

A Measure of Cognitive Vulnerability:
Development and Validation of the Anxiety Attitude and Belief Scale

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Abstract

The cognitive model of emotional disorders has inspired considerable research effort, much of it self-report and questionnaire-based. This methodological focus has been criticized on several grounds and poses a challenge for those attempting to index relevant cognitive constructs. The aim of the study described here is to further develop and validate the Anxiety Attitude and Belief Scale-Revised (AABS-R). The measure was designed to index attitudes and beliefs that may represent a cognitive vulnerability to anxiety problems. The development of the scale involved an emphasis on avoiding confounding with affect, thus averting some of the criticisms of self-report cognitive measures. First, construct validation through cognitive interviewing was undertaken. Four undergraduate students completed 53 questions on the AABS-R while thinking aloud. The ensuing verbal protocols were coded by a blind rater according to the specific cognitive processes participants engaged in. Results indicated that items generally tap into cognitive rather than affective processes. Subsequently, the reliability, psychometric properties and validity of the scale were investigated in an online anxiety disorder support group and student sample. Participants ($N = 346$) completed an online battery of tests, which included the AABS-R as well as criterion measures. Exploratory factor analyses suggested the existence of five factors, which index domains of theoretical interest. The final 33-item measure total and factor scores demonstrated adequate internal consistency. A correlational analysis was consistent with convergent, but only partly with the discriminant validity of the AABS-33. As predicted, the AABS-33 appears to be a reliable, valid and potentially clinically useful index of anxiety vulnerability, which may overcome the shortcomings of well-established anxiety measures. The findings are discussed within the broader literature on cognitive theory and its' operationalization, 'transdiagnostic processes' and notions of validity.

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Introduction

The purpose of this chapter is to provide a review of the literature for the reported study, the aim of which is to further improve and validate the Anxiety Attitude and Belief Scale (Brown, Craske, Tata, Rassovsky & Tsao, 2000). This self-report measure was developed to index enduring appraisals, attitudes and beliefs, believed to represent a distal cognitive vulnerability to anxiety. Drawing on clinical cognitive models of emotional disorders, this vulnerability, in interaction with precipitating negative life events, is hypothesized to increase the likelihood that a predisposed individual will develop anxiety symptoms. Little theoretical and research effort has been focused on conceptualizing and measuring phenomena that constitute durable anxiety-related cognitive styles, not contaminated by anxiety symptoms. Because such a cognitive predisposition is seen as antecedent to the later development of anxiety symptoms, it is anticipated that the measure will be a useful clinical tool. The review that follows will consider the relevant literature and concepts.

First, an overview of anxiety disorders, prevalence and cost will be provided. Subsequently, cognitive models are presented in order to provide a general cognitive framework for conceptualizing anxiety. Next, the concept of anxiety vulnerability is examined to develop the background to the field, clarify the role of cognitions generally, and attitudes and beliefs in particular, in anxiety, and in order to define key variables. This section serves also to provide a general introduction to the topic matter. Subsequently, the focus is on ‘transdiagnostic processes’, methodological issues, the measure itself and notions of validity. Finally, the rationale for and purpose of the research will be stated in terms of the research aims.

Anxiety, Prevalence and Cost

The notion of ‘anxiety disorders’ applies to a group of psychiatric disorders that are characterized by disabling feelings of anxiety. The Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition Text Revision (DSM-IV-TR; American Psychiatric Association, 2000) identifies twelve different anxiety diagnoses, including agoraphobia, panic disorder, social phobia, specific phobias, obsessive compulsive disorder, generalized anxiety disorder, post-traumatic stress disorder and anxiety disorder not otherwise specified.

In Europe, anxiety disorders are the most common mental health problem and 12% of the population will have had an episode in the previous year (Andlin-Sobocki & Wittchen, 2005). Anxiety disorders are principally disabling, persistent and associated with various co-morbidities (Kessler, Chiu, Demler & Walters, 2005). These disorders account for up to 30 per cent of the total expenditure for mental health (Arikian & Gorman, 2001; DuPont et al., 1996) as individuals with anxiety disorders utilize services to a greater extent than those with other mental health problems (Lepine, 2002). When co-morbidity is present, expenditure more than doubles (Dozois, Dobson & Westra, 2004; Ohayon, 2006). Such figures have led to recent calls for research with a preventative focus (Schmidt & Zvolensky, 2007).

Cognitive Models of Anxiety

Cognitive models emphasise that cognition plays a significant role in the aetiology, maintenance and treatment of anxiety. Beck and his colleagues have put forward a cognitive model of anxiety disorders (e.g., Beck, Emery & Greenberg, 1985). They

suggest anxious individuals interpret innocuous phenomena (both external and internal) as threatening, and underestimate their ability to cope. This bias consequently results in cognitive (e.g., hypervigilance for threat), physiological (e.g., autonomic arousal) and behavioural (i.e., maximising avoidance and safety-seeking and minimising risk-taking) effects, which serve to maintain anxiety (Wells, 1997). This model illuminates the general assumptions of cognitive models. First, cognition affects behaviour. Second, cognition can be observed and altered. Third, behaviour change is achieved through changes in cognition (Dobson, 1988).

Cognitive mediation

In explaining emotional disorders, cognitive-mediational models predominate, a state of affairs that has been described as the ‘cognitive revolution’ (Mahoney, 1974). Such models have greatly influenced theorizing in the area of depression and more recently, anxiety disorders (e.g., Beck, 1967, 1976; Beck & Emery, 1985; Beck & Clark, 1997). Cognitive-mediational models are derived from early emotion theories, which propose that cognitive appraisal and information processing mediate the relationship between events in the world and their emotional impact (e.g., Arnold, 1960; Lazarus, 1968). The cognitive constructs employed by different cognitive theories to account for such a mediation are debated and involve different levels of analysis (Brewin, 1996; Clark, Beck & Brown, 1989). Ingram and Kendall (1986, 1987) suggest four distinct components of ‘cognition’. ‘Structure’ (or ‘schemata’) signifies how information is organized internally (e.g., associative networks) and ‘propositions’ refer to its’ stored content – the information or knowledge that is considered and represented. Dysfunctional attitudes and beliefs are typically conceptualised as being represented at the propositional level (Segal & Dobson, 1992). ‘Operations’ involve information-

processing system processes (e.g., selective attention); ‘products’ are the output of that system (e.g., negative automatic thoughts).

Though this categorization is useful, recent cognitive system models are more complex and suggest that a stimulus can have multiple representations. For example, Teasdale and Barnard (1993) suggest two qualitatively different levels of meaning, in the form of ‘meaning structures’. The propositional system is based on language and involves rational analysis. The implicational system encodes new information in terms of feelings, images and kinaesthetic sensations (Teasdale, 1996). This view is similar to the distinction that Epstein (1990, 1998) makes between a cognitive and an experiential system. Though these are seen to operate relatively independently, they can also interact and influence each other (Salas-Auvert & Felgoise, 2003).

Beck’s (1967, 1976) influential cognitive theory of emotional disorders suggests that cognitive mediation involves an interaction between such factors. In emotional disorders, maladaptive and stable structures are activated when information consistent with their content is received. Subsequently, information-processing biases and negative automatic thoughts result (Clark et al., 1989).

Cognitive content-specificity

Depression and anxiety commonly co-occur, an overlap that can be observed in terms of symptoms, mood and diagnosis, in samples of children, adolescents and adults (Barlow, DiNardo, Vermilyea, Vermilyea & Blanchard, 1986; Maser & Cloninger, 1990; Mineka, Watson & Clark, 1998; Watson et al., 1995). For example, about half of those who receive a clinical diagnosis of depression are diagnosed with comorbid

anxiety and vice versa (Mineka, et al., 1998). Similarly, numerous reviews of the depression and anxiety psychometric literature have found that clinical rating and self-report scales of depressive and anxious mood state and symptoms are highly associated (e.g., Dobson, 1985; Gotlib & Cane, 1989). L. A. Clark and Watson's (1991) comprehensive review indicated that concurrent correlations between various well-established measures of depressive and anxious symptoms averaged .66 in patient populations and .70 in non-patient populations. Such observations have been seen to support the view that depression and anxiety are best defined as variations of a unitary disorder (e.g., Stavrakaki & Vargo, 1986).

Indeed, Beck and his colleagues theorise that these emotional disorders involve comparable cognitive processes. However, they are seen to vary in terms of cognitive content at all levels of conceptualization. Thus, the observed overlap between depression and anxiety is seen to reflect co-occurring but phenomenologically distinct phenomena, each with a particular cognitive profile (Beck, 1967; 1976; Beck & Clark, 1988; Clark et al., 1989; Clark, Beck & Alford, 1999). Also, Clark, Beck and Stewart (1990) specify that although depression and anxiety have common features, differences between them in terms of course, symptomatology and treatment provide grounds for viewing them as distinct.

Research on this cognitive 'content-specificity' hypothesis has repercussions for those attempting to measure anxiety and depression. Much research effort has focused on the cognitive operations level and this has largely been supportive of Beck's specificity hypothesis in that anxiety has been found to involve selective encoding of and attention to threatening information (for reviews see Clark & Steer, 1996; MacLeod,

1999; Mathews & MacLeod, 1994; Wilson & MacLeod, 2007). However, more relevant for developing a background to a self-report measure are the propositional and product levels and their measurement.

In Beck's theory, in anxiety, automatic thoughts are seen to involve themes of anticipated danger or harm (Beck & Emery, 1985) and anxious thinking is said to be more future-oriented, probabilistic and situational than depressive thinking (Beck & Clark, 1988; Ingram & Kendall, 1987). Such danger perceptions result in feelings of fear and dread as well as tension and autonomic arousal (Feldman, 1993). Thus, according to Beck, it is possible to differentiate depression and anxiety as each is associated with specific cognitive content.

Clark and colleagues (1990) suggest measures of anxiety and depression typically contain a mixture of anxious and depressive items, resulting in low discriminant validity and high correlations (Dobson, 1985). It follows from Beck's hypothesis that higher discriminant validity can be achieved by developing depression and anxiety inventories that index distinct cognitive constructs.

Clark, Steer and Beck (1994) performed a succession of factor analyses on two widely-used measures of depression and anxiety, which include cognitive items, the Beck Depression Inventory and the Beck Anxiety Inventory. They found a general second-order factor that accounted for 40% of the two measures' shared variance. When its effects were partialled out, first-order Anxiety and Depression Factors still explained more than 20% of the measures' common variance. The authors conclude that depression and anxiety measures that comprise cognitive symptoms do assess

dimensions that are specific to depression and anxiety, in addition to a non-specific and large general distress (affect) component.

L. A. Clark and Watson's (1991) tripartite model specifies that depression and anxiety consist of a non-specific component (conceptualised as negative affect) as well as specific depression and anxiety mood components. Clark et al's (1994) findings therefore provide support for the tripartite model in terms of mood as well as for Beck's specificity hypothesis in that including cognitive items can increase the specificity of depression and anxiety symptom measures.

Numerous self-report measures aim to assess specific cognitive aspects of depression and anxiety (e.g., Beck, Brown, Steer, Eidelson & Riskind, 1987; Beck, Epstein, Brown & Steer, 1988). These measures may be more able to discriminate between depression and anxiety (e.g., Steer, Beck, Clark & Beck, 1994) and numerous research studies that have deployed these have been supportive of Beck's formulation. For example, Clark and colleagues (1990) performed factor analysis to verify that depressive symptoms and cognitions, and anxious symptoms and cognitions, loaded on distinct factors. Cognitions of failure and loss have been found to be related to depression, whilst thoughts of danger and harm have been found to predict anxiety in clinical and adult outpatient (Beck et al., 1987; Clark et al., 1989; Lambertson & Oei, 2008), inpatient (Clark, Steer, Beck & Snow, 1996) and adolescent inpatient samples (Jolly & Dykman, 1994). In addition, Kendall and Chansky (1991) find that cognitive content can differentiate childhood disorders as automatic thoughts of anxious youth were found to centre around threat, danger and anticipated harm.

Despite these encouraging findings, vulnerability and threat cognitions, in various studies of college students, have been found to be similar or better predictors of depression than anxiety (e.g., Bruch, Mattia, Heimberg & Holt, 1993; McDermut & Haaga, 1994). Also, R. Beck and Perkins (2001) included 13 studies in their meta-analysis of the evidence for cognitive content-specificity for depression and anxiety. They operationalized Beck's specificity hypothesis as "depressive symptomatology should share significantly more variance with depressive cognition than anxious cognition (the same reasoning would also apply for the anxiety constructs)" (p. 657). Significant specificity was found for depressive but not for anxious cognitive content. Thus, cognitions that are typically conceptualised as related to anxiety were common to both depression and anxiety.

Clark and Steer (1996) state "it would be interesting to know why cognitive content-specificity has not been as robust in anxiety as in depression" (p. 89). They maintain that it is possible to improve the discriminant validity of depression and anxiety measures by including specific cognitive items, though this may not always be an effective strategy as more support has been found for specificity in clinical than nonclinical samples (e.g., Clark et al., 1996). Thus, it is possible that with decreased symptom distress, cognitions become less-specific predictors of symptoms.

Other hypotheses have been offered to account for inconsistent findings with regards to anxiety-related specificity, which relate to the perceived heterogeneity of anxiety. Various authors (e.g., Bruch et al., 1993; Cho & Telch, 2005, Epkins, 1996; Smith & Mumma, 2008) suggest that specificity findings for anxiety may be inconsistent because anxiety-related cognitions are conceptualised in an overly broad manner and

that anxiety *disorder* related cognitions may provide more support for specificity. Some evidence exists for this explanation. In a recent study (R. Beck, Benedict & Winkler, 2003) it was possible to discriminate between depression and panic disorder on the basis of specific cognitions. However, worry (the central characteristic of generalized anxiety) was a shared feature of depression and anxiety. Similarly, on the basis of two studies, depressive and anxious cognitions distinguished depression and panic disorder. However, the researchers failed to differentiate generalized anxiety disorder from depression on the basis of danger and threat cognitions (Clark, Beck & Beck, 1994; Riskind et al., 1991). Finally, Woody and colleagues (Woody, Taylor, McLean & Koch, 1998) found panic-related cognitions to correlate significantly with agoraphobic and panic, but not depressive symptoms. In contrast, general anxiety-relevant cognitions were related to anxiety as well as depression. This may suggest that cognitive-specificity is less apparent in generalized anxiety disorder than panic and that specific cognitions may relate to specific anxiety disorders. It is important to note here that this disorder-specific focus has been challenged recently by emerging findings regarding the anxiety disorders and their similarities. This ‘transdiagnostic’ perspective (Harvey, Watkins, Mansell & Shafran, 2004) is discussed below, following further discussion of the cognitive model.

