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OXFORD REGIONAL TRAINING COURSE IN CLINICAL PSYCHOLOGY

DOCTORATE IN CLINICAL PSYCHOLOGY

FRIGHTENING WEB SIGHTS:

IMAGERY AND ITS CHARACTERISTICS IN SPIDER PHOBIA

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Abstract

Objectives. The objective of this study was to investigate how the characteristics of self-generated and spontaneous images might differ between states of high and low anxiety, as observed in spider phobia. It was not known whether self-generated images could be used, in the same way as spontaneous images, to access core beliefs. The frequency and characteristics of spontaneous images were assessed to determine whether they are negative, recurrent, and link to early memories, as have been reported in social phobia.

Design. Participants were recruited into either a spider-anxious group or a control group based upon their response (independent variable) to the Fear of Spiders Questionnaire (Muris & Mercklebach, 1996). A semi-structured interview, incorporating a within and between-group design, required participants to rate the characteristics (the dependent variables) of self-generated and spontaneous images.

Method. A semi-structured interview was administered. Participants rated the characteristics of two images (spider and butterfly) using visual analogue scales. The downward arrow technique was used to access core beliefs associated with the self-generated and spontaneous images.

Results. The spider-anxious group's spider image was more vivid, evoked more anxiety, and was perceived as having more intent than both control images. The spider-anxious group reported more negative core beliefs associated with the self-generated image and more spontaneous images, that were recurrent, negative and that linked to early traumatic experiences.

Conclusions. The phenomenological characteristics of self-generated images can be reliably assessed and, in the absence of spontaneous images, can be utilised to access core beliefs in anxiety disorders. This study provides some evidence of cognitive biases and thinking errors and calls for a new cognitive model of specific phobia.

1 Introduction

The Collins English Dictionary (1995) defines an image as “*A mental representation of something (esp. a visible object), not by direct perception, but by memory or imagination.*” An important distinction, not implicit in this definition, is the non-verbal quality of imagery. Horowitz (1970) defined images as contents of consciousness that possess sensory qualities, as opposed to those that are purely verbal or abstract. This definition embraces dreams and waking images of various kinds. The dictionary definition highlights the prominence of the visual modality in imagery. However, images can have qualities associated with any of the sensory modalities.

Hackmann (1998) described some of the different types, or categories, of images. “*They may occur spontaneously, but can also be deliberately evoked, transformed, or suppressed. They can reflect perspectives on the past, present, or the future, and can be literal or symbolic. They can appear to be veridical memories or at the other end of the scale they can be seen as imaginative images. However, their content is necessarily determined by experience.*” (Hackmann, 1998, p.302). Singer (1966) reported that 96% of normal adults have daydreams everyday. However, Beck (1970) noted the paucity of research on spontaneous imagery, and this situation has not changed much over the years.

This paper is essentially concerned with imagery, its phenomenological characteristics and how these might differ between states of high and low anxiety (observed here in those people with and without a specific animal phobia). However, before focussing

in on the current study, the historical background to the scientific investigation of imagery will first be considered. A more detailed look at what experimental and cognitive psychologists have discovered about imagery will then be considered before focussing upon the literature that has looked at imagery in the emotional disorders, including specific (spider) phobia, which is the focus of the present study. This necessarily brief literature review, of an enormous area of scientific endeavour and philosophical debate, will then focus in upon the aims and hypotheses of the current study.

1.1 Historical Background

Investigations of mental imagery can be traced back to over 2500 years, they were an important part of the earliest attempts to establish a scientific psychology in the 19th century, and were at the forefront of the initial development of cognitive psychology in the 1960s. However, while imagery has recently become more prominent within the cognitive therapy framework, the psychoanalysts have, of course, always been interested in images. Freud (1900, p.33) described images as *“the royal road to a knowledge of the unconscious; it is the securest foundation of psychoanalysis and the field in which every worker must acquire his convictions and seek his training”*.

Wundt, on the other hand, whilst setting up the first institute for the study of experimental psychology, had grave doubts as to the value of introspective methods, including those focussed on imagery, regarding them mainly as a way of generating hypotheses that could subsequently be tested by non-introspective methods. Wundt believed that complex mental process, such as thinking and remembering, could never adequately be studied either by introspection or by experimentation. It was left to his students (such as Titchener, James, and Galton) to develop the methods of study.

Wundts students believed that all forms of mental experience could be analysed in terms of certain basic elements which would be revealed when asking participants to report on their mental processes whilst carrying out cognitive tasks. Mental images were seen as the obvious elements through which thought processes might be introspectively analysed. However, some participants reported no conscious experience, which was termed *imageless thought*.

As the behavioural movement gathered momentum, there was a move away from introspection, fuelled by the imageless thought controversy, to the systematic study and measurement of behaviour. Behaviourists, such as Watson and Skinner argued that mental phenomena, by their very nature, could not be the subject of scientific investigation, and that the study of behaviour should be the sole aim of psychology.

Despite the behaviourists' view of the unknowable black box, imaginal material re-emerged early on in the history of behaviour therapy. Jacobsen (1942) demonstrated that imagery could produce similar physiological responses in the body as that produced by real experiences. Wolpe (1958) proposed that images were specific neural events, which formed part of the neural sequence, previously evoked by specific external stimuli. Therefore, as the image and the object shared a common neurophysiology, the image could act as a substitute for the object stimulus. Thus, imaginal material proved a suitable alternative to *in vivo* material in the laboratory, and was used in various forms of exposure therapy, such as Wolpe's desensitisation (Wolpe, 1958).

With the emergence of modern cognitive psychology in the 1960s mental imagery once again became a legitimate object of scientific study. Richardson (1999) suggests that the moral of the imageless thought controversy was, that it can never be assumed that cognition involves both imaginal and non-imaginal representations. The nature of the interface between these two systems is now open for debate and research.

1.2 The science of imagery

There are four main categories into which imagery can be split. Imagery has been seen as a phenomenological experience and as a mental or internal representation. Cognitive psychologists have studied imagery as a property or attribute of the materials that subjects have to deal with in laboratory experiments. The fourth approach is to focus upon imagery as a process that is under strategic control.

Imagery can be studied as a dependent variable (something that is measured) or as an independent variable (something that is manipulated). Researchers who have viewed imagery as a dependent variable (the perspective adopted in this study) have been interested in the subjective and qualitative aspects of imagery, such as the vividness of the experienced imagery. Essentially what is of interest is how the experience of imagery and the use of imagery vary from one person to another, and from one task/situation to another. As an independent variable researchers are interested in the objective, observable, and quantifiable aspects of cognition, which are reflected in behaviour and performance on cognitive tasks.

Mental imagery is a private or subjective experience along with other mental events such as sensations, thoughts, and feelings. We can only come to know about other

peoples' mental experiences on the basis of their verbal and non-verbal behaviour. However, unlike pain, there is no obvious expression that corresponds to a specific image. While there are certain expressions associated with being thoughtful or feeling sad, they do not tell us about the content of the person's thought. Therefore, imagery must be studied through verbal accounts. A number of questionnaires have been devised to assess imagery, and are discussed below. These have tended to focus upon the vividness and controllability of the reported imagery.

1.3 The 'imagery debate'

The imagery debate relates to the scientific and philosophical discussion as to the nature of images that people experience. The main debate is not whether images exist or not, but is about their nature and operational status (De Silva, 1986). For example, Pylyshyn (1973) argued that images have no pictorial quality and that they are merely epiphenomena, with no function.

However, Lang (1977) argued that images are non-linguistic propositional units, which may be rendered as statements in a natural language. Therefore the emotional image can be considered as a cognitive schema containing a finite set of propositional units, each of which can be represented as a verbal statement or instruction. Lang suggested that the emotional image contain both stimulus and response propositions. Stimulus propositions include information about the stimuli, e.g. 'spiders are black and hairy'. Response propositions relate to behaviour, e.g. 'I will run away.' Response propositions contain the three main emotional responses: verbal, overt motor acts, and physiological responses. They also relate to characteristics of thinking processes and sense organ adjustments, and postural responses. Neisser's (1976) view of imagery

was that they are plans for obtaining information from potential environments, and are therefore anticipations of perception. However, Rachman and Hodgson (1980) suggested that the highly detailed and specific images experienced by people with obsessive-compulsive disorder do not fit with Neisser's view.

Kosslyn (1980) argued that an image consisted of two components: (1) a surface representation, or quasi-pictorial entity, which carries the subjective experience of having a mental image; and (2) a deep representation (i.e. words), the information stored within long term memory from which the surface representation was derived. Kosslyn argued there were two kinds of deep representation. Firstly, information about the literal or perceptual appearance of objects, and secondly, information about the appearance of objects expressed in a discursive or propositional format. Kosslyn's view, that images depict information spatially, and that they represent objects for size, position, and orientation, does not sit easily with the propositional network theory of Lang. Currently, there is no single view on the nature of imagery, and the debate rumbles on.

1.4 Experimental findings on imagery

Experimental psychologists have discovered evidence to suggest that images contain certain basic properties. Finke (1989) proposed four principles of mental imagery. The *implicit coding* principle states that mental imagery is instrumental in retrieving information about the physical properties of objects, or about physical relationships among objects, that was not explicitly coded at any previous time. For example, Shepard (1966) commented how in order for him to count the number of windows in

his house he had to form various images of the house and then count the windows from these images. In fact there is a direct relationship between the number of windows counted and the time taken to answer the question (Meudell, 1971). Thus, images have emergent properties, they are not just phenomenal experiences, but a medium or a form of internal representation in which information about the appearance of physical objects, events, and scenes can be depicted and manipulated. Underpinning this property is the principle of *structural equivalence*. The structure of mental images corresponds to that of actual perceived objects, in the sense that the structure is coherent, well organised, and can be reorganised and reinterpreted. As Galton (1883) originally suggested, there seem to be a variety of situations in which it is helpful to be able to read off visual or spatial information from a mental image. A number of studies (e.g. Kosslyn, 1973) have shown that an image is a relatively faithful model of the perceptual information on which it is based, and can capture the metric structure of Euclidean space, the principle of *spatial equivalence*. A number of studies suggest that the way images can be manipulated correspond to the way physical objects can be manipulated. Finke (1989) called this the principle of *transformational equivalence*. Thus, mental imagery is not just a phenomenal experience, but a medium or form of internal representation in which information about the appearance of physical objects, events, and scenes can be depicted and manipulated.

1.5 Why might the study of imagery be of clinical significance?

Beck reported how in therapy “*client’s problems often remain vague despite the usual methods of description, associations, exploration, probing or reflection.*” He went on to describe how in many instances “*induced imagery clarified the problem and*

provided important clues for the explanation of an excessive or inappropriate reaction, [which is] usually apparent from the gross distortion of reality in the patient's fantasies." (Beck, 1970, p.8). The cognitive therapies emphasised that between stimulus and response there were appraisals, which included "*meanings, significances, and imagery*" (Beck, 1976, p.32), and it was suggested that meanings were the things that needed to change, and that these were accessible through thoughts and images. Imagery seems to provide richer details and often helps to unpack the idiosyncratic meanings of automatic thoughts (Wells and Hackmann, 1993). Images can therefore provide a quicker route to what Barnard and Teasdale (1991) call the implicational level of meaning.

Thus, as well as being useful in the initial assessment of clients' difficulties, images can also be manipulated as part of therapy. Beck (1970) reported how patient's pictorial images can be utilised in many ways to produce favourable effects, and that stimulation of visual fantasies has a broader application than outlined by Wolpe in his description of systematic desensitisation. Hackmann (1987) described how, in cognitive therapy, there are a number of aspects of spontaneous imagery one might choose to work on. These include unpacking the meaning encapsulated within spontaneous images, attempting to transform them, and examining and working on beliefs about the meaning of actually having such images. It is also possible to work on the memories, which are imagined by the patient when asked to relive the remembered experience. The meaning of the memory can also be explored, and sometimes transformed using imagery techniques.

1.6 Imagery and stress: spontaneous images

Spontaneous images are those which suddenly come to mind without volition, as oppose to self-generated images that are consciously created or recalled. Horowitz and Becker (1971) studied the responses of normal participants to stress-inducing films. In the post-stress period, during which their cognitions were monitored, the participants reported many more spontaneous intrusions, especially images, than controls. Thus, contrived stress appears to have led to an increase in intrusive imagery.

Parkinson and Rachman (1981) studied the effects of uncontrived stress and found similar results. They studied mothers of children who had been admitted into hospital for surgery and found, in comparison to a control group, that the stress condition mothers reported significantly more intrusive images. The difference in number of images reported between the two groups was much greater than the number of thoughts that were reported. These findings suggest that stress is likely to induce spontaneous images in a non-clinical sample. De Silva (1986) suggested that these findings indicate that the imagery mode may be more easily activated by stress than the verbal mode.

Rachman (1980) listed four classes of factors that he considered would give rise to difficulty in processing stress experiences and would thereby contribute to the development of symptoms. These were state factors; personality factors; stimulus factors; and associated activity factors. De Silva (1986) felt that certain personality factors were of particular relevance to the production of imagery. These were the overall ability to obtain clear and vivid images in a person (for example, Marks,

1973); the cognitive style, specifically a person's tendency to have images relative to abstract, verbal thinking (Alwyn, 1985); and the degree of control one can exercise over one's imagery (Gordon, 1949). De Silva hypothesised, in the case of obsessive-compulsive disorder, that individuals who have images as part of their symptomology will have more vivid imagery, will be more likely to be 'visualisers', and will have less control over their imagery. These are empirical questions that can be tested.

1.7 Differences between disorders

The content-specificity hypothesis is one of the central hypotheses of the cognitive model and states that every psychological disorder, including a specific phobia, has a distinctive cognitive profile that is reflected at all levels of cognitive functioning (Beck, 1976, 1987). Cognitive content differences across disorders have been useful in evaluating psychological theories. For example, processing biases tend to be strongest for material matching the domain postulated to be the critical maintaining feature of that disorder. As well as content specificity, disorders differ in the type of process that reveals the bias most reliably. For example, memory biases are more consistently found in depression, while perceptual encoding effects seem more reliably found in anxiety (Cameron, 1997).

The processing and characteristics of images might therefore also be susceptible to bias, and the content of images should, in some way, reflect the specific idiosyncrasies of each disorder. The literature suggests that images are common in psychological states, particularly in anxiety disorders, and there is a growing body of research in this area. A number of studies have revealed that images in psychological disorders are similar in content and theme to the verbal cognitions that clients typically describe.

For example, Ottiviani and Beck (1987) in panic disorder, De Silva (1986) in obsessive-compulsive disorder, Wells and Hackmann (1993) in health anxiety, and Beck (1976) in depression, all revealed that the images their patients described were all typical of their anxious thoughts. The images, usually visual but which may also be sensory impressions, play an important role in the maintenance of such conditions. Images are often regarded as reflecting reality, and are therefore acted upon, giving rise to avoidant behaviours.

More specifically, De Silva (1986) described how the four categories of images (obsessive, compulsive, disaster, and disruptive) observed in obsessive-compulsive disorder have specific characteristics of their own. For example, *disaster* and *disruptive* images were, although vivid, found to be less detailed than the *obsessive* and *compulsive* images, and *obsessional* images were reported to appear spontaneously. All the images were reported to potentially contain movement and flow, and were observed to recur in the same form and detail.

1.8 The phenomenological characteristics of mental images

Early attempts to study imagery focussed upon vividness (Galton, 1883; Bett, 1909; and Sheehan, 1967) and controllability (Richardson, 1969) in self-generated images, which resulted in a number of standardised questionnaires being developed. These questionnaires typically required participants to imagine a specific image, such as the setting sun, and rate how vivid the image was in their mind's eye.

However, very little is known about the phenomenological characteristics of either self-generated or spontaneous images. Bandler (1985), in an early account of Neuro-

Linguistic Programming (NLP), suggested that the way people 'go wrong' is related to the way they process information, particularly images. Bandler suggested, for example, that spider phobics' mental representation of a spider would be qualitatively and quantitatively different in comparison to someone who is not scared of spiders. Bandler suggested that peoples' mental images are experienced in a variety of different modalities (visual, auditory, kinaesthetic, gustatory and olfactory) and each of these can be broken down into specific sub-modalities. For example, some of the visual sub-modalities include brightness, colour, movement, size, perspective, and how close the image is to the person. Bandler suggested that investigating and then manipulating the sub-modalities of images, would be a quick and direct method of altering the emotional response to such stimuli.

1.9 The observer perspective

While there are some anecdotal reports, there are only a few studies in the literature that have investigated specific phenomenological characteristics of mental images. Clark and Wells (1995) suggested that in social phobia a distorted image of one's public self plays an important role in maintaining the disorder. The images are reported to be negative, at least partly distorted, but that the patient believe that the image is accurate at the time it occurs. Wells, Clark, and Ahmad (1998) found that that, compared to non-patient controls, patients with social phobia were more likely to take an observer perspective (as if seeing themselves from an external viewpoint) when asked to image a recent social situation in which they had felt anxious. Non-patient controls were likely to take a field perspective (as if viewing the image through their own eyes). These studies were limited in that they did not contain a control group of patients with an anxiety disorder other than social phobia. To address this, Wells

and Papageorgiou (1999) compared social phobia, agoraphobia, and blood/ injury phobia and found that only patients with social-evaluative concerns reported observer perspectives for anxiety-provoking social situations. And only social phobics showed a significant switch from an observer to a field perspective across conditions.

