking about I'm hungry, or something might just take me away from that releasing.

Lightness, Balance, and Presence

Participants suggest that the AT has helped them to move with greater ease, to feel lighter, and more balanced. In many cases this seemed to result from letting go of body habits, and often occurred most powerfully immediately after lessons.

> L: I just sort of feel like I'm walking on air, you know, I just feel really light in my body and I walk along the road and I just feel different and very, you know, as though movement's not in strain and I just feel really light

In many accounts the word 'just' is used in relation to the lightness, implying that there is a certain simplicity to their experiences. At the same time, participants suggest that the feelings the balance evokes can be very powerful. In the following extract, *B* describes this combination of power and simplicity, comparing the effect to an addictive drug.

> B: I've just found that alignment and there's no effort, you're just naturally err poised and the minute I go off the alignment again, I know where I've tensed. So I know now almost, it's like an addictive drug almost because there's no effort in being here.

Participants felt present in their bodies, and were more accepting of themselves, when they felt light and balanced. Here, *B* explains the relief of being herself effortlessly, as a result of letting go of efforts to 'try harder' and suggests that this state helps her to become aware of her physiological state of alignment.

> B: You know it is a very different feeling is that you know, it is a 'I am good as I am,' not having to do anything its you know just sort of that general feeling of 'I'm fine' you know, its nice to be me and just be, not do.
>
> Researcher: Yeah
>
> B: and that's that's the relief that I think and I think that's why I know when I've got myself aligned and centred
>
> Researcher: So that's when it happens, that's when you feel the relief
>
> B: Yeah yeah yeah , its just calm and relaxed, wonderful, this is just me

In most cases, it appeared that participants experienced the state of balance as being of both an emotional and physiological nature, though only one participant states this explicitly.

> H: Its just to have that balance... to achieve that kind of mental balance without a physical balance as well, I don't think its actually... you know if you're not physically completely free and balanced, then how can you be sort of emotionally and mentally free?

The fact that other participants do not state that they experience a connection between body and mind, while implying that both are involved, may indicate that the body and mind are experienced as intrinsically connected during states of balance, lightness, and presence.

Control, Confidence, and the Future

Participants described having more control and confidence in their lives as a result of having AT lessons. Participants who still experienced pain, explained that they were now more able to reduce it.

> P: If I do get a slight twinge in my hip I know that it's probably that I'm sat in a certain way or there's something I have done, I can quickly correct it now.

Most participants reported that their increased confidence was not limited to the effects of pain reduction. Together with an increased sense of control over their actions, participants became aware of having a greater number of options in life. This provided them with the freedom to make choices, which they felt able to put into action to improve wellbeing.

C: It gives you a greater choice about your life and what you do with it

For some participants, paying attention to oneself and responding to one's own needs, was not what they were used to doing. Learning the AT had helped them to accept the importance of looking after themselves, as well as having confidence that they are able to do this. *D* described a relationship between accepting and valuing her needs, having confidence, and changing behaviour, which led to a cycle of ongoing improvements in wellbeing.

D: Actually you probably ought to do things for yourself and actually um that you are able to and in doing so it does make you feel better, so a mix of benefits, drives the next change, drive the benefits, drives the next change.

C made significant life changes as a result of learning the AT, including changes in her job and improvements in her relationships with friends. This involved engaging with fears that had prevented her from making changes in the past.

Researcher: I mean these questions that you've raised that you're asking about your job, are they things that you would have thought about?

C: Possibly, but not to the sort of degree where, you know, back then it would have been nice to have done it um but now its okay I'm thinking about things, these are real possibilities... I suppose that in actual fact, before I took the Alexander Technique, what you're actually looking at is a sort of fear that, you know, I was thinking these things but I daren't move on it... I suppose its courage

As a result of increases in control and confidence, participants had experienced a range of life changes, including improved relationships, greater work satisfaction, and weight loss. Confidence was experienced with regards to the future as well as in the

present. Five participants indicated that they expected the changes they were experiencing to continue, giving them increased optimism and hope for their ageing process.

> E: And that fear of it all going downhill has gone... I think I'm still (sigh) on an upwards projectory rather than downhill so it's made a big difference

Situations of Wellbeing

Usually, experiences of using the self well were described as a feeling or sensation, rather than something that lends itself to verbal expression.

> Researcher: How did you know that at that moment you were doing it right?

> J: How did I know it? Erm I don't know I suppose I just caught myself doing it and thought 'ah' okay you know just keep that going, that's what she's talking about erm I don't know how I knew it, it was, it just happened

For some participants, the AT had given them a sense of wellbeing, right from the first lesson, which was difficult to conceptualise but had encouraged them to re-attend for a future lesson.

> C: Yeah. You notice changes more or less straight away from the first lesson... when you first start you're unsure of what it is err but you know they're situations of wellbeing, I suppose you could call it

Several participants mentioned that they had struggled to explain the AT to other people, and felt that it is necessary to experience it to understand how it works.

In lessons, too, some participants considered that words could detract from the essence of the AT and even be counterproductive to the learning process.

> Researcher: So if the if the Alexander Technique didn't involve touch, how do you think your experiences might have been different?
>
> M: (Pause) Um well if it had involved a lot of talking I don't think it would have been as good a way of communicating.

It is notable that not all participants had a preference for quiet during their lessons, in fact, some had a preference for chatting with their teacher. Nevertheless, from the majority of participants, there was suggestion that their experiences of learning the AT could be powerful or difficult to verbalise.

Teachers' Expertise and the Ease of the Pupil-Teacher Relationship

It was widely acknowledged by participants that having a teacher with whom they felt at ease and whom they trusted was fundamentally important in helping them to learn the AT, and enable psychophysical benefits. The teacher's expertise was also described as important, however, in many cases, expertise was considered to be inseparable from the quality of the teacher-pupil relationship, suggesting that a good teacher is also someone with whom you have a positive relationship. Participants who had made a decision to change AT teacher, in almost all cases, had made this decision due to difficulties in the relationship. In the following extract, C describes some of the positive aspects of her relationship with her teacher.

> C: I would describe it as a really good relationship, it's excellent. There's a lot of give and take erm you know he does explain things, he's very clear erm he's absolutely excellent

Researcher: Mm okay, so you feel quite comfortable with him

C: I feel more than comfortable with him. I mean I would tell him things that I would probably not tell anyone else

In contrast to *C*, most participants stated that they did not talk about personal matters with their AT teacher. For many, this was a conscious decision, based on an understanding that their AT lessons were not the place to discuss problems and that, if they did, it might get in the way of their learning.

Trust in the teacher was very important to participants, particularly in helping to adjust to being touched in lessons, which was experienced by many as uncomfortable at first.

J: Its quite personal really, you need to feel confident with the person and um its very physical, they're prodding you or touching you all over the place erm yeah you need to feel confident and and relaxed with the person

Similarities with the teacher were considered, by several participants, as important factors in helping them to feel more relaxed in situations which otherwise could make them feel vulnerable. These included being of similar age, being of the same gender, and having similar interests to their teacher.

Researcher: How would you describe your relationship with your teacher?

L: Very good, very friendly, very warm... I don't think I could have this sort of session if I didn't get on with the person, I think you have to be able to relate to them, and I suppose being a woman helped. I mean coz its very hands-on technique and I don't know how I'd react if I had a

male teacher, I mean I don't know, it might be fine but certainly with TEACHER NAME I have no inhibitions or anything, I'm just happy to put myself in her hands

Some participants mentioned that it was important to understand or respect their teacher as a person, as well as a competent teacher. Participants seemed to value the authenticity of the relationships, and many indicated that better relationships with teachers involved a more equal division of power, such that discussions occurred 'naturally' and both parties had some control over how the lessons were run.

H: I do have a lot of respect for her in terms of ability as an Alexander teacher and um in the way she, the way she is, the way she conducts her life.

Discussion

Six themes were developed from the interviews, centred around AT pupils' experiences of the psychological processes and outcome of learning the AT. The themes were inter-related. Self-awareness seemed to be the basis of personal growth, enabling a process of letting go of habitual psychological and physiological patterns, which resulted in feelings of balance and presence. As these feelings became part of self-experience, participants were able to respond to new options and possibilities. Self-awareness was then altered and increased further, which resulted again in letting go of different habits, and so on. It may have been the overall experience of this process and anticipation of further growth, which led to optimism for the future and the ageing process, and it seemed that the overall process involved meta-cognitive changes which fed back into the cycle, altering awareness. Gestalt psychotherapy considers responsibility, choice, freedom, and awareness, as inter-related in the process of maturation and self-actualisation (Korb, Gorrell, & Van De Riet, 1989). As participants

did seem to experience these factors as strongly inter-related in the AT learning process, this may provide support for Gestalt maturation theory, and suggest that the AT is one means of enabling this process of growth. This raises the possibility that the AT and Gestalt psychotherapy may be complementary when used together to improve wellbeing.