As noted, it has been suggested that anxiety and depression have unique and shared mood components (L. A. Clark & Watson, 1991). A recent neuropsychological study (Keller et al., 2000) supports this. The authors found support for Heller’s (e.g., 1993) model of regional brain activity in depression and anxiety, in that depression was related to a smaller right hemisphere bias and anxiety to a larger right-hemisphere bias on the Chimeric Faces task, a measure of a hemispatial bias, which is thought to index

arousal levels. Following from this the authors suggest that inconsistencies among empirical studies of anxious and depressed groups may be the result of anxiety and depressive symptom balance being inconsistent across studies. In addition, they found support for the view that depression and anxiety comorbidity reflects a combination of unique and shared features. Thus, once common variance has been removed, distinct features become apparent. The authors theorise that common variance may reflect negative affect, as suggested by L. A. Clark and Watson (1991) and unique features may be represented by low arousal for depression and high arousal for anxiety. In mixed samples (depression and comorbid anxiety samples), this opposing relationship may, in effect, cancel the other. Alternatively and depending on the strength of self-reported arousal levels in the sample, it may result in inconsistent results. This may explain why measures of anxiety, many of which contain items that index affective rather than purely cognitive phenomena, have produced inconsistent findings. The issue of the mixing of cognitive and affective content is of central relevance and will be further discussed below, along with other methodological issues.

Finally, it has been suggested that cognitive variables, like mood components, can be divided into those that are common or distinctive to depression and anxiety (Ingram & Kendall, 1987; Kendall & Ingram, 1987). There is some support for this view (e.g., Cho & Telch, 2005).

The inconsistencies evident in cognitive content-specificity research do not at present appear to have a clear explanation. However, recent studies indicate that the relationship between putative anxiety-related cognitions and the anxiety disorders is more complex than Beck and his colleagues initially theorized.

Despite this, there are theoretical and empirical reasons for accepting that depression and anxiety can be differentiated on the basis of particular cognitions. It obviously follows from Beck's cognitive content-specificity hypothesis that it is possible to differentiate depression and anxiety by deploying measures of unique cognitive content and that discriminant validity can be enhanced by incorporating the appropriate cognitive constructs (Clark & Steer, 1996). Such specificity may be more evident in clinical groups and specific cognitive constructs may relate to the different anxiety disorders in varied ways.

Cognitive vulnerability to anxiety

Though distinct cognitive variables may be specific to a disorder, content-specificity does not establish cognitive causality (Lazarus, 1991). Indeed, Beck and Weishar (1989) emphasize that certain cognitions can be seen as "an intrinsic part of the disorder" (p. 23). As noted, content-specificity findings are less robust in non-clinical than in clinical samples and it is possible that during the symptomatic state, avoidance as well as mood-congruent processing perpetuate established difficulties (Beck, 1987; Brown et al., 2000, Hayes, Strosahl & Wilson, 1996; Salkovskis, 1991). For example, individuals can adopt coping strategies or misinterpret their symptoms in ways that serve to exacerbate their difficulties (Bower, 1981; Brewin, 1996; Teasdale, 1993). In terms of depression, Teasdale (1996) argues that different mechanisms may be responsible for its onset as opposed to maintenance. In terms of anxiety, a recent study found that manipulating interpretive biases influenced emotional reactivity in response to a subsequent and potential stressor (Wilson, MacLeod, Mathews & Rutherford, 2006). The authors conclude that an enduring tendency to selectively attend to material that is emotionally threatening may be causally implicated in anxiety vulnerability. It

is therefore possible that specific cognitive biases play a part in not just the maintenance but also the onset of anxiety disorders.

Dysfunctional beliefs and attitudes

Beck's model goes beyond the descriptive and includes a causal level implicating specific cognitive constructs. Ingram, Odom and Mitchusson (2004) propose that though cognitive models vary somewhat in their conceptual details, they usually converge in viewing dysfunction in cognitive self-structures as being at the core of emotional disorders. Similarly, successful cognitive therapy is often seen to depend on the modification of such structures (Padesky, 1994).

Beck equates such structures with underlying assumptions, attitudes and beliefs. He argues that dysfunctional schemas can be defined as enduring cognitive patterns, in the form of stable unconditional beliefs and conditional assumptions. These are acquired from early experience and direct how individuals conceptualize sets of stimuli (Beck, Rush, Shaw, & Emery, 1979; Beck, Epstein & Harrison, 1983). In anxiety, beliefs and rules embodied in the schemas centre on a sense of vulnerability and the perception that one will be unable to cope. These beliefs and rules provide the basis for the interpretation of ambiguous information, prompting negative automatic thoughts in specific situations (Beck & Emery, 1985). For example, in social anxiety, the threat is related to the perception and possibility that others may evaluate one negatively (Ingram & Kendall, 1987). In panic disorder, internal changes are viewed as threatening and are catastrophically misinterpreted (Clark, 1986). This view gives primacy to the propositional content of cognitive structures, which is viewed as verbally accessible.

Equating schemas with beliefs and assumptions has been criticised. Epstein (1998) views beliefs as representations in the cognitive-propositional system. Teasdale (1993) argues that schematic models contain implicit meaning, capable of eliciting emotion. Propositional representations of such emotion-related material can correspond to that of the implicational level. However, no causality can be attributed to it. Thus, beliefs and assumptions at the propositional level are not seen to directly influence depression. Teasdale's views fit with the conclusion of researchers who have argued that though dysfunctional attitudes could be stable vulnerability factors, they are mood-state dependant and require priming to be accessed (e.g., Miranda, Persons & Byers, 1990). According to this view, cognitive vulnerability factors may exist. However, these will not be apparent until an individual experiences a change in emotional state. Thus, cognitive vulnerability factors may be implicated in vulnerability to future relapse, rather than onset.

According to Teasdale (1993) the goal of Beckian therapy, to modify dysfunctional beliefs, is not sufficient to combat depression. This is because underlying schematic models (implicational) remain unchanged. However, arguably, emotional changes can come through the cognitive-propositional system. For example, when an individual re-evaluates information, which her beliefs have been based on, the experiential system may subsequently undergo change (Salas-Auvert & Felgoise, 2003). Such change may be especially relevant to anxiety disorders where only minimal psycho-education and corrective information can result in changes in anxiety symptoms (e.g., Craske & Freed, 1995), arguably the result of changes in beliefs or conditional rules (Beck, 1996). Similarly, an anxious individual can give herself instructions to remain in an aversive situation (Meichenbaum, 1977), which could lead to changes in cognitive

appraisals and beliefs (Beck, 1996).

Beck (1996), in response to various criticisms, has expanded his original model of linear schematic processing in order to incorporate findings from cognitive psychology and science (e.g., Brewer & Treyns, 1981, Power & Champion, 1986; Segal, 1988; Teasdale & Barnard, 1993). He invokes the concept of 'modes'. These can be defined as networks of affective, motivational, cognitive and behavioural structures of personality, that function together to handle specific demands. Each system is comprised of structures called schemas. Thus, the cognitive system is comprised of cognitive schemas, which are implicated in meaning assignment and information processing. Beck agrees with Kihlstrom (1987) that processing typically takes place outside of awareness but argues that content is in theory knowable.

Beck suggests that the emotional disorders can be represented by specific modes. Their cognitive structure consists of a belief hierarchy, comprised of core beliefs and conditional rules. These shape meaning, explanations, expectations and interpretations. In phobic anxiety, a core belief might be "I am vulnerable to physical disaster". A conditional rule might be "if I take the elevator, I am likely to get killed". Should this person decide to use an elevator, the 'phobic mode' is activated (Beck, 1996, p. 14). Though this model departs somewhat from viewing cognitions as primary (Gurnan, 2007), Beck (1996) maintains "the preliminary framework of a dysfunctional mode is already in place *prior* to the onset of psychological disorders" (p.12). In addition, Alford and Beck (1997) have emphasized that verbal propositions represent the key informational code at every level of processing.

There is evidence to suggest that existing in memory is an interconnected and broad knowledge base related to the self, which an individual draws upon in order to process emotive information in particular situations (e.g., Klein & Kihlstrom, 1986). Also, a distinction between fleeting automatic thoughts and more enduring cognitive variables (attitudes, assumptions and beliefs) is generally accepted (Kwon & Trey, 1994). The implication of the above discussion is that a specific and causal cognitive vulnerability to anxiety may exist in the form of stable and enduring attitudes and beliefs, which are verbally accessible and differ from more transient cognitive factors. It is unclear at the moment whether these are risk factors in terms of onset, maintenance or both. Clearly symptomatic samples cannot be deployed exclusively to index such a predisposition.

Proximal and distal cognitive factors

Given the above discussion, it may be possible to distinguish between cognitive factors that are distal, existing before an individual developed a disorder and influencing onset, and those proximal or precipitating factors that are observable around the time of onset or during an episode of anxiety (Abramson, Metalsky & Alloy, 1989; Beck, 1987; Teasdale, 1993). As noted, findings related to cognitive specificity for cognitive content at the product and descriptive levels have been inconsistent. However, it has proved even more difficult to demonstrate specificity at the causal level (e.g., Beck et al., 1987; Haaga, Dyck & Ernst, 1991; Mathews & MacLeod, 2005). Some of the reasons for this are obvious, in that causality tests require longitudinal designs. However, there are also methodological issues that are of relevance. These will be reviewed below, following a discussion of the hypothesized role of stress in anxiety and the ‘transdiagnostic’ view.

Cognitive vulnerability-stress models: Stressful life events

As noted, cognitive models suggest that individuals who possess certain cognitive characteristics are vulnerable to developing anxiety. However, because emotional disorders are theorized to result when congruent precipitating factors interact with such predispositions, cognitive vulnerability factors cannot, in isolation, explain why an individual develops a particular emotional disorder (Beck, 1996). Adopting such a cognitive vulnerability-stress framework indicates that emotional problems result when specific events trigger an emotional response in those who are cognitively predisposed (Alloy, Abramson, Ranieri & Dyller, 1999; Beck, 1967, 1976). Congruency between a cognitive vulnerability and a matching negative event has not been studied in-depth but has tentative support (e.g., Mongrain & Zuroff, 1989). However, a substantial body of research confirms that stressors typically precede onset. In terms of anxiety, stressful events are associated with both the incidence and onset of anxiety disorders in children and teenagers (Nolen-Hoeksema, Girgus & Seligman, 1992). Stressful events have also been found to precipitate the development of post-traumatic stress disorder (Barlow, 2002), agoraphobia (Last, Barlow & O'Brien, 1984), panic disorder (Roy-Birne, Geraci & Udhe, 1986) and some phobias (Öst, 1987; Thyer, Nesse, Cameron, & Curtis, 1985). Thus, theory and evidence suggests that those attempting to conceptualize cognitive vulnerability factors in anxiety need to consider the role of stressful events.

A Transdiagnostic Perspective

The dominance of the cognitive model has precipitated a 'disorder-focus' as clinicians and researchers have tended to target a particular disorder in terms of understanding and treating it. This focus has largely come about as a result of the specificity

hypothesis (Butler, 2004), has been beneficial in terms of better understanding maintenance processes and has consequently led to the development of effective treatments for depression and specific anxiety disorders (Clark, 2004). For example, specific cognitive models and treatments have been proposed for obsessive compulsive disorder (e.g., Rachman, 1997; Salkovskis, 1985), generalised anxiety disorder (e.g., Borkovec & Inz, 1990; Wells, 1997), panic disorder (e.g., Clark, 1986; Reiss, 1991) and post-traumatic stress disorder (e.g., Ehlers & Clark, 2000).

However, this disorder-specific focus has arguably failed to accommodate those individuals who meet criteria for more than one anxiety disorder at any one time. A large-scale research study, involving over one thousand patients, found that over 50% of those diagnosed with an anxiety disorder also met criteria for at least an additional anxiety disorder or depression (Brown, Campbell, Lehman, Grisham & Mancill, 2001; Rodriguez et al., 2004).

This disorder-specific focus has been challenged recently by accumulating findings that indicate that the anxiety disorders, as a group, are more alike, with regard to development and maintenance, than previously thought (Harvey et al., 2004).

Remarkable similarities have been reported in terms of the processes that are hypothesised to be involved in the aetiology and maintenance of the various anxiety disorders, suggesting that they are 'transdiagnostic processes' (Harvey et al., 2004). For example, in terms of clinical features, compulsive checking behaviours, a central feature of obsessive compulsive disorder can also be observed in generalised anxiety disorder (Schut, Castonguay & Borkovec, 2001). Worry is a generalised anxiety disorder diagnostic criteria (APA, 1994). However, worry is also a feature of panic

disorder (with and without agoraphobia), specific and social phobia, obsessive compulsive disorder and depression (Andrews & Borcovec, 1988; Barlow, 1988; Brown, Antony & Barlow, 1992; van Rijsoort, Emmelkamp & Vervaeke, 1999). As noted in the DSM-IV (1994), panic attacks occur in anxiety disorders other than panic disorder and more than 50% of individuals diagnosed with panic disorder have obsessive compulsive disorder symptoms (Torres, Dedomenico, Crepaldi & Miguel, 2004). Also, somatic symptoms and a degree of avoidance can be observed in all the anxiety disorders (Kessler et al., 2005). For example, anxiety-related somatic signs (e.g., increased heart rate and sweating) are diagnostic criteria for panic disorder, generalised anxiety disorder and post-traumatic stress disorder. Symptom overlap amongst the anxiety disorders is acknowledged in DSM-IV and extensive guidelines for differential diagnosis are therefore delineated.

A recent theory of the diathesis and persistence of emotional disorders (Allen, McHugh & Barlow, 2008; Moses & Barlow, 2006) suggests that depression and the anxiety disorders result from common underlying psychological vulnerabilities and that they are both maintained by behaviours that are emotion-driven (i.e., safety behaviours), emotional avoidance and maladaptive (cognitive) appraisals.

Safety or 'emotion-driven' behaviours are motivated behaviours that occur as a reaction to emotional states (Moses & Barlow, 2006). They are common in panic disorder (Salkovskis, Clark & Gelder, 1996), social phobia (Clark & Wells, 1995), obsessive compulsive disorder (Harvey et al., 2004), post-traumatic stress disorder (Ehlers & Clark, 2000) and specific phobias (Sloan & Telch, 2002). More generally,

Wells and his colleagues (1995) have described such behaviours as the ‘major cause’ of the persistence of anxiety.

Risk avoidance, the tendency to make particular decisions that avoid outcomes judged by the individual as potentially risky or dangerous (Maner et al., 2007), is another commonly observed transdiagnostic process. Thus, particular avoidance behaviours can be observed in panic disorder (Wells, 1997), specific phobias (Barlow, Raffa & Cohen, 2002), social phobia (Barlow, 2002) and in post-traumatic stress disorder (Ehlers & Clark, 2000). More generally, it has been proposed that, in addition to particular disorder-related risk avoidance behaviours, risk avoidance may be an influential aetiological and maintenance factor in all the anxiety disorders (Brown & Bohn, personal communication, February 24, 2008; Maner et al., 2007; Maner & Schmidt, 2006).