However, perspective, according to Bandler's taxonomy (see appendices), is only one sub-modality of the visual modality. No study so far has attempted to systematically investigate the characteristics of images in any of the other visual sub-modalities, or those of the other sensory modalities such as the kinaesthetic, gustatory, and auditory modalities.

1.10 Imagery in Spider Phobia

The research on imagery in spider phobia is limited to studies that have investigated information-processing biases. Watts, Sharrock, and Trezise (1986) hypothesised that spider phobics would have imagery connected with their phobias that was relatively lacking in detail and elaboration. They discovered in a study of visual imagery of coping with a spider that the accounts of phobics were briefer and less elaborated, suggesting a lack of coping imagery. However, in another study of stimulus imagery immediately following exposure, phobic subjects reported being more aware of the image, but did not report less detail (as predicted). This was surprising in view of a previous study by Watts, Trezise, and Sharrock (1986) in which poor recognition memory for phobic stimuli was demonstrated and taken as evidence for poorly elaborated stimulus processing.

So far we have seen that images are commonly reported in psychological disorders. This is not unexpected, given that they seem to be easily generated, more so than verbal cognitions, at times of stress. They tend to reflect the nature of the disorders, and in social phobia, images tend to be seen from an observer perspective. However, in the current study, which to a large extent is exploratory in nature, it is important to consider what other characteristics we might expect to find, on the basis of the literature. In other words, what hypotheses can we generate about the characteristics of images that are empirically testable?

To do this we will now turn our attention to the literature concerned with the vividness and controllability of images. As was discussed earlier, Rachman (1980) felt that personality factors would affect a person's ability to process stressful experiences. Following on from Rachman, De Silva (1986) argued, in the context of OCD, that a person's ability to bring to mind vivid images and the degree of control they have over their imagery would influence the likelihood of that person experiencing spontaneous images.

1.11 Vividness of mental imagery

The earliest attempt to study peoples' phenomenal experience of mental imagery was conducted by Galton (1880, 1883) who asked participants to visualise familiar objects or scenes and then describe the quality of the mental imagery. The majority of this early questionnaire left participants free to describe their experience in their own words. Galton concluded that there was considerable diversity in the experience of mental imagery among the general population. Galton then approached a wider cross-

section of the population, and found that he could rank order their responses in relation to the vividness of their reported imagery.

Based upon Galton's original questionnaire Betts' (1909) developed the first quantitative instrument. The Questionnaire upon Mental Imagery (QMI) consisted of 150 items and covered seven sensory modalities. Participants were asked to rate the vividness of an image on a seven-point scale. However, the original QMI took nearly 55 minutes to administer and was therefore shortened by Sheehan (1967) who developed a 35-item (five per modality) questionnaire which took only 10 minutes to administer. Marks (1973) argued that in experiments of visual imagery the relevant modality would be vision, and that visual imagery would be the modality most easily aroused. Marks devised the Vividness of Visual Imagery Questionnaire (VVIQ), a 16-item, 5-point questionnaire.

Lang (1980) argued that the success of therapy must depend upon the vividness and the affective intensity of the generated images. Vividness, according to Lang, is determined by the completeness of the evoked propositional (stimulus) structure, and by the pattern of response propositions. Affective intensity is defined by the amplitude of the visceral, verbal, and smooth muscle responses associated with an overt emotional state. Therefore, vividness and affective intensity might interact, and individuals, according to Lang, who produce vivid images will probably be able to generate more intense affect. However, Lang argued that an emotional image's potency seems to be linked more by the elaboration of response propositions than by the refinement of stimulus elements. Therefore, more arousing images might seem "more vivid", despite fewer discriminating details.

Thus, Lang argues that the therapeutic effect of an image is determined by its propositional structure, the balance between stimulus and response elements, and the interrelated characteristics of vividness and affective intensity.

1.12 The controllability of mental imagery

Information processing theory distinguishes between automatic and controlled processing. Automatic processes are triggered by set patterns of external/ internal input with no real need for either effort or attention. They appear to be resource-independent, and have limited flexibility. Controlled (or strategic) processes involves serial sequences of operations under the control of the individuals' attention, which are modifiable but constrained by capacity limitations (Bargh, 1992).

The significance for the present study is that in terms of the emotional disorders, it is proposed that anxiety predominantly leads to biases for threatening material at automatic stages of processing, leading to automatic attentional biases rather than biases in controlled processing (Cameron, 1997). This should therefore be reflected at all levels of processing, including imagery.

Gordon (1949) devised a questionnaire with the aim of classifying respondents in terms of whether their imagery tended to be "controlled" or "autonomous". The (Gordon) Test of Visual Imagery Control (TVIC) was amended (Start and A. Richardson, 1964) and then standardised (Richardson, 1969) to produce a 12-item questionnaire. The internal consistency of this measure was good and its test-retest reliability proved satisfactory. We might therefore expect participants, whose

spontaneous images reflect their fears, to score lower on the TVIC, indicating less control.

1.13 Recurrent images and earlier memories

Recurrent images are those which are re-experienced with the same form and content. In therapy with patients suffering from a variety of anxiety disorders it has been noted that there is often a close similarity between the sensory and interpersonal content of recurrent images and upsetting childhood memories (Hackmann, 1995; Wells & Hackmann, 1993). Hackmann, Clark, and McManus (2000) in their exploration of social phobic imagery, found that all participants were able to identify negative spontaneous images that were recurrent, in the sense that their content appeared to be relatively stable over time and across different feared social situations.

Although many images contained a visual component, the recurrent images in this study tended to involve more than one sensory modality, and some contained no visual component. The visual modality was most commonly reported, with body sensations and skin perceptions. Most recurrent images were linked to memories of adverse social events that clustered in time around the onset of the disorder. Their results suggested that, in patients with social phobia, early unpleasant experiences may lead to the development of excessively negative images of their social selves that are repeatedly activated in subsequent social situations and fail to update in the light of subsequent, more favourable experiences

In depression individuals often have intrusive memories, linked to their current mood, of childhood traumas (for example, Brewin, Hunter, Carroll, & Tata, 1996). Recurrent

images may also be important in PTSD, and may not simply be a re-living of the trauma. Images in PTSD tend to appear like flashbacks, often of traumatic scenes. The images are rich in sensory detail, can involve all the sensory modalities, and may be so vivid that the sufferer may feel like they are actually reliving the experience. The intrusive image is often of the same fragment(s) of memory, and it appears that these fragments are those which have not been resolved in the mind of the sufferer. Victims of sexual abuse report similar experiences, in all sensory modalities, in their spontaneous images and their early memories of abuse. Patients of both conditions often worry that letting such images into full awareness would have serious mental or physical consequences. This often results in attempts to suppress the images, which can help to maintain the condition.

1.14 Imagery and developmental theory

Imagery has been described as one of the major representational systems that we use to make sense of the world around us. Bruner (1973) described an image as a selective, simultaneous, and often highly stylised analogue of an event experienced. A key theoretical concept in his approach to intellectual growth is that of representation, the system of rules by means of which an individual converses in a manageable way the recurrent features of his environment. Bruner distinguishes three systems of representation, based upon action, imagery, and language. These are called enactive representation, iconic representation, and symbolic representation, respectively. He argues that their appearance in the course of growth is in that order, although one system of representation is not replaced but rather supplemented by subsequent systems.

According to Bruner (1973) a child's earliest memories are encoded in the sensori-motor system, while visual representation becomes dominant between the ages of two and seven. By contrast linguistic representation develops more slowly, and may not be fully integrated with the kinaesthetic and visual modes of representation until adolescence. (Smucker, Dancu, Foa, & Niedree, 1995). This description of a progressive development of representational systems suggests that events that occur early in life might be encoded and processed differently to more recent events. Bandler and Grinder's theory of neuro-linguistic programming also proposes that the visual, auditory, and kinaesthetic are three major cognitive systems for representing the world, and that each person has a preferred modality (King, Novik, & Citrenbaum, 1983). However, no one has investigated whether there is a relationship between the type of modality that imagery is experienced and the age at which relevant experiences occurred.

1.15 The current study

The current study is essentially split into two main parts. Part one is concerned with the phenomenological characteristics of images, and how they might differ between a high-anxiety and low-anxiety group, and how they might differ within groups when comparing two different images. The second part of the study is concerned with spontaneous, recurrent imagery and its link to early memories. For this study, the researcher focussed on spider phobia, and it is worth first considering the rationale for such a choice.

1.16 The rationale for using spider phobia to study imagery

Spider phobia is a specific phobia, which is defined in the fourth edition of the American Psychiatric Association's (1994) *Diagnostic and Statistical Manuals* (DSM-IV). The essential feature is a marked and persistent fear of the object, which is exacerbated by exposure to it. The fear is described as excessive and unreasonable, which usually causes phobics to avoid any situations in which exposure to the feared object might occur. A diagnosis is only made if the symptoms (avoidance, fear, and anxious anticipation) significantly disrupts the person's daily routines, or if the person is markedly distressed about having the phobia.

Specific phobias tend to be less disruptive and disabling, are associated with less comorbidity and can be treated more quickly and easily than other anxiety disorders. However, they are the most prevalent of the anxiety disorders and they disable a significant number of sufferers. Because extremely effective treatments are now available, it is sometimes forgotten that the current ease of treatment has only come about as a result of intensive research over almost four decades, during which time continual therapeutic refinements have been derived by theory-driven experimental findings. Animal phobias, in particular, played an important role in the evolution of psychological theories of other anxiety related disorders, and in the development of effective treatments. Behaviour therapy, for example, developed from early work that was almost exclusively confined to animal phobias (Jones, 1924; Wolpe, 1958). The extension and amplification of this early work has been particularly important in the development of cognitive behavioural treatments, which are now applied to a wide range of psychological problems (Hawton, Salkovskis, Kirk, and Clark, 1989).

Research into animal phobias continues to make a major contribution to the understanding of the nature of fear and the psychopathology of a wide range of anxiety based disorders (Thorpe & Salkovskis, 1997).

Although current treatments are highly effective, there are still those, including those with spider phobia, who do not improve with current treatment protocols. The prevalence of spider phobia within the general population makes it a useful disorder in which to investigate psychological processes that are likely to have implications for anxiety based disorders in general.

1.17 Cognitive factors in spider phobia

It has long been assumed that specific phobias are by definition, non-cognitive and irrational, despite the DSM-IV criteria, which suggests that the focus of fear in specific phobia may be anticipated harm from the object or situation, concerns about losing control, panicking, and fainting on exposure to the object (APA, 1994). However, current cognitive theory suggests that idiosyncratic cognitions may be primary to the experience of phobic anxiety. In particular, Beck, Emery, and Greenberg (1985) argued that it is not the object itself that causes phobic anxiety, but the expectations of certain aversive consequences that result from being in contact with the object.

Thorpe and Salkovskis (1995) assessed conscious beliefs related to exposure to phobic stimuli and found that the majority of specific phobics reported high levels of belief in at least one of a set of cognitions, such as “I would go mad” (Thorpe & Salkovskis, 1995). Phobics were found to have a range of negative beliefs about their

phobic object which were identifiable and which appeared to form a logical framework for phobic fear responses. Thus, beliefs appeared to be central to the meaning that the phobic object had for the phobic person. Phobic's negative cognitions relating to harm and coping were found to correlate highly with feelings of fear and avoidance. Such beliefs appeared to be essential in the maintenance, and therefore the understanding of, the state of phobic anxiety. In the second of two studies, Thorpe & Salkovskis (1995) focussed upon spider phobia and found idiosyncratic beliefs, specific to the disorder.

These findings suggest that, far from being "non-cognitive" (Seligman, 1971, p.315), phobics have a complex construction of beliefs to do with their phobic object, which is different from that of non-phobics. Therefore, the definition of phobias as 'irrational' may be unsound (Thorpe & Salkovskis, 1995). These findings are of significance for the current study, in that they indicate what themes might be reflected in the imagery of spider phobics. Thus, we might expect to find images in spider phobics that reflect beliefs about the harm which spiders may inflict upon them, either physically, psychologically, or socially.

1.18 Summary

Spontaneous images have been observed in a number of psychological states, especially in some of the anxiety disorders. The literature to date suggests that it may be helpful to consider images in cognitive therapy. Both types of image, both spontaneous and self-generated, often reflect the feared outcomes in anxiety disorders and they can help to reveal, and disambiguate, meanings that have not been accessed through verbal discussion. As well as being useful in the assessment of clients'

difficulties, they can also be useful in intervention techniques. Spontaneous, recurrent images may also be linked to traumatic early memories (for example, Wells & Hackmann, 1993).

A few studies have looked at imagery in anxiety disorders, but no study so far has investigated either spontaneous or self-generated images in spider phobia. Research into specific phobia, particularly animal phobia, has made a major contribution in the development of cognitive theory and practice. Also, there has been no comprehensive study of phobias from a cognitive-behavioural perspective. Cognitive theory predicts that spider phobia will have a distinctive cognitive profile, reflected at all levels of cognitive functioning including imagery. Recent findings also suggest that phobic images in this disorder will reflect phobic beliefs, particularly in spontaneous images.

While there appears to be some characteristics that are specific to certain disorders, such as the *external perspective* in social phobia imagery, there has been no systematic investigation of how a wide range of imagery characteristics, across all of the sensory modalities, might differ in relation to anxiety. It is also unclear whether such characteristics can be reliably measured.

If such characteristics can be reliably assessed, then one might predict that the images of spiders would be different in phobic and non-phobic populations. One might also reasonably predict that the characteristics of spider images would be significantly different to images of other, non-threatening, animals in the phobic population. However, given the paucity of research it is difficult to make predictions about the direction of any differences that might be observed.

It has also been suggested in the literature that certain personality traits will influence the type of images that people experience and their degree of control over such images. Although again, it is not possible to predict how exactly images will differ.

The overall aim of the first part of this study is to conduct a detailed investigation of the characteristics of self-generated imagery in a wide range of modalities. It is hoped that this will contribute to the development of cognitive theory in both spider phobia and more generally in a wide range of anxiety based disorders. The aim of the second part of the study is to look at spontaneous images in spider phobia and to determine, as has been found in other disorders, whether they tend to be recurrent, negative, and linked to early memories.

While spontaneous, recurrent imagery has been found to link to core beliefs in some anxiety disorders, it is not clear whether self-generated images can serve the same function. Not everyone experiences spontaneous images and, therefore, self-generated images could provide a useful method for accessing core beliefs in such people.

Spontaneous images have been observed in a number of psychological disorders. These images, in comparison to those in control groups, tend to be recurrent, more negative, and relate to core beliefs and early experiences (Hackmann *et al.*, 2000). However, it is unclear whether spider phobics experience spontaneous images that relate to their fears. If such images are experienced, one might assume that spider phobics would be more likely to report images that are recurrent, are associated with more distress, and that relate to core beliefs and early experiences, than a control

group. It is also hypothesised that the results will add support to the findings of Thorpe and Salkovskis (1995), who reported idiosyncratic beliefs in spider phobia. It would also be reasonable to predict that the fears of spider phobics would also be reflected in verbal thoughts that are negative, recurrent, and linked to early experiences.

Bruner's developmental theory of representational systems might lead us to predict that, depending upon the age of onset, spider phobics might report images that are represented in different sensory modalities. Thus, we might predict that the characteristics of early memories would differ in relation to the type of modalities that are reported, depending upon the age of the memory. We might expect the characteristics of early memories to reflect the developmental stage to which they relate. For example, we might expect that early memories contain more input from the kinaesthetic senses than memories that relate to a later developmental period. Likewise, we might expect that images that contain a visual component reflect an earlier developmental age than images that are more verbal in content.

1.19 Hypotheses

1.19.1 The characteristics of non-verbal images (and verbal thoughts) will have good internal consistency and good test-retest reliability.

1.19.2 Spider phobics will report images that are (a) different than those of control participants when asked to generate an image of a (worst possible) spider situation, and (b) different than their images of other insects in a similar (worst possible) situation.

- 1.19.3 Spider phobics will report more spontaneously occurring images (that are associated with anxiety/ distress and are recurrent) when asked about their fear of spiders than control participants. These images will be linked to core beliefs and early experiences.
- 1.19.4 Spider phobics will report more negative verbal thoughts when asked about their fears of spiders than control participants. These will be linked to core beliefs/early experiences.
- 1.19.5 (a) Age of acquisition of spider phobia will be lower in those reporting spontaneous non-verbal imagery than those not reporting such imagery.
(b) Age of acquisition will be lower in those reporting imagery in the sensorimotor (kinaesthetic) modality than the visual and verbal modalities only.

2 Method

2.1 Overview

A semi-structured interview was administered to two groups, a spider-anxious group and a control group. The first part of the interview assessed the phenomenological characteristics of two self-generated images. The second part of the interview asked about spontaneous images and their possible links with early memories.

2.2 Participants

Participants were undergraduate students, all of whom were volunteers. Two methods of recruitment were employed. Students were either approached *en masse* at the end of their lectures or via the university e-mail system. An initial screening procedure recruited 128 participants (107 female, 21 male) all of whom completed the Fear of Spiders Questionnaire (FSQ: Szymanski and O'Donohue, 1995).