An increased self, body, and environmental awareness was central to the process of learning the AT and, by being aware, participants were able to use the AT flexibly, could recognise how misuse of their body was triggered by interpersonal contexts, and were able to apply the AT to alter posture, improve relationships and help solve problems. Research has suggested that context and subtleties involved in the process of postural adjustment are crucial to psychological outcome (Riskind, 1984; Duclos et al., 1989). The current study suggests that awareness during the process of postural adjustment helps to improve psychological wellbeing. Increased awareness helped some participants to accept themselves or alter values and beliefs, which gave them a different relationship with the environment. Accounts suggested that this occurred partly as a result as alterations in habitual thoughts, such that new thoughts had become internalised, affecting how participants experienced their presence in the world. In the AT, cognitive instruction is used to direct the self to better use (Gelb, 2004) and it seems that this process may function similarly to cognitive restructuring in cognitive-behavioural therapy, where maladaptive thoughts are replaced with more adaptive thoughts to improve psychological wellbeing (Leahy, 2003). In other cases, the changes experienced in relation to the environment, appeared to be meta-cognitive. Several participants stated that, though their thought content had not changed, they had become more accepting of their thoughts. This is similar to the concept of willingness in Acceptance & Commitment Therapy, which encourages the stance of accepting both negative and positive thoughts to increase life satisfaction (Hayes, Stroshal, & Wilson, 1999). Participants' increased ability to step back from habitual thought processes, and

alter how they think (Flavell, 1979) parallels the alterations found in the meta-cognitive process of people recovering from depression (e.g. Sheppard & Teasdale, 2004), and thought to be important in the treatment of anxiety disorders (Evans et al., 2008). Interestingly, the AT does not aim to change thoughts or meta-cognition, but rather, to change habitual body patterns (Gelb, 2004). The fact that both evidence-based cognitive therapy and the AT seemed to result in similar changes in thought patterns may suggest that cognitive therapy could benefit from greater consideration of how body processes impact upon therapy outcome. It also suggests that there is compatibility between the two approaches, such that they may benefit from being used in combination to treat psychological or physiological disorders.

Similarities between changes experienced by participants and meta-cognitive changes occurring through awareness-based therapies can be accounted for by the Interactive Cognitive Subsystems Model (ICS). This is a holistic information-processing framework, which incorporates sensory, cognitive, emotional, and physiological information processes (Teasdale & Barnard, 1993). The model comprises of nine codes. At the level of least complexity, information is processed in three sensory codes: Visual, Auditory, and Body-state. At the next level of complexity, information is coded in more abstract structure, in visual and sound form. At the level above this is the Propositional code, by which meaning is encoded semantically and can be subjectively experienced as knowledge. At the most complex level, the Implicational code encodes abstract descriptions of human experience into a holistic form, which involves the integration of information pertaining to cognition, emotion, the body and the mind. Each code has its own memory store, so information from one event can be stored in the memory of several different codes. Information process occurs both in parallel and serial. By this means, coding on one level can be copied to adjacent levels. This model accounts for how cognition, emotion and alterations in body state can interact and form

repeated patterns, and how people can experience holistically the integration of these different factors. Within the ICS framework, both awareness-based therapies and the AT can be considered to involve alterations in the relationship between the Implicational level of meaning and the Body-state sensory code. Through increased awareness, coding on the Body-state level is altered and this affects information-processing throughout the system, including emotional changes and alterations in meta-cognition. The model accounts for how learning the AT can lead to a cycle of meta-cognitive and body-state changes, which include changes described by participants, such as increased awareness, letting go of unwanted patterns and improved psychophysical balance.

Participants found that letting go of habitual patterns was difficult. Many had a tendency to apply effort to achieve the desired outcome and letting go of familiar patterns led to feelings of vulnerability, anxiety, and anger. When participants did let go, psychological benefit occurred, particularly for those who had found it hardest to let go. This suggests that letting go is important for enabling psychological change, or that those who hold the most tension are the most distressed. The finding can be considered to support the theory of body psychotherapies that suggest people hold emotional tension in the body and that letting go of these tensions helps resolve emotional disturbance (Conger, 1994). It also supports mindful approaches that emphasise allowing the self to be what one is, rather than striving for change (Johanson & Kurtz, 1991) and cognitive therapies, which focus on letting go of maladaptive thought patterns (Leahy, 2003).

Letting go of tensions and psychophysical habits led to feelings of relief, alignment, balance, and body presence, which were pleasurable and relaxing. Evidence suggests that people are able to recall autobiographical memories more quickly when their body posture is congruent at the times of encoding and retrieval (Dijkstra, Kaschak,

& Zwaan, 2005). In this sense, letting go of posture at times of emotional stress may reduce memories of emotional stress, thereby breaking a cycle of negative posture-memory links, and allowing a creative solution to occur to improve the situation. The breaking of such a cycle may be responsible both for feelings of vulnerability and feelings of freedom, which were described by participants upon letting go of habitual body use. Balance was mostly experienced holistically, as a synthesis of physiology and psychology. This supports research showing that there is positive correlation between poor physiological balance and anxiety (Bolmont, Gangloff, Vouriot & Perrin, 2002), and research demonstrating that the AT can improve balance (Dennis, 1999). The current findings can be accounted for by Gestalt theory, which suggests that people organise their experiences into polarities, and that when polarities become fixed, this leads to mental distress (Korb et al., 1989). In this way, participants' experiences of balance can be conceptualised as letting go of identification with a polarity, which allowed participants to interact mindfully in the present moment. The findings add to Gestalt theory and physiological research by suggesting that psychological and physiological balance can be experienced as a result of psychophysical awareness, release and letting go.

Participants found that learning the AT had increased their confidence, which allowed them to confront fears, thereby opening up new possibilities and life choices. This change could be conceptualised behaviourally, as a result of learning that the feared stimulus would not cause harm (Masters, Burish, Hollon & Rimm, 1987). It could also be seen to support body psychotherapy[10], which suggests that releasing the fear/tension helps improve wellbeing (Kepner, 2008). One notable difference between the AT and body psychotherapy is that the AT does not emphasise verbalising such experiences or on finding meaning in them and, consequently, it has been suggested that

[10] Body psychotherapies are a set of approaches which involve working with the body to enable holistic psychological growth, such as through the use of transference, touch, and developing awareness of bodily experience (Kepner, 2008).

the AT does not allow emotional problems to be fully resolved (Naylor, 1988). As the AT helped participants to solve emotional problems, this may suggest that they did not need to find meaning in their experiences. Alternatively, they may have found meaning as a result of increased awareness and space for reflection, which some participants reported.

When the body was 'right' this was felt instinctively as a very pleasurable experience. The feeling of 'right' was difficult to verbalise, and participants felt that it is necessary to experience the AT to understand it fully. This finding can be explained by the ICS model (Teasdale & Barnard, 1993), which suggests that body-state and acoustic information are coded separately without direct link and, therefore, communication between the two may be arduous. Alternatively, the finding can be explained by neurological evidence suggesting that both self-awareness and the processing of tactile sensations are dominated by right-brain non-verbal processes (Schore, 2009), which involve different parts of the brain to the comprehension and communication of language. The AT is experiential in nature, and it may not be possible to engage with the experiences while also standing back to theorise on the subject. In this sense, the verbal interview-based methodology may be a limitation of the study.

AT teachers' qualities, and participants' relationships with the teachers, helped in the process of learning the AT, and enabling psychological benefits to occur. Participants felt that trust in the teacher was fundamentally important, particularly given the involvement of touch in the lessons which had the potential to be uncomfortable and anxiety-provoking. Mowat (2003) suggests that teachers' lack of therapeutic skill is a shortcoming of the technique. Interestingly, participants in the current study expressed almost entirely positive experiences of their relationship with their teachers. There could be various explanations for this. Many participants did not begin AT lessons for the purpose of psychological change, and may therefore have prevented themselves from

exposing themselves psychologically in lessons, reducing the therapeutic element of the relationship and dependence on the teacher for psychological support. Additionally, the phenomenological focus in interview focused on 'what is' (Joyce & Sills, 2001) and, therefore, the interviewer may not have invited the participants to consider hypothetical differences in the pupil-teacher relationship. It is also important to note that the participants' history of mental health problems appeared to be fairly typical of the general population (Office for National Statistics, 2006) and they may have required less psychological support from teachers than pupils with more severe difficulties. It may be that greater psychotherapeutic knowledge would lead to alterations in the teacher-pupil relationship which could help pupils to gain further psychological benefit. Nevertheless, all pupils described some psychological changes as a result of learning the AT, which they found was helped by trust of the teachers and positive teacher-pupil relationships.