Finally, overestimating the probability of the occurrence of negative events (i.e., ‘probability inflation’ or ‘biased expectancy reasoning’) is a common feature of the anxiety disorders (Barlow & Craske, 2000; Moses & Barlow, 2006) and results in increased anxiety and avoidance (Constans & Mathews, 1993). This bias has been observed in generalised anxiety disorder (Butler & Mathews, 1983), obsessive compulsive disorder (Rachman & Hodgson, 1980), panic disorder (Arntz, Rauner & van den Hout, 1995) and social phobia (Foa, Franklin, Perry & Herbert, 1996). More generally, Moses and Barlow (2006) suggest this particular cognitive misappraisal may be common to all the emotional disorders.

In conclusion, there is reason to believe that these transdiagnostic phenomena are not

linked to a particular anxiety disorder, as the cognitive model has emphasised, but may instead be observed across many of the anxiety disorders. It should be noted that another implication of the above is that it is again, in opposition to the cognitive model, being emphasized that it is not just the *anxiety* disorders, but the *emotional* disorders, that are more alike than different. In order to cope with the challenge of explaining anxiety and depression comorbidity, it has been suggested that it is possible that commonalities can now become the focus, given that much is known about differences (Butler, 2004; Hertel, 2002; Mogg & Bradley, 1998).

Given that a discussion of transdiagnostic processes is a relatively new topic, established measures of the above mentioned constructs have been developed within an anxiety disorder specific framework. However, recently Brown (Brown & Bohn, personal communication, February 24, 2008) has developed three provisional scales in light of recent theoretical developments that promote a transdiagnostic approach to anxiety disorders. These index risk aversiveness or avoidance, behaviours engaged in to create a sense of safety (safety behaviours) and a tendency to overestimate the likelihood of negative events occurring. These scales will be discussed further in the Method section and are deployed in the reported study as general anxiety-related criterion validation measures.

Cognitive vulnerability: Methodological issues

Self-report

In clinical psychology, self-report predominates, a state of affairs that has been frequently criticised (e.g., Coyne & Gotlib, 1983). It has been pointed out that survey respondents often offer answers that are inaccurate or unreliable, in response to

seemingly direct and objective questions (Bradburn, 1983; Burton & Blair, 1991; Sudman & Bradburn, 1974; Tourangeau & Rasinski, 1988). Despite this, self-report measures also have clear advantages. They are arguably able to access subjective experience, facilitate normative comparisons and inferential testing, whilst being easy to administer and economical. However, given the criticisms raised, it is essential that self-report measures are valid.

The arguably scant research accrued on dysfunctional beliefs in emotional disorders has typically adopted either a cognitive psychology or a paper-and-pencil methodology (Rector, Segal & Gemar, 1998). The best-known example of this latter methodology is the Dysfunctional Attitudes Scale (DAS: Weissman & Beck, 1978), which aims to measure beliefs thought to be causally related to depression, as specified by Beck's model. Whilst researchers have at times questioned the construct validity of the measure (e.g., Muran & Segal, 1992), it has been found to predict future depressive symptoms in remitted patients (e.g., Rush, Weissenberger & Eaves, 1986).

Various authors argue that some of the difficulties associated with self-report arise from the fact that cognitions and affect can only be indirectly inferred (Hammen & Krantz, 1985). For example, a researcher who is interested in demonstrating the effect of negative automatic thoughts on mood may be unable to exclude the possibility that participants highly endorse a negative automatic thought item because they are experiencing high negative affect (Glass & Arnkoff, 1997).

As noted, it has proved difficult to verify a basic principle of cognitive models - that cognition is a causal factor in affect and emotional difficulties (e.g., Haaga, Dyck &

Ernst, 1991). There may be two important reasons for this. First, it has been pointed out that many affect measures overlap with cognition measures, in terms of content (see Hammen & Krantz, 1985).

Also, even those measures that seemingly index only cognitive phenomena, it is frequently not clear whether cognitive products or more stable phenomena are being indexed. Thus, as pointed out by Hawkes (2004), when a researcher attempts to interpret questionnaire scores, it is difficult to establish “whether responses represent a fleeting, surface level, situationally specific stream of thoughts, or whether they represent enduring, underlying beliefs, assumptions or propositions” (p. 13). Kwon and Trei (1994) emphasise that distinguishing beliefs from cognitive products such as negative thoughts, on the theoretical and measurement levels, is essential to an improved understanding of onset and persistence of depression. It seems obvious that the same argument can be applied to the study of anxiety.

With respect to anxiety, various measures exist that aim to assess proximal variables in the form of situational and automatic thoughts (for a review see Glass & Arnkoff, 1997). However, few measures attempt to index those more enduring respondent modes that may predispose individuals to anxiety. A noteworthy exception is the Anxiety Sensitivity Index, which will be discussed below to highlight some of the methodological challenges involved in conceptualising and measuring a cognitive vulnerability to anxiety.

Anxiety Sensitivity Index

The Anxiety Sensitivity Index (ASI; Reiss, Peterson, Gursky & McNally, 1986) is a self-report measure designed to index ‘anxiety sensitivity’ (AS). AS is defined as a fear of anxiety symptoms, arising from beliefs about the harmful effects of anxiety (Reiss & McNally, 1985). Though AS was initially viewed as a vulnerability to anxiety disorders generally, subsequent research has largely confirmed that AS is a specific predictor of panic disorder (Schmidt & Woolaway-Bickel, 2006). Other concerns have been raised. Lilienfeld, Jacob and Turner (1989), questioning the construct validity of the ASI, have suggested that the measure accesses fear of anxiety symptoms rather than underlying beliefs. A recent study by Brown and Hawkes (2008) found evidence to support this view. Adopting a cognitive interviewing procedure, they found that outpatients with anxiety problems, responding to items on the ASI whilst thinking aloud, mainly based their responses on retrieved instances of anxiety. Rather than accessing beliefs, the measure may therefore prompt the retrieval of previous affective experiences. In this way the measure may be confounded with anxiety symptoms. Therefore, it is not surprising that it has been found to be a good predictor of panic. “A predictor that is actually measuring the criterion will appear to be a very good predictor indeed” (Brown and Hawkes, 2008, p. 25).

These findings do not indicate that the ASI is not a useful measure, as it may be a proximal predictor of symptoms, especially panic. In order to illustrate how this might come about, an example provided by Brown et al. (2000) is presented. Individual ASI, and Beck Anxiety Inventory (BAI; Beck et al., 1988) items can be considered. Items from the ASI (e.g., ‘When I cannot keep my mind on a task, I worry that I might be going crazy’) and the BAI (‘Fear of losing control’) are clearly conceptually related

and should therefore correlate. However, if the content of the items is thoroughly inspected it becomes clear that such a correlation is suspect as it is logical to assume that a considerable proportion of the possible covariance between ASI and BAI items is “‘built-in’ as a logical consequence of their respective content” (Brown et al., 2000, p. 237). Thus, an individual cannot logically agree that when they cannot concentrate on a task they are concerned that they might go crazy, and simultaneously disagree with the BAI item, “claiming that they *never* fear losing control, because they do sometimes – namely when they cannot keep their mind on a task” (p. 237).

Thus, various criticisms have been levied against the ASI, the measure most commonly seen to index an anxiety vulnerability factor, thereby supporting Beck’s (Beck & Emery, 1985) view that anxiety disorders have a cognitive aetiology (Teachman, 2005). The Anxiety Attitude and Belief Scale has been developed bearing the above-mentioned issues in mind.

The Anxiety Attitude and Belief Scale

The Anxiety Attitude and Belief Scale (AABS) was developed by Brown and colleagues (2000) with the aim of indexing enduring appraisals, attitudes and beliefs seen to constitute a cognitive vulnerability to anxiety, as outlined by cognitive-behavioural models. The initial content of the scale was derived from the clinical cognitive literature in order to ensure sampling adequacy. To tackle potential limitations of scales such as the ASI, the wording of items is such that previous experiences of anxiety symptoms are not thought likely to be brought to mind. Items on the Dysfunctional Attitudes Scale (Weissman & Beck, 1978) also served as a blueprint for how to word items to ensure that they take account of clinical cognitive

theories (Brown et al., 2000). To further ensure content, and arguably also construct validity, initial items were sent to experts in the area of cognitive approaches to anxiety (Tenopyr, 1977). These experts provided validity ratings and answered open-ended questions regarding the content of items (see Brown et al., 2000, for a full discussion of the development of the AABS). Thus, the development of the scale followed scale development best-practice guidelines (see Glass & Arnkoff, 1997). The AABS has been described in terms of its factor structure and psychometric properties in a student sample (Brown et al., 2000). From a 58-item pool, the authors retained 36 items that loaded on three factors (Catastrophizing, Vigilance-Avoidance and Imagination). The authors also found evidence to support the view that the scale measures theoretically relevant constructs reliably. A cross-lagged panel analysis suggested that a causal relationship exists between the constructs measured and anxiety, but not depression, indicating discriminant validity. Additionally, analyses were consistent with the prediction that constructs indexed by the AABS precede anxiety symptoms, suggesting predictive validity (Brown et al., 2000).

Recently, evidence has been found to further support the construct validity of the AABS. As noted, Brown and Hawkes (2008) conducted a cognitive interviewing study, which required that respondents provide think aloud protocols (i.e., verbal reports) while responding to items on the AABS (as well as the ASI). As anticipated, responses to the AABS were based on appraisals and were mostly unconfounded with the previous experience of affect. Thus, it appeared that the AABS could potentially meet the requirements of an unconfounded scale of anxiety vulnerability.

Expanding on the example provided above regarding the relationship between the ASI and symptom measures such as the BAI, AABS scores (as a distal index of anxiety vulnerability) should be related to scores on the ASI (more proximal index of symptoms) and finally to symptom measures. Thus, the relationship between AABS-type items and symptom scores would be expected to increase in more symptomatic groups as it is (theoretically) possible to hold beliefs that predispose one to anxiety, without experiencing anxiety symptoms.

Following the Brown et al. (2000) study, a fundamental review of the scale was undertaken to examine its validity (Brown & Hawkes, 2008). Additionally, examination of item content to ensure best wording and coverage of relevant content domains resulted in duplicative and redundant items being dropped and other items being reworded. Consequently, the measure that resulted, the AABS-Revised (AABS-R) includes 53 items that require endorsement on a seven-point scale. The scale will be further discussed in the Method section.

Reliability and validity

When developing a measure, there exist a collection of criteria that researchers must chose from. These criteria are subsumed by the topics of measurement consistency (reliability) and what a particular questionnaire measures (validity). Reliability is an essential but not sufficient requirement for high validity. Because all estimations of reliability are basically concerned with the level of agreement or consistency between sets of scores, the correlation (reliability) coefficient is the appropriate index of agreement. Chronbach's alpha (Chronbach, 1951) can be deployed to examine the internal consistency of a scale or subscale (Cortina, 1993). It is also possible to

improve the internal consistency of a scale by removing those items that fail to correlate well with other scale items (Loewenthal, 1996). L. A. Clark and Watson (1995) argue that Chronbach's alpha above .80 is acceptable, though for research purposes an alpha level of .70 may be acceptable (Nunnally & Bernstein, 1994).

Construct validation provides the basis required for interpreting scores and is traditionally seen to necessitate accumulation of theoretically consistent evidence derived from various sources (Cronbach & Meehl, 1955; Messic, 1995). Various strategies can be deployed to develop this network of cumulative findings that supports a construct's definition. Criterion-related evidence involves testing the prediction that scores on a measure are associated or not associated with scores on a criterion measure that it is supposed to predict or be dissimilar from (convergent and discriminant validation, respectively). Such validation can involve predictive or concurrent designs (Wernimont & Campbell, 1968) and highlights the need for criterion measures to be relevant, reliable and valid (Guion, 1987). Also, if criterion ratings are undertaken, the rater must be blind (Brown, 1979). Finally, internal consistency and factor analyses can contribute to a better understanding of the construct (e.g., Shore & Tetrick, 1991).

It is important to note that construct validation, in effect, combines two separate issues (Anastasi & Urbina, 1997). The first issue is concerned with supporting the validity of a particular construct (e.g., beliefs). The second issue is related to establishing that a particular measure actually measures the particular construct (i.e., beliefs). These issues could be disregarded if a particular construct had been empirically proven as valid. However, it is often the case that this cannot be assumed. As discussed previously, there is a general assumption in the literature that attitudes and beliefs

exist, can be distinguished from automatic thoughts and that they possibly are causal factors in the aetiology of anxiety. However, these suggestions have not been consistently confirmed and therefore, the construct validity of these phenomena (i.e., causal attitudes and beliefs) remains an empirical question. A measure of such phenomena, if found to be valid, may contribute to the evidence required for construct validation of the constructs themselves.

The strategies listed above can be seen to constitute construct-related evidence. However, Feldman and Lynch (1988) argue that experimental artefacts sometimes account for predicted effects in self-report, as questionnaire cues (e.g., wording of items) can affect the structural relations among items. Coyne (1989) similarly suggests that participants completing a questionnaire, when faced with an item that does not apply to them, may endorse an item. However, this endorsement will not be a valid reflection of their cognitive activity.

Along with an emphasis on self-report has come an emphasis on quantitative validation studies, investigating concurrent associations. Campbell and Fiske (1958) suggest that broadening validation efforts to include different types of validity correlations, such as discriminant ones, will increase a researcher's confidence that a scale is valid. However, discriminant validity correlations can be difficult to interpret. For example and as previously noted, some types of cognitions are thought to be shared among the emotional disorders. Thus, finding evidence of discriminant validity can also be interpreted as evidence for the opposite (Glass & Arnkoff, 1997).

Studies of process

The previous discussion implies that traditional notions of validity, though obviously useful, may be limited. Cronbach and Meehl (1955) suggest a logical method for examining what explains variability on a measure: observe closely the performance process of respondents. Inviting individuals to think aloud as they respond to questions is one methodology that has been proposed. The ensuing verbal protocols can then be examined and underlying processes deduced (Bickart & Felcher, 1996). This strategy allows researchers to ensure that those responding to a measure intended to access cognitions are indeed accessing cognitions more often than not. The cognitive interviewing approach provides a means to this end (e.g., Tourangeau, 1984). It can take the form of ‘think-aloud- interviewing’ (Ericsson & Simon, 1980) whereby respondents are asked to ‘think-aloud’ whilst they respond to items on a measure. This methodology facilitates construct validation by allowing access to the thought processes that participants engage in when responding to a self-report measure. Consequently, it can increase confidence that the measure in fact measures what it is intended to measure. As noted by Borsboom, Mellenbergh and van Heerden (2004) in their critique of traditional conceptions of validity, correlational tables can never replace an understanding of processes that underlie responses.