Two groups were required for a between-subjects design. Participants whose FSQ scores fell within the upper ($FSQ \geq 52$) and lower ($FSQ \leq 4$) quartile range of the initial sample (spider-anxious and control group, respectively) were then contacted and invited to continue into the main part of the study. The spider-anxious group consisted of 27 females and 2 males (mean age = 23.8, $SD = 5.1$), while the control group consisted of 24 females and 6 males (mean age = 27.0, $SD = 7.4$). During the course of the study four participants opted out prior to the interview stage, and one set of interview data was not included in the analysis due to confounding co-morbid psychopathology.

2.3 Measures (see appendices)

Prior to the administration of the interview schedule, participants in both groups completed the Vividness of Visual Imagery Questionnaire (VVIQ: Marks, 1973), the Test of Visual Imagery Control (TVIC: Start and Richardson, 1964). The semi-structured interview was developed specifically for the current study.

2.3.1 Fear of Spiders Questionnaire (FSQ: Szymanski and O'Donohue, 1995)

The FSQ is an 18 item, Likert-type questionnaire that assesses spider phobia. The FSQ has been found to discriminate between phobics and non-phobics, and is sensitive to change following cognitive therapy (Muris and Merckelbach, 1996). Test-retest and convergent reliability are good (Klorman, Weerts, Hastings, Melamed, Lang, 1974).

2.3.2 Vividness of Visual Imagery Questionnaire (VVIQ: Marks, 1973)

The VVIQ contains 16 items to be rated on a five-point scale, for the visual imagery evoked. The internal consistency is good, test-retest reliability is satisfactory, and factor analysis yielded a single underlying dimension (Richardson, 1999). The VVIQ has been used in a large number of studies since the 1970s.

2.3.3 The Test of Visual Imagery Control (TVIC: Richardson (1969)

The TVIC was originally developed to classify respondents in terms of whether their imagery tended to be controlled or autonomous (Gordon, 1949). The internal consistency and test-retest reliability of the TVIC is good, and scores tend to correlate with the VVIQ (Marks, 1973).

2.3.4 Semi-structured interview (Part one): Self-generated imagery

A semi-structured interview was developed to assess the phenomenological characteristics of self-generated imagery. Images were first defined to participants as mental representations that may contain input from any of the sensory modalities.

Participants were asked to generate a frightening image of a spider and to describe it. The researcher noted which of the sensory modalities (visual, auditory, bodily (skin and internal bodily sensations), gustatory, and olfactory) were present in the image. Participants' level of anxiety evoked in response to the image was recorded. Specific characteristics of each sensory modality were assessed via 100-point visual analogue scales. For example, within the visual modality, there are numerous sub-modalities^ψ that can be assessed, such as the vividness, brightness, and size of the image. Thus, to determine the size of the spider/ butterfly within the image respondents were asked: *“How much of the image is taken up by the spider/ butterfly, whereby 0 = the spider/ butterfly is so small it does not take up any of the image, 100= the spider/ butterfly is so large it takes up all of the image?”*

In the example given above, in relation to the size of the image, participants were also asked to graphically display the relative size of the animal on a 10*10 centimetre grid. This was incorporated to help provide a measure of concurrent validity, as it would be expected that the measure of area would positively correlate with the analogue scale.

A within-subject design required the comparison of two images. Therefore, participants were also asked to generate a frightening image of a butterfly, as a non-

^ψ A full list of the sensory modalities and their associated sub-modalities can be found in the appendices.

threatening control animal. Ratings for anxiety and the sub-modalities were repeated. The order of presentation for the spider and butterfly image was randomised within the spider-anxious and the control group.

The choice of which animal to use as a control was discussed and various options were tried out in the piloting of the semi-structured questionnaire. There is no one ideal control animal, especially as people who have a specific phobic subtype are also more likely to be phobic of other similar subtypes. An ordinary 'house fly' was considered, although it was felt that people often make a concerted effort to either kill or disperse them, and that they can be associated with the spreading of disease. The butterfly was finally chosen as it was felt to be associated with few negative connotations. However, there was some concern of its similarity to moths, another common specific phobic subtype.

It was also observed from the pilot stage that participants' images tended to change in response to each specific sub-modality item of the questionnaire. For example, some participants reported that their image initially contained no sound until they were asked to consider sound within their image, which they then became aware of. Therefore, participants were asked to stick with the original image that came to mind, rather than report characteristics that came to mind in response to the questionnaire items.

Once participants had completed the ratings for the spider image, the 'downward arrow' technique (Burns, 1980) was used to determine whether core beliefs could be accessed via the self-generated image. Each core belief identified was recorded by the interviewer using the participants' exact words. Degree of distress associated with

each belief was also recorded. Participants were asked to rate on a 100-point scale (0 = I do not believe this thought to be true, 100= I believe this thought to be completely true) how much they believed the thought, both on an emotional and rational level.

The core beliefs identified by the downward arrow technique were classified into specific themes, the frequency of which was recorded. The principle researcher identified seven main themes into which all of the core beliefs could be categorised. The themes identified included: loss of control, negative self-evaluation, feeling vulnerable, negative social evaluation, poor coping skills, negative evaluation of others, and disgust. While these themes were based upon the researcher's interpretation, and not upon a pre-arranged classificatory system, an experienced clinical psychologist also independently rated the core beliefs and the same seven key themes were identified.

2.3.5 Semi-structured interview (Part two): Spontaneous imagery

The design of the second part of the questionnaire follows the procedure adopted by Hackman, Clark, and McManus (2000) in their study of images in social phobia. Participants were asked to cast their minds back to the last time they felt really anxious about spiders, and were asked if they could recall having any images, and whether these images were recurrent i.e. whether their images always involved the same kinds of things. Participants who responded affirmatively were asked to recall a typical image. A description of the image, the sensory modalities present, and the level of anxiety experienced, in response to the image, were recorded. The downward arrow technique was employed to access core beliefs about the self, others and the world. Participants were asked to rate on a 0-100 scale the degree to which the beliefs, reflected in the image, were representative of how they generally felt.

Participants were then asked, when in their life had they first experienced the sort of sensations, emotions and thoughts reflected in the spontaneous image. Participants were asked whether there was a particular early memory that seemed closely linked to the recurrent image. Early memories were explored in the same way as the spontaneous image, checking for the sensory modalities present, associated emotions, anxiety in response to the memory, and associated core beliefs. Participants were asked how old they were at the time of the remembered event.

After describing the sensations associated with the memory, participants were asked to rate on a 100-point scale, the degree to which the recurrent image and the early memory appeared to be similar in sensory content. Similarly, after describing the emotions and meanings reflected in the memory, participants were asked to rate the extent to which the recurrent image and the memory were similar in terms of interpersonal content.

Participants were told that when anxious, as well as non-verbal images, people often experience spontaneous verbal thoughts. Participants were asked to recall a recent incident in which they had felt anxious about spiders and were asked to describe what thoughts went through their mind. These thoughts were subjected to the downward arrow technique to access assumptions and core beliefs. Participants were asked to recall their first memory of having such thoughts and how old they were at that time.

2.4 Ethical concerns

Ethical approval for the study was sought from the Oxfordshire Psychiatric Research Committee (OPREC). Once approval had been granted a separate application was made to Oxford Brookes University, who also approved the study.

Prior to granting approval, OPREC asked the researcher to clarify how any distress experienced by participants would be dealt with. In a letter granting approval for the research proposal, Oxford Brookes University expressed slight concern that the level of participant involvement might affect recruitment. It was suggested that students in the psychology department might be approached first, and that if more participants were needed other schools within the Department of Law and Social Sciences could also be contacted.

Information about the study was provided to all prospective participants, including what participation would involve, and their rights as participants. Participants completed a consent form (as recommended by OPREC). Correspondence with both ethics committees can be found in the appendices.

3. Results

3.1. Data Analysis

Analysis for normality (Kolmogorov-Smirnov Test) and for equality of variance (Levene's Test for Equality of Variance) revealed that approximately two thirds of the data did not meet the assumptions required for the use of parametric analyses. As a result the data was analysed using non-parametric tests. ^ψ

The Wilcoxon Signed Ranks Test was employed for within-group analyses. The Mann-Whitney Test and Chi-square analysis was used for the between-group analyses. A Spearman's rho correlation matrix was used to explore how the characteristics of the self-generated images might relate to each other.

3.2. Descriptive data

Table 1 shows descriptive data (Age, FSQ, VVIQ, TVIC) for the spider-anxious and control groups. Between-subject analysis (Mann-Whitney Test) revealed that the two groups differed significantly with age ($U = 295, p < 0.05$), TVIC ($U = 248, p < 0.01$), and, as expected, with their scores on the FSQ ($U < 0.0001, p < .0005$). No significant difference between the two groups was found for their VVIQ scores. One outlier was found to account for the age difference, and when this participant's data was removed from the analysis the difference disappeared. A significant negative correlation ($r_s = -$

^ψ Parametric analyses (on data that met the required assumptions) did not reveal any significant findings that were not also picked up by the equivalent non-parametric analyses.

0.404, $p < 0.03$) between the TVIC and VVIQ was found in the control group, but not in the spider-anxious group. The significance of these findings is discussed below.

3.2.1. Table 1

Means (and standard deviations) for descriptive variables for both groups.

Variable	Spider-anxious group	Control group
Age	24.00 (5.10)	27.31 (7.10)
FSQ	68.45 (13.50)	1.76 (1.99)
VVIQ	2.22 (0.56)	2.34 (0.67)
TVIC	18.18 (3.67)	20.62 (3.91)

FSQ = Fear of Spider Questionnaire; VVIQ = Vividness of Visual Imagery Questionnaire; TVIC = Test for Visual Imagery Control.

The spider-anxious group's FSQ scores were significantly lower ($t = -8.2$, $df = 28$, $p < 0.0005$) than those reported by Muris & Merckelbach (1996) for a clinical population ($M = 89.1$, $SD = 19.6$). The control group in this study also scored significantly lower ($t = -3.4$, $df = 28$, $p = < 0.002$) on the FSQ in comparison to their respective sample ($M = 3.0$, $SD = 7.8$).

Hypothesis 1: *The characteristics of non-verbal images (self generated) will have good internal consistency and good test-retest reliability.*

3.3. Test-retest reliability

Part one of the questionnaire (the characteristics of self-generated images) was re-administered to 14 participants (seven from each group) four weeks after their initial interview. Test-retest reliability was measured using the Wilcoxon Signed Ranks Test.

No significant differences, for either the spider or butterfly images, were observed at retest for the spider-anxious or control groups. However, while not statistically significant, one item showed a trend towards significance ($p < 0.08$) in the control group. This was the item relating to the intensity of skin sensations reported in the butterfly image.

3.4. Internal reliability

It became apparent during the administration of the interview schedule, which was not highlighted during the piloting stage, that a few items were somewhat ambiguous and could be interpreted in different ways. For example, the items relating to the speed, colour, and brightness of the image (for example, '*How fast is the image moving?*' *Where 0 = not moving fast at all, 100 = moving very fast*) was often rated in a bi-polar fashion, so that a score of 50 equated to an image that was moving at a '*normal*' speed. Also, the item relating to colour did not specify whether the participants were rating the colourfulness of the animal or the image as a whole.

3.5. Concurrent validity

Concurrent validation involves observing the relationship between the measure and other criteria measured at the same time. For the current study participants scores on the VVIQ were expected to correlate with their scores vividness for the two images. Likewise, in accordance with Finke's (1989) principles of mental imagery a number of sub-modalities should logically correlate with each other.

Vividness/ VVIQ: Both the spider-anxious ($r_s = -0.46, p < 0.04$) and control group's ($r_s = -0.45, p < 0.01$) VVIQ scores negatively correlated with reported vividness of the

spider image. However, the Vividness of the Butterfly image did not correlate with VVIQ scores, in either group.

Relative size/ Area: Participants were asked to rate (0-100 visual analogue scale) how much of the image was taken up by the spider/ butterfly. Participants were also asked to graphically display the relative size of the spider/ butterfly within the image, by drawing a shape within in a 10*10 cm grid. The two measures of relative size did not significantly correlate ($r_s = 0.33$) for the spider-anxious group's image of the spider, but strong positive correlations were found for their butterfly image ($r_s = 0.81, p < 0.001$), and for the control groups' spider ($r_s = 0.79, p < 0.001$) and butterfly ($r_s = 0.86, p < 0.001$) image.

Distance/ Closeness: Participants were asked to rate how close the spider/ butterfly was to them on 0-100 visual analogue scale (0 = not close at all, 100 = very close, almost or actually touching), and to rate, in terms of meters, the actual physical distance. Strong positive correlations were found for the spider-anxious and control group's spider ($r_s = 0.73, p < 0.001$; $r_s = 0.72, p < 0.001$) and butterfly ($r_s = 0.85, p < 0.001$; $r_s = 0.83, p < 0.001$) images, respectively.

Distortion/ Realism: Participants were asked to rate how much bigger (i.e. how distorted in relation to reality) their image of the spider/ butterfly was. Participants also rated how realistic their images were. Both rating were 0-100 visual analogue scales. No significant correlation was found between the two measures for the spider-anxious group's spider image ($r_s = 0.30$), while a strong negative correlation ($r_s = -0.75, p < 0.001$) was found for the control group's spider image. Significant negative correlations

were also found for the spider-anxious group's, ($r_s = -0.71, p < 0.001$) and control group's ($r_s = -0.60, p < 0.001$), butterfly image.

Size/ Background: Strong negative correlations of the Size (cm^2) of the spider ($r_s = -0.49, p < 0.01$; $r_s = -0.52, p < 0.004$) and butterfly ($r_s = -0.66, p < 0.001$; $r_s = -0.58, p < 0.001$) within the image and the amount of reported background in the image, were found in the spider-anxious and control group respectively.

Hypothesis two: *The spider-anxious group will report images that are (a) different than those of control participants when asked to generate an image of a (worst possible) spider situation, and (b) different than their image of a (worst possible) butterfly situation.*

3.6. Characteristics of the self-generated image

Participants were asked which of the sensory modalities were present in the image (see Table 2, below). The mean number of modalities reported for the Spider and Butterfly images were 2.9 ($SD = 0.69$) and 2.07 ($SD = 0.96$) for the spider-anxious group, respectively, and 1.7 ($SD = 0.88$) and 1.9 ($SD = 1.03$) for the control group, respectively.

Between-group analysis (Mann-Whitney Test) revealed that the spider-anxious group reported significantly ($U = 149.5, p < 0.001$) more modalities in the spider image than the control group, while no significant difference ($U = 196$) was found for the butterfly image. Within-group analysis (Wilcoxon Signed Ranks Test) showed that the spider-

anxious group reported significantly more modalities ($Z = -2.90$, $p < 0.004$) for the spider image than the butterfly image, while the control group did not ($Z = -0.47$).

The spider-anxious group was significantly (Fisher's Exact Test) more likely than the control group to report Skin ($p < 0.001$) and Body ($p < 0.001$) sensations for the spider image. There were no other significant differences between the two groups in terms of the specific modalities reported, in either image.

For both groups and both images, the visual modality was most commonly reported. The percentage of participants reporting a visual component, for both images, was 100% and 97% for the spider-anxious and control group, respectively. The spider-anxious group reported more Skin (83%) and Body (93%) sensations than their butterfly image, and both of the control group's images. The pattern for the auditory modality was similar between the two groups, with fewer participants reporting sounds in the spider image than the butterfly image. Only one participant (control group) reported any olfactory or gustatory sensations.

3.6.1. Table 2.

Number of (percent) of participants in the Spider-anxious and Control group reporting sensory modalities in the Spider and Butterfly image.

Modality	Spider-anxious group (n=29)				Control group (n=29)			
	Spider		Butterfly		Spider		Butterfly	
Visual	29	(100)	28	(96.6)	27	(93.1)	26	(92.9)
Auditory	5	(17.2)	13	(44.8)	4	(13.8)	13/28	(46.4)
Skin	24	(82.8)	10	(34.5)	8	(27.6)	7/28	(25.0)
Body	27	(93.1)	9	(9)	11	(37.9)	13/28	(46.4)
Smells/ Tastes	0	(0)	0	(0)	0	(0)	1/28	(3.6)

3.7. Differences between specific imagery characteristics

Between-group analysis (Mann-Whitney Test) revealed that the spider-anxious and control group's images differed significantly in relation to certain specific characteristics. The spider-anxious group reported a spider image that evoked more anxiety ($U = 44.5, p < 0.005$), was more vivid ($U = 249, p < 0.01$), was situated higher within the image/ visual field ($U = 247, p < 0.05$), was more likely to be just about to do something ($U = 272, p < 0.01$), and contained skin ($U = 44.5, p < 0.05$) and body ($U = 69, p < 0.03$) sensations that lasted longer within the image, in comparison to the control group. Body sensations in the spider image were also more intense ($U = 84, p < 0.05$) in the spider-anxious group. In relation to the Butterfly image, the spider-anxious group reported less perceived intent ($U = 279, p < 0.04$), and sounds that were more realistic ($U = 37, p < 0.03$). See appendices for the means and standard deviations for both groups, on all of the items of part one of the interview schedule.

Within-group analysis revealed that spider-anxious group's spider images differed significantly in comparison to their butterfly image in relation to how much anxiety the images evoked ($Z = -2.81, p < 0.005$), how vivid the images were ($Z = -2.81, p < 0.0005$), and how much intent was perceived ($Z = 2.17, p < 0.03$). The control groups images did not differ significantly in relation to these variables.