Several limitations of the study are noted with regard to the participant sample. All participants were white-British, nine of the ten were female, and the majority were in their 50s. The cost of AT lessons is unlikely to make AT accessible to people from poorer socioeconomic backgrounds. These socio-cultural and developmental factors may have had some impact on participants' experiences, and the subjective response of the researcher to the participants. Research has found that gender can impact upon the relationship between posture and emotion (Hillman, Rosengren & Smith, 2004; Roberts & Arefi-Afshar, 2007), and this may suggest that gender in particular could interact with participants' experiences of learning the AT. An additional limitation of the study is that psychological characteristics of the sample may have been biased. Participants may have volunteered to take part because they had particularly positive experiences of the AT. As many found learning the AT challenging, they may have required an above average level of motivation compared with the general population. Consequently, it is

possible that less motivated people may have been less persistent and gained less benefit from the AT than the sample.

In summary, participants describe a range of benefits of the AT, including increased awareness, calm, confidence, control, choice, and presence. There are strong parallels between participants' experiences and changes that have been found to occur in people recovering from depression (e.g. Peden, 1996). This study supports the AT literature, which claims that there are a range of psychological benefits in learning the AT (e.g. STAT, 2009) and adds to the literature (Stallibrass,1997; Stallibrass, Sissons & Chalmers, 2002) by suggesting that participants without physical pain, neurological, movement, or psychological disorders also experience improvements in wellbeing as a result of learning the AT. Similarities between the AT and some psychotherapeutic approaches provide theoretical opportunities for the AT to be used in combination with or within psychotherapeutic models, particularly Gestalt psychotherapy, and mindfulness-informed cognitive therapies. However, future research is needed to clarify the impact of the AT on people from different populations, particularly how the AT is experienced by people with mental health problems.

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Part Three.

Appendices

Appendix 1. Reflective Statement

Reflective Statement

Conducting this research study has been an interesting and, at times, challenging process, which stimulated a great deal of reflection. In particular, I enjoyed carrying out exploratory research on a topic that had received little attention in the psychological field, with participants who were not from a mental health population. In this reflective statement, I will discuss the issues which arose and which I reflected on, chronologically through the research process.

When I decided to embark on doctorate research into psychological change and the Alexander Technique (AT) I felt very excited about what I might find. Very little research has been carried out previously into the psychological impact of the AT, yet there was a good deal of indication from anecdotal evidence that there were psychological benefits. I liked the fact that this research would bridge body and mind and potentially could help to bring together disparate areas in healthcare, and I was excited about the possibility of finding something new which could help inform clinical psychology practice. At the same time, the shortage of background research meant that was little evidence to inform my research design. For these reasons, I undertook the research with feelings of excitement, but also with some anxieties, as the topic was not mainstream clinical psychology and I was not sure how it would be received by clinical psychologists.

As there was little existing research into the AT and psychology to help guide my research design, it was important that I took time to search for background information in less conventional ways than looking in journals and books. I contacted researchers who had considered psychology and the AT in their work, and I was able to meet with one of these researchers to gather more information. I carried out a pilot

interview study with AT teachers to find out their perspectives on the issues of most relevance to their pupils, with regards to psychological change and the AT. This was very helpful in informing my interview schedule with pupils and finding out more about what the AT involves, both psychologically and practically. By interviewing five teachers, I was able to compare AT teachers' approaches to their work. Some came across as psychologically-orientated, whereas others appeared to be more practical and physiologically-orientated. It was interesting that all teachers thought there could be psychological benefits, though some seemed to come to this decision based more on theory than on their own experiences. It made me think about how the AT teacher can influence pupils' expectations and guide the lessons, and I wondered whether pupils of teachers with a more psychological leaning, would experience greater psychological change than pupils of teachers with a more practical/physiological approach. At this stage, thoughts such as this were helpful, as they helped inform my interview questions with the pupils. In this case, I made a question in the interviews of 'how has your relationship with your teacher informed your experiences of learning and practising the AT?' It was important at times such as this, not to lose focus on my specific research questions, as I was aware of my tendency to let this happen sometimes when I became interested or inspired by another idea. The research diary I kept was helpful in this respect, as it allowed me to write down matters of interest and help me to move on from them where they were not directly relevant to the research.

The AT was described as experiential by teachers, and I did feel that my understanding of what it is like to have lessons was limited by the fact that, prior to the research process, I had never had a lesson. I debated whether it would be an advantage or disadvantage to have lessons and, if so, how many I should have. I was aware that if I did have lessons, then this would influence my perspective on the AT, and, as IPA is a subjective analysis method, this would impact on my interpretation of the data I

collected. On the other hand, I reasoned that I would still have a perspective on the AT even without lessons, which would impact on my interpretation of the data. I decided to have just two lessons, which I considered would allow me to experience the AT lessons, but would probably not be sufficient time to experience significant psychological changes. This, I thought, would help me to empathise with my participants while not increasing my bias as to whether and to what extent the AT improved psychological wellbeing. I do think, in retrospect, that this was a wise decision, as my experience helped me to relate to the participants' experiences. As well at this, I found that many of the participants asked me whether I had had lessons myself. Given that one of the themes stemming from the data was that the AT is non-verbal and participants felt it is necessary to experience it to understand it, I think the fact that I was able to tell them I had had lessons might have helped them to relax somewhat in the interviews and feel more assured that I would understand their experiences.

I wanted my AT lessons to be as authentic as possible, and I was keen to minimise the extent to which my researcher role impacted upon my experiences of lessons. For this reason, I chose to have lessons with the AT teacher who lived closest to me, and whom I did not know. I think this helped me to feel more like a typical AT pupil than I might have done if I had had lessons with an AT teacher who had been involved in my research. Nevertheless, I found that my role as researcher did impact on my experiences to a large extent. I found myself comparing the teacher's approach to other teachers I had spoken with, and I think this knowledge and awareness of the AT from other settings reduced the extent to which I identified as a pupil. The teacher too, seemed to identify me as a researcher, as well as a pupil. As I was only having two lessons, she adapted the content of the lessons, so that there was less theory and more practical application than in her typical lessons. This was helpful so that we did not

cover things I already knew, but it probably also meant that my process of learning the AT was different to most pupils.

I think that my awareness that I was only having two lessons, affected my investment in the lessons, as I was not expecting to see significant changes. I found that in the lessons I became more aware of how I should be using my body but I knew that in two lessons I would not be able to correct this, and this was a bit frustrating. I was encouraged to apply what I had learned outside of lessons, and I did this to some extent, but not as frequently as I might have done if I was planning on having regular lessons. It took considerable effort to apply the technique everyday. These experiences made me think that pupils would have to be very committed to the AT, to attend lessons and practice regularly. This would require quite a stable background situation, including a good regular income and regular time to come to lessons. It is uncertain how many lessons people need to correct poor body use, and having lessons made me realise that this uncertainty could be quite hard to tolerate. For example, if someone has back pain, and begins lessons, they would not know how many lessons they would need to help them: it could be just a few or it could involve carrying on for years. This is a contrast to other means of dealing with back pain, which, in healthcare would often have a fixed number of sessions, or which might involve medication that is quicker, cheaper, requires less effort, and is better-regarded in society. Learning the AT, therefore, not only requires a stable background, but also a good deal of faith in its ability to help. My experiences of AT lessons were, in some ways, atypical of the experiences of most pupils going to their first lessons, however, they did help me to gain a greater understanding of the application of the AT, and some of the difficulties involved in regular practice.