Rationale for a Measure of Anxiety-Related Attitudes and Beliefs

A case can be made for the importance of developing a measure of enduring cognitive constructs thought to be causally implicated in anxiety, and not contaminated by affective symptoms. Because such a cognitive predisposition is seen as antecedent to the later development of anxiety symptoms, it is anticipated that the measure will be a useful clinical tool that can enhance the identification of those who are at risk (e.g., of

relapse), leading to more effective prevention and intervention. Given the cognitive models reviewed, it is anticipated that the measure could index more distal risk than existing measures, and could in this way be used to predict who is likely to develop anxiety sensitivity and eventually a diagnosable anxiety disorder (Brown et al., 2000). Similarly, the measure may be of use in testing some of the prediction of the cognitive model and if found to be valid, could allow clinical practitioners to identify targets and monitor progress in therapy. Based on the review of the literature, the aims of the study will be presented.

Aims

Guided by the literature, the overall aim of the study reported here is to further develop and validate a questionnaire of attitudes and beliefs thought to predispose individuals to anxiety disorders, in a student and analogue clinical sample. Despite initial encouraging findings, there are a number outstanding issues. First, the revised measures construct validity needs to be assessed with another cognitive interviewing study. This approach will also indicate whether any items need to be eliminated or revised before they are included in the final measure and before that measure is validated in the larger sample. Second, a large sample is needed to perform a factor analysis in order to determine the factor structure of the revised AABS. Third, the reliability of the AABS and its subscales needs to be determined. Fourth, concurrent criterion-related (convergent and discriminant) validation is required. Thus, it is important to administer the AABS to a relevant sample in order to look at the associations between items on the AABS and criterion measures. Given that a previous investigation (Brown et al., 2000) involved a student sample, the above needs to be investigated in a more symptomatic sample, in addition to a student sample.

Student samples are important given that many in such groups are likely to develop anxiety disorders, which the AABS is hypothesized to predict (American Psychiatric Association, 1994; Mathews & MacLeod, 2005). As previously noted, non-symptomatic groups are important in order to investigate temporal questions.

In terms of the fourth aim, given that the scale constructs were not developed with the aim of mapping onto diagnostic criteria directly, but to rather be present across the anxiety disorders to a varying degree, specific predictions are based on the findings of Brown et al (2000) as well as the reviewed literature. Criterion measures were selected on the same basis. The predictions made for particular criterion measures are depicted in the Results section but are discussed in detail below.

In particular, scores on the AABS are predicted to be associated with the ASI, as well as with a general measure of anxiety symptoms, and given Beck's vulnerability-stress model, with stress levels. Given the finding that depression and anxiety symptom measures are typically correlated and the fact that common factors have been suggested, the AABS is expected to correlate with depression. However, here the cognitive-content specificity hypothesis is operationalized by predicting that the correlation between the AABS and anxiety should be higher than that between the AABS and depression.

A key prediction is that scores on the AABS will be differentially associated with scores on anxiety symptom measures in clinical and non-clinical samples. The AABS aims to access underlying beliefs, which can be endorsed without having experienced anxiety problems in the past. On the other hand, endorsing items on symptom

measures and measures such as the ASI, which may be a more proximal predictor, logically implies that one would also endorse items on the AABS. Therefore, the relationship between items on the AABS and anxiety symptom measures should be stronger in clinical samples (Brown et al., 2000).

In addition, the AABS is predicted to be associated with various proposed correlates of anxiety. An inspection of AABS item content suggested that the measure potentially indexed catastrophic beliefs. Given that panic disorder is seen to involve catastrophic cognitions, such beliefs were predicted to be related to safety behaviours (Salkovskis et al., 1996), a tendency to overestimate the probability of the occurrence of negative events (Arntz et al., 1995) and concerns about physical and cognitive phenomena, which are often catastrophically misinterpreted in panic (Clark, 1986).

Other items appeared to represent beliefs about the importance of certainty, caution, planning and vigilance. Such beliefs were predicted to be associated with a tendency to adopt safety behaviours, a tendency to overestimate the occurrence of negative outcomes and being aversive to taking risks, all of which could potentially raise individuals' risk of developing difficulties with anxiety (Maner & Schmidt, 2006; Maner et al., 2007; Miranda & Mennin, 2007; Moses & Barlow, 2006). These items appeared to be conceptually related to the concept of intolerance of uncertainty, which represents "beliefs about the necessity of being certain, about the capacity to cope with unpredictable change" (Obsessive Compulsive Cognitions Working Group, 1997). Such beliefs have been found to be associated with worry, generalised anxiety, obsessive compulsive disorder (as well as with compulsive checking behaviours) and anxiety sensitivity (e.g., Dugas, Gosselin & Ladouceur, 2001; Ladouceur, Gosselin &

Dugas, 2000; Tolin, Abramowitz, Brigidi & Foa, 2003). Therefore, these items were predicted to be related to measures of these constructs.

An additional cluster of items appeared to index social beliefs and was therefore expected to be associated with social anxiety, social AS concerns, safety behaviours, social risk avoidance and a tendency to expect negative outcomes (Carleton, Collimore & Asmundson, 2007; Clark & Wells, 1995; Foa et al., 1996; Wells, 1997). Given the noted relationship between social anxiety and worry, these items were additionally predicted to be associated with a measure of worry.

A different item cluster seemed to represent beliefs about the negative consequences of emotional experiences. Similar to the concept of ‘emotional reasoning’ (Beck & Emery, 1985), whereby individuals make invalid inferences about phenomena based on subjective affective responses (Arntz et al., 1995), these items were hypothesized to be associated with the ASI and physical and cognitive concerns in particular (Clark, 1999). As noted, AS is defined as a fear of anxiety symptoms, arising from beliefs about the harmful effects of anxiety. Arntz and colleagues have suggested emotional reasoning is a predisposing factor in anxiety that is not disorder specific. This item cluster was therefore expected to be related to anxiety-relevant measures generally.

The final item cluster appeared to measure beliefs about the importance and role of thoughts in having real life negative outcomes. The Obsessive Compulsive Cognitions Working Group (e.g., 2003) has described such beliefs as a key feature of obsessive compulsive disorder. Such beliefs may result in an inflation of felt personal responsibility and observable behaviours such as compulsive checking (Shafran,

Thordarson & Rachman, 1996) As such, these items were predicted to be associated with a measure of obsessive compulsive correlates, a tendency to overestimate the likelihood of negative events occurring, as well as with the adoption of particular safety behaviours (Harvey et al., 2004; Rachman & Hodgson, 1980).

In summary, the research aims to:

- i) Investigate whether the AABS appears to index attitudes and beliefs
- ii) Determine the underlying factor structure of the AABS
- iii) Assess whether the AABS and its subscales are reliable
- iv) Perform a correlational analysis in order to assess whether the AABS correlates more highly with anxiety than depression
- v) Perform a correlational analysis to investigate whether the relationship between items on the AABS and anxiety symptom measures is stronger in a clinical sample
- vi) Perform a correlational analysis to investigate whether the measure and its subscales correlate with anxiety-related criterion measures in predictable ways (the specific predictions are depicted in the Results section)

Given that different prediction can be derived from cognitive models and the transdiagnostic perspective, an exploration of the relationship between attitudes and beliefs and the various anxiety-related criterion measures, may also cast light on which of these perspectives gain more support generally.

Method

Overview

Prior to administering the Anxiety Attitude and Belief Scale-Revised (AABS-R) and accompanying validation measures, cognitive interviews were carried out and the resultant verbal protocols analysed. This was largely to assess the acceptability of items on the AABS-R and to gauge the measure's construct validity (i.e., the hypothesis that participants respond to items on the basis of cognitive appraisals rather than episodic or affective-based retrieval).

Following evaluation of the AABS-R items through the cognitive interviewing task, a large sample of participants completed an online battery of measures. This main portion of the study proceeded in two phases and can be described as a cross-sectional, correlational and factor analysis survey. As such, all variables were collected at a single point in time. In the first phase, a shorter battery was administered in conjunction with a parallel study (Brown & Bohn, personal communication, February 24, 2008)¹, sharing data with the current study, in which three anxiety-related transdiagnostic criterion measures are being developed (Brief Safety Behaviour Scale, Brief Inflation of Probability Scale, and the Brief Aversiveness to Risk Scale, all of which are described below). This was done as longer versions of these new scales were initially administered and the resulting battery would have been too lengthy and therefore burdensome. The initial subset of data permitted shortening of the three new scales, thus making room for a longer battery of criterion measures in the second

¹ This study was carried out independently from the one here described. However, data were shared.

phase. The psychometric analyses of the three scales are only reported in general terms in the present study.

Participants

For the cognitive interviewing task, a convenience sample of four undergraduate female students (18-22 years old) from Royal Holloway's, University of London research participation scheme, was recruited to provide cognitive interviews.

Participants, sought through an information sheet (see Appendix 1) posted in the research participation area at Royal Holloway, were fluent English speakers who received course credit for taking part.

The sample in the main validation portion of the study included 346 participants, of which 151 participants completed the shorter initial battery and 195 (139 females and 56 males, mean age = 33.61, $SD = 10.22$, range = 13-64) participants completed the longer battery that included additional measures.

Of those who completed the shorter battery, 97 (78 females and 19 males, mean age = 21.98, $SD = 5.48$, range = 18-48) were undergraduates at Royal Holloway, University of London. The remaining 54 participants (39 females and 15 males, mean age = 35.43, $SD = 12.79$, range = 16-65) who completed the shorter battery were recruited from online communities for specific anxiety disorders in the United Kingdom. The 195 participants who completed the longer battery were also members of online communities for specific anxiety disorders. As motivation to participate, student and members of web communities for anxiety disorders had the option of being entered into a prize draw.

In addition, 20 NHS patients were recruited from West London Mental Health Trust Primary and Secondary Care Psychological Therapies Service in Hammersmith, as well as practices in the Hammersmith and Fulham area of London. These respondents had the option of receiving a high street store voucher in return for their participation. Because the number of recruited NHS participants was less than what was anticipated and required for statistical analysis, these participants were eventually excluded. Given the low response rate the representativeness of the sample was also suspect. A discussion of the recruitment of these participants is discussed for the sake of completeness. It should be noted that because participants could interrupt their Internet sessions at any point, the numbers who completed any given scale varied.

Recruitment of participants for the main study

Student recruitment

Students at Royal Holloway, University of London, received a recruitment message on the college intranet asking for their participation (see Appendix 2). The message contained a hyperlink², through which students could access the website that hosted the survey. Flyers (with the same content) were also left in the research participation area at Royal Holloway and on college grounds.

Online recruitment

A list of web sites and communities for individuals with specific anxiety disorders was compiled by using the Internet search engine Google and entering the key words,

² A hyperlink is an Internet address that individuals can click on to be directed to a particular site.

“anxiety support group” or “anxiety support forum³”. Further web sites and communities were found from those cited on previously identified sites. If forum members had not posted comments in the previous week, the forum was excluded.

Once the list had been finalised, the researcher familiarised herself with the philosophy and rules of the community and then contacted the sites and forums. If an administrator or moderator⁴ could be identified, the researcher contacted this person via email (see Appendix 3). If no one person was responsible for a forum, the researcher posted a short message on the forum, asking members whether they were happy for her to post a brief description of a study she was hoping to recruit for. If permission was granted, a recruitment message like the one for students (see Appendix 2), but containing a different hyperlink, was posted in an appropriate place on the website. This was done either by the administrator or moderator, or in the case of forums without moderators, by the researcher herself. In the latter case, the message was listed as a separate topic thread⁵ in an appropriate section. Forum members frequently commented on the thread and asked questions about the study. The researcher made sure to answer every question and respond to every comment, as any other responsible and active member. The researcher remained transparent throughout. None of the forums that the researcher approached denied her membership. The online communities that took part, included sites and forums designed for individuals experiencing symptoms of panic, social anxiety, specific phobias,

³ A forum is an online discussion group, which allows participants with a common interest to exchange messages.

⁴ Administrators and moderators are individuals accountable for managing and running an online community as well as ensuring appropriate use.

⁵ A topic thread is an online conversation that is grouped by a specific topic.

obsessive compulsive symptoms and anxiety generally (see Appendix 4 for a list of the communities that agreed to take part).

NHS recruitment

Various recruitment methods were employed for recruiting NHS patients. First, a flyer with a website link on it (see Appendix 5) was posted in the reception areas of seven GP services in the Hammersmith and Fulham area. Second, an information letter (see Appendix 6) was posted with all opt-in letters sent out between 25th March and 10th June 2008 from the Psychological Therapies Service in Hammersmith. The aim was to have represented individuals who present in primary and secondary care for both psychological and medical reasons.

Full sample participant demographics

As noted, the total sample was comprised of 346 participants (256 females and 90 males, mean age = 30.63, $SD = 11.04$, range = 13-64). In addition to age and gender, basic information was collected on ethnicity, education level, employment status, marital status and recruitment source, and is presented in Table 1. Group membership in terms of ethnicity was re-classified into 'white' and 'other', as only very few participants assigned themselves to each non-white group. Two individuals did not offer information regarding employment status.

Table 1.

Full Sample Status on Gender, Ethnicity, Education level, Employment Status, Marital Status and Recruitment Source

Variable	Category	<i>n</i>	%
Ethnicity	White	318	92
	Other	28	8
Education Level	No Qualifications	16	4.6
	GCSE/O'level	49	14.2
	Vocational/A'level	146	42.2
	Degree or Higher	135	39
Employment Status	Part/Full Time Employment	205	59.2
	Full Time Student	49	14.2
	Leave/Unemployed/Retired	90	26
Marital Status	Married	79	22.8
	Relationship/Cohabiting	84	24.3
	Single/Separated/Divorced	183	52.9
Recruitment Source	Royal Holloway	97	28
	Anxiety Internet Support Groups	249	72

Sub-sample participant demographics

The undergraduate sample had a demographic profile that was broadly similar to that of UK undergraduates (National Statistics Online, 2006) in terms of marital status, education and age. However, they were somewhat less likely to identify as White British (61.9% of the sample identified themselves as White British) and females (80.4%) were overrepresented. Finally, 34% of undergraduates reported experiencing

(currently or in the past) mental health difficulties. This is higher than a recently estimated prevalence rate of 25% for diagnosable mental health difficulties in the adult UK population (Mental Health Foundation, 2008). However, not all students who reported mental health difficulties are expected to have had a formal diagnosis and consequently mental health difficulties are likely to have been over-reported.

The Internet support group sample was broadly similar to the general UK adult population (Office for National Statistics Reports, 2000, 2001) in terms of marital status and ethnicity. However, the sample was more highly educated (45% indicated that they had a 'degree or higher') and women were again overrepresented (71%). These participants were also more likely to be unemployed or on leave (25%). As expected, they were also much more likely to report having experienced mental health difficulties. Thus, 82% indicated that they had a mental health problem. Respondents had the option of specifying their particular difficulties. Because not everyone completed this section, it is not possible to accurately specify the particular categories, apart from saying that generally, depression and anxiety were the most commonly stated mental health difficulties. As with the students, it is unclear how many of these participants had a formal diagnosis, though most of them stated that they did.