The control group's spider and butterfly images differed significantly in relation to the vertical midpoint of the image ($Z = -2.19, p < 0.02$), the degree of motion ($Z = -2.17, p < 0.03$), the amount of background ($Z = -2.40, p < 0.02$), and the duration of body sensations ($Z = -2.03, p < 0.04$). The spider-anxious group's images did not differ in relation to these variables.

Both the spider-anxious group's and the control group's two images differed significantly in relation to the colour ($Z = 2.18, p < 0.007$; $Z = -2.31, p < 0.02$), brightness ($Z = -3.11, p < 0.002$; $Z = 1.99, p < 0.05$), and speed ($Z = -2.40, p < 0.02$; $Z = 3-3.50, p < 0.0001$) of the images.

3.8. Core beliefs associated with the self-generated spider image

The downward arrow technique was used to access core beliefs associated with the self-generated image. Table 3 (below) shows the percentage of participants in each group that reported negative core beliefs associated with the self, other people, and the world in general. Between group analysis revealed a significant difference in the number of participants reporting negative beliefs about the self (Fisher's Exact, $p < 0.0005$), and other people (Fisher's, $p < 0.005$), but not for negative beliefs about the world in general.

3.8.1. Table 3.

Number of (percent) participants reporting core beliefs associated with the self-generated image.

Core Beliefs	Spider-anxious Group (N = 29)	Control Group (N = 29)
Self	27 (93)	3 (10)
Others	9 (31)	1 (3)
World	2 (7)	1 (3)

3.9. Themes of the spontaneous spider image

A more detailed analysis of the content yielded by the downward arrow technique, which was employed to access core beliefs associated with self-generated images, could be classified under seven broad headings. These are listed below, in order of frequency, together with examples. An experienced clinical psychologist also rated this material and found the same main themes and in similar numbers.

3.9.1. Theme 1. Reduced sense of control/ total loss of control (mental & physical)

The spider is controlling me, it has more control of the situation than I do.

They do what they like, you can't do anything about them, unless you kill them.

I'd be out of control, total mental shutdown, loss of control over body.

It's unpredictable, moves fast, don't know where or what it's going to do, don't know what it's thinking. I'd be paralysed. I'd be frozen.

3.9.2. Theme 2. Negative self-evaluation

I'm irrational. I'd feel silly and stupid [because of my reaction]. I'm a raving idiot.

Makes me feel different... somehow more susceptible to danger.

I'm scared about my reaction, I know I'm being silly but I can't help it

I have the potential to be poisonous [in relationships].

I should be more independent...less girlie.

I'm not as confident: In control people are more confident than out of control people!

3.9.3. Theme 3. Feeling vulnerable

Feel trapped. Stuck. Unable to escape. I feel helpless.

It looks evil, as though it could do something to me if it wanted.

It's threatening...intimidating. It's like being hunted. It's waiting to get me.

It could crawl out at night whilst I'm asleep, could crawl on me, or in my mouth.

3.9.4. Theme 4. Negative social evaluation

It's embarrassing, people think I'm stupid.

People find it [my reaction] annoying, they laugh at me.

Other people see it [my phobia] as a sign of weakness, it's quite alienating.

3.9.5. Theme 5. Poor coping skills

I haven't got the courage to deal with it. I can't cope.

I'm not confident coping in the situation.

3.9.6. Theme 6. Negative evaluation of others

Other people can be manipulative

People put you down, they don't understand

Other people are ignorant/ insensitive

3.9.7. Theme 7. Disgust

It's just disgusting!

The way it moves, alien to human movement

The way their legs move makes my skin crawl.

Hypothesis 3: *The Spider-anxious group will report more spontaneously occurring images (that are associated with anxiety/ distress and are recurrent) when asked about their fear of spiders than control participants. These images will be linked to core beliefs and early experiences.*

3.10. Frequency of spontaneous images when anxious about spiders

Participants were asked whether they could remember a recent time when they had felt anxious about spiders. Twenty-eight (97%) participants in the spider-anxious group could remember a specific incident, and were able to say when this had occurred, which ranged from “right now” up to approximately one year. Although 9 (32%) of the control group said they could remember feeling anxious about spiders, only 2 (7%) could give an approximate time of when this event occurred.

3.11. Characteristics of the recurrent images

Participants were asked whether they had experienced any spontaneous images whilst feeling anxious, and whether these images were recurrent. Twenty (69%) of the spider-anxious group reported spontaneously occurring images, all of whom reported that the images were recurrent. Of these 19 (95%) reported ‘anxiety’ as the predominant emotion associated with the image. The mean rating (0-100) for anxiety was 81 ($SD =$

17.4). One (5%) participant rated 'Disgust' as the predominant emotion, with a rating of 80%. Only 2 (7%) participants from the control group reported spontaneous images, none of which were recurrent images.

For spontaneous, recurrent images (see page 62) the visual modality is most frequently reported. This is followed by 17 (85%), 13 (65%), and 5 (25%) participants who reported Body, Skin, and Auditory sensations in their images, respectively. No one reported smells or tastes. Within-group analysis (Wilcoxon Signed Ranks Test) revealed no significant difference between the number of modalities reported in the self-generated and spontaneous images.

3.12. Core beliefs associated with the spontaneous image

Of the 20 participants who reported spontaneous, recurrent images 19 (95) reported negative self-beliefs, 7 (35%) reported negative beliefs about others, and 1 (5%) reported negative beliefs about the world in general. Within-group analysis found no significant difference between the number of core beliefs (self, others, world) accessed via the self-generated image in comparison to those accessed via the spontaneous image.

Participants were asked whether the core beliefs, that were associated with their spontaneous image, reflected how they generally felt about themselves, other people, and the world. Of the participants who reported negative core beliefs 17 (85%) reported that these beliefs reflected their general beliefs about themselves, 7 (35%) that they reflected their general beliefs about other people, and 1 (50%) that it reflected their general beliefs about the world.

3.13. Characteristics of early memories

Of the 20 participants who reported spontaneous, recurrent imagery, 11 (55%) reported that these images were closely linked to a particular memory, of which the mean age (years) associated with the memory was 7.4 ($SD = 3.1$). All of the remaining 9 (45%) participants, who reported no associated early memory, stated that they had always been afraid of spiders, from as far back as they could remember.

The mean (and standard deviation) number of modalities reported for the early memory was 2.6 (0.80). Again, for the early memory, the visual modality was most frequently reported with all eleven (100%) participants reporting visual input. The remaining modalities were reported in same order of frequency as the self-generated and spontaneous images, with 10 (91%), 7 (64%), and 6 (55%) participants reporting Body, Skin, and Auditory sensations in their memories. One (9%) participant reported olfactory sensations (flowers), and no participants reported any tastes.

3.13.1. Table 4:

Percent of Spider-anxious participants reporting sensory modalities in the self-generated and spontaneous images, and associated memories.

Modality	Self-generated N = 29	Spontaneous N = 20	Memory N = 11
Visual	100	90	100
Body	93	85	91
Skin	83	65	64
Auditory	17	25	55
Smell/ Taste	0	0	9

3.14. Links between spontaneous images and early memories

Within-group analysis (Wilcoxon Signed Ranks Test) found no significant difference between the number of modalities reported in the spontaneous image and the early memory. Participants were asked to rate (0-100 visual analogue scale) the degree of similarity between the spontaneous image and the associated memories, in terms of the interpersonal meaning, the sensory input, and the associated emotions. The mean sensory similarity reported was 72%, the mean interpersonal similarity was 73%, and the mean emotional similarity was 56%.

Hypothesis 4: *The spider-anxious group will report more negative thoughts when asked about their fears of spiders than control participants. These will be linked to core beliefs/ early experiences.*

3.15. Characteristics of negative thoughts

Between-group analysis revealed a significant difference (Fisher's Exact Test, $p < 0.001$) in the number of participants reporting negative thoughts. Twenty-four (83%) spider-anxious participants reported negative thoughts, while only 4 (14%) participants in control group did. The mean number (and standard deviation) of thoughts reported by the spider-anxious and control group was 1.76 ($SD = 1.2$) and 0.2 ($SD = 0.47$), respectively. The spider-anxious group reported significantly more negative thoughts ($p < 0.001$) than the control group. The mean rating (0-100) of distress associated with negative thoughts was 83 ($SD = 21.5$), for the spider-anxious group, and 35 ($SD = 7.1$) for the control group.

Twenty (69%) of the spider-anxious group reported that the negative thoughts linked to the same core beliefs that were identified through their images, and another 3 (10%) reported additional beliefs. Only 1 (3%) participant from the control group reported negative beliefs associated with their thoughts.

3.16. Link between thoughts, early memories, and images

Nine (31%) of the spider-anxious group and 2 (7%) of the control group reported early memories associated with their thoughts. Participants estimated how old they were in this memory, and the mean age reported by the spider-anxious group was 13.5 years ($SD = 5.4$). Although this is higher than the mean age associated with the early memory that was associated with the spontaneous image (7.2, $SD = 3.0$), the difference did not reach significance ($Z = -1.83, p < 0.068$).

Hypothesis 5: *Age of acquisition of spider phobia will be lower in those reporting spontaneous non-verbal imagery than those not reporting imagery. Age of acquisition of spider phobia will lower in those reporting imagery in the sensori-motor (kinaesthetic) modality than the visual and verbal modalities only.*

A measure of age-of-onset was not available and consequently is difficult to reliably assess hypothesis five. However, a crude analysis revealed that participants who reported having always been afraid of spiders did not differ significantly in the type of modalities reported, in comparison to participants who reported a specific memory.

4 Discussion

4.1 Summary of results

The spider-anxious group scored lower on the TVIC, a measure of imagery control, than the control group. All participants were able to generate images. The spider-anxious group's spider image was more likely to contain input from body and skin modalities than the control group's spider image, and than their own butterfly image. More specifically, the spider-anxious spider image evoked more anxiety, was more vivid, and was perceived as having more intent, than the control images.

The characteristics of the self-generated images appeared to be relatively stable over time. In accordance with Finke's (1989) principles of mental imagery, the characteristics of the control group's images generally related to each other in a logical manner. However, the characteristics of the spider-anxious group's spider image did not correlate as expected. The rating of distortion did not correlate with the rating for reality, and the two measures of relative size were also found not to correlate as expected.

In comparison to the control group, the spider-anxious group reported more negative core beliefs, associated with the self-generated spider image. These beliefs were associated with high levels of distress, and tended to reflect more general beliefs about the self. A number of themes were identified which seemed to reflect idiosyncratic beliefs about the potential consequences of encountering a spider.

Sixty-nine percent of the spider-anxious group reported experiencing recurrent images when worrying about spiders, 95% of which were found to be associated with an early negative memory. The high level of skin and body sensations reported in the self-generated image was also reported for the recurrent image and the early memory. Participants rated the recurrent image and early memory as being similar in relation to the sensory characteristics, the interpersonal meaning, and the emotional response. None of the participants in the control group reported experiencing recurrent images.

The spider-anxious group, in comparison to the control group, also reported significantly more distressing spontaneous verbal thoughts when encountering a spider, and nine spider-anxious participants reported that their thoughts were associated with an early memory. The mean age of the memories associated with verbal thoughts was higher than the age of memories associated with the spontaneous image, but this did not reach significance.

The results of the present study are broadly in line with the hypotheses stated in the introduction, concerning self-generated and spontaneous imagery. The results are discussed in relation to each of the five main hypotheses. The discussion then goes on to consider some of the theoretical implications, treatment implications, and the limitations of the study. Finally directions for future research are suggested.

4.2 The validity and reliability of the measure

4.2.1 Test-retest reliability

Test-retest reliability was generally satisfactory for the images reported by both groups. Only one item (the intensity of skin sensations reported by the control group

for the butterfly image) showed a trend towards significance. However, it should also be noted that the number of control participants reporting any skin sensations was low, and were so low on some of auditory sub-modalities (Volume, Clarity, Reality, Duration) that statistical analysis of test-retest reliability was not possible, i.e. a floor effect was observed.

A difficulty with test-retest reliability is that it assumes that the characteristics being measured are stable over time. While there is some evidence in the literature (Richardson, 1999) that certain imagery characteristics, such as controllability and vividness, are relatively stable, there is no evidence concerning the stability of specific sub-modalities, as measured in the current study. Hackmann *et al.* (1998) did not report test-retest reliability concerning the observer perspective, and no other studies have reported this to date. However, the findings of this study suggest that many of the characteristics of self-generated images, including perspective, are relatively stable over time.

However, the reliability of this measure needs to be interpreted with caution, as it might be artificially high due to a tendency of participants to recall their previous responses. Imagery is often utilised to enhance memory skills, and might therefore have increased the likelihood of an over-estimated measure of reliability. Although, this seems an unlikely problem given the large number of items that were administered. In any future such studies it might be wise to increase the period of time between the test and retest administrations.

4.2.2 Concurrent reliability

When evaluating a new measure, a standard approach is to determine the internal consistency, based upon the principle that each part of the test should be consistent with all other parts. However, the wide range of variables that were assessed ruled out any such analysis. For example, in just considering the items that relate to the visual modality, there is no obvious single (or group of) construct that is being measured. Consultation with a statistician confirmed this view, that a measure of internal consistency would be inappropriate here.

However, what was possible was to gain some indication of the measure's concurrent validity. The VVIQ was found to correlate, for both groups, with the vividness of the spider image, but not the vividness of the butterfly image. One possible explanation for this is that scary images of spiders are common in verbally and culturally transmitted information, such as the traditional nursery rhyme *Little Miss Muffet* and in Tolkein's *Lord of the Rings* (1968). The same can not be said for butterflies. In fact, many participants struggled to generate a frightening image, and one participant refused to form a negative image of a butterfly. Thus, participants had to try harder to generate a 'frightening' image of a butterfly, which might have reduced the vividness of the image.

According to Finke's (1989) principles of mental imagery, the characteristics of images should reflect the physical characteristics of the object being imaged. Therefore, in the current study, logical relationships were expected in the data. This allowed certain predictions to be made about how various sub-modalities would relate to each other. For all of the variable pairings, the control group's results followed the

expected pattern. And for both groups, the relative *size* of the spider/ butterfly within the image significantly correlated (negative) with the degree of *background* detail reported. This is to be expected, in that as the size of the animal increases within the image, the background should logically decrease. Likewise, for both groups, the estimated distance (metres) between the observer and the image significantly correlated with the analogue measure of *closeness*, for both images.

However, the spider-anxious group's results were inconsistent. For example, their rating of relative *size* of the spider, did not correlate with their graphical representation. Also, the spider-anxious group's rating of how much *bigger* the spider was (i.e. a measure of distortion) did not correlate with their rating for *reality*. However, these variables did correlate in relation to the spider-anxious group's butterfly image, and in both of the control group's images.

The results, especially for the control group, provide some evidence for concurrent validity. However, it is not clear why the spider-anxious group's spider image did not follow suit. An anxiety related processing bias is one possible explanation. The spider image evoked significantly more anxiety in the spider-anxious group than the control group, and significantly more than the anxiety evoked by the butterfly image. These results lead to the suggestion that the spider-anxious group might be more likely to perceive a distorted spider image as a closer approximation to reality. This is of course one of the key components of Clark & Wells (1995) cognitive model of social phobia, in which distorted self-images are used as accurate models to predict what might happen in social situations, which leads to anxiety and avoidant behaviour. This begs the question as to whether there is a similar mechanism at work in spider-phobia.

4.3 Characteristics of self-generated images

The results generally support the second hypothesis that the phenomenological characteristics of the spider-anxious group's spider image would differ in comparison to a control group, and in comparison to a non-threatening control image.

4.3.1 Modalities

The spider-anxious group reported significantly more modalities, than the control group, for their spider image, but not for their butterfly image. The spider-anxious group also reported significantly more modalities in their spider image than their butterfly image, while again, the control groups images did not significantly differ. It is clear from looking at table 3 (p.39) that the big difference in the frequency of reported modalities lies in the higher frequency of skin and body sensations/perceptions in the spider-anxious groups' spider image. This is confirmed by the statistical analysis.

For both groups, the visual modality is most frequently reported, closely followed by skin and body sensations. This is discussed further when the discussion turns to the findings for recurrent imagery. The percentage of spider-anxious participants reporting each modality in their self-generated images (table 3) bears a close resemblance to the modalities reported by social phobics in relation to their recurrent images (Hackmann *et al.*, 2000).

These results fit with Lang *et al.*'s (1980) findings that the somato-visceral patterns of response differ in relation to different images and that the responses observed in

phobic patients is different to that of controls. Lang *et al.* found that subjects whose imagery contained more physiological response propositions produced more relevant efferent activity than participants whose imagery contained mainly stimulus propositions. It would have been interesting in the present study to have compared the two groups' images in terms of the frequency of stimulus and response propositions reported. According to Lang's theory, we would expect more response propositions in the spider anxious group's spider image in comparison to the other images. This is potentially a question for a *post hoc* analysis.

4.3.2 Sub-modalities

However, the frequency of reported modalities does not tell us how, if at all, the spider-anxious image differs in terms of specific characteristics. For example, just because the visual modality is reported in similar proportions by both groups and in both images, it can not be assumed that there are no significant differences in the specific visual sub-modalities, or that a ceiling effect is in operation. Indeed, the results provide some evidence for specific differences within the visual, auditory, and kinaesthetic modalities.