Societal views on body and mind, had a considerable impact on the research process, not only by influencing participants' experiences of the AT, but also by

affecting how I was able to bring together ideas in my mind and draw conclusions. This was particularly so with the Systematic Literature Review (SLR). It was important that the subject matter of the SLR fitted with the empirical paper, and I wanted to address a topic which would look at the relationship between body and mind. However, when I carried out initial searches to consider what might be possible, it was apparent that there was very little research available which explicitly looked at this relationship. While I was aware that there are dominant social discourses around seeing the body and mind as separately and treating them as such (Crossley, 2000), I was surprised at the extent to which this was evident in the literature. As a result of this shortage of literature, I considered conducting a SLR on a different topic. I thought about the effectiveness of mindfulness-informed therapies, but there were already systematic reviews in this area. Another consideration was the effectiveness of complementary therapies, but I concluded that, as complementary therapies vary so much in their theoretical bases, it would be unlikely that helpful implications would follow from a SLR on this topic. My decision to focus on the relationship between posture and emotion occurred after much contemplation and searching through the literature. Literature on the topic was conducted in disparate fields, including physiology, social psychology, and neurology, as well as clinical psychology. Use of language and approach towards the posture-emotion relationship varied in different academic fields, and this made it difficult to define search terms, as I did not want to omit relevant articles. It was also difficult to make sense of all the information from different approaches. I had to do some background reading around areas which were not directly related to mainstream psychology, particularly physiology, in order to consider, adequately, ideas in my mind to make comparisons and reflections. My persistence with this was helped by my enthusiasm for the topic. I found it sad that there was so little communication in the literature between different fields of academia. It seemed to me that this was unhelpful,

as it may mean that individual areas of academia continue along one route of enquiry, gaining an increasingly specific understanding of the topic, but that this could involve missing out on new and relevant material. My own difficulties in forming search criteria and making sense of the articles I searched through, demonstrated to me the difficulties other researchers would face when attempting to integrate areas in separate fields. I could appreciate why this would be an unpopular choice. At the same time, this made me determined to pursue the study and to get it published in a clinical psychology journal. The limited research that I did find, suggested that there are strong links between posture and emotion, and I wanted clinical psychologists to be aware of this and for it to inform their practice.

Recruiting participants proved to be more difficult than I had expected. As I only needed ten participants, I thought that they would be quite easy to recruit but, though AT teachers were willing to show my flyers to their pupils, few pupils contacted me to express an interest in participating. It was difficult to know whether I should wait for more participants to contact me or whether I needed to take a more forceful approach. I was grateful for the help of the teachers and did not want to put any more pressure on them to advertise their study to pupils. However, I was also aware that some of the teachers who had agreed to help, had never met me and would not have known whether I was a trustworthy person. I wondered whether this meant they were unenthusiastic about recruiting participants, which would have discouraged participants from contacting me. It was helpful at this stage to refer back to my time-plan for the research, so that I could see whether I was behind schedule, and it was also helpful talking to my supervisor about what she thought of the time delay in recruitment. From this, I decided to take a further step to help recruit participants. I e-mailed teachers to ask them whether they had recruited anyone. Most replied and said that pupils had been interested and had said they would contact me. As they had not contacted me, I decided

to change the procedure, such that teachers would give me the contact details of participants and I would contact them, rather than waiting for them to contact me. This proved to be a successful decision. I was quickly able to recruit sufficient numbers of participants. Throughout the recruitment process, I had managed to remain calm, which I think was due to recognising the need to use time efficiently. I interviewed participants as I recruited them, rather than waiting to finish recruitment before starting the interviews. I also worked on the write-up of my papers, and the systematic literature review, to make productive use of time.

It was interesting carrying out interviews with participants who were not from a mental health population. I intentionally used clinical psychology skills during interviews, such as reflective listening, empathy, and collaboration (Dryden, 2007), which I think strengthened the relationships with participants. Nevertheless, at times, I felt frustrated when participants were not forthcoming with information. This made me very aware of my role as a researcher and how this was different to the role of clinician, where there is more time to build a relationship and a greater investment in doing so. It must have been difficult for some participants to build up enough trust with me in one session to disclose personal information. I wondered whether this was made more so by discourses around the AT, which do not encourage discussion of problems within AT lessons, such that participants may have been less willing to do so with me. My awareness of these issues seemed helpful in maintaining my confidence during interviews and practising ethically by respecting participants' decisions not to disclose information or discuss subjects they found difficult.

One of the biggest areas of difference between my role as clinical psychologist, and as researcher, was with regards to boundaries between me and participants/clients. While these can be easier, or more familiar, to negotiate when I am in a role as a clinician and we are encouraged to reflect upon them as part of the therapeutic process

(Norcross, 2002), as a researcher, this is less clear. There is some, limited, writing on the use of self when conducting qualitative research (King, 1996) but very little written on this topic with specific regards to IPA. Managing boundaries with participants was difficult at times, both inside and outside of the interviews themselves. I was offered food and drink by some participants, and I wondered how best to respond to this. On one occasion, I arrived while a participant was serving up dinner for her family and she offered me a meal. It felt both rude to refuse and watch them eat, and like a possible violation of professional boundaries to accept. On this occasion, I refused the meal but on other occasions before and after interviews, I think I was less careful with maintaining boundaries than might be considered appropriate when in sessions with clients. I think that some degree of self-disclosure and flexibility was probably helpful with building trust and rapport (King, 1996) but it made me wonder how this difference in relational dynamics had come about. Partly, I think it was because there was an inherently different power balance in the interviews than in therapy sessions. Though I was in a position of power due to my research agenda, it was also the case that participants were there to help me, rather than vice-versa. This, together with the fact that participants had not been recruited from a mental health population, may have meant that my role felt significantly separate from my role as clinician. Boundaries were made clear from the start of the interview, as it was explained that I was meeting with them only once and would not contact them again, other than to send them a write-up of the study. This clarity may have helped me to bring my sense of self into my interaction with the participants, while feeling assured that both parties were aware of boundaries. For these reasons, I was quite relationally flexible with participants before and after interviews. However, in the interviews themselves, I was less willing to self-disclose, as the aim of IPA is to understand participants' experiences (Smith, 2008), and I did not want to impose my view on the participants. This was quite difficult to do, as I also

wanted to make sure I showed enough of myself such that they felt comfortable and were able to trust me. In most cases I think I managed to negotiate this balance well, which was helped by being clear with participants about the phenomenological nature of the study. During interviews, the only question participants asked me was whether I had had AT lessons, whereas before and after interviews, participants asked me several questions, all of which I felt it was appropriate to answer. I tended, however, in my research role, not to ask participants questions about themselves before and after interviews, which I think was helpful in maintaining a balance between being authentic as a person and therefore helping them to feel comfortable, and acting in a professional manner.

I enjoyed both the transcribing and the analysis process. Transcribing helped me to process the material and become immersed in the data. It also allowed me to start making links between data, which was useful for the analysis. I chose to use N-VIVO computer program to do the analysis, which was helpful. I had used N-VIVO before but this was a different version so it required a bit of getting used to, but once I had done that, it was easy to use and helped me to group data together and generate themes in both a systematic and flexible way. My favourite part of the research was finding out new things and generating ideas from the data, which I found really exciting. I had done Discourse Analysis (DA) in the past and, throughout the research process, I reflected on the differences between DA and IPA. Both seemed very similar in terms of conducting the interviews and transcribing but there were differences in interpreting the data. At times I found myself looking at the data from a DA perspective; thinking about the psycho-social meaning behind the language. By being aware of this, I was able to bring myself back to take an IPA perspective, and it helped me to consolidate the differences between the two approaches. I found that IPA fitted very well theoretically with therapies I am used to working with in clinical practice, such as cognitive-behavioural

therapy, and Gestalt psychotherapy. Therefore, both DA and my experiences with psychological therapies helped me to grasp the underpinnings of IPA and to carry out the analysis effectively.

The IPA group I attended with other trainee clinical psychologist IPA researchers was helpful in familiarising myself with the IPA approach. I enjoyed reading through other researchers' transcripts and forming ideas about the meaning of them, and it was very interesting to compare perspectives with others to consider how each of our own subjectivities impact upon the analysis. Mainly, we agreed about the meaning of participants' accounts, which was encouraging, as it suggested that our analysis was of a good quality. I found that our experiences as clinical psychologists were both a help and a hindrance. We were all very reflective and able to consider the transcripts from different perspectives while seeming to agree for the large part on how we understood participants' accounts, which I think was a positive factor. Less positively, I think at times, we became too interpretive and lost sight of the conscious meaning participants made of their experiences. With regard to researchers' perspectives on my transcripts, I think this was limited by their unfamiliarity with the AT and what is involved in this. At the same time, their perspectives, as clinical psychologists with no knowledge of the AT, was helpful to me, as it highlighted the importance of making my write-up accessible to people of similar backgrounds, knowledge, and interests.