In conclusion, as a whole, the sample was generally younger and more highly educated than the general UK population. In addition, females were overrepresented. Members of Internet support groups were more likely to be unemployed or on leave than is typical of the UK population, and mental health difficulties were overrepresented as expected.

Sampling procedure and sample rationale

The sample was a non-probabilistic and self-selected one. As such, a response rate could not be determined.

Traditionally, it has been advised that a participants-to-variables ratio of either 4:1 or 5:1 is adequate for exploratory factor analysis (Floyd & Widaman, 1995) and that at a minimum the sample size should be $N = 200$ (Gorsuch, 1983). Therefore, in order to identify the dimensions of the AABS-R, a measure comprised of 53 items, a sample size of $N = 208$ was deemed adequate, which the current study exceeded.

Ethical Considerations

The study was given a favourable opinion by the Royal Holloway Ethics Committee (Appendix 7), the Royal Holloway, University of London Psychology Department Ethics Committee (Appendix 8) and the Riverside Research Ethics Committee (Appendix 9).

As all participants took part online, ethical guidelines specific to Internet-mediated research (British Psychological Society, 2007; Mathy, Kerr & Haydin, 2003) were consulted to supplement general ethical principles (i.e., BPS, 2006). Thus, research instruments were accessed and hosted on a secure, specific and credible web page⁶. Informed consent was obtained on the very first web page, which also contained information about the study, along with the researcher's complete contact details. The researcher aimed to make the initial study information easy to understand and clear to

⁶ The survey was hosted by www.surveymonkey.com, a site given a favourable opinion by the American Psychological Association (Kraut et al., 2004).

ensure that consent was informed. The page was customised to ensure that consent was obtained before participants could proceed. Participants were also provided with the option of refusing consent and terminating their participation. As respondents did not have direct contact with the researcher whilst responding to questions, upset could not be monitored. Therefore, the information section provided contact details for organizations that could offer support.

Given that incentives were used and in order to offer participants a summary of the findings upon the study's conclusion, participants had the option of providing contact details. To ensure anonymity, participants who completed the survey were directed to a separate webpage where they could provide their details. Finally, the researcher followed Cho and La Rose's (1999) recommendations for communicating with online communities. Consequently, the researcher maintained transparency about her reasons for being online, her name and position as well as contact details. The researcher also obtained full consent of community leaders before approaching participants.

Measures

Provisional scales

The Anxiety Attitude and Belief Scale- Revised (AABS-R)

As previously noted (see p. 32), the AABS was developed by Brown and his colleagues (2000) as a measure of enduring attitudes and beliefs believed to constitute a cognitive vulnerability to anxiety. Following a fundamental review of the scale, it (AABS-R) includes 53 items that require endorsement on a seven-point scale (see Appendix 10).

The Brief Inflated Probabilities Scale-13 (BIPS-13)

The BIPS (see Appendix 11) contains 13 items and requires that respondents indicate what they believe is the probability of experiencing negative life events such as 'getting the flu this year'. Items were sampled from Ropeik and Gray's (2002) discussion of undesirable events that people are commonly concerned about, as well as the actual odds of these events taking place. Data collected in the initial portion of the validation study was analysed by Brown & Bohn (personal communication, February 24, 2008) to investigate the internal consistency of the measure. The measure appeared to be internally consistent ($\alpha = .78$) and consequently was used in the second phase of the reported validation study. Further psychometric data on the BIPS are presented in the Results section.

The Brief Safety Behaviour Scale-17 (BSBS-17)

The initial BSBS was a 30-item scale that was developed to enquire about various safety behaviours that anxious respondents might engage in to make themselves feel safe. Items were drawn from previous scales of diagnosis-specific safety behaviours, such as The Liebowitz Social Anxiety Scale (Liebowitz, 1987). Participants are asked to rate how often they engage in behaviours such as 'take deep breaths before going into a social situation', using a four-point response format, where 0 = never or almost never and 3 = always. The BSBS was reduced to 17 items based on analyses conducted in the previously mentioned Brown and Bohn (personal communication, February 24, 2008) parallel study, using a subset of the current sample that completed the longer version of the scale. They conducted principal components analyses, which resulted in a reduction of items and the identification of two factors, a general safety subscale (11 items) as well as a checking subscale (6 items). These accounted for 45%

of the variance. The new scale, the BSBS-17 (see Appendix 12), appeared to be internally consistent (the alpha for the full scale = .86, alpha for the general scale = .84 and for the checking subscale = .81). Further psychometric data on the BSBS are presented within the Results section.

The Brief Aversiveness to Risk Scale-10 (BARS-10)

The initial BARS contained 25 items and was developed to index behaviours that might be considered risky in some respect. Respondents are asked to rate the percent likelihood (from 0 to 100 %) that they would engage in behaviours such as ‘complaining about unacceptable service’. Items were drawn from pre-existing measures of risk (e.g., Weber, Blais & Betz, 2002) and from typical avoidance behaviours observed in clinical practice.

Data from the initial portion of the validation sample was used by Brown and Bohn (personal communication, February 24, 2008) to ascertain the underlying structure of the BARS, using principal factor analysis. Consequently, the scale was reduced to 10 items (see Appendix 13). A two-factor solution was obtained and the factors together accounted for 66% of the variance. Items that loaded strongly onto the first factor mainly represented risk taking in social situations (e.g., openly taking the unpopular side in a group of people). Items that loaded onto the second factor represented risk taking that might involve physical harm (e.g., rafting down a fast moving river). The two factors were named ‘social’ and ‘physical’ concerns, respectively. The internal consistency of the full scale was .83, whereas the internal consistency of the ‘social’ and ‘physical’ concerns scales was .89 and .83 respectively. Further psychometric data on the BARS are presented within the Results section.

Established scales

Anxiety Sensitivity Index-3 (ASI-3)

The ASI-3 (see Appendix 14) is an 18-item self-report measure designed to index anxiety sensitivity (AS) using a five-point response format, where 1 = very little and 5 = very much (Taylor et al., 2007). As noted, AS is defined as a fear of anxiety symptoms, arising from beliefs about the harmful effects of anxiety (Reiss & McNally, 1985). The measure was derived from the previously discussed (see p. 30) Anxiety Sensitivity Index (ASI: Reiss et al., 1986) and is an attempt to improve its' unstable factor structure. The ASI-3 is comprised of three factors: Cognitive, Social and Physical concerns. The authors claim that cognitive concerns are represented by beliefs about the harmful effects of cognitive difficulties (e.g., concentration difficulties). Social concerns are comprised of beliefs about the negative effects of observable anxiety reactions. Finally, physical concerns are represented by beliefs about the harmful effects of physical reactions that are related to anxiety.

Taylor and colleagues (2007) conducted a series of studies (using clinical and undergraduate samples) and found that the internal consistency of the measure was acceptable (internal consistency was at or above .70 for the total scale and three subscales). They conclude that the scale displayed good functioning on validity indices and that it has better psychometric properties than the original scale.

Depression Anxiety Stress Scales-21 (DASS-21)

The DASS-21 (see Appendix 15) is a short form of the 42-item self-report measure developed by Lovibond and Lovibond (1995) to assess current emotional states of anxiety, depression and stress (Lovibond & Lovibond, 2002). This self-report measure

contains 21 items and its' three scales are comprised of seven items each. Respondents indicate the extent to which statements such as 'I found it hard to wind down' applied to them over the preceding week, using a four-point response format, where 0 = did not apply to me at all and 3 = applied to me very much. Henry and Crawford (2005) found that the scales appeared to possess good validity and concluded that the internal consistency of the scales was satisfactory (alpha = .88 for the total scale) in a non-clinical sample. Cronbach's alphas for the stress, anxiety and depression subscales were .93, .90 and .88, respectively. A previous study has reached similar conclusions in a clinical and community sample (Antony, Bieling, Cox, Enns & Swinson, 1998). Because the scales were developed with the aim of being discriminant measures of depression and anxiety, these were seen as more appropriate measures of the constructs than other well-validated measures (Norton, 2007).

Penn State Worry Questionnaire (PSWQ)

The PSWQ (see Appendix 16) is a 16-item self-report instrument that indexes an individual's general propensity to worry, on a five-point scale, where 1 = not at all typical and 5 = very typical (Meyer, Miller, Metzger & Borkovec, 1990). The authors found evidence to suggest that the measure is highly internally consistent, possesses good test-retest reliability (overall alpha = .95; test-retest reliability = .93) and is a valid measure of worry. This conclusion has been supported by other studies (e.g., Brown, 2003). The measure has been used to identify individuals who meet criteria for a diagnosis of generalized anxiety disorder (GAD) (Fresco, Mennin, Heimberg, & Turk, 2003) and has been used to discriminate between those with a diagnosis of GAD and other anxiety presentations (e.g., obsessive compulsive disorder) (Brown et al., 1992).

Thought-Action Fusion Scale-Revised (TAFS-R)

The TAFS-R (see Appendix 17) is a 19-item self-report questionnaire designed to measure thought-action fusion (TAF) beliefs (Shafran et al., 1996). These are cognitive biases in which individuals fuse (psychologically) thoughts and actions, which are considered to be implicated in obsessive compulsive disorder. The scale is composed of two subscales, Moral and Likelihood beliefs. Moral TAF beliefs are represented by items such as 'If I wish harm on someone, it is almost as bad as doing harm'. Likelihood beliefs can be self-referential, such as 'If I think of myself being injured in a fall, this increases the risk that I will have a fall and be injured'. They can also relate to others, such as 'If I think of a relative/friend losing their job, this increases the risk that they will lose their job'. Likelihood beliefs are typically combined into a single subscale (Shafran et al., 1996). Respondents endorse items using a five-point response format, where 0 = disagree strongly and 4 = agree strongly. The authors investigated the psychometric properties of the scale in obsessional, student and community samples. The internal consistency of the measure and its two subscales was high (Cronbach's alpha range = .85-.96) in all samples and TAF was significantly higher amongst those who met criteria for obsessive compulsive disorder than those who formed the non-clinical group.

Brief Fear of Negative Evaluation-II (BFNE-II)

The Brief Fear of Negative Evaluation Scale (BFNE; Leary, 1983) measures individuals' tolerance for possible negative evaluations by others. Fearing negative evaluation is a key feature of social phobia. However, the measure may be a better predictor of social anxiety than phobia (e.g., Rapee & Heimberg, 1997). The BFNE-II (see Appendix 18) is the result of attempts to improve the psychometric properties of

the original scale and consists of eight items, which require endorsement on a five-point scale, where 0 = agree very little and 4 = agree very much (Carleton et al., 2006). The developers found, in a non-clinical sample, that the scale demonstrated excellent internal consistency ($\alpha = .96$) and was significantly correlated with instruments related to social anxiety.

Procedure

Cognitive interviewing study

Cognitive interviewing generally includes both verbal probing and think-aloud techniques to access the thought process of respondents (Willis, 2005). However, in order to minimise potential interviewer-imposed bias, the cognitive interview methodology adopted favoured think-aloud techniques (Ericson & Simon, 1984). As such, interviewer input was restricted to prompting interviewees to 'keep talking' if they were silent for more than ten seconds and the interviewer sat out of view. However, verbal probing was also deployed if considered appropriate (Willis, 2005). This was done retrospectively, after interviewees had responded to all questions on the AABS-R, in order to minimise interjections from the researcher and thus potential bias.

The manner in which the researcher introduced and conducted the cognitive interview was standardized. The interview schedule (see Appendix 19) was adapted from Brown and Hawkes (2008) and is based on Campanelli and Collins's (2002) recommendations for carrying out cognitive interviews. Each participant was interviewed in the same room at Royal Holloway, University of London, and all completed 53 items on the AABS-R while thinking aloud. The interviews lasted between 30 and 45 minutes

depending on the length of participants' responses. The interviews were recorded and the researcher made notes of potentially important probes throughout the interview.

On interview, the researcher met with a single participant and read through the cognitive interview schedule, which recapped information contained in the Information and Consent Sheet (see Appendix 20) and also informed the interviewees of the purpose of the interview. Subsequently, participants were provided with the information sheet to read. Once written consent was obtained, participants were introduced to the format and rationale of cognitive interviews as specified in the interview schedule. As recommended by Willis (1999), the researcher emphasised that she was interested in whether participants came upon any difficulties with understanding or answering the questions and that she was more interested in the thought process they engaged in than their actual responses.

Participants were then given the opportunity to observe the interviewer answer two practice questions on the AABS-R while thinking aloud. Subsequently they were given a chance to practice themselves. However, all four participants declined and felt ready to begin. Participants were given the AABS-R and instructed to read aloud each question before thinking aloud about their responses. Upon completion of the cognitive interview, and if considered appropriate, the researcher used relevant pre-determined or spontaneous probes to clarify the thought processes that participants engaged in when responding to a specific question. The specific difficulties that a participant had encountered when responding to a question determined the choice of a probe. The probes were adapted from Brown and Hawkes (2008) and are based on a cognitive model, which indicates that responding to survey questions implicates the following

cognitive stages: Comprehension, retrieval, judgement formation and response selection (Tourangeau, 1984). The predetermined probes are listed in Table 2.

Table 2.

Predetermined Cognitive Interview Probes

Condition	Probe Examples
Comprehension: significant hesitation at reading stage	Take item X as an example. What did you think the question required you to do?
	OR The questionnaire asked you about X. What did you think of as X?
	OR On Item X you gave it a score of X. How did you arrive at your answer of X?
Judgement formation is unreported: Response is immediate	On item X you gave it a score of X. How did you arrive at your answer of X?
	OR How did you decide on your answer to this question?
	OR How did you decide that you agreed or disagreed?
Significant hesitation at judgement formation stage	On item X you gave it a score of X. How did you arrive at your answer of X?
	OR How did you decide on your answer to this question?
	OR How did you decide that you agreed or disagreed?
Significant hesitation at response selection	What led you to choose that particular answer rather than one of the others?
	OR On item X you gave it a score of X. What did that score of X mean to you?
	OR Was it easy or difficult to choose which score to give? What was easy/difficult?

Finally, participants were debriefed and given the opportunity to ask questions.

Cognitive interviews and the analytic approach

The analytic approach adopted involved applying a coding scheme that was developed by Brown and Hawkes (2008). They analysed verbal reports from their cognitive interviewing study using Chi's (1997) verbal analysis strategy, a quantitative approach for coding qualitative data. Chi suggests eight basic actions that can be taken – which of these are followed depends on the subject matter and aims of the study. In the Brown and Hawkes (2008) study and in order to develop a coding scheme, the authors viewed the following three stages as relevant: segmenting the verbal responses, developing a particular coding scheme and operationalizing the coded verbal report data. The coding scheme and its development will be discussed here whilst the operationalization of data relevant to the reported study is discussed in the Results section.