The spider-anxious group, in comparison to the control group, reported a spider image that evoked more anxiety, was more vivid, was situated higher within the visual field, was perceived as having more intent, contained skin and body sensations that lasted longer, and had body sensations that were more intense. While, within-group analysis revealed the spider-anxious group's spider image evoked more anxiety, was more

vivid, and had more intent, in comparison to their butterfly image. Thus, both between and within group differences have been found, as predicted.

However, the spider-anxious group also reported that the butterfly image had less intent, than the control group's image. It is difficult to know how to interpret this finding. Although the large number of analyses that were conducted must be considered, in that, the likelihood of discovering a significant difference by chance alone increases in relation to the number of analyses conducted. For that reason it may be cautious to increase the significance value to the 99% level. If this is done we see a number of significant findings drop away. This leaves evoked anxiety, vividness, and intent as the between group differences, and evoked anxiety and vividness as the within group differences. It is possible that with a larger sample, from a clinical population, more significant results would have been found. These results provide some support for Bandler's (1985) hypothesis that specific sub-modality differences would be found between spider phobics and controls.

Given that this study compared two different animals, from different phyla (spiders are arachnids, not insects!) it might be reasonable to expect some within group differences that reflect the anatomical and behavioural characteristics of each animal. It could be argued that within-group differences reported by the control might reflect such real differences. The control group's two images differed (though not at the 99% level) in relation to the position within the visual field, the degree of motion, and the amount of reported background detail. But these variables do not obviously relate to characteristics that are specific to either animal.

However, despite the caution already expressed concerning the variables relating to the *brightness*, *colour*, and *speed* of the images, both groups did report significant within-group differences for these variables, although not all at the 99% level. At least these sub-modalities seem more plausible candidates to reflect phylogenetic differences, rather than just differences in perception.

4.3.3 Accessing core beliefs via self-generated images

Previous studies have found that the investigation of patients' spontaneous images to be an effective means of uncovering core beliefs. However, what was not known was whether self-generated images could serve the same function. The results of the current study would seem to support the utility of assessing self-generated images, in the absence of spontaneous imagery. The core beliefs accessed through self-generated imagery were found to be fairly typical of participants' general beliefs. This is of particular clinical significance given that not all patients report experiencing spontaneous imagery.

The analysis revealed a significant difference between the two groups in relation to the number of negative self-beliefs reported. Ninety-three per cent of the spider-anxious group reported negative self-beliefs, while only 10% of the control group did.

The downward arrow technique accessed significantly more negative core beliefs in the spider-anxious group, which were found to reflect a number of different themes. These seem to be similar to those reported by Thorpe & Salkovskis (1995), who collapsed their findings into three main categories: harm, coping and disgust, with the harm category incorporating social, physical and psychological components. Analysis

of the content revealed seven main themes, which can all be seen to fit within these three categories, these were: the complete loss of or reduced control; negative self-evaluation; feeling vulnerable; negative social evaluation; poor coping skills; negative evaluation of others; and disgust.

It is interesting to note the wide variety of core beliefs reflected in the self-generated spider image. Beck, Emery & Greenberg (1985) noted that in phobias it is not the object itself that causes such distress, but rather the aversive consequences that result from being in contact with the object. The results of this study clearly reflect this, with a range of idiosyncratic beliefs being reported.

4.3.4 The observer perspective

Wells & Papageorgiou's (1999) comparison of social phobia, agoraphobia, and blood/injury phobia indicated that it was only participants with social-evaluative concerns that reported images viewed from the observer perspective for anxiety-provoking situations. This suggests that future research on imagery might benefit from looking at how people's images differ in relation to specific core beliefs. For example how do the characteristics of images differ when negative self-evaluation or negative social evaluation are the predominant concerns? A preliminary *post hoc* analysis of the current findings revealed that participants who reported more socially evaluative beliefs ($n = 6$), in comparison to participants who reported more self-evaluative beliefs ($n = 6$), differed significantly ($U = 4.5, p < 0.03$) in relation to the perspective that their spider image was viewed. The socially evaluative participants were more likely ($M = 52.5, SD = 36.3$) to rate their image further along the 'observer perspective'

continuum, than the self-evaluative participants ($M = 8.3$, $SD = 13.3$) who tended to view the spider through their own eyes.

It is also interesting to note that a number of the participants who reported an observer perspective, reported that they had two images, one viewed from an observer perspective, the other viewed from the field perspective, and these images tended to switch automatically every few seconds. Participants who reported such switching between two images rated the *perspective* item by averaging the score for each of the two images. Thus, even if a participant reported one image viewed entirely from an external perspective, the rating given by the participant was usually about 50. Because of this it is not surprising that ratings for perspective did not differ significantly between the two groups. Bandler (1985) described a number of sub-modality patterns, such as the switching between two different images. It might be possible that each image reflects a different belief or concern. Thus, we might expect the observer image to reflect a concern about social-evaluation as has been suggested, while the second image might reflect a different concern altogether, such as vulnerability.

4.3.5 Perceived Intent

Although not reaching the desired 99% level of significance, the spider anxious group perceived significantly more *intent* in the spider image than both control images. This is interesting, particularly when put into the context of participants' verbal descriptions. Some fairly typical responses included beliefs that the spider is "*out to get me*", and that it "*knows I'm scared*". A couple of participants reported that the spider might know what they were thinking and would be able to second guess their

escape plan and move to cut them off. This almost seems to verge on theory-of-mind or paranoia. Either way it is would appear to be a clear example of a cognitive thinking error and an over-estimation of risk. This is discussed further in the section that relates to the implications for cognitive theory.

4.4 Spontaneous imagery and early memories

The spider-anxious group were significantly more likely to report spontaneous images than the control group, when worrying about spiders. Nearly 70% of the spider-anxious group reported spontaneous imagery, all of which were recurrent, and associated with high levels of anxiety. Only two participants from the control group reported experiencing spontaneous images, and neither reported recurrent images.

The percentage of participants reporting each modality (see Table 5, below) in the spontaneous images followed a similar pattern to the self-generated image, the early memory, and the results found by Hackmann *et al.* (2000) in social phobia. However, counting the number of modalities is a relatively crude method of analysing images. There might be more subtle differences between the images and memories, as were found in the self-generated images in part one.

The percentage of participants reporting core beliefs reflected in the spontaneous image also followed a similar pattern to that found in the self-generated image. Negative self-beliefs were most common, followed by beliefs about other people, and beliefs about the world in general. The core beliefs accessed via the downward arrow technique were rated quite highly as being reflections of how the participants generally felt about themselves. And, like Hackmann (2000), a close correspondence

was observed between the spontaneous images and early memories in terms of the sensory, inter-personal and emotional content.

More than half of the spontaneous images linked to an early memory. While the remaining participants who did not report an early memory, stated that they had always been afraid of spiders, as long as they could remember. While an attempt was made to split the participants into two groups, based upon age of onset, with the earlier group being those that reported having always been afraid of spiders and having no early associated specific memories, this was somewhat futile. Of course, it can not be assumed that just because participants do not report early memories that there was one but was just too early to be remembered. Although a possibility, there are other factors, such as modelling, that can lead to the acquisition of a phobia, which would make it difficult to determine a specific age of onset.

However, these results, when taken together, would seem to indicate that early unpleasant experiences associated, although not exclusively, with spiders (e.g. a frightening dream, being criticised for over-reacting, being suddenly scared by a spider, observing a parent's reaction to spiders) may lead some people to develop a negative image of a spider, that is activated in subsequent anxiety-provoking situations and fails to update. However, unlike Hackmann *et al* (2000) who reported that images tend to be from an observer perspective, the images in the spider-anxious group were more varied in content and theme.

Table 5

Percentage of spider-anxious and social phobia (Hackmann, *et al.*, 2000) participants reporting sensory modalities in spontaneous images and early memories.

Modality	Spider- anxious group		Social phobia group	
	Spontaneous	Memory	Spontaneous	Memory
Visual	90	100	86	90
Body/ Skin	85/65	91/64	82	95
Sounds	25	55	32	66
Smells/ Tastes	0	9	0	24

It is interesting that, in both studies, it is only the early memories that are associated with olfactory or gustatory sensations. According to developmental theory these modalities would be more prominent in a young child's mode of representation (Bruner, 1973) and Bandler (1985) suggested that odours might be important in anchoring mood states. Either way, they do not appear to be obviously relevant to spiders, and the numbers reported here are small, and not statistically significant.

Hackmann *et al* suggested three main processes that might explain why social phobics' recurrent images are so persistent and fail to up-date. These processes may also operate in the spontaneous images of spider phobics. The first process is an attentional bias, whereby spider phobics, in anxiety-provoking situations, might attend to stimuli that can be interpreted negatively. Secondly, spider-phobics may avoid situations in which they might encounter a spider, thereby reducing the likelihood of them noticing information that would help correct their distorted negative image. The

third process is that when spider phobics do receive positive information about spiders that is inconsistent with their beliefs, it is often in verbal form, and may be poorly suited to modify visual images (Hackmann, *et al.*, 2000).

4.5 Verbal thoughts and developmental theory

The spider-anxious group was more likely to report negative thoughts, and reported significantly more than the control group. The spider-anxious group's thoughts were associated with more distress than the control group. For nearly 70% of spider-anxious participants, the negative thoughts linked to the same core beliefs that were identified via the self-generated images. Only a few additional core beliefs were identified through the investigation of thoughts. However, the assessment of thoughts was not randomised, so that this section always followed on after the assessment of spontaneous images.

Negative thoughts were found to link to early memories for nearly one third of the participants who reported spontaneous images. What is interesting, although statistically not significant, is that the mean age of the verbally associated memories was higher than the mean age of the visually associated memories. This makes sense developmentally and fits with Bruner's (1973) theory of developmental representation. Thus, although most participants reported that the thoughts and images linked to the same core beliefs, the negative thoughts seemed to link to a different, later memory than the spontaneous images. That the difference was not statistically significant, in some ways still fits with Bruner's theory and developmental theory in general. Bruner suggested that although the different modes of representation become predominant sequentially, earlier modes are not replaced, but rather, are supplemented

by subsequent systems. The results of this study show a trend towards significance and suggest that the symbolic mode or representation links to later memories than the iconic mode of representation. The fact that cognitive development is not rigidly fixed to a time schedule, that different people develop at different stages, and that people may develop a personal style or preference to the visual or verbal mode, all reduce the likelihood of finding a concrete difference between the modes of representation. Nevertheless, the results were promising, and a larger clinical sample size might have produced a clearer picture.

4.6 Implications for imagery theory and research

These findings are quite complex. However, they seem to fit reasonably well with the literature. Lang hypothesised that vividness and affective intensity might interact, and both of these variables were found to be significantly higher in the spider-anxious group's spider image. The affective intensity of an image, according to Lang, is determined by the amplitude of the visceral, verbal, and smooth muscle responses (Lang *et al.*, 1980). The results of this study seem to support this, in that the image that evoked more anxiety also contained significantly more skin and body sensations. Lang argued that an emotional image's potency seems to be linked more by the elaboration of response propositions than by the refinement of stimulus events. Therefore, arousing images might appear to be more vivid, despite fewer details. Again, the results of the current study seem to support this, in that although the spider-anxious group's spider image evoked more anxiety and was more vivid, there were no within or between-group differences with respect to reported detail. Thus, there was no evidence found in this study to support Watts, Trezise, and Sharrock

(1986), who reported spider phobics as having imagery connected with their fears that was lacking in detail and elaboration.

Participants from both groups, like Wells & Hackmann's (1993) study of imagery in health anxiety, reported stimulus and response elements in their images, thus revealing more of the whole fear network (Lang, 1977) than automatic thoughts alone. The images described in this study all contained descriptions of the stimuli evoked, as well as the three classes of response elements, namely, verbal responses, overt motor acts, and responses of the physiological organs.

4.7 Theoretical implications

4.7.1 Does controllability act as a predisposing or maintaining factor?

The spider anxious-group's lower score on the TVIC suggests that, in general, they may have less strategic control over their imagery, unrelated to their fears. This needs to be revisited because it might have important implications for the development of theoretical models. It might indicate a mechanism that predisposes an individual to develop a phobia, as well as one that helps to maintain a disorder. In social phobia, for example, Clark & Wells (1995) suggest that a distorted self-image might play an important role in the maintenance of the disorder. But control of imagery has not been studied and may have a role as a general vulnerability factor.

Of course, this could be explained as a general effect of anxiety. We know for example, that spontaneous images are more common at times of stress, although these tend to be specific to people's fears and not thought of as a general bias, as appears to be the case here. Also, the literature suggests that anxiety leads to processing biases at

an automatic level (Cameron, 1997) and although the TVIC was completed prior to the administration of the interview schedule (i.e. before participants had to start thinking about spiders), it is reasonable to assume that the spider-anxious group would have reported a higher level of state anxiety. In fact, a number of participants reported how they had been nervous prior to the interview, worrying about what might happen during the research. However, no between-group differences were found for the VVIQ, which was completed at the same time as the TVIC, although it might not be as sensitive to anxiety as the TVIC. Another possibility is that there might be an interaction between controllability and specific stressors, such as spiders.

The TVIC and VVIQ have been found to correlate in normal populations (Richardson, 1999), and this was also found in the control group of the current study. However, no such correlation was found in the spider-anxious group. Again, heightened state-anxiety in the spider-anxious group might be responsible for this finding. Research needs to tease out the relative contribution of control and stress/anxiety (related to specific fears) to vividness of imagery.

4.7.2 Cognitive biases

The basic premise of cognitive theories of emotional disorder is that dysfunction arises from an individual's interpretation of events. Beck (1976) asserts that emotional disorders are maintained by a thinking disorder in which anxiety and depression are accompanied by distortions in thinking. Danger-related thoughts in anxiety patients and themes of loss and self-devaluation in depressive patients form the basis of the content-specificity hypothesis, whereby the two disorders are distinguishable in terms of thought content. The results of this study, as expected, reveal danger-related

thoughts and images, and also provides evidence of specific thinking errors (Burns, 1989). The spider-anxious group in this study reported many of the commonly reported cognitive distortions, including: arbitrary inference, selective abstraction, over-generalisation, personalising, catastrophising, and mind reading (see Wells, 1997). Thus, as with accessing core beliefs, images can also be used to access thinking errors, which might suggest that imagery might be a useful medium to be manipulated in information-processing paradigms in research on anxiety disorders.

4.8 Treatment implications

It might be slightly premature to infer treatment implications based upon the findings of the current study. However, it is possible to make a number of tentative suggestions.

The findings of this study suggest that the investigation of patient's images in spider phobia might be an effective strategy to help unravel personal meanings associated with their fears. The downward arrow technique appears to be a quick method of accessing idiosyncratic beliefs, which are then open to either verbal reattribution techniques or direct imagery modification.

The series of studies that investigated patients' images in social phobia focussed on spontaneous recurrent images (see Hackmann, *et al.*, 2000) and the treatment implications may be also be applicable to spider phobia. These images not only help access current negative beliefs, but also often link back to an early traumatic experience, which the patient may have forgotten about and does not associate with their current fears. This allows the opportunity of working directly with the early

memories to access distorted meanings that are still influencing current perceptions. Hackmann et al suggested transforming the memory so as to give it a meaning that is less distorted and over-generalised, using techniques similar to those that have been used in post-traumatic stress disorder (Ehlers & Clark, 2000) and schema focussed therapy (Layden, Newman, Freeman & Morse, 1993).

While Hackmann *et al* found a high percentage of participants reporting recurrent images (100%) and associated early memories (96%), in the current study, with spider-anxious participants, nearly 30% reported no recurrent images, and of those that did only 55% reported an associated early memory. While it is possible that these figures might fall in line with Hackmann *et al*'s findings with a clinical population, it still leaves open the possibility that some patients with spider phobia will not report recurrent images. However, this study found that all participants were able to access self-generated spider images, which should therefore be used if recurrent images are not reported. What is not clear is whether self-generated images might also be used to access early memories, although it was clear that a number of participants in this study reported that their self-generated images were based upon early experiences or nightmares.

The findings support Thorpe & Salkovskis's (1997) suggestion that spider phobia may be far from irrational, and helping patients to see this may increase the likelihood of them engaging in therapy. This should be done in the initial stages of therapy as part of the education of clients to the theory and techniques that will be employed. That phobias are irrational is a common belief and for a number of participants in this study the lack of an associated early memory was used as further evidence of this.

This should prompt therapists to challenge such evidence by discussing the various pathways to acquisition of such disorders, and discuss the possibility that early traumatic experiences might have been forgotten.

The wide range of idiosyncratic beliefs that were accessed through the images suggest that therapists may need to be able to incorporate a range of cognitive and behavioural techniques. While current treatment protocols incorporate cognitive and behavioural techniques, the focus is upon desensitisation to spiders (Thorpe & Salkovskis, 1997). However, therapy might need to adapt to the range of beliefs, such as those reported in this study. For example, for some patients it appears that there is a strong social-evaluative component to their fears. For these patients a more sophisticated desensitisation program might be warranted that incorporated techniques used in the treatment of social phobia, such as video feedback.

4.9 Limitations

The participants were recruited from a normal, student population and, although a few of them might have met the DSM-IV criteria for a specific phobia, the overall mean FSQ score for the spider-anxious group was significantly lower than that reported for a clinical spider phobic sample (Muris & Merckelbach, 1996). It is possible that a larger, clinical sample might have yielded more significant findings.