Write-up was the hardest and most tedious part of the research process. I wanted to consider multiple psychological theories in the paper and to link these, so as to suggest how experiences of the AT can inform different therapeutic approaches. It was difficult to hold all of these theories in my mind and make comparisons with the AT, which in itself, does not refer to any particular popular psychological approach. I found that I could work for several days on making diagrams and forming analogies, taking

ideas apart and putting them together again in various ways to link ideas. This background work was engrossing but it was sometimes hard to catch these ideas in words, to structure the thoughts that followed, and to put them onto paper in a clear and concise way. The information in my mind could feel quite overwhelming and, often, when I wrote something down, I got a new idea stemming from what I had written and lose sight of my original focus. On occasions, I thought I had arrived at an overall structure in my head, and then it seemed to falter part of the way through and I had to re-think it. The word-count was particularly problematic to adhere to, due to the multiple psychological theories being considered, and the qualitative analysis, which required the inclusion of transcript extracts. Cutting out large chunks of information which seemed highly relevant, was difficult to do and very time-consuming. One thing I learned from the research was that the background work that goes into each small chunk of the write-up, really does add to the study's strength, even when it feels like a lot of relevant material has not been discussed.

Overall, I enjoyed the research. I was well-motivated and organised throughout the research process, which was helpful when unexpected things happened, such as difficulties with participant recruitment. It was important to find ways of balancing the demands of the research with other work-related and personal demands, and I think I managed to achieve this. I was helped by the support and enthusiasm of my supervisor and I was inspired by colleagues and friends who demonstrated an interest in my research, and gave me alternative perspectives, which encouraged me and helped to inform my ideas. I will take a lot from these research experiences, and use them to inform and enrich research I undertake in the future.

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Appendix 2. Journal Choice

Journal Choice

I chose to submit *Body posture and emotion: A systematic review of the literature* to Clinical Psychology Review. I wanted the article to be accessible to clinical psychologists with differing areas of psychological interest, as I thought the research had broad applications to clinical psychology practice and I wanted to increase clinical psychologists' interests and awareness in this area. Clinical Psychology Review appealed, in particular, due to its accessibility to clinical psychologists, the regularity of its eight yearly publications, and its 2009 Thompson impact factor of 6.763.

I chose to submit *Psychological change and the Alexander Technique* to Psychology and Psychotherapy: Theory, Research, and Practice. The results of the study suggested that the Alexander Technique had implications for a range of psychotherapeutic models, and I wanted to make the study accessible to clinicians of various therapeutic interests, including psychotherapists, as well as clinical psychologists. It was also important to submit the article to a journal that is welcoming of exploratory research and would consider articles about complementary therapies. The journal has an impact factor of 0.750, according to 2008 Journal Citation Reports.

Appendix 3. Guide for Authors for the Systematic Literature Review

Guide for Authors for the Systematic Literature Review removed due to copyright

Appendix 4. Quality Review

Table 1. Quality Review

Criteria	Mezey & Melville 1960	Riskind & Gotay 1982	Riskind 1984	Duclos et al. 1989
Internal Validity				
Aims and hypotheses clear	Aims, not hypotheses	Broad hypothesis but not for each individual study	Yes	Yes
Method clearly follows from aims	Yes	Adequately	Yes	Yes
Clinical relevance clear	Brief	Adequately	Yes	Yes
Overall section rating	2	2	2	3
Participant selection				
Participant characteristics included	Yes	Poor coverage	Adequate	Poor
Co-morbidities taken into account	Some	No	Not evident	Poor
Appropriate sample size with power calculations	Reasonable but small control group, no power	Small sample size, no power	Good in first 2 studies. Adequate in 3rd study. No power.	Not addressed
Appropriate method of recruitment	No. Participants known to researchers	Yes	Yes	Yes
Groups taken from comparable populations, with differences defined	Poorly addressed	Yes	Yes	Yes
Overall section rating	1	1	2	2
Scientific Rigor of Design				
Single/double blind	No	Blind for participants and for one researcher	Yes, double	Single (participants)
Randomisation and allocation concealment	No	Yes, random	Yes	Yes
Control group	Yes	No	In study 1 but not study 2 or study 3	No
Appropriate outcomes measures used to address aims	Subjective questionnaire	Some tests with untested or unspecified validity	Yes	Unclear
Drop-outs reported and the effect on the study considered	Reported but effects not considered	Yes	No	Yes
Ethical Issues addressed	Poor coverage	Adequate	Adequate	Adequate
Overall section rating	1	2	2	2
Presentation and availability of information				
P values reported	Yes	Yes	Yes but not in tables	Yes
Method clearly described	Yes	Yes	Adequate	Adequate
Clear tables and figures	Yes	Poor. P values absent from tables. No figures	Adequate. No figures	Adequate, no figures
Clear and logical report	Yes	Yes	Somewhat though some missing information	Yes though no overview or studies as a whole.
Overall section rating	3	3	2	2

Note. Section ratings are on a scale of 0-3.

Table 1. Quality Review (continued).

Criteria	Fletcher & Fitness 1990	Maki, Holliday, & Topper 1991	Rossberg-Gempton & Poole 1993
Internal Validity			
Aims and hypotheses clear	Yes	Yes	Yes
Method follows clearly from aims	Yes	Yes	Yes
Clinical relevance clear	Adequate	Yes	Yes
Overall section rating	3	3	3
Participant selection			
Participant characteristics included	Adequate	Yes	Adequate
Co-morbidities taken into account	No	Yes	No
Appropriate sample size with power calculations	Adequate, power not considered	Yes but power not mentioned	Poor
Appropriate method of recruitment	Not discussed	Yes	Adequate
Groups taken from comparable populations, with differences defined	NA	Yes	Yes
Overall section rating	2	3	1
Scientific Rigor of Design			
Single/double blind	Blind for participants and partially for researchers	Unclear for participants. Partially for researchers	Single (participants blind)
Randomisation and allocation concealment	NA	No	Unclear
Control group	NA	NA	No
Appropriate outcomes measures used to address aims	Adequate, some are	Adequate but variable	Adequate but validity unknown
Drop-outs reported and the effect on the study considered	No	Yes	No
Ethical Issues addressed	No	Adequate	No
Overall section rating	2	2	2
Presentation and availability of information			
P values reported	Yes	Yes	Yes
Method clearly described	Yes	Yes	Yes
Clear tables and figures	Yes	Clear tables, no figures	Yes
Clear and logical report	Adequate	Yes	Yes
Overall section rating	3	3	3

Table 1. Quality Review (continued).

Criteria	Stepper & Strack 1993	Maki & McIlroy 1995	Yardley, Britton, Lear, Bird, & Luxton 1995
Internal Validity			
Aims and hypotheses clear	Yes	Clear aims but no specific hypothesis	Aims clear but no specific hypothesis
Method follows clearly from aims	Yes	Yes	Yes
Clinical relevance clear	Yes	Yes	Yes
Overall section rating	3	2	2
Participant selection			
Participant characteristics included	Poor	Yes	Some
Co-morbidities taken into account	Poor	Yes	Some, broad inclusion criteria
Appropriate sample size with power calculations	Good	Reasonable, no evidence of power	Reasonable sample size, no evidence of power
Appropriate method of recruitment	Not specified	Not discussed	Somewhat, although may have attracted participants with balance disorders
Groups taken from comparable populations, with differences defined	Yes	Yes	No. Control population ill-defined and difference not defined
Overall section rating	2	2	2
Scientific Rigor of Design			
Single/double blind	Single. Participants blind and researchers have little contact with participants	Not discussed	Unclear
Randomisation and allocation concealment	Unclear	Randomised order of tasks. Concealment not discussed	Not discussed.
Control group	No	Yes	Yes
Appropriate outcomes measures used to address aims	Content appropriate but validity unclear	Some are but the Affect scale concentrates only on somatic anxiety.	Yes
Drop-outs reported and the effect on the study considered	No	Not mentioned	Yes
Ethical Issues addressed	Adequate	Adequate	Unclear
Overall section rating	2	2	2
Presentation and availability of information			
P values reported	Yes	Yes	Yes
Method clearly described	Yes	No procedure section	No, procedure not outlined
Clear tables and figures	Yes	Only one, clear	Yes
Clear and logical report	Yes	Yes	Yes
Overall section rating	3	2	2

Table 1. Quality Review (continued).