In the Brown and Hawkes (2008) study verbal reports were first segmented by independent coders who were blind to the aims of the study and who listened to the verbal reports, identifying discrete ideas, thoughts or cognitive processes. The final coding scheme involved applying content analysis (Krippendorf, 1980) to think-aloud protocols (Ericsson & Simon, 1993; Green & Gilhooly, 1996) in order to develop categorical codes that described the cognitive processes that respondents engaged in when thinking aloud. When appropriate, these codes were then synthesized with codes from a pertinent questionnaire evaluation research study (Bickhart & Felcher, 1996) as well as with Tourangeau's (1984) description of cognitive processes involved in responding to survey questions. As previously noted, he described and argued that

particular processes are implicated when individuals respond to self-report measures (i.e., comprehension, retrieval and judgement formation). When the codes did not match such conventional nomenclature, they were retained and formed a novel code.

The final coding scheme (see Brown & Hawkes, 2008 for a full discussion) employs hierarchically organised codes. A three-digit code signifies coding categories. The first digit denotes the processing stage occurring in a segment (i.e., comprehension, retrieval or judgement formation). The second digit indexes the particular process deployed (e.g., how difficult the item is to answer) and the third digit indicates the content of that processing. For example, a code of 120 represents an assessment of whether the question was easy or difficult to answer, indicating a particular comprehension process. A code of 220 refers to recalling an episode from episodic memory, which is a specific retrieval process. A code of 122 is employed when an interviewee has stated that the question is difficult to answer and 221 is used when a respondent is recalling episodes that have happened to herself and that are notable for the absence or presence of anxiety. Table 3 displays the cognitive interview coding system.

Table 3.

The Cognitive Interview Coding System

Stage	Process	Content
<hr/>		
100	Comprehension	
	120	Difficulty Assessment
		121 Easy
		122 Difficult
	150	Ambiguity
	160	Re-read Instructions
200	Retrieval	
	210	Inapplicable
	220	Recall Episode(s)
		221 Recall Episode(s), Self, Anxiety-relevant
	240	General Knowledge
		241 General Knowledge, Self, Anxiety-relevant
300	Judgement Formation	
	310	Appraisal
		311 Reasoning
		312 Imperative
		313 Arbitrary Conclusion
	330	Feeling Occurrence/Intensity Based
		331 Feeling, non-zero frequency
		333 Feeling, Positive Qualitative Frequency Assessment
		334 Feeling, Negative Qualitative Frequency Assessment
		335 Feeling, Positive Qualitative Intensity Assessment

336 Feeling, Negative Qualitative Intensity Assessment

340 Cognition Occurrence/Frequency Based

341 Cognition, Non-zero Frequency

343 Cognition, Positive Qualitative Frequency Assessment

344 Cognition, Negative Qualitative Frequency Assessment

Validation study

All participant groups (students, members of web communities for specific anxiety disorders and NHS patients) accessed the survey through (separate) web addresses (posted on the relevant advertisement), read the information sheet and consented to taking part by ticking the appropriate box (see the information and consent sheets in Appendix 21). The information sheet provided the names and telephone numbers of organizations that could offer support should the need arise. Subsequently participants completed a descriptive information section, which required that they provide information on age, ethnicity, marital status, educational attainment, employment status and optionally, history of mental health difficulties. NHS participants were additionally asked whether their visit to the clinic (from which they were recruited) was primarily for psychological or medical issues. Participants then completed the online battery of tests.

In the first phase of the study, which included students and members of web communities for specific anxiety disorders, the AABS-R was the first administered measure. The DASS-21, BIPS-13, BSBS-30 and BARS-25 were then completed and in that order.

In phase two, which included members of web communities and NHS patients, the AABS-R was again the first administered measure. The ASI-3, BFNE-II, TAFS-R, PSWQ, DASS-21, BIPS-13, BSBS-17 and BARS-10 were then completed and in that order.

Once participants had completed the battery they were provided with the option of logging onto a separate website. There they could provide contact details, which were kept separate from their answers, and could indicate whether they wanted to be sent the results of the study and/or the offered incentives.

Results

Overview

The data analysis process involved the following general steps. First, cognitive interview data were analysed in order to examine the acceptability and construct validity of the AABS.

Initial steps in the quantitative data analysis phase involved an examination of all data distributions and, where applicable, the transformation of those that were not normally distributed. Subsequently, the internal reliability and characteristics of the AABS data from the full sample ($N = 346$) were determined and, at a later stage for criterion measures.

The next step involved ascertaining the latent underlying structure of the AABS, using a principle factor analysis strategy for factor extraction. Subsequently, relationships between the AABS subscales and criterion measures were investigated in order to gauge the validity of the AABS. Finally, group comparisons were conducted in order to test criterion-related validity.

Operationalizing Evidence in the Cognitive Interview Protocols

First, the recorded verbal reports were reviewed qualitatively to enquire whether the measure was acceptable to respondents. Willis (2005) provides a framework for doing this. In short, the measure seemed acceptable as no obvious wording difficulties, problems related to ordering of items, length of the instrument, or difficulties with instructions were encountered.

Proponents of cognitive interviewing stipulate that interviews are best collected in 'rounds', the outcome of which determines subsequent stages (Willis, 2005). Because the first round of interviewing did not indicate that participants had any significant difficulties with the AABS-R, no further cognitive interviews were collected. Verbal reports from four individuals were also deemed adequate for gauging the construct validity of the AABS-R given that some of its items had previously been validated with this procedure (Brown & Hawkes, 2008).

Subsequently, the verbal protocols were analysed to estimate the construct validity of the measure. Given the previously mentioned study (Brown & Hawkes, 2008), there was an emphasis on verifying previous results as well as on analysing new and revised items. As noted, the analytic approach adopted here involved applying a coding scheme that was developed by Brown and Hawkes (2008) and this was done by an independent rater who was blind to the study aims. Also, a priori criteria were set for evaluating the AABS-R items in light of the cognitive interviewing protocols with reference to the conventional processing stages of comprehension, retrieval and judgement formation. The a priori criteria are summarized in Table 4.

Table 4.

Cognitive Interviewing Item Evaluation Criteria

Stage: Comprehension			
Process	Content	Criterion	Number of AABS items Meeting Criterion
120 Difficulty Assessment	122 Difficult	No more than 1 of 4 protocols has any of these codes	All but one; Item 27 received 122 codes in two protocols
150 Ambiguity			
160 Re-reads Instructions			
Stage: Retrieval			
210 Inapplicable		No more than 1 of 4 protocols has any of these codes	No 210 or 221 codes. Six 241 codes, but no more than one protocol per item
220 Recall episodes	221 Recall episodes, self, anxiety-relevant		
240 General knowledge	241 General knowledge, self, anxiety-relevant		
Stage: Judgment formation			
310 Appraisal	311 Reasoning 312 Imperative 313 Arbitrary conclusion	Either 310 or 340 code for each protocol	One item (#9) did not elicit either a 310 or 340 code
330 Feeling occurrence	331 Feeling, non-zero frequency 333 Feeling, positive qualitative frequency assessment 334 Feeling, negative qualitative frequency assessment	No more than 1 of 4 protocols has any of these codes	Six 330 codes, but no more than one protocol per item

	335 Feeling, positive qualitative intensity assessment		
	336 Feeling, negative qualitative intensity assessment		
340 Cognition occurrence	341 Cognition, non-zero frequency	Either 310 or 340 code for each protocols	See comment for 310 Appraisal, above
	343 Cognition, positive qualitative frequency assessment		
	344 Cognition, negative qualitative frequency assessment		

Comprehension

Certain types of responses can suggest possible problems with item comprehension.

The codes in the comprehension stage have to do with whether a respondent understands what she is being asked about. Here responses were categorized according to whether the question appeared to be easy or difficult to answer, whether it was perceived as ambiguous in any way and whether the AABS-R instructions had to be re-read. The criterion set for these codes was that no more than one in four verbal reports could contain such codes. This was realised for all AABS-R items, apart from one item ('Disapproval is more likely than approval in most social interactions'), which received a 122 (Difficult) code in two of four protocols and was consequently removed, resulting in a 52-item measure.

Retrieval

As previously highlighted and as emphasised by Brown & Hawkes (2008), a measure aiming to operationalize the cognitive aspect of Beck's formulation of emotional

disorders should generally index appraisal processes rather than recollections of affective experiences. This is particularly important for scales that are intended to be predictors of affective states. In order to evaluate the AABS-R in this regard, anxiety retrievals that were self-relevant (codes 221 and 241) were counted. An example of a 221 (Recall episode, self, anxiety-relevant) code is a response such as “I sometimes get that from feeling anxious”. An example of a 241 (General knowledge, self, anxiety-relevant code) code is exemplified by a response such as “my usual behaviour when I’m not feeling anxious”. A final code of 210 (Inapplicable) was applied when a respondent indicated that an item was not applicable or irrelevant to her, for example because the experience or event represented by the item had not occurred. A response that typifies this categorisation is, for example, “I’ve never noticed my breathing becoming irregular”. The a priori criterion was that no more than one in four protocols would have these codes. This was observed. Thus, there were no 210 or 221 codes. Though six 241 codes were tallied there was no more than one protocol per item.

Judgement formation

Once individuals have comprehended and retrieved stored material from memory in order to respond, judgement formation processes come into play. In addition to not relying on anxiety episodes, a cognitive propositional measure should also involve appraisal processes in forming judgements. Three appraisal categories were identified: reasoning (logical inferences, code 311), imperatives (e.g., judgements of the “should” variety, code 312) and arbitrary conclusions (propositional judgements that are made without a specified basis, code 313). Those judgement formations that remained and did not involve appraisal judgements, were categorised on the basis of perceived

incidence or intensity of feelings (code 330) or cognitions (340) within the interviewee's experience.

Appraisal and cognition occurrence were distinguished and coded on the basis of whether respondents made a demonstrable appraisal in response to the question (e.g., "I don't think there is anything wrong with me") or were noting previous cognition occurrence ("I don't usually think, 'there is something wrong with me'"). The a priori criterion was that either appraisals (code 310) or cognition occurrences (code 340) would be noted in each protocol. This was realised for all items, apart from one ('Insanity can gradually creep up on you'), suggesting that the AABS-R is generally a measure of appraisals.

For a measure that has been developed to predict affect, feeling-based judgements represent a grave validity threat. The criterion for such judgement formations (both intensity and occurrence) was that no more than one of four protocols would earn such codes. This was observed. There were six instances of feeling occurrences. However, there was not more than one protocol per item.

Quantitative Analysis

Data coding

Data were entered into a database (SPSS version 14) for analysis. Negatively keyed items on the PSWQ were reversed and total and subscale scores calculated for the criterion measures.

Data distribution and preliminary analysis

Criterion measures

The data distributions for each measure were inspected. The distributions for the DASS-21 (Anxiety subscale), TAFS-R (Total scale and Likelihood subscale), BIPS, BARS (Total scale and Physical subscale) and BSBS (Total scale, General and Checking subscales) were positively skewed. The distributions for the PSWQ, BFNE-II and ASI-3 (Social Concerns subscale) were negatively skewed. Skew significance was determined by calculating z scores for individual distributions. As recommended by Field (2005), a distribution was defined as skewed if z scores were larger than 2.58. Given that parametric statistics were planned, those distributions that were not normal were transformed. Those distributions that displayed moderate positive skew were successfully transformed with square root transformations, whilst substantial positive skewness was transformed using log transformations. Negatively skewed distributions were reflected and then either square rooted or transformed using a log transformation.

Full sample AABS analysis

Descriptive statistics and reliability

The complete sample ($N = 346$) of participants responded to the 53 items on the AABS-R. However, given the cognitive interviewing study, one item was removed and thus 52 items were included in the analysis. The mean AABS-R scale score was 215.96 ($SD = 55.57$). The internal reliability of the AABS-R was considered with all 52 items. The measure was found to be highly internally consistent (Cronbach's alpha = .96). Table 5 presents the mean and standard deviation scores for the different AABS-R items as well as individual AABS-R item correlations with the total score and Cronbach's alpha estimates should individual items be deleted.

Table 5.

Means and Standard Deviations for AABS-R Items, Item-Total Correlations and Cronbach's Alpha if Item Deleted

AABS-R item	<i>M(SD)</i>	Item Total Correlation	Alpha if Item Deleted
1. Things that you can imagine are more likely to come true	3.79(1.76)	.25	.96
2. Having negative thoughts means you are a bad person	2.53(1.75)	.43	.96
3. You can never have enough information for making the right decision	4.90(1.60)	.38	.96
4. If you don't make an effort, you can easily lose control of yourself	4.53(1.62)	.48	.96
5. It is important to always appear fully at ease	4.23(1.74)	.53	.96
6. Insanity can gradually creep up on you	4.19(1.82)	.43	.96
7. It is important to be on the lookout for the first, small signs of an illness	4.16(1.78)	.54	.96
8. In general, it is better to keep things the way they are than to take the risk of making things worse	3.82(1.76)	.67	.96
9. Thinking about bad things that have happened to other people could cause the same thing to happen to you	2.62(1.86)	.66	.96
10. You should always take as much time as possible when making a decision in order to make the right choice	4.68(1.57)	.48	.96
11. The way to avoid problems is not to take any risks	3.19(1.81)	.66	.96
12. Imagining things that might happen can help bring those things about	3.69(1.95)	.44	.96
13. If someone is concerned about something happening in the future, they should take steps to insure that it does not come true	4.81(1.60)	.49	.96
14. It is better not to rock the boat than to make changes	3.44(1.79)	.68	.96
15. It is unwise to proceed with something unless you have all of the possible information you might need	4.42(1.62)	.61	.96
16. It is better to carry out your activities when nobody is watching	4.35(2.10)	.61	.96
17. Insanity can develop without warning	3.79(1.82)	.43	.96

18. It is better to be over-prepared for a potential disaster than to be caught unprepared	4.90(1.69)	.60	.96
19. You should be constantly looking out for things happening within your body so that you can detect things going wrong	3.88(1.79)	.66	.96
20. It is possible to instantly lose control of your mind	3.42(1.96)	.49	.96
21. If you imagine something bad happening, then it is up to you to make sure that it doesn't come true	4.03(1.82)	.59	.96
22. To avoid disasters, you need to be prepared for anything	4.01(1.80)	.70	.96
23. Ignoring feelings of anxiety means you risk overlooking something serious	4.27(1.74)	.61	.96
24. You should not allow yourself to be seen losing control of yourself in any way	4.63(1.85)	.60	.96
25. A medical catastrophe can happen to anyone at any time	5.65(1.59)	.26	.96
26. Planning every detail in advance is the only way to avoid unpleasant surprises	3.69(1.90)	.71	.96
27. One should always be on the lookout for trouble that might be developing	3.98(1.77)	.76	.96
28. You should not get involved in something if you're not sure that you can manage	4.51(1.60)	.62	.96
29. It is essential to avoid being disapproved of by other people	4.01(1.93)	.61	.96
30. If you imagine something bad happening, it can help make it come true	3.15(1.86)	.51	.96
31. It is important always to keep in mind that a catastrophe can happen to anyone at any time	3.15(1.86)	.63	.96
32. It is best not to let on if you are in public and feel that something is wrong with you	4.66(1.90)	.62	.96
33. Anticipating the worst outcome prepares you for the worst	5.97(2.97)	.63	.96
34. It would be difficult to ever live down the embarrassment of losing control of yourself or acting strangely in public	4.66(2.00)	.45	.96
35. Picturing something happening might cause it to really happen	3.15(1.87)	.59	.96
36. Anxiety is generally a sign that something is wrong	4.43(1.82)	.56	.96
37. There is no such thing as being too careful when it comes to your health	4.18(1.67)	.60	.96