The interview schedule was quite lengthy taking up to 90 minutes, when combined with the administration of the VVIQ and TVIC. Some participants reported reduced levels of anxiety as the interview progressed, which may have affected the latter stages of the interview. Thus, although the administration of the two self-generated

images were randomised, it might also have been useful to have randomised the other main sections of the protocol, i.e. the sections relating to the self-generated image, spontaneous image, and verbal thoughts. Responses to the items relating to verbal thoughts might reflect fatigue in the participants or an effect of having already responded to previous sections.

A difficulty that was observed in this study in assessing the characteristics of images is that the participants' images appeared to be sensitive to suggestion. Thus, for some participants, their images tended to respond to the items of the questionnaire. For example, when asked if their images contained any sounds, a number of respondents stated that they then became aware of sound within their image, i.e. as a direct response to the stimulus of the questionnaire item. This might suggest that future research should focus upon single, specific characteristics rather than multiple factors, as the results are likely to be easily contaminated by the measures used to assess each characteristic.

The interview schedule only assessed the characteristics of self-generated images, and it might be possible that they differ in comparison with spontaneous, and memory images. For example, the language (or propositions) used in relation to memories is different to that used for other types of images. Memories are described as being in the 'distant' past, which you put 'behind' you, or look 'back' on with 'rose coloured' spectacles, etc. Thus, it might be that it is not possible to generalise the findings of self-generated images to other types of images.

The 18-item FSQ was used in this study, rather than the 31-item SPQ, as it is quicker to administer and is reported to be better able to distinguish between clinical and control groups. However, the SPQ has been the measure of choice, and has been used in many studies, over the last 15 years. Any replication of the current study needs to bear in mind that, in comparison to the SPQ, the FSQ taps into a unique aspect of spider phobia, namely "*fear of harm*", that is not measured by the SPQ (Muris & Merckelbach, 1996, p.244).

4.10 Future directions

The results suggest the need to consider more carefully the pathological processes that occur when a person with specific phobia is worrying about the consequences of coming into contact with the feared object. The relationship between control over imagery, anxiety, and specificity of the effect requires further investigation, as does the role of control over imagery in the development and maintenance of anxiety disorders. If spontaneous images do contribute to the development and maintenance of specific phobias, it is important that treatment would bring about a change in the frequency and content of such images, and in the meaning of having such images.

The interaction between different types of images (sub-modality patterns) also needs to be investigated. Rather than focussing imagery research on specific disorders, it might be more beneficial to focus upon how images differ in relation to specific beliefs or themes. The correlation between perspective and concern about social-evaluation would appear to be strong evidence in support of such an approach.

The content specificity, the range of idiosyncratic beliefs, evidence of cognitive biases and the possibility of control as a potential vulnerability factor and maintaining factor might all form the basis of a new cognitive model that includes a developmental formulation. A cognitive model is needed to help guide and organise future research. The results also point to the importance of including imagery in any new cognitive model and the need for images to be revisited in existing models.

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Median and (Inter-Quartile Range (I.Q.R.)) of sub-modalities for the spider-anxious group and control group

Characteristics	Spider-anxious Group		Control Group	
	Median (I.Q.R.)		Median (I.Q.R.)	
	Spider	Butterfly	Spider	Butterfly
Evoked anxiety	60.0 (30.0 - 78.0)	10.0 (0.0 - 23.0)	5.0 (0.0 - 11.0)	1.5 (0.0 - 19.0)
Visual Modality				
Vividness	75.0 (65.0 - 90.0)	60.0 (40.0 - 80.0)	65.0 (50.0 - 70.0)	68.0 (43.0 - 80.0)
Colour	45.0 (20.0 - 69.0)	75.0 (50.0 - 80.0)	60.0 (20.0 - 72.0)	73.0 (41.0 - 90.0)
Brightness	40.0 (40.0 - 70.0)	70.0 (50.0 - 80.0)	50.0 (22.0 - 72.0)	70.0 (50.0 - 80.0)
Relative size	75.0 (60.0 - 80.0)	60.0 (39.0 - 95.0)	75.0 (35.0 - 90.0)	55.0 (23.0 - 90.0)
Bigger	55.0 (35.0 - 80.0)	50.0 (5.0 - 80.0)	50.0 (1.0 - 100)	40.0 (0.0 - 98.0)
Smaller	-	-	-	-
Area	15.3 (5.3 - 41.3)	15.3 (2.4 - 58.3)	16.0 (2.0 - 66.4)	28.5 (2.1 - 59.0)
Width	0.0 (-0.3 - 1.0)	0.0 (-0.3 - 0.3)	0.0 (0.0 - 0.2)	0.0 (0.0 - 0.5)
Height	0.3 (-0.5 - 1.0)	0.0 (-0.2 - 0.6)	0.0 (-0.4 - 0.0)	0.0 (-0.1 - 0.8)
Distance	0.3 (0.0 - 1.0)	0.3 (0.0 - 1.0)	0.6 (0.0 - 1.0)	0.3 (0.0 - 1.4)
Close	80.0 (60.0 - 100)	85.0 (55.0 - 98.0)	75.0 (58.50 - 97.0)	80.0 (41.3 - 100)
Far	-	-	-	-
Perspective	0.0 (0.0 - 50.0)	0.0 (0.0 - 37.5)	0.0 (0.0 - 5.0)	0.0 (0.0 - 50.0)
Film/ photograph	50.0 (10.0 - 70.0)	80.0 (20.0 - 87.5)	60.0 (15.0 - 80.0)	75.0 (50.0 - 100)
Speed	23.0 (10.0 - 50.0)	50.0 (25.0 - 80.0)	13.0 (1.0 - 35.0)	50.0 (20.0 - 70.0)
Duration	80.0 (55.0 - 100)	70.0 (37.5 - 100)	50.0 (15.0 - 93.0)	65.0 (21.3 - 88.8)
Reality	60.0 (25.0 - 85.0)	70.0 (10.0 - 80.0)	70.0 (10.0 - 82.0)	50.0 (10.0 - 78.8)
Depth	90.0 (71.0 - 100)	80.0 (40.0 - 90.0)	85.0 (75.0 - 100)	81.0 (52.5 - 97.5)
Detail	70.0 (60.0 - 87.0)	70.0 (45.0 - 80.0)	60.0 (50.0 - 75.0)	55.0 (41.3 - 70.0)
Background	20.0 (0.0 - 45.0)	20.0 (0.0 - 77.5)	20.0 (0.0 - 45.0)	27.5 (11.3 - 75.0)
Foreground	10.0 (0.0 - 30.0)	0.0 (0.0 - 50.0)	0.0 (0.0 - 35.0)	2.5 (0.0 - 27.5)
Intent	85.0 (70.0 - 100)	20.0 (0.0 - 72.5)	50.0 (20.0 - 87.0)	72.5 (6.3 - 98.8)

Auditory modality				
Volume	60.0 (42.0 – 80.0)	20.0 (10.0 – 50.0)	30.0 (23.0 – 55.0)	40.0 (30.0 – 70.0)
Clarity	70.0 (35.0 – 87.0)	75.0 (30.0 – 90.0)	60.0 (40.0 – 86.0)	57.5 (27.5 – 70.0)
Reality	90.0 (25.0 – 100.0)	90.0 (80.0 – 100)	85.0 (50.0 – 100.0)	60.0 (37.5 – 81.3)
Duration	70.0 (10.0 – 100)	80.0 – 20.0 – 100)	50.0 (37.0 – 97.0)	92.5 (35.0 – 100)
Skin sensations				
Intensity	60.0 (50.0 – 82.0)	25.0 (17.5 – 45.0)	54.0 (10.0 – 80.0)	37.5 (12.5 – 56.3)
Duration	70.0 (33.0 – 95.0)	25.0 (3.8 – 65.0)	25.0 (5.0 – 73.0)	62.5 (20.0 – 92.5)
Hot	-	-	-	-
Cold	-	0.0 (0.0 – 6.3)	-	10.0 (0.0 – 55.0)
Body sensations				
Duration	58.0 (30.0 – 100)	25.0 (7.5 – 90.0)	30.0 (15.0 – 56.0)	40.0 (20.0 – 90.0)
Intensity	70.0 (47.0 – 80.0)	30.0 (10.0 – 65.0)	30.0 (25.0 – 75.0)	40.0 (20.0 – 90.0)
Smells				
Pleasant	-	-	-	-
Strong	-	-	-	-
Tastes				
Pleasant	-	-	-	-
Strong	-	-	-	-

Modalities and sub-modalities

Visual Modality

Brightness	Perspective (point of view)
Size	Associated/ Dissociated
Colour/ Black & White	Foreground/ Background
Vividness	Self/ context
Hue/ Colour balance	Frequency or number
Shape	Frame/ Panorama
Location	Aspect/ Ratio
Distance	Orientation (tilt, spin, etc)
Contrast	Density (graininess/ pixels)
Clarity	Transparent/ Opaque
Focus	Strobe
Duration	Direction of Lighting
Movement (slide/ movie)	Symmetry
Speed	Digital (printing)
Directin	Magnification
3-Dimensional/2-Dimensional	Texture
Horizontal/ Vertical Hold	Sparkle

Auditory Modality

Pitch	Distance
Tempo	Contrast
Volume	Figure/ Ground
Rhythm	Clarity

Continuous/ interrupted

Number

Timbre/ Tonality

Symmetry

Digital (Words)

Resonance with context

Associated/ Dissociated

External/ internal source

Duration

Monaural/ Stereo

Location

Kinaesthetic Modality

Pressure

Movement

Location

Duration

Extent

Intensity

Texture

Shape

Temperature

Frequency

Number

Bandler (1985) suggested splitting the Kinaesthetic modality into three categories:

- 1. Tactile: the skin senses**
- 2. Proprioceptive: the muscle senses and other internal sensations.**
- 3. Evaluative meta-feelings about other perceptions**

For Olfactory and Gustatory sensations, Bandler suggested that the terms sweet, sour, bitter, salt, burnt, etc would not be useful. However, he stated that odour and taste are powerful anchors for emotional states.

Information for participants

Dear participant,

Re: 'Images and their characteristics in spider phobia'

Introduction

My name is Dan Pratt and I am currently undertaking a piece of research as part of my doctorate in clinical psychology. I would greatly appreciate it if you would consider participating in my study. However, before you decide it is important for you to understand why the research is being done and what it would involve. Please take time to read the following information carefully and discuss it with friends and relatives if you wish. If there is anything that you do not understand you can ask me now or contact me at any time (see below).

What is the purpose of the study?

Mental images (which include dreams, memories, and images that pop into your mind during the day) are very common experiences. However, the characteristics of such imagery have not been systematically evaluated before. The overall aim of this study is to conduct a detailed investigation of these images.

Why study spider phobia?

We have chosen Spider Phobia as a means of studying mental imagery, as it is a relatively common fear within the general population. The study of phobias has played an important role in the development of theory and treatments for phobias and other anxiety disorders.

But I'm not scared of spiders...

For this study it is just as important to recruit people who are not scared of spiders as it is to recruit spider phobics. One of the aims of this study is to compare these two groups of participants.

Do I have to take part?

No, there is no obligation to take part in this study. Participation is on a voluntary basis and, should you decide to take part, you can change your mind and opt out of the study at any point without it affecting you in any way.

Would I have to look at or touch a spider?

No, this study would only require you to think about spiders.

What would I have to do?

1. Read all the information provided. Ask any questions if you wish.
2. Sign and date the consent form (attached).
3. Complete the attached Fear of Spiders Questionnaire (attached).
4. Complete your personal details (attached).

What would happen next?

I would then contact you to check whether you still wished to participate in the study and, if you did, to arrange a convenient time to conduct a semi-structured interview. This would take no more than 40 minutes. It is probably easier to conduct the interview at your home, although an alternative venue could be arranged if you prefer.

What would happen to the data?

All conversations and data collected in this study would be coded so as to ensure anonymity. No one else would have access to this data.

Thanks for your time and co-operation,

Yours sincerely,

Dan Pratt
Trainee Clinical Psychologist
Isis Education Centre
Warneford Hospital

Consent Form

Study number: O00.59

Title of project: Images and their characteristics in spider phobia

Name of researcher: Dan Pratt

Please initial box

1. I confirm that I have read and understand the information sheet dated 10th October 2000 for the above study and have had the opportunity to ask questions.

2. I understand that my participation is voluntary and that I am free to withdraw at any time, without giving any reason, without medical care or legal rights being affected.

3. I agree to take part in the above study.

Name of participant

Date

Signature

Researcher

Date

Signature

Contact form

Contact Name, Address & Phone Number

Name:
Address:
Post code:
Phone 1:
Phone 2:
E-mail:

Fsq1

fsq2

Vviq1

Vviq2

wiq3

vviq4

THE GORDON TEST OF VISUAL IMAGERY CONTROL

You have just completed a questionnaire that was designed to measure the vividness of different kinds of imagery. In the present questionnaire some additional aspects of your imagery are being studied.

The questions are concerned with the ease with which you can control and manipulate visual images. For some people this task is relatively easy and for others relatively hard.

Read each question then close your eyes while you try to visualise the scene described. Record your answer by underlining 'Yes', 'No', or 'Unsure', whichever is the most appropriate. Remember that your accurate and honest answer to these questions is most important for the validity of this study. If you have any doubts at all regarding the answer to a question, underline 'Unsure'. Please be certain that you answer each of the twelve questions.

- | | | | |
|---|-----|----|--------|
| 1. Can you see a car standing in the road in front of a house? | Yes | No | Unsure |
| 2. Can you see it in colour? | Yes | No | Unsure |
| 3. Can you now see it in a different colour? | Yes | No | Unsure |
| 4. Can you now see the car lying upside down? | Yes | No | Unsure |
| 5. Can you now see the same car back on its four wheels again? | Yes | No | Unsure |
| 6. Can you see the car running along the road? | Yes | No | Unsure |
| 7. Can you see it climb up a very steep hill? | Yes | No | Unsure |
| 8. Can you see it climb over the top? | Yes | No | Unsure |
| 9. Can you see it get out of control and crash through a house? | Yes | No | Unsure |
| 10. Can you now see the same car running along the road with a handsome couple in it? | Yes | No | Unsure |
| 11. Can you see the car cross a bridge and fall over the side into the stream below? | Yes | No | Unsure |
| 12. Can you see the car all old and dismantled in a car-cemetery? | Yes | No | Unsure |

Interview Schedule

Part One

Different people experience different types of images. I'm interested in all the different types of images that you may experience (pictures, sounds, smells, tastes, bodily sensations). Sometimes, like dreams, they are quite unusual. This is normal, so try not to be embarrassed if you feel that the images you experience are strange.

(Randomly order spider/ control insect first/ second)

Before we start this part of the questionnaire we need to practice some of the ways that I will ask you to answer my questions. (Practice using the analogue scales)

0 25 50 75 100

.....

Self Generated Imagery

Order 1 2

a) I'd like you to try to imagine the **most frightening image of a spider** as you can.

It is probably best if you close your eyes... take a few moments and try to bring an image to mind...

Were you able to bring an image to mind? Yes No

Can you give me a brief description of the image?

Use prompts...

What do you see? Hear? Feel on your skin? Feel in your body? Smell? Taste?

Are you in the image, if so where?

Where is the spider in relation to you?

Visual Modality

Vividness (how clear the image is in your mind)

How vivid is the image of the spider/ butterfly in your mind's eye?

(0 = not at all vivid, 100 = extremely vivid)

Rate: 0 – 100

Spider _____ Butterfly _____

Colour

How colourful is the image? (if the image is all black i.e. no colour at all, = 0)

Rate: 0 – 100 (0 = not at all colourful, 100 = extremely colourful)

Spider _____ Butterfly _____

Brightness (like turning up the brightness dial on your TV)

How bright is the image?