Criteria	Schelde 1998	Hennig et al. 2000	Garvin, Trine & Morgan 2001
Internal Validity			
Aims and hypotheses clear	Yes but some terms such as 'social inhibition' could have been clearer	Yes	Yes
Method follows clearly from aims	Yes	Yes	Yes
Clinical relevance clear	Yes	Yes	Yes
Overall section rating	3	3	3
Participant selection			
Participant characteristics included	Yes	Adequate	Yes
Co-morbidities taken into account	Yes	Some but not anxiety levels	Some but not psychological factors
Appropriate sample size with power calculations	No	Relatively small sample size, no evidence of power	Reasonable sample size but no evidence of power
Appropriate method of recruitment	Participation may be a behavioural marker in itself	Unclear	Unclear why relaxation group had to be well trained and the hypnosis group had to be particularly hypnotisable
Groups taken from comparable populations, with differences defined	NA	Yes	Not comparable populations but differences defined
Overall section rating	2	2	2
Scientific Rigor of Design			
Single/double blind	No	Appears double-blind	Single
Randomisation and allocation concealment	NA	Yes	Randomised for seating vs. supine but not for order of treatment
Control group	No	No	Yes
Appropriate outcomes measures used to address aims	Reasonable. Voice-tone not measured	Yes	Yes
Drop-outs reported and the effect on the study considered	Not mentioned	No	Not drop-outs but explained that one intervention was postponed.
Ethical Issues addressed	Adequate	No	Yes
Overall section rating	1	2	3
Presentation and availability of information			
P values reported	Yes	Yes	Yes
Method clearly described	Adequate but not detailed	Yes	Reasonably although there is some repetition of information
Clear tables and figures	Yes	Yes	Clear tables, no figures
Clear and logical report	Yes	Yes	Yes
Overall section rating	3	3	2

Table 1. Quality Review (continued).

Criteria	Perna et al. 2001	Wada, Sunuga & Nagai 2001	Adkin, Frank, Carpenter, & Peysar 2002
Internal Validity			
Aims and hypotheses clear	Yes	Yes	Yes
Method follows clearly from aims	Not entirely as the hypothesis is causal but the methodology is correlational	Yes	Yes
Clinical relevance clear	Yes	Yes although mainly physiological	Yes
Overall section rating	3	2	3
Participant selection			
Participant characteristics included	Yes	Yes	Yes
Co-morbidities taken into account	Yes	Some but not psychological factors	Yes but only physical and vestibular
Appropriate sample size with power calculations	Relatively small sample size, no evidence of power	Reasonable sample size, no evidence of power	No
Appropriate method of recruitment	Yes	Unclear	Volunteers but specifics unclear
Groups taken from comparable populations, with differences defined	Yes	Yes	NA
Overall section rating	2	2	2
Scientific Rigor of Design			
Single/double blind	No	NA	Unclear
Randomisation and allocation concealment	No	Unclear	No and rationale for this explained
Control group	Yes	Yes	No
Appropriate outcomes measures used to address aims	Yes	Yes	Reasonable but questionable how well participants could recall their positions and experiences. Validity questionable.
Drop-outs reported and the effect on the study considered	Not discussed	No	No
Ethical Issues addressed	Yes	Yes	Yes
Overall section rating	2	2	1
Presentation and availability of information			
P values reported	Yes	Yes	Yes
Method clearly described	Yes	Yes	Yes
Clear tables and figures	Some clear, some more difficult to interpret	One clear figure	Yes
Clear and logical report	Yes	Yes	Yes
Overall section rating	2	1	3

Table 1. Quality Review (continued).

Criteria	Cheyne 2002	Bolmont, Gangloff, Vouriot & Perrin 2002	Hillman, Rosengren & Smith 2003
Internal Validity			
Aims and hypotheses clear	Yes	Yes	Yes
Method follows clearly from aims	Yes	Yes	Adequate but questionable whether positive images were sufficiently arousing
Clinical relevance clear	Yes	Yes	Yes
Overall section rating	2	3	3
Participant selection			
Participant characteristics included	Few	Yes	Adequate
Co-morbidities taken into account	No	Yes	No
Appropriate sample size with power calculations	Yes	No	Adequate, no mention of power
Appropriate method of recruitment	Yes	Unclear	Adequate
Groups taken from comparable populations, with differences defined	Yes	NA	Yes
Overall section rating	2	2	1
Scientific Rigor of Design			
Single/double blind	Seems double blind but not explicitly stated	Unclear	Single
Randomisation and allocation concealment	NA	Unclear	Yes
Control group	NA	No	No
Appropriate outcomes measures used to address aims	Reasonably though brief	Yes	Yes
Drop-outs reported and the effect on the study considered	No	No	Yes
Ethical Issues addressed	Yes	Adequate	Adequate
Overall section rating	2	2	2
Presentation and availability of information			
P values reported	Yes	Yes	Yes
Method clearly described	Yes	Yes	Yes
Clear tables and figures	Yes	Adequate	Yes
Clear and logical report	Yes	Adequate. No headings	Yes
Overall section rating	3	1	3

Table 1. Quality Review (continued).

Criteria	Carpenter, Frank, Adkin, Paton, & Allum 2004	Agargun, Boysan & Hanoglu 2004	Ohno, Wada, Saitoh, Sunaga, & Nagai 2004
Internal Validity			
Aims and hypotheses clear	Clear aims	Clear aims	Clear aims
Method follows clearly from aims	Yes	Yes	Yes
Clinical relevance clear	Yes	Adequate but theoretical background is vague	Yes
Overall section rating	2	1	2
Participant selection			
Participant characteristics included	Yes	Yes	Yes
Co-morbidities taken into account	Adequate	Yes	Adequate but not psychological co-morbidities
Appropriate sample size with power calculations	No	Adequate, no mention of power	Adequate, no mention of power
Appropriate method of recruitment	Adequate, volunteers	Unclear, seems somewhat biased, as participants known to lecturers	Unclear
Groups taken from comparable populations, with differences defined	NA	NA	NA
Overall section rating	2	2	2
Scientific Rigor of Design			
Single/double blind	Single	Unclear	Unclear
Randomisation and allocation concealment	Order of conditions counterbalanced	NA	No
Control group	NA	No	No
Appropriate outcomes measures used to address aims	Adequate	Adequate but not all measures have recognised validity	Yes
Drop-outs reported and the effect on the study considered	No	No	Unclear
Ethical Issues addressed	Yes	Adequate	Yes
Overall section rating	2	1	2
Presentation and availability of information			
P values reported	Yes		Yes
Method clearly described	Adequate though subtitles somewhat misleading re. procedure	Adequate but procedure is brief	Yes
Clear tables and figures	Figures small (on online version)	Yes	Yes
Clear and logical report	Yes	Yes	Yes
Overall section rating	2	2	3

Table 1. Quality Review (continued).

Criteria	Azevedo et al. 2005	Gregersen 2005	Galeazzi, Monzani, Gherpelli, Covezzi, & Guaraldi 2006
Internal Validity			
Aims and hypotheses clear	Yes	Yes	Yes
Method follows clearly from aims	Yes	Yes	Yes
Clinical relevance/application of findings clear	Yes	Yes	Yes
Overall section rating	3	3	3
Participant selection			
Participant characteristics included	Yes	Poor	Yes
Co-morbidities taken into account	Yes	No	Yes
Appropriate sample size with power calculations	Appropriate sample size but no evidence of power	No	Appropriate sample size but no evidence of power
Appropriate method of recruitment	Yes	Adequate	Yes
Groups taken from comparable populations, with differences defined	NA	Yes	NA
Overall section rating	2	1	3
Scientific Rigor of Design			
Single/double blind	Unclear	No	Unclear
Randomisation and allocation concealment	Yes	No	No
Control group	No	Yes	No
Appropriate outcomes measures used to address aims	Yes	Poor validity	Yes
Drop-outs reported and the effect on the study considered	Yes	No	No
Ethical Issues addressed	Yes	Unclear	Yes
Overall section rating	2	1	2
Presentation and availability of information			
P values reported	Yes	No	Yes
Method clearly described	Yes	Yes	Yes
Clear tables and figures	Yes	Yes	Yes
Clear and logical report	Yes	Yes	Reasonably but absence of appropriate headings
Overall section rating	3	2	2

Table 1. Quality Review (continued).