38. You should avoid being seen acting awkwardly	4.60(1.98)	.58	.96
39. People will make negative judgments if they think something is wrong	5.26(1.60)	.66	.96
40. Disasters are a lot more likely than most people realize	3.66(1.83)	.61	.96
41. Minor difficulties can easily get out of control and grow into major ones	4.58(1.62)	.58	.96
42. If someone is feeling anxious, there must be something for them to be concerned about	4.01(1.88)	.74	.96
43. It is crucial to anticipate potential difficulties so that you have a better chance of avoiding them	4.33(1.67)	.47	.96
44. It is possible to suddenly completely lose control of your behaviour	3.84(1.90)	.66	.96
45. An unusual physical sensation in your body is likely to be a sign that something is seriously wrong with you	3.38(1.75)	.48	.96
46. Anxiety does not happen without there being a reason for it	4.31(1.93)	.67	.96
47. Even with small problems, one thing can lead to another and quickly turn into something huge	4.46(1.70)	.71	.96
48. When making a decision, it is better to play it safe rather than risk making the wrong choice	4.16(1.60)	.57	.96
49. You should always maintain control of your thinking	4.95(1.61)	.51	.96
50. If you can foresee future problems you have a greater opportunity to prevent them	4.78(1.61)	.54	.96
51. People don't experience anxiety unless there is actually something they should be concerned about	3.36(1.93)	.66	.96
52. It is necessary to continually be aware of signs that a health problem is developing	3.85(1.76)	.66	.96

The above information demonstrates that deleting any particular item would reduce, rather than improve, reliability. It is noteworthy that scores largely correlated well with the total scale score. Thus, 38 of the 52 items had item-total correlations above .50. Apart from two items, all other items had item-total correlations above .30. Given the

sample size, these two lesser correlation coefficients can be regarded as acceptable (Floyd & Widaman, 1995).

Factor analysis

Initial considerations

As was previously noted, the sample size was adequate. Thus, “it is comforting to have at least 300 cases for factor analysis” (Tabachnick & Fidell, 2001, p. 640) as this will maximise the likelihood of achieving a stable solution and allows the interpretation of factors with a few loadings (Guadagnoli & Velicer, 1988). Despite the adequate sample size, the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy was calculated for the AABS variables (Kaiser, 1970). The KMO statistic was .95, which is ‘superb’ (Hutcheson & Sofroniou, 1999) and suggested that the sum of correlations was large relative to the sum of partial correlations and consequently factor analysis should generate reliable and discrete factors. As noted, the correlation matrix indicated that all the AABS-R items correlated fairly well and that no single coefficient was especially large, confirming that multicollinearity was not present. Finally, Bartlett’s Test of Sphericity was highly significant ($p < .001$), indicating that covariances were zero and the sphericity assumption was met.

Distributions of the 52 AABS-R variables were considered. A number of the variables were found to be negatively, and several, positively skewed. Expected normal and detrended expected normal probability plots suggested that the distribution of variables was largely normal, with some deviations. The approach used here for factor analysis, principal axis, does not require multivariate normality (Floyd & Widaman, 1995) and factor analysis is generally robust against normality violations (Gorsuch, 1983). Also,

given that the AABS has been published and is currently in use, no transformations or deletions were undertaken. However, the fact that transformations were not conducted limits the generalizability of findings (Floyd & Widaman, 1995).

Full sample AABS-R principal factor analysis

In order to ascertain the underlying structure of the AABS-R an exploratory strategy was adopted, using a common (or principal) factor analysis approach to extracting factors. This factor extraction method was preferred over principal components analysis, as it generates more precise final communality estimates, is less influenced by the number of items that load on the various dimensions and the level of variable communalities (Widaman, 1993). In their review, Floyd and Widaman (1995) conclude that this approach “should be strongly preferred” when a researcher is interested in understanding “a domain of phenomena in terms of a smaller number of underlying, latent variables” (p. 291).

In order to aid in deciding on how many factors to extract, the scree plot was examined. Figure 1 displays a scree plot graph for the data. In total, nine factors had eigenvalues above one.

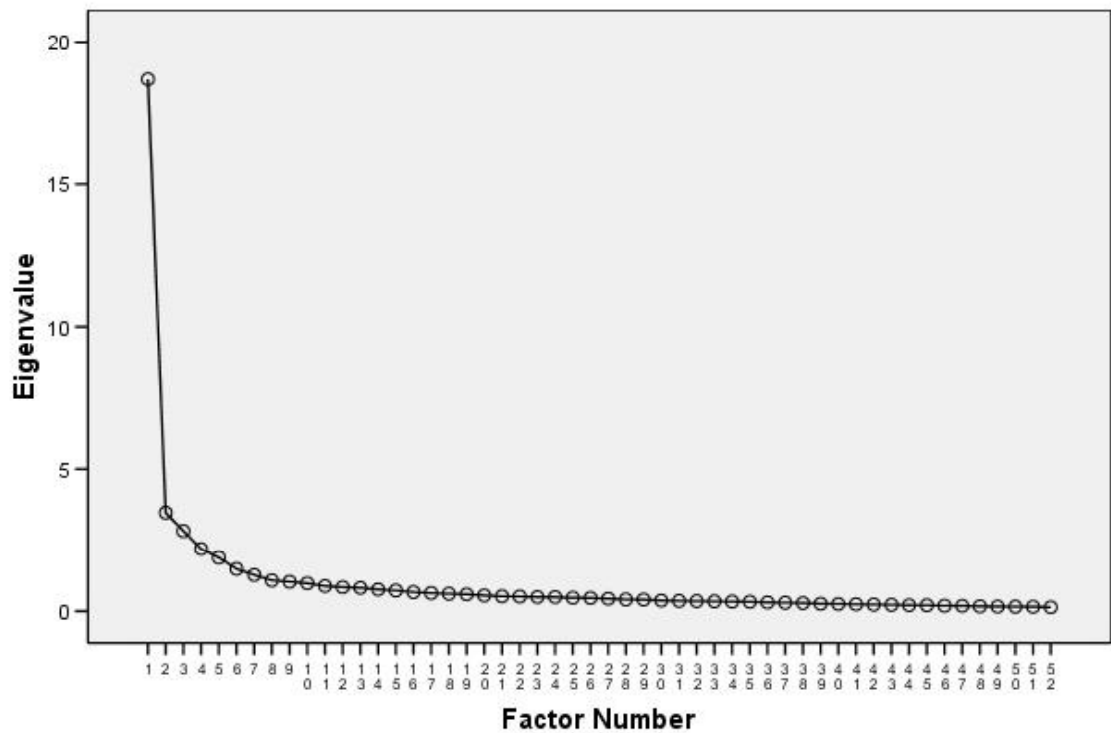


Figure 1. AABS-R Scree Plot

Kaiser (1960) argues that factors should be retained when they have eigenvalues that are greater than one. However, in many situations this is not optimal and can overestimate how many factors should be retained (Zwick & Velicer, 1986). Stevens (1992) reports that scree plots provide a reliable factor selection criterion with samples of over 200 participants and a visual inspection typically provides satisfactory results (Floyd & Widaman, 1995). The criterion for factor retention is decided by observing the position where the slope moves towards zero. This indicates beyond which point significant variance will not be discarded by excluding a particular factor (Floyd & Widaman, 1995).

The first four factors had associated eigenvalues all above 2.0 and changes in succeeding eigenvalues, beyond the sixth factor, were small. This indicated the existence of between four and six factors.

Thus, an initial five-factor solution was sought. Table 6 presents total eigenvalues as well as how much of the variance was explained with this solution. The unrotated five-factor solution resulted in eigenvalues above 1.0 for all unrotated factors and an inspection of communalities suggested the variables were defined well by this solution.

Table 6.

Eigenvalues and Total Explained Variance for the Five-Factor Solution

Factor	Total Eigenvalue	% of Variance	Cumulative
1	18.22	35.04	35.04
2	3.06	5.89	40.93
3	2.41	4.63	45.56
4	1.66	3.19	47.75
5	1.46	2.82	52.56

Rotation

Following factor extraction, retained factors were rotated to aide interpretation by maximising loading (of each variable) on one factor and minimizing loading on the other factors. An oblique solution (promax) was first obtained to help decide whether an orthogonal or oblique rotation was appropriate. Because the oblique solution resulted in mainly uncorrelated factors, an orthogonal solution was preferred (Pedhazur & Schmelkin, 1991). Also, Floyd and Widaman (1995) argue that an orthogonal varimax procedure typically yields an acceptable simple structure when exploratory factor analysis is undertaken.

Exploratory factor analysis

Exploratory factor analysis of the 52-item correlation matrix was carried out using principal factor analysis. In exploratory strategies, factor loadings that exceed .30 or .40 are typically viewed as meaningful (Floyd & Widaman, 1995). Initially, items that loaded onto a factor below .37 were interpreted as loading significantly. These items were then removed one-by-one and the analysis conducted again on the subset of items

that remained, with the aim of observing whether variable loadings improved. This process was sustained until all items had loadings of more than .40 and resulted in a solution that was clearly interpretable with each factor recruiting a distinct item group.

However, a number of items were multivocal and loaded on more than one factor. These were removed one-by-one and the analysis repeated. These complex items may be candidates for a short form of the AABS-R in the future. In total, 36 items were retained and these loaded onto five factors, with each individual item loading obviously on just one factor.

The reliability analysis (see below) suggested that retained items were appropriately included but also indicated that three items could be removed to improve reliability. An inspection of these items highlighted that they were similar to other retained items and therefore redundant. The factor analysis was therefore run again without these three items and a final solution obtained. Thus, 33 items were retained and together, the five factors explained 57% of the overall variance.

Table 7 displays each factor and its item content. Factor 1 items reflect a tendency towards caution, planning and vigilance. This Caution factor contained 13 items with an eigenvalue of 12.1, and accounted for 17.6% of the variance. The items that loaded on Factor 2 were around themes of anticipated social evaluation and judgement. This Evaluation Sensitivity factor contained 8 items, had an eigenvalue of 2.9 and accounted for 15.9% of the total variance in items. Factor 3 was comprised of 4 items, which had an associated eigenvalue of 2.2. These items represent metacognitive beliefs about the causal association between thoughts and negative outcomes. This Thought-Outcome

Fusion factor explained 8.5% of the variance. Factor 4 was called Anxiety-Based Reasoning and was comprised of four items. It had an eigenvalue of 1.8 and explained 7.7% of the variance. Factor 5 had 4 items reflecting a propensity to expect catastrophic outcomes and was therefore called Catastrophizing. The factor had an eigenvalue of 1.7, accounting for 7.2% of the total variance.

Table 7.

AABS-33 Item Analysis

Item	Factor				
	1	2	3	4	5
Factor 1: Caution					
It is better to be over-prepared for a potential disaster than to be caught unprepared	0.75				
To avoid disasters, you need to be prepared for anything	0.73				
It is crucial to anticipate potential difficulties so that you have a better chance of avoiding them	0.70				
One should always be on the lookout for trouble that might be developing	0.64				
Planning every detail in advance is the only way to avoid unpleasant surprises	0.62				
It is unwise to proceed with something unless you have all of the possible information you might need	0.60				
It is important to always keep in mind that a catastrophe can happen to anyone at any time	0.59				
It is necessary to continually be aware of signs that a health problem is developing.	0.57				
You should always take as much time as possible when making a decision in order to make the right choice	0.55				
If you can foresee future problems you have a greater opportunity to prevent them.	0.55				
If someone is concerned about something happening in the future, they should take steps to insure that it does not come true	0.54				
There is no such thing as being too careful when it comes to your health	0.50				
Disasters are a lot more likely than most people realize	0.52				
Factor 2: Evaluation Sensitivity					
You should avoid being seen acting awkwardly		0.85			

It is best not to let on if you are in public and feel that something is wrong with you.	0.78
It would be difficult to ever live down the embarrassment of losing control of yourself or acting strangely in public	0.78
You should not allow yourself to be seen losing control of yourself in any way	0.74
It is essential to avoid being disapproved of by other people	0.71
It is important to always appear fully at ease	0.70
People will make negative judgments if they think something is wrong with you	0.67
It is better to carry out your activities when nobody is watching you	0.62

Factor 3: Thought-Outcome Fusion

Picturing something happening might cause it to really happen	0.88
If you imagine something bad happening, it can help make that thing come true	0.83
Imagining things that might happen can help bring those things about	0.74
Thinking about bad things that have happened to other people could cause the same thing to happen to you	0.58

Factor 4: Anxiety-Based Reasoning

If someone is feeling anxious, there must be something for them to be concerned about	0.74
People don't experience anxiety unless there is actually something they should be concerned about	0.74
Anxiety does not happen without there being a reason for it	0.73
Anxiety is generally a sign that something is wrong.	0.48

Factor 5: Catastrophizing

It is possible to instantly lose control of your mind	0.75
It is possible to suddenly completely lose control of your behaviour	0.65

Insanity can develop without warning	0.63
Insanity can gradually creep up on you	0.51

Note. $N = 346$.

Reliability

A reliability analysis suggested that the 33 items that were retained on the basis of the factor analysis were highly internally consistent (Cronbach's $\alpha = .94$).

A reliability analysis was then performed on the items that related to the separate factors (Cronbach, 1951). The alpha coefficients for Factors 1 to 5 were .91, .93, .89, .86 and .79, respectively. Consequently, scale and subscale reliability of this 33-item scale (AABS-33) is supported in this population.

Relationship between the AABS-33 and demographic information

Full sample ($N = 346$) AABS-33 scores were studied in order to look for differentiations across the span of demographic information. To explore a possible connection between age and AABS-33 scores, a Pearson's correlation was used. To investigate score differences related to gender, ethnicity and recruitment source, t-test's were deployed. One-way ANOVAs were employed to look for possible differences between AABS-33 scores related to education level as well as employment and marital status.

The correlation between age and AABS-33 scores was not significant ($r(344) = .06$, n.s.), suggesting that generally participants' age was not consistently associated with either high or low AABS-33 scores.