Rate: 0 – 100 (0 = not at all bright, 100 = extremely bright)

Spider _____ Butterfly _____

Size

How much of the image is taken up by the spider/ butterfly? (0 = the spider is so small it does not take up any of the image, 100 = the spider is so large that it takes up all of the image)

Spider _____ Butterfly _____ Size in relation to a 'normal sized' spider/ butterfly

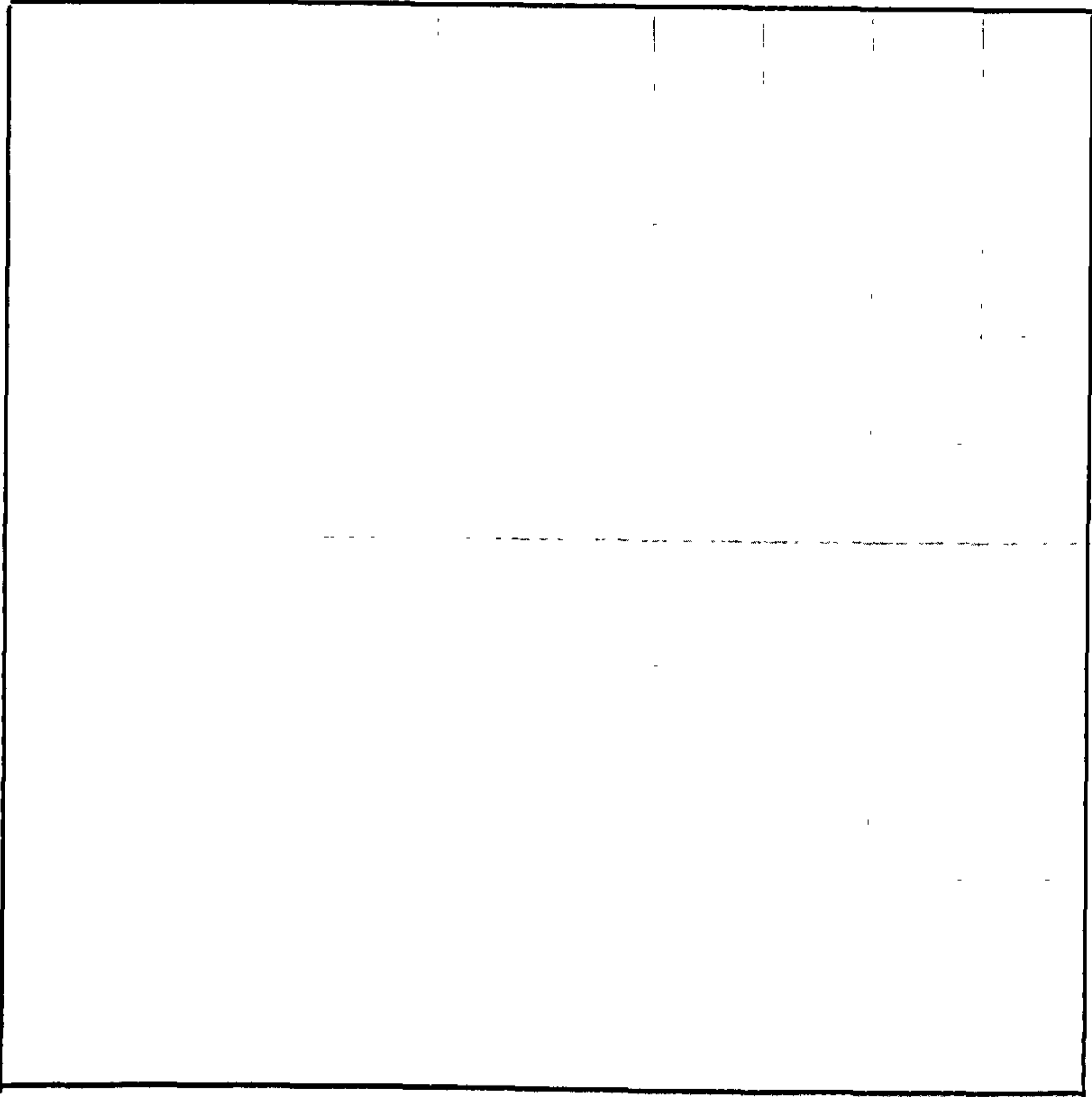
Bigger: In relation to a normal sized spider, how much bigger is the spider/ butterfly in your mind's eye? (0 = not at all bigger than a normal sized spider, 100 = extremely bigger than a normal sized spider)

Spider _____ Butterfly _____

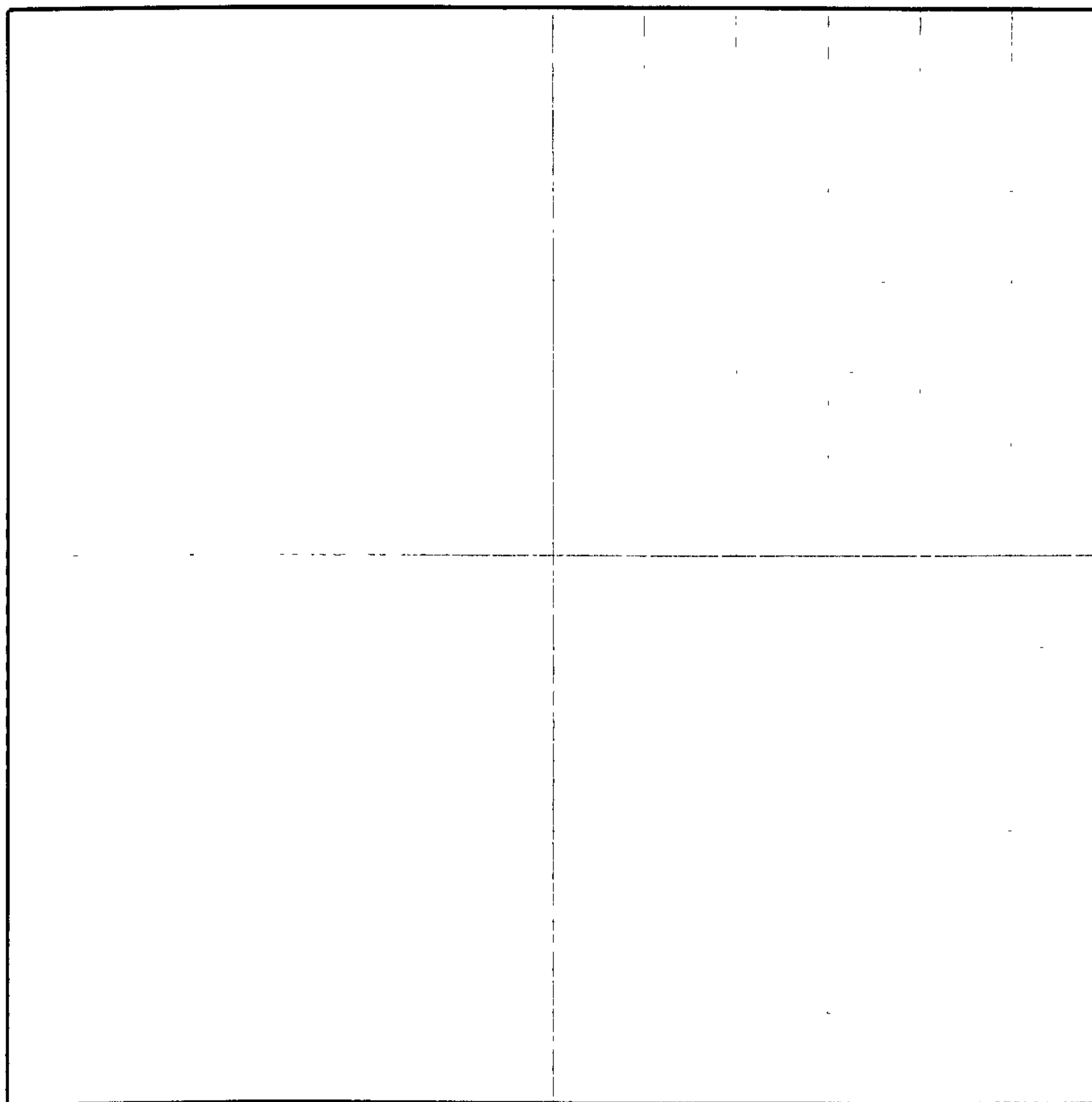
Smaller: In relation to a normal sized spider/ butterfly, how much smaller is the spider/ butterfly in your mind's eye (0 = not at all smaller than a normal sized spider, 100 = extremely smaller than a normal sized spider)

Spider _____ Butterfly _____

Size/ Position of spider within the image



Size/ Position of butterfly within the image



Proximity of the animal to the observer

How close to you is the spider/ butterfly in the image?

Rate: 0 – 100 (0 = not close at all, 100 = so close, it's almost/ is actually touching me)

Spider _____ Butterfly _____

How distant is the spider/ butterfly from you?

Rate: 0 – 100 (0 = not at all far away, 100 = extremely far away)

Spider _____ Butterfly _____

Perspective from which the animal is observed

From what perspective do you see the image?

Rate: 0 – 100 (0 = as though entirely looking out through my eyes, 100 = as though entirely observing myself/ spider from an external view point).

Spider _____ Butterfly _____

Movement of the spider/ butterfly

Is there any movement in the image?

Spider Yes No

Butterfly Yes No

Is the image in your mind's eye like a still photograph or moving film?

Rate 0 – 100: (0 = exactly like a still photograph, 100 = exactly like a moving film)

Spider _____ Butterfly _____

Speed

How fast is the image moving?

Rate: 0 – 100 (0 = not moving fast at all, 100 = moving very fast)

Spider _____ Butterfly _____

Direction

In what direction is the spider moving?

Towards you	()	Away from you	()
Moving up	()	Moving down	()
From behind	()	From in front	()

Other _____

Duration (Bring the image to mind and hold there for 5 seconds.)

How long does the image last for in your minds eye? (0 = hardly any time at all, 100 = it remains as long as I think about it)

Seconds: Spider _____ Butterfly _____

Realism

How realistic (rationally) is the image?

Rate: 0 – 100 (0 = not at all realistic, 100 = extremely realistic)

Spider _____ Butterfly _____

Depth

How much depth is there in the image?

Rate 0 – 100: (0 = there is no depth at all in the image, 100 = the image is completely three-dimensional)

Spider _____ Butterfly _____

Detail

How detailed is the image?

Rate 0 – 100: (0 = not detailed at all, 100 = extremely detailed)

Spider _____ Butterfly _____

Background

How much background is there in your image?

Rate 0 – 100: (0 = There is no background, 100 = There is a lot of background)

Spider _____ Butterfly _____

Foreground

How much foreground is there in your image?

Rate 0 – 100: (0 = There is no foreground, 100 = There is a lot of foreground)

Spider _____ Butterfly _____

Intent

How much does the spider/ butterfly look as though it is just about to do something?
 (0 = it does not look at all as though it is about to do something, 100 = it looks very much as though it just about to do something)

Spider _____ Butterfly _____

Notes:

Auditory Modality

Does your image contain any sounds?

Spider Yes No If yes, please describe...

Butterfly Yes No

Volume

How loud is the sound?

Rate: 0 – 100 (0 = not loud at all, 100 = extremely loud)

Spider _____ Butterfly _____

Clarity

How clear is the sound you hear?

Rate: 0 – 100 (0 = not at all clear, extremely clear)

Spider _____ Butterfly _____

Realism

How realistic is the sound that you hear?

Rate: 0 – 100 (0 = not realistic at all, 100 = extremely realistic)

Spider _____ Butterfly _____

Duration (bring the image to mind and hold it here for 5 seconds)

How long does the sound last for? (0 = hardly any time at all, 100 = it remains as long as I think about it)

Seconds: Spider _____ Butterfly _____

Location

Where is the sound coming from?

Source

What is making the noise?

Notes:

Bodily sensations

Do you notice any sensations of touch or pressure upon your skin, from an external source?

Spider Yes No If yes, get brief description

Butterfly Yes No If yes, get brief description

Intensity

How strong is the pressure upon your skin?

Rate: 0 – 100 (0 = No pressure at all, 100 = A strong pressure upon the skin)

Spider _____ Butterfly _____

Duration (Bring the image to mind for 5 seconds)

How long does the sensation of touch last for? (0 = hardly any time at all, 100 = it remains as long as I think about it)

Seconds: Spider _____ Butterfly _____

Temperature

How hot is the pressure on your skin?

Rate: 0 – 100 (0 = not hot at all, 100 = extremely hot)

Spider _____ Butterfly _____

How cold is the pressure on your skin?

Rate: 0 – 100 (0 = not cold at all, 100 = extremely cold)

Spider _____ Butterfly _____

Location

Where on your body do you experience the sensation of touch?

Spider _____ Butterfly _____

Movement

Is there any movement in the sensation of touch on your body?

Spider Yes No

Butterfly Yes No

Bodily sensations

Do you notice any sensations of movement, touch or pressure inside your body?

Spider Yes No

Butterfly Yes No

If Yes, please briefly describe...

Duration

How long do these sensations last for? (0 = hardly any time at all, 100 = it remains as long as I think about it)

Seconds: Spider _____ Butterfly _____

Intensity

How intense are these sensations?

Rate 0 – 100 (0 = not at all intense, 100 = extremely intense sensations)

Spider _____ Butterfly _____

Olfactory and Gustatory

Do you notice any sensations of taste?

Spider Yes No If Yes, please describe...

Butterfly Yes No If Yes, please describe...

How pleasant is the taste?

Rate: 0 – 100 (0 = not at all pleasant, 100 = extremely pleasant)

Spider _____ Butterfly _____

How strong is the sensation of taste?

Rate: 0 – 100 (0 = not at all strong, 100 = very strong sense of taste)

Spider _____ Butterfly _____

Do you notice any sensations of smell?

How pleasant is the smell?

Rate: 0 – 100 (Rate 0 = not at all pleasant, 100 = extremely pleasant)

Spider _____ Butterfly _____

How strong is the smell?

Rate: 0 – 100 (rate: 0 = not at all strong, 100 = extremely strong)

Spider _____ Butterfly _____

Notes:

Downward arrow from self generated imagery

What is the worst thing about the image?

What's so bad about that?

	Belief rating		
What does that mean about you?	Distress	Rational	Emotional
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
What does it mean about other people?			
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
What does it mean about the world?			
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

Part Two

1. Spontaneous Images:

You have just been describing an image of a spider/ butterfly that you generated in your mind's eye. However, what I'd like you to do now, is to cast your mind back to the last time you felt really anxious/ scared about spiders.

Can you think of such a time? Yes No

Usually when people get anxious they get a mixture of thoughts and images or fleeting pictures that go through their minds. I'm especially interested in the images. They could be visual, auditory, bodily sensations, and smells/ tastes. Have you ever experienced any images or sensory impressions that have **spontaneously** popped into your mind's eye when you were anxious/ worried about spiders?

YES NO ⇒ ⇒ ⇒ Go to verbal thoughts

⇓

⇓

2. Recurrent Imagery

Did you find that any of your images were recurrent ones, that is, they always involved the same kinds of things?

YES NO

3. When was the last time you had one of those spontaneous images?

Cues: It might be now, or some other time. Where were you? What were you doing?
etc...

4. Describe the image (s)

Please could you close your eyes and recreate one of those images (sensory impressions) now, making it as vivid as possible.

Have you got it now? YES NO

How does this image make you feel?

Rating (0-100)

Can you see anything in the image? Describe.

Can you hear anything in the image?

What about taste or smell?

What sensations do you have in your body?

What sensations do you have on your skin?

Summarise all the sensory detail in the image asking “is that right?” and make a written summary:

5. When the image popped into your mind, how anxious did you feel at the worst moment?

0 – 100 ()

What is the worst thing about it?

What does it mean about you?

Rational

Emotional

Others?

The world?

Summarise the meaning, asking "is that right?", and make written summary.

Is this how you generally/ usually see yourself?	Yes	No
Others	Yes	No
The world	Yes	No

6. Link to early experience

I'd like you to stick with the image and how it makes you feel...prompt.

What is the earliest recollection of having the thoughts/ sensations/ emotions/ experiences reflected in the image (or impression)?

How old were you? _____

Is there a particular memory from that time? Yes/ No

Can you evoke a memory of that time? Yes / No

Where were you?

Who were you with?

What were you doing?

What was happening in your life at that time?

How did you feel about yourself at that time?

Can you see anything in the image? Describe.

Can you hear anything in the image?

Taste?

Smell?

What sensations do you have in your body?

What sensations do you have on your skin?

Summarise all the sensory detail in the image asking “is that right?”, and make a written summary:

Then ask (0 – 100% rating), How similar are the actual sensory aspects of the spontaneous image compared with that early memory?

How does this image make you feel?

Rating (0-100)

What is the worst thing about it?

What does it mean about you?

Rational

Emotional

Other people?

The world?

Summarise the interpersonal meaning, asking “is that right?”, and make written summary.

Ask, for 0 –100% rating about the similarity between this remembered event and the image, in terms of its meaning.

Verbal thoughts

In the same way that images often pop into peoples' minds when they become anxious, so to do verbal thoughts. People sometimes a number of thoughts that quickly rush through their mind when they are anxious. This is normal.

Think back to that last time when you were anxious about spiders (prompt) ...

What thoughts went through your mind?

Note duration and belief of each thought:

How long did the thought last for (seconds/ minutes)

Rate belief in each thought 0 = I do not believe this thought at all, 100 = I am completely convinced that this thought is true.

Thoughts	Duration	Belief
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

Which is the most distressing thought?

Identify thoughts and rate on 0 – 100 visual analogue scale how much the participant is distressed by this thought.

0 = not at all distressed, 100 = as distressed as I have ever felt.

Thought	Distress
_____	_____

To access assumptions:

Use the downward arrow technique to pursue the most distressing thought related to spiders.

What is the worst thing that could happen?

What is so bad about...?

What does it mean about you

Rational

Emotional

Others

The world

Rate each belief in each assumption on a customised visual analogue scale
0 = I do not believe this at all, 100 = I am completely convinced this is true.
Rate how much the participant is distressed by each belief
0 = not at all distressed, 100 = as distressed as I've ever felt.

(1) you?

Assumption	Belief rating	Distress
-----	-----	-----
-----	-----	-----
-----	-----	-----
-----	-----	-----

(2) other people?

Assumption	Belief rating	Distress
-----	-----	-----
-----	-----	-----
-----	-----	-----
-----	-----	-----

(3) the world?

Assumption	Belief rating	Distress
-----	-----	-----
-----	-----	-----
-----	-----	-----
-----	-----	-----

Identify participant's first memory of these assumptions. Where were you? How old were you? What was happening in your life at this time? Obtain a brief description.