Criteria	Roberts & Arefi-Afshar 2007	Lipnicki & Byrne 2008
Internal Validity		
Aims and hypotheses clear	Yes	Adequate
Method follows clearly from aims	Yes	Yes
Clinical relevance clear	Yes	Yes
Overall section rating	3	2
Participant selection		
Participant characteristics included	Adequate	Adequate
Co-morbidities taken into account	No	Poor
Appropriate sample size with power calculations	Appropriate sample size but no evidence of power	Adequate sample size but no evidence of power
Appropriate method of recruitment	Unclear	Unclear
Groups taken from comparable populations, with differences defined	Yes	NA
Overall section rating	2	2
Scientific Rigor of Design		
Single/double blind	Single blind	No
Randomisation and allocation concealment	NA	Yes
Control group	No	Yes
Appropriate outcomes measures used to address aims	Adequate	Adequate
Drop-outs reported and the effect on the study considered	Yes	Reported but reasons poorly considered
Ethical Issues addressed	Adequate	Yes
Overall section rating	2	2
Presentation and availability of information		
P values reported	Yes	Yes
Method clearly described	Yes	Adequately
Clear tables and figures	Yes	Yes
Clear and logical report	Yes	Yes
Overall section rating	3	2

Appendix 5. Notes for Contributors for the Empirical Paper

Notes for Contributors for the Empirical Paper removed due to copyright

Appendix 6. Pilot Study

Pilot Study

Introduction

Anecdotal evidence suggests that the AT has psychological benefits (Gelb, 2004), however, no previous research has investigated AT's pupils' experiences of learning and practising the AT, or the psychological changes they experience. In the main study, it was important that the interview schedule allowed the breadth of pupils' psychological experiences to be discussed, and that no key areas were excluded. For this reason, the psychological and AT literature were consulted and considered with regards to the research questions. However, the validity of the anecdotal evidence was questionnable and the links between the AT and the psychological literature were only speculative at this stage. Futhermore, the literature did not discuss some of the complexities around psychological change, including factors impacting upon psychological outcome of learning the AT. In order to gain a background understanding of psychological changes experienced by pupils, and more about what happens in AT lessons, to inform the interview schedule, a pilot interview study was conducted with AT teachers. The aims of the pilot study were:

- To increase the researcher's understanding of the AT and what is involved in AT lessons
- To investigate AT teachers' understandings of the psychological benefits of the AT, and how and under what circumstances they consider that these arise.
- To use the teacher's understandings of the psychological benefits of the AT to inform the interview schedule with pupils.

Method

Background and Participants

An interview schedule was formed for the teacher interviews, which addressed the research questions and was informed by the available literature. A list of STAT-approved AT teachers was accessed from the Society of Teachers of the Alexander Technique website (STAT, 2009). Teachers were selected if they were known, through word of mouth, to have considerable experience teaching pupils, or if they were thought to be particularly knowledgable with regards to the psychological benefits of the AT. Selected teachers were contacted via e-mail. The aims of the study were explained to them and they were asked whether they would be willing to participate. The first five teachers who responded to the e-mail and agreed to take part in the pilot study, were selected for inclusion.

Data Collection and Analysis

Teachers were interviewed at their homes or the site of their AT lessons. Interviews were semi-structured and lasted approximately an hour. All interviews were taped, and were listened to after the interview. Key points communicated during the interviews were written down, and reflected upon in relation to the research questions and how they could inform the interview schedule with pupils.

Results and Implications

A summary of the key findings from the interviews with teachers, and how these findings were used to inform the interviews with pupils in the main part of the study, can be found in Table 1.

Table1. Outcome and Implications from Pilot Study

	Teachers' Comments	Application to Pupil Interview Schedule
1	Pupils' psychological experiences of the AT vary and can be affected by what pupils intend to achieve from the lessons. E.g. if they only want to alleviate pain and are resistant to psychological change, then they might not experience psychological change, might not notice them, or might not attribute changes to the AT. Changes can be very gradual, which may prevent people from making the link between psychology and the AT.	Add a question about pupils' intentions for learning the AT, and consider how this has affected the changes they have noticed.
2	Psychological consequences of learning the AT include feeling lighter, freer, more open to the outside world, increased control, seeing more options, increased self-awareness leading to greater connections with other people, more gentle and calm and easy for other people to be around, more trusting, self-assurance, psychological effects of pain-reduction, and postural changes which communicates something about their psychological wellbeing to other people.	If pupils experience psychological change which they do not attribute to the AT, it might be helpful to give examples in interview of what is meant by psychological changes.
3	Pupils can find it difficult to fit the AT into their daily lives. Cultural norms mean that people face many day-to-day pressures, deadlines, and competition, which are counterproductive when trying to acquaint themselves to 'having to do nothing,' rather than striving.	Add a question about how pupils fit the AT into their lives, including when they practice it and for what reason they practice at these times..
4	Touch can lead to psychological change, as it puts pupils in a regressive situation, particularly when they lie down and the teacher holds their head, which can evoke powerful emotions. If these emotions are contained within the lesson, they are likely to benefit. The quietness and space gives people opportunity to think and increase awareness.	Add a question about how touch affects pupils' experiences, and whether they think their experiences would be different if the AT did not involve touch.
5	What teachers talk about with pupils varies a great deal. Some teachers approach the relationship similarly to a friendship but by knowing that they will	Add a question asking for pupils' experiences of talk with their AT

	leave at the end, do not invest in the relationship. One teacher treats the relationship as a therapy relationship, with the only difference being that the pupil has greater choice e.g. can end lessons at any time, only has to discuss what they feel comfortable with. Many teachers found that talk was used more during early sessions in order to explain the key issues to pupils. With regard to the discussion of psychological issues, again this varied. One teacher asks questions about pupils' lives and encourages pupils to reflect on this. Other teachers felt they were prying when asking questions about their pupils' personal lives but at the same time, if a pupil brought something up, they would ask questions about it as otherwise they would feel guilty. Teachers showed some ambivalence around what to discuss in lessons e.g. they want to appear approachable and put pupils at ease and to acknowledge emotional issues but recognised that are not trained to do so.	teacher, what they talk about and whether they would ever prefer to talk about something different. Add a question about pupils' experiences of the pupil-teacher relationship and how this has affected their experiences.

The pilot study helped to familiarise the researcher with the AT approach, what is involved in AT lessons, and teacher's perceptions of pupils' psychological experiences. These perceptions were considered and used to inform the pupil interview schedule. Interview questions were added or changed so as to encourage broad discussion of pupils' experiences of psychology and the AT in the main part of the study.

As well as informing the interview schedule, the pilot study was used to inform the inclusion criteria for participation in the main study. Teachers considered that the number of lessons pupils need to experience psychological changes varies, but, at first, pupils often do not attribute psychological findings to the AT. Based on teachers thoughts on this subject, it was decided that inclusion criteria would specify that participants must have had at least fifteen AT lessons and have been learning the AT for more than three months.

References

Gelb, M. J. (2004). *Body learning: An introduction to the Alexander technique*. London: Aurum.

STAT. (2009). http://www.stat.org.uk/pages/directory.htm Retrieved 1 July 2009.

Appendix 7. Interview Forms for Pilot Study

Interview Forms for Pilot Study

Department of Clinical Psychology
Hertford Building

University of Hull

Cottingham Road

Hull
HU6 7RX

Information for Participants: Teachers

What is the purpose of the study?

This study is an investigation into people's experiences of the Alexander Technique.

The aim of the research is to develop a greater understanding of how the Alexander Technique is related to mental health and well-being. Research findings could help improve psychological therapies for people with mental health problems.

The study is being conducted by a Trainee Clinical Psychologist as part of her training.

Why have I been chosen?

You have been chosen because you are a qualified Alexander Technique teacher, accredited by the Society of Teachers of the Alexander Technique (STAT). The content of interviews with teachers will be used to help guide subsequent interviews with students of the Alexander Technique. These interviews with students will yield the main research data which will be analysed.

What will participation in the study involve?

You will be interviewed by the researcher regarding your experiences of the Alexander Technique. The interview will be semi-structured. This means that you will be asked questions based on a series of pre-organised questions but that the interview will be flexible and will be adjusted according to which issues are more relevant to your particular experiences.

The verbal content of the interview will be recorded and listened to again to check no key issues were missed. After this, the record will be destroyed.

The study will take approximately one hour but may be a bit more or less depending on what material comes up in interview.

Will participation remain confidential?

Yes. If you agree to take part your name will be kept confidential.

You will be asked to invent a pseudonym, which will be used instead of your real name throughout the research process.

What will be done with any information that I disclose?

At the end of the interview, the content will be summarised and the researcher's understanding of the key issues which have arisen checked with you. The content of the interview and other interviews with Alexander Technique teachers will be used to guide the main research interviews that will be carried out with Alexander Technique students.

What happens next?

There is no obligation to take part in they study, and it is entirely your decision.

If you do not wish to take part, you are free to go now. If you do want to take part, you will be asked to sign a consent form. We will then begin the interview.

Questions?

If you have any questions about the study and what participation will involve, please ask the researcher now.

Contact Details

Jocelyn Armitage
Trainee Clinical Psychologist
Department of Clinical Psychology
Hertford Building
University of Hull
Hull
HU6 7RX

Telephone: 01482 464117
Email: J.Armitage@psy.hull.ac.uk

Thank you for considering to take part in this study.

Interview Schedule Questions

Teachers

Prior to Teaching AT

-Tell me a bit about your reasons for beginning AT lessons?

-What were your expectations for AT?

-To what extent has it met your expectations?