Do the assumptions reflect your current views? YES/ NO

Use the downward arrow technique to pursue the assumptions identified above.

Suppose that were true, what would be so bad about that?

What would it mean or say about you?

What's the worst thing that it could mean or say about you?

Identify core beliefs.

- obtain separate ratings for rational and emotional belief
- what do you think when you consider/ look at all the evidence and consider it rationally?
- What do you think about how you feel deep inside, regardless of what your rational side knows to be true?
- Rate on 0 – 100 visual analogy scale how much the participant is distressed by each belief, 0 = not at all distressed, 100 = as distressed as I've ever felt.

You	R	E	Distress
-----	----	----	-----
-----	----	----	-----
-----	----	----	-----
Others			
-----	----	----	-----
-----	----	----	-----
-----	----	----	-----
World			
-----	----	----	-----
-----	----	----	-----
-----	----	----	-----

Identify participant's first memory of these beliefs.

Where were you?

How old were you?

What was happening in your life at this time?

Obtain a brief description.

Images and their characteristics in spider phobia

Coding for Part One

Identity	Retest <input type="checkbox"/>	:
Gender		:Male Female
Age		:Scale
FSQ total score (range18-126)		:Scale
VVIQ		:Scale
TVIC (0-24)		:Scale
	Spider	Butterfly
Generate spontaneous image	Yes No	Yes No
Visual	Yes No	Yes No
Auditory	Yes No	Yes No
Skin	Yes No	Yes No
Bodily sensations	Yes No	Yes No
Smell	Yes No	Yes No
Taste	Yes No	Yes No
Anxiety	Scale	Scale
Vivid	Scale	Scale
Colour	Scale	Scale
Brightness	Scale	Scale
Size within image	Scale	Scale
Relative: Bigger	Scale	Scale
Relative: Smaller	Scale	Scale
Area	Scale	Scale
Close	Scale	Scale
Distant	Scale	Scale
Perspective	Scale	Scale
Movement	Yes No	Yes No
Still/ Movie	Scale	Scale
Speed	Scale	Scale
Direction	Categorical (7)	Categorical (7)
Duration	Scale	Scale
Realism	Scale	Scale
Depth	Scale	Scale
Detail	Scale	Scale
Background	Scale	Scale
Foreground	Scale	Scale
Intent	Scale	Scale
Sound	Yes No	Yes No
Volume	Scale	Scale
Clarity	Scale	Scale
Realism	Scale	Scale

Duration	Scale	Scale
Location	Categorical	Categorical
Source	Categorical	Categorical
External pressure (SKIN)	Yes No	Yes No
Intensity	Scale	Scale
Duration	Scale	Scale
Hot	Scale	Scale
Cold	Scale	Scale
Location	Categorical	Categorical
Movement	Yes No	Yes No
Bodily sensations	Yes No	Yes No
Duration	Scale	Scale
Intensity	Scale	Scale
Taste	Yes No	Yes No
Pleasant taste	Scale	Scale
Strong taste	Scale	Scale
Smell	Yes No	Yes No
Pleasant smell	Scale	Scale
Strong smell	Scale	Scale
Downward arrow		
Core beliefs identified		
Self: Yes No	Others: Yes No	World: Yes No
Mean number of core beliefs identified in image		
Self:	Others:	World:
Mean belief rating (Rational Emotional beliefs)		
R E	R E	R E

Part two: Coding for spontaneous imagery

Spontaneous Image		
Recent anxious episode	YES	NO
Spontaneous images	YES	NO
Recurrent images	YES	NO
Most recent spontaneous image	Date	
Feelings		
Modalities identified Visual <input type="checkbox"/> Auditory <input type="checkbox"/> Taste <input type="checkbox"/> Smell <input type="checkbox"/> Bodily <input type="checkbox"/> Skin <input type="checkbox"/>		
Participant % rating of how -ve is the image		
Researcher (1) % rating of how -ve is the image		
Researcher (2) % rating of how -ve is the image		
Participant % anxiety		
Core beliefs identified from image		
Self: Yes No	Others: Yes No	World: Yes No
Number of negative core beliefs identified in image		
Self:	Others:	World:
Mean belief in negative core beliefs		
R E	R E	R E
Reflect current beliefs: Self (Y/N) Others (Y/N) World (Y/N)		
Early memory		
Early memory identified	YES	NO
Age at first memory		
Negative event occurring		
YES NO		
Modalities identified Visual <input type="checkbox"/> Auditory <input type="checkbox"/> Taste <input type="checkbox"/> Smell <input type="checkbox"/> Bodily <input type="checkbox"/> Skin <input type="checkbox"/>		
Similarity (%) of sensory aspects: image vs. memory		
Core beliefs identified from memory		
Self: Yes No	Others: Yes No	World: Yes No
Number of core beliefs identified from memory		
Self:	Others:	World:
Similarity (%) of interpersonal meanings: image vs. memory		
Verbal thoughts		
Duration		
Belief		
Distress		
Assumptions identified		
YES NO		
Number of assumptions		
Belief in assumptions		
Distress		
Age at first memory of assumptions		
Negative events occurring		
Reflect current views		
Core beliefs identified		
YES NO		
Number of core beliefs identified from memory		
Rational belief		
Emotional belief		
Similarity (%) of meaning: image and thoughts		

Manor House
Headley Way, Headington
Oxford OX3 9DZ

Tel: 01865 222547
Fax: 01865 222699

ob/Imp/O00.59

13 September 2000

Mr Daniel Pratt
Trainee Clinical Psychologist
53 Stratfield Road
SUMMERTOWN
OXFORD OX2 7BG

Dear Mr Pratt

Re: O00.59 – Images and their characteristics in Spider Phobia.

I write to acknowledge your recent application to OPREC which has been given the above reference number. Please quote this number on all correspondence, and when you make telephone enquiries.

Your application will be discussed at the next meeting of the Committee on Tuesday, 3 October 2000 and we will write to you shortly afterwards.

All research applications submitted to the Oxfordshire Local Research Ethics Committees for ethical approval, which stem from limited companies or from agencies on their behalf, will be subject to a fee of £825 + VAT. Invoices will be sent to the originating company or agency.

Yours sincerely



Mrs Orla Bickers
Oxfordshire Psychiatric Research Ethics Committee

Manor House
Headley Way, Headington
Oxford OX3 9DZ

Tel: 01865 222547
Fax: 01865 222699

RJ/Imp/O00.59

30 October 2000

Mr Daniel Pratt
Trainee Clinical Psychologist
53 Stratfield Road
SUMMERTOWN
OXFORD OX2 7BG

Dear Mr Pratt

Re: O00.59 – Images and their characteristics in Spider Phobia

Thank you for your letter dated the 17 October 2000 addressing the concerns raised by the Committee at their meeting on the 3 October 2000. In accordance with the authority set out in the Terms of Reference, I am happy to confirm ethical approval and wish you every success with the study.

Please note:

- Ethical approval is valid for three years from the date of this letter.
- No significant changes to the research protocol should be made without appropriate research ethics committee/chairman's approval. Any deviations from or changes to the protocol which increase the risk to subjects, or affect the conduct of the research, or are made to eliminate hazards to the research subjects, should be made known to OPREC.
- OPREC should be made aware of any adverse events.
- Whilst the study has received approval on ethical grounds, it is necessary for you to obtain management approval from the relevant Clinical Directors and/or Chief Executive of the Trusts (or Health Boards/DHAs) in which the work will be done.

I should be very grateful if you could send me a copy of any publication which may arise from this study.

NB: Any research which will be conducted on NHS patients or staff, and which has been approved by a research ethics committee must carry the appropriate indemnity. May I remind you that OPREC final approval is contingent on the appropriate indemnity being in place.

Yours sincerely,

pp *Robin Jacoby*
Professor Robin Jacoby
Chairman
Oxfordshire Psychiatric Research Ethics Committee

Oxfordshire Psychiatric Research Ethics Committee (OPREC)		
OPREC No: O00.59		
Title of Project: Images and their characteristics in Spider Phobia		
The following documents have been approved by OPREC		
	Date/Version	Approved
Patient Information Sheet	30 October 2000	✓
Patient Consent Form	30 October 2000	✓
Spider Phobia Questionnaire	30 October 2000	✓

Terms of Reference, Standard Operating Procedures and a list of members of the Ethics Committee are available from the Research & Development office on request.

INDEMNITY

The purpose of an indemnity arrangement for a researcher is to provide legal protection in the event of a researcher led unforeseen adverse circumstance, however minimal the risk, arising during the course of a research project. The indemnity applies to the Senior Investigator in the project and automatically covers any other generally more junior colleagues associated with the project. There are various types of indemnity dependent on the circumstances of the researcher and the nature of the research project. Staff employed in the NHS Trust Hospitals should ensure that they are properly protected by the appropriate indemnity approved by the Trust Chief Executive or Medical Director.

Manor House
Headley Way, Headington
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Tel: 01865 222547
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Our Ref: OB/Imp/O00.59

2 March 2001

Mr Daniel Pratt
Trainee Clinical Psychologist
53 Stratfield Road
SUMMERTOWN
OXFORD OX2 7BG

Dear Mr Pratt

Re: O00.59 – Images and their characteristics in Spider Phobia

I enclose a copy of the indemnity letter that we have received duly signed from the Oxfordshire Mental Healthcare NHS Trust who are providing indemnity for the above study. I can now confirm final approval and wish you every success with your study.

Yours sincerely,



Mrs Orla Bickers
Administrator
Oxfordshire Psychiatric Research Ethics Committee

Enc.

Julie Waldron
Chief Executive
Warneford Hospital
Warneford Lane
Headington
Oxford OX3 7JX

01865-223966

Ref: JW/jm

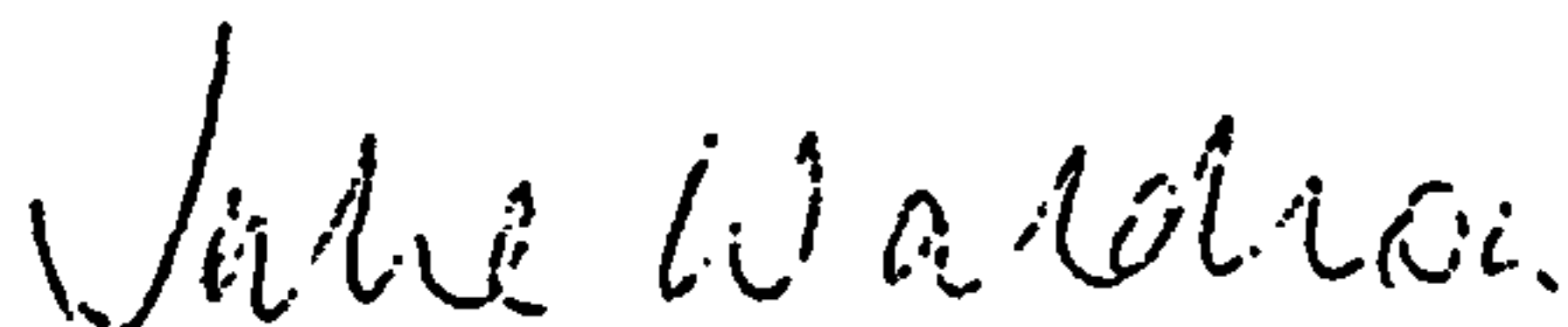
11th October 2000

Dr Daniel Pratt
Trainee Clinical Psychologist
ISIS Education Centre
Clinical Psychology
Warneford Hospital

Dear Dr Pratt

I am writing to confirm that Oxfordshire Mental Healthcare NHS Trust will indemnify you for your Research project O00.59, 'Images and Their Characteristics in Spider Phobia', as described in your application to the Psychiatric Research Ethics Committee. This commitment is dependent on the formal approval of the Psychiatric Research Ethics Committee and on the understanding that you have contract of employment with this Trust.

Yours sincerely



Julie Waldron
Chief Executive

Manor House
Headley Way, Headington
Oxford OX3 9DZ

Tel: 01865 222547
Fax: 01865 222699

RJ/Imp/O00.59

2 February 2001

Mr Daniel Pratt
Trainee Clinical Psychologist
53 Strafield Road
SUMMERTOWN
OXFORD OX2 7BG

Dear Mr Pratt

Re: O00.59 – Images and their characteristics in Spider Phobia.

Thank you for your letter dated the 29 January 2001 requesting approval for the changes to the submitted protocol. There seems to be no problem with this, and I can now confirm OPREC approval for this addendum.

Please note:

- No significant changes to the research protocol should be made without appropriate research ethics committee/chairman's approval. Any deviations from or changes to the protocol which increase the risk to subjects, or affect the conduct of the research, or are made to eliminate hazards to the research subjects, should be made known to OPREC.
- OPREC should be made aware of any adverse events.

Best wishes with your continuing study.

Yours sincerely,

W *Rob Jacoby*
Professor Robin Jacoby
Chairman
Oxfordshire Psychiatric Research Ethics Committee

Oxfordshire Psychiatric Research Ethics Committee (OPREC)		
OPREC No: O00.59		
Title of Project: Images and their characteristics in Spider Phobia.		
The following documents have been approved by OPREC		
	Date/Version	Approved
Questionnaires	2 February 2001	✓

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Oxford, OX2 7BG
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Work: 01865 226374
Daniel.Pratt@oxmhc-tr.anglox.nhs.uk

Dr Jenny Butler
Principle lecturer
School of Healthcare Studies
Oxford Brookes University

Tuesday, 17 October 2000

Dear Dr Butler,

Re: Doctoral research: Images and their characteristics in spider phobia.

My name is Dan Pratt and I have just started the third year of my doctorate in clinical psychology, based at the Warneford Hospital. You may remember that I spoke to you briefly on the phone earlier in the year about the possibility of approaching Oxford Brookes University students to participate in my study. At that time you advised me to write a letter to you outlining the study and enclosing all relevant letters, questionnaires etc. I have summarised the aims and the protocol of the research below and have included a number of documents for your information, including:

1. Oxfordshire Psychiatric Research Committee application form.
2. Response from OPREC.
3. Letter of indemnity from Oxfordshire mental health NHS Trust.
4. Information letter for participants.
5. Spider Phobia Questionnaire
6. Bett's QMI vividness of imagery scale
7. The Gordon test of visual imagery control
8. Semi-structured interview: parts 1 & 2.

Main question

Images have been observed in psychological states, especially in some of the anxiety disorders. The phenomenology of imagery in anxiety disorders has not been systematically evaluated and it is not clear whether it is possible to reliably assess such characteristics. The overall aim of this study is to conduct a detailed investigation of the characteristics of images in a wide range of sensory modalities. It is hoped that this study will contribute to the development of cognitive theory in both spider phobia and more generally in a wide range of anxiety based disorders.

If such characteristics can be reliably assessed one might predict that images of spiders would be different in phobic and non-phobic populations. One might also reasonably predict that characteristics of images of spiders would be significantly different to those of other, non-threatening, animals in the spider phobic population.

Protocol

Ideally I would like to approach students at the end of lectures, when I could briefly present my study. I would ask students who were interested to read the information letter and then to complete the spider phobia questionnaire, the consent form, and their personal details. I would then contact the participants to arrange a time to conduct the semi-structured interview. Prior to conducting this interview I would send participants two further questionnaires by post (Bett's QMI and Gordon's test of imagery control). The interview stage should not take much more than 40 minutes to complete.

I would be looking to recruit approximately 40 spider phobics and 40 non-phobics. I am being supervised jointly by Myra Cooper (Research Tutor, Oxford Doctoral course in Clinical Psychology) and Ann Hackman (Clinical Psychologist, Oxford University). I am hoping to start recruiting participants as soon as possible. You mentioned that, if I were given permission to approach the students, you could provide me with a list of tutors/ heads of schools so that I could contact them about speaking to their students. That would be extremely useful to me.

I hope I have provided enough information. If you have any further questions please call me at home or at the Isis Education centre.

Thanks for your help,

Dan Pratt
Trainee clinical psychologist
Oxford Doctoral Course in Clinical Psychology.

OXFORD
BROOKES
UNIVERSITY

18 December 2000



Mr D Pratt
53 Stratfield Road
Summertown
Oxford
OX2 7BG

Research Services and Business
Development Directorate
University Research Centre
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Chair: Professor Helen Bartlett BSc RGN

Dear Daniel

The University Research Ethics Committee has reviewed your proposal on spider phobia. There were a number of comments, summarised as follows:

- (1) The level of burden on participants involved in this study will be considerable given the number and length of instruments - it seems unlikely that you would achieve a very good response rate.
- (2) Conceptual issues about phobia/ non-phobia and cut-off points.
- (3) The need to ensure that adequate support/counselling is accessed in any cases where serious anxiety is provoked by the study.
- (4) The value of this research versus the cost implications.
- (5) The validity of the questionnaire - piloting and establishing reliability and validity.

These are all issues that you will need to address if your study is to be successful. Given the various reservations, my recommendation is that you proceed with the School of Social Sciences and Law, in particular the Psychology Department, who have indicated that they would be happy to have you approach their students to take part in this study. Prof Mary Boulton will provide you with the necessary advice on how to proceed. If the study proceeds smoothly, you may wish to request wider coverage involving other departments later.

I hope this is helpful. Please do not hesitate to contact me should you wish to discuss any of these issues.

Yours sincerely

Professor Helen Bartlett
Chair
University Research Ethics Committee