-How have you or your life changed from learning the AT? How do you explain the way this works?

-If, before you began lessons, someone said there would be this effect, what would you have thought?

-When practising the AT yourself, can you explain to me what you are doing? What are you thinking and feeling?

Approach in teaching

-What approach do you take to your lessons? E.g. do you teach students through instruction or by using your hands? What made/makes you decide this? Has your approach changed at all over time?

-How would you describe your relationship with your students? How do you manage boundaries with your students?

-What do you talk about with your students?

-How do you think the use of touch affects students' experiences of learning the AT and the effect of practising the AT?

-Have you at any point been aware of strong emotions being brought out for students or for yourself when teaching the AT? Could you tell me a bit more about this? How was this dealt with? What were the consequences? How did you feel about this?

- How do you think your approach is similar or different to that of other AT teachers? Why is this the case?

-Could you tell me about situations in which you are unsure about how to manage something that has arisen in a/some AT lesson(s)? What was this about? What did you do? How did you feel? What would have been helpful in this circumstance?

Outcomes for students

-What changes have you seen in your students or yourself as a result of learning the AT? How do these changes come about?

-How do you think learning the AT affects your students' close relationships?

-How do you think learning the AT affects your students' other general relationships?

-Personally, do you see your students differently when they are practised in the AT to when they first start lessons? Do you think other people they know may see them differently too?

-How do you think the AT affects your students' psychological well-being? How do you think this happens?

-How are you able to relate to the changes you have observed or heard from your students? Are these changes you've noticed that have happened to you?

-How would you explain the process of learning the AT to someone else? How would you explain the outcomes? How would you explain the means by which it has effect?

-In your opinion, what should I be asking the students about in relation to the research questions (how practising the AT impacts upon their psychological wellbeing and by what means this has impact?)

Appendix 8. Recruitment Flyer

Recruitment Flyer removed due to copyright

Appendix 9. Ethical Approval Letter

Ethical Approval Letter removed.

Appendix 10. Interview Forms for Main Study

Interview Forms for Main Study

THE UNIVERSITY OF HULL

Department of Clinical Psychology
Hertford Building
University of Hull
Cottingham Road
Hull
HU6 7RX

Information for Participants: Students

What is the purpose of the study?

This study is an investigation into people's experiences of learning and practising the Alexander Technique.

The research aims to develop a greater understanding of how the Alexander Technique is related to mental health and well-being. Research findings could help improve psychological therapies for people with mental health problems.

The study is being conducted by a Trainee Clinical Psychologist at the University of Hull as part of her training.

Why have I been chosen?

You have been chosen because you are currently having regular lessons in the Alexander Technique. To date you have had at least fifteen lessons over a period of between three months and five years, which is the requirement for participation in this study.

What will participation in the study involve?

You will be interviewed by the researcher regarding your experiences of the Alexander Technique. The interview will be semi-structured. This means that you will be asked questions based on a series of pre-organised questions but the interview will be flexible and will be adjusted according to which issues are more relevant to your particular experiences.

The verbal content of the interview will be recorded and transcribed before it is analysed. The tape will then be destroyed.

The study will take approximately one hour but may be a bit more or less depending on what material comes up in interview.

Will participation remain confidential?

Yes. If you agree to take part your name will be kept confidential.

You will be asked to invent a pseudonym, which will be used instead of your real name throughout the research process.

What will be done with any information that I disclose?

After the interview, all verbal content will be written up and analysed. The tape will be destroyed to protect your anonymity.

If you would like to see a copy of the write-up of the study after it has been completed, please ask the researcher, who would be pleased to send this to you. Otherwise, after participation in this study, you will not be contacted by the researcher again.

You have the right to withdraw from the study at any time.

What will happen to the results of the research study?

The results of the study will be written up and submitted to a peer-reviewed journal. It is possible that transcribed extracts of your interview will be published in this journal. As pseudonyms will be used throughout the research process, your true identity will not be known by anyone other than yourself and the researcher.

What are the advantages of taking part in the study?

You may find the interview interesting to do as it involves talking about and reflecting on your experiences of learning and practising the Alexander Technique.

Are there any disadvantages of taking part in the study?

There are no anticipated risks involved in participation in this study. However, you should be aware of the possibility that some topics we discuss may bring up some material which you feel uncomfortable or distressed to think about. You are not obliged to answer any questions which you do not want to. If you feel particularly distressed in response to the interview questions and require further professional help, you will be directed towards a relevant source.

What happens next?

There is no obligation to take part in they study, and it is entirely your decision.

If you do not wish to take part, you are free to go now. You will not be asked any more questions and you will not be contacted again.

If you do want to take part, you will be asked to sign a consent form. Following this, you will be asked a series of short questions. This should take no more than five minutes. We will then begin the interview.

Questions?

If you have any questions about the study and what participation will involve, please ask the researcher now.

Contact Details

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University of Hull
Hull
HU6 7RX

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Email: J.Armitage@psy.hull.ac.uk

Thank you for considering to take part in this study.

Consent Form

Research Study Title: 'An exploratory study into the psychological impact of the Alexander Technique.'

- I have read the 'Information for Participants' sheet and understand the purpose of the study and what participating in it will involve ☐
- I understand that the interview will be taped ☐
- I understand that there is no obligation to participate in the study. I am aware that I have the right to withdraw at any time. ☐
- I agree to take part in the study ☐

Participant's name:

Date:

Signature:

Researcher's name:

Date:

Signature:

Record Form for Participants

Name

Age

Sex

Ethnicity

Work status : full-time/part-time

Activity level. Type, frequency, duration, intensity.

Reasons for beginning to learn the Alexander Technique

Approximate number of AT lessons had so far

Time period over which the lessons have spanned

Other complementary therapies tried

Mental health history and experience with therapy

Additional information (if appropriate)

Interview Schedule Questions

Students

Prior to AT

-Tell me a bit about your reasons for beginning AT lessons?
-What were your expectations for what would happen in AT lessons?
-What were your expectations for the outcome of having AT lessons?
-How did other people's ideas/opinions about the AT influence you?
-What other things do you do, or have you done in the past, to help cope with your reasons for beginning AT lessons?
-How have expectations and aims affected how you have approached learning and practicing the AT?

Present

AT lessons

-What do you like the most about your AT lessons? What might be the reason(s) for this?
-How would you describe your relationship with your teacher?
-What do you talk about with your teacher? Are there ever times when you would prefer to be talking about something else with the teacher? If so, could you give some examples…
-How do you think your relationship with your teacher has affected your experiences of learning or practising the AT?
-How do you feel about the involvement of touch in AT lessons? If the AT did not involve touch and relied more on cognitive direction, how do you think this would affect your experiences?
-Have you at any point been aware of strong emotions being brought up during your AT lessons or when practising outside of lessons? Could you tell me a bit more about this? How was this dealt with? How would you have liked it to have been dealt with? What were the consequences? How do you explain the reasons for why and how the emotions were evoked during the lesson?

Outside of lessons

-What is your lifestyle like? How does AT fit into your life? In which situations might you apply the AT?
-When you're doing AT in your everyday life, can you tell me what you are doing/thinking/feeling?
-How has AT affected the problem for which you originally sought it out?
-To what extent has it met your expectations?
-What else in your life has changed as a result of AT lessons? How do you think this was related?
-How did you used to feel in your body? How do you feel now? How do you think this change happened?
-How has AT affected your close relationships?
-How has AT affected your relationships in general?
-Do you think people have noticed any changes in you since you began AT lessons or has their opinion of you changed?
-Have you thought of the AT in relation to your psychological wellbeing before? If so, in what way? If no, why do you think this might be?
-How has the AT affected your outlook on the world or relationship with the environment?
-If someone had said before you started lessons that there would be this effect, what would you have thought?

Future

-How long do you think you'll continue having AT lessons for?
-How might you feel when you stop having lessons?
-How long-term do you think the changes you have seen in practising the AT will continue for?
-If you were explaining the process of learning the AT to someone else, what would you say? How would you explain to them the outcomes of AT and how it works?

THE UNIVERSITY OF HULL

Debriefing Form

Thank you very much for participating in my study.

The study is about the impact of the Alexander Technique on psychological wellbeing. Literature has suggested that people experience psychological benefits from learning the Alexander Technique (e.g. Gelb, 2004). However, very little psychological research has been carried out to investigate these claims.

In particular, the study aims to investigate:

- How people experience the impact of the Alexander Technique on their lives
- How people explain the means by which the Alexander Technique has impact.

Reference

Gelb, M. J. (2004). Body learning: *An introduction to the Alexander technique*. London: Aurum.