Table 8 displays the outcome of independent t-test's investigating differences in AABS-33 scores across gender, ethnicity and recruitment source. The difference was not significant for gender or ethnicity, indicating that women and men did not, on average, differ in terms of how they used the response scale on the AABS-33. Similarly, ethnicity did not differentiate the groups in terms of AABS-33 scores. However, as expected, AABS-33 scores did differ significantly across recruitment source groups (i.e., whether participants heard about the study through Internet communities for specific anxiety disorders or from Royal Holloway, University of London). Here, separate estimates of variance were used because assumptions of homogeneity of variance were not met ($F = 7.43, p < .05$). The results were as expected and showed that members of anxiety disorder Internet communities, on average, scored higher on the AABS-33 than the students sample.

Table 8.

Differences in AABS-33 Scores Across Gender, Ethnicity and Recruitment Source

Group	Subgroup	<i>M</i>	<i>SD</i>	<i>t</i>	<i>df</i>	<i>p</i>
Gender						
	Male	138.9	36.3	-.77	344	.44 (n.s.)
	Female	134.9	35.8			
Ethnicity						
	White	135.5	36.7	-.47	344	.63 (n.s.)
	Other	138.8	29.3			
Recruitment Source						
	Anxiety Group	117.7	28.0			
	Students	142.8	36.6	-6.8	228	< .001

Note. $N = 346$. Anxiety group, members of Internet communities for specific anxiety disorders.

A series of one-way independent ANOVA's were used to compare AABS-33 scores across educational level, employment and marital status. Table 9 displays the means and standard deviations for the various groups. AABS-33 scores were found to differ significantly depending on the education level of participants ($F(3, 342) = 6.78, p < .001$). Hochberg's GT2 procedure for doing post hoc comparisons was performed, as the sample sizes were highly unequal. This revealed that the 'no degree' group scored significantly higher on the AABS-33 than the 'vocational/'A level' ($p < .001$) and 'degree or higher' group ($p < .001$). Thus, AABS-33 scores reduced as education levels rose in this sample.

AABS-33 scores also differed across employment status groups ($F(2, 343) = 4.1, p = .001$). Hochberg's GT2 post hoc comparisons suggested that participants who were unemployed or on leave scored significantly higher on the AABS-33 than students ($p < .01$). However, marital status did not differentiate between participants in terms of their scores on the AABS-33 ($F(2, 343) = .57, n.s.$).

Table 9.

AABS-33 Means and Standard Deviations Across Education Level, Employment Status and Marital Status

	<i>M</i>	<i>SD</i>
Level of Education		
No Qualifications	168.9	32.1
GCSE / O' level	144.9	38.9
Vocational / A'level	133.2	34.7
Degree or Higher	131.4	34.9
Employment Status		
Full/Part Time Employment	134.9	37.3
Unemployed/Leave	144.2	34.0
Full Time Student	124.9	32.9
Marital Status		
Married	136.5	39.2
Relationship/Cohabiting	138.9	34.5
Single/Separated/Divorced	134.0	35.6

Note. $N = 346$.

It is noteworthy that some of the above results are based on groups comprised of only a small number of participants (see Table 1, p. 48). Also, some of the observed effects are likely to be related, rather than independent. For example, it is likely that being unemployed or on leave may be related to having a mental health problem (and belonging to a web anxiety disorder community).

Criterion measures

Before discussing the results of the correlational and validation analysis, relative descriptive statistics for the newly developed and established criterion measure will be presented.

Newly developed scale descriptive statistics and reliability

Table 10 presents descriptive statistics and internal reliability related to the three newly developed (total) scale scores and, where relevant, subscale scores. As can be seen, these scales appear to have acceptable internal consistency, which is comparable, though generally better, than that reported by Brown and Bohn (personal communication, February 24, 2008) (see pp. 52-53).

Table 10.

Descriptive Statistics and Reliability for the BIPS, BARS and BSBS

Scale	Subscale	<i>M</i>	<i>SD</i>	Chronbach's alpha
BIPS Total		25.88	8.21	.88
BARS Total		30.84	13.01	.86
	Social	16.94	7.59	.87
	Physical	13.90	8.49	.87
BSBS Total		35.57	9.70	.87
	General	25.30	7.37	.85
	Checking	10.27	3.73	.79

n = 173

Established criterion measure descriptive statistics and reliability

Table 11 displays descriptive statistics for the relevant subscales of the ASI-3, DASS-21 and TAFS-R, along with (total) scale scores and descriptives for the PSWQ and BFNE-II.

Table 11.

Descriptive Statistics and Reliability for the ASI-3, DASS-21, PSWQ, TAFS-R and BFNE-II

Scale	Subscale	<i>n</i>	<i>M</i>	<i>SD</i>	Chronbach's alpha
ASI-3		190			
	Social		21.72	6.22	.80
	Physical		16.45	5.81	.88
	Cognitive		15.52	6.58	.89
DASS-21		322			
	Depression		17.37	6.64	.93
	Stress		18.62	5.67	.88
	Anxiety		15.34	6.17	.86
PSWQ		179	64.11	12.15	.91
TAFS-R		181			
	Moral		30.65	11.84	.96
	Likelihood		14.67	7.68	.94
BFNE-II		186	26.78	6.42	.96

The internal consistency of the ASI-3 subscales was adequate and compares to the conclusions recently reached by Taylor and colleagues (2007) (see p. 54). Similarly, the internal reliability of the DASS-21 subscales was satisfactory and corresponds to previous findings in both clinical (Henry & Crawford, 2005) and community (Antony et al., 1998) samples (see p. 55). The high internal consistency of the PSWQ was also in line with previous findings (e.g., Brown, 2003; Meyer et al., 1990, see p. 55).

The TAFS-R displayed excellent internal reliability, corresponding to previously reported findings in clinical, community and student samples (Shafran, et al., 1996) (see p. 56). Finally, the internal consistency of the BFNE-II was also excellent and identical to that reported by Carleton and his colleagues (2006) (see p. 57).

Hypothesized relationships between AABS-33 subscales and criterion measures

Table 12 presents hypothesized associations between the AABS-33 factors and criterion measures. These are based on a review of the literature. Predictions for the DASS-21 scales are not included here but are discussed below.

Table 12.

Hypothesized Relationships between AABS-33 Factors, BIPS, BARS, BSBS, BFNE-II, PSWQ and the ASI-3

Scale	Subscale	Caution	EvSens	ToF	ABR	Catas
BIPS		H	H	H	+	H
BARS		+	+	--	+	--
	Social	--	H	--	--	--
	Physical	H	--	--	+	--
BSBS		+	+	+	+	+
	General	H	H	+	+	H
	Checking	H	--	H	+	--
BFNE-II		--	H	--	+	--
PSWQ		H	H	+	+	+
TAFS-R		+	--	+	+	--
	Moral	--	--	H	+	--
	Likelih	H	--	H	+	--
ASI-3						
	Social	+	H	--	--	--
	Physical	H	--	--	H	H
	Cognitive	+	--	--	H	H

Note. EvSens, Evaluation Sensitivity; ToF, Thought-Outcome Fusion; ABR, Anxiety-Based Reasoning; Catas, Catastrophizing; Social, Social Concerns; Physical, Physical Concerns; Cognitive, Cognitive Concerns; Likelih, Likelihood. *H* = Hypothesized association; preferably, strongest association of subscale; + = Likely relationship; -- = No specific expectation.

In summary, and as can be seen, Factor 1 (Caution) was expected to correlate most highly with the BIPS, BARS (Physical subscale), BSBS (General and Checking subscales), PSWQ, TAFS-R (Likelihood) and the ASI (Physical Concerns subscale). Factor 2 (Evaluation Sensitivity) was expected to have the strongest association with the BIPS, BARS (Social), the BSBS (General), the BFNE-II, the PSWQ and the ASI-3 (Social Concerns subscale). Factor 3 (Thought-Outcome Fusion) beliefs were expected to be most highly associated with the BIPS, BSBS (Checking subscale) and the TAFS-R (Likelihood and Moral subscales), whereas Factor 4 (Anxiety-Based Reasoning) was expected to have a strong association with the ASI-3 (Physical and Cognitive Concerns) and possibly other anxiety correlates. Finally, Factor 5 (Catastrophizing) was expected to be associated with the BIPS, BSBS (General) and the ASI-3 (Physical and Cognitive Concerns).

Hypothesized relationships between AABS-33 subscales and DASS-21

A measure of cognitive vulnerability to anxiety, as specified by cognitive models, is expected to be related to anxiety, depression as well as stress. However, given the cognitive content-specificity hypothesis, the AABS-33 and its subscales, should be more highly associated with anxiety than depression.

Correlational analysis: Convergent validity

AABS-33 and newly developed criterion measures

Table 13 displays the results of the Pearson's correlational analysis looking at the relationship between the AABS-33 factors and the newly developed criterion measures. It should be noted that correlations are discussed in terms of being small ($r = 0.10$), moderate ($r = 0.30$) or large ($r = 0.50$) (Cohen, 1988).

Table 13.

AABS-33, BIPS, BARS and BSBS Correlations

Scale	AABS	Caution	EvSens	ToF	ABR	Catas
AABS						
Caution	.90					
EvSens	.74	.55				
ToF	.62	.44	.35			
ABR	.71	.58	.41	.41		
Catas	.62	.44	.40	.34	.35	
BIPS	.52	.49	.40	.35	.31	.41
BARS						
Social	-.33	-.23	-.50	-.21	-.05	-.17
Physical	-.30	-.36	-.23	-.12	-.15	-.04
BSBS						
General	.58	.51	.50	.32	.35	.50
Checking	.45	.49	.27	.18	.29	.35

Note. Correlations above .15 are significant at $p < .05$. Correlations above .18 are significant at $p < .01$. The BIPS, BARS (Total and Physical) and BSBS (Total and subscales) have been transformed to offset for positive skew. EvSens, Evaluation Sensitivity; ToF, Thought-Outcome Fusion; ABR, Anxiety-Based Reasoning; Catas, Catastrophizing. Correlations in bold indicate hypothesized highest correlations between an AABS-33 factor and a newly developed criterion measure.

As expected, given the high internal consistency of the AABS-33, the subscales intercorrelated. All of the AABS-33 subscales were moderately to highly intercorrelated in the total sample. Thus, the beliefs and attitudes measured by the AABS-33 may not be well differentiated from one another. The total AABS-33 score was highly associated with the adoption of general safety behaviours (BSBS General) and a tendency to overestimate the probabilities of negative events (BIPS). The AABS-33 was moderately associated with risk aversiveness.

As expected, Factor 1 (Caution) was (highly) related to reporting the use of general safety behaviours (BSBS General) and (moderately) related to checking safety behaviours (BSBS Checking), overestimating the probabilities of negative events (BIPS) and avoiding physical risks (BSBS Physical).

As expected, Factor 2 (Evaluation Sensitivity) was highly associated with reporting the use of general safety behaviours (BSBS General) and avoiding social risks (BARS Social). Evaluation Sensitivity was also, as expected, associated (moderately) with a tendency to overestimate the occurrence of negative outcomes.

As expected, Factor 3 (Thought-Outcome Fusion) was (moderately) related to reporting a tendency to overestimate the probability of the occurrence of negative events (BIPS). Though this subscale was significantly associated with reporting the use of safety behaviours in the form of checking (BSBS Checking) as expected, this association was not strong and the subscale was more strongly related to general safety behaviours (BSBS General).

No specific predictions were made for Factor 4 (Anxiety-Based Reasoning). However, it was moderately associated with reporting the use of safety behaviours (BSBS), both general and checking, and a tendency to overestimate the occurrence of negative outcomes. Finally, Factor 5 (Catastrophizing) was, as anticipated, associated (moderately) with overestimating the probabilities of negative events (BIPS) and highly associated with general safety behaviours (BSBS General). In conclusion, the relationships are in the predicted direction.

AABS-33 and established criterion measures

Table 14 displays the results of the correlational analysis between the AABS-33 (total and factor scores) and the established criterion scales (BFNE-II, PSWQ, TAFS-R and ASI-3) and relevant subscales.

Table 14.

AABS-33, BFNE-II, PSWQ, TAFS-R and ASI-3 Correlations

Measure	AABS	Caution	EvSens	ToF	ABR	Catas
BFNE	.47	.29	.66	.17	.21	.31
PSWQ	.51	.46	.44	.26	.29	.35
TAFS						
Moral	.46	.39	.27	.40	.39	.30
Likelih	.56	.47	.29	.65	.43	.35
ASI						
Social	.61	.46	.81	.25	.21	.39
Phys	.58	.51	.46	.29	.42	.48
Cog	.55	.40	.49	.30	.40	.53

Note. Correlations above .17 are significant at $p < .05$. Correlations above .21 are significant at $p < .01$. The BFNE-II and ASI-3 (Social Concerns) have been transformed to offset for negative skew. The PSWQ and TAFS-R (Total and Likelihood) have been transformed to offset for positive skew. Likelih, Likelihood; Phys, Physical; Cog, Cognitive; EvSens, Evaluation Sensitivity; ToF, Thought-Outcome Fusion; ABR, Anxiety-Based Reasoning; Catas, Catastrophizing. Correlations in bold indicate hypothesized highest correlations between an AABS-33 factor and an established criterion measure.

The total AABS-33 was moderately to highly related to all anxiety-related validation measures. As can be seen, correlations between criterion measures and Factor 1 (Caution) were in the expected direction. The subscale was most highly associated with a tendency to be concerned about physical phenomena (ASI-3 Physical) as

expected. It was also moderately associated with a tendency to be concerned about Social and Cognitive phenomena (ASI-3 Social and Cognitive). A moderate association was also found between Caution and worry (PSWQ) as well as with reporting thought-action fusion beliefs in the form of believing that thoughts can increase the likelihood of negative events (TAFS Likelihood). Though not predicted, the subscale had a moderate association with moral TAF beliefs (TAFS Moral).

Factor 2 (Evaluation Sensitivity), as anticipated, was (highly) associated with being concerned about social phenomena (ASI-3 Social) and fearing negative evaluation (BFNE-II). Also as expected, the subscale was (moderately) associated with worry (PSWQ). Predictions regarding Factor 3 (Thought-Outcome Fusion) were also confirmed. Thus, the subscale related highly to individuals reporting that thoughts about negative events increase the likelihood that these events will take place (TAFS-R Likelihood). The relationship between this factor and TAF Moral beliefs (TAFS-R Moral) was moderate.

Predictions regarding Factor 4 (Anxiety-Based Reasoning) were supported. Thus, the subscale was most highly (moderately) associated with being concerned about physical and cognitive phenomena (ASI-3 Physical and Cognitive). Though not anticipated, this subscale was (moderately) related to holding thought-action fusion beliefs about the likelihood of negative events (TAFS-R Likelihood). Finally, Factor 5 was moderately to highly associated with being concerned about physical and cognitive phenomena as anticipated.

In terms of the general relationship between AABS-33 and ASI-3 subscales, all AABS-33 subscales were moderately to highly related to at least one subscale of the ASI-3. Thus, the AABS-33 demonstrated good convergent validity as specified by the literature, and in particular, the literature associated with the transdiagnostic approach.

Correlational analysis: Discriminant validity

AABS-33 and DASS-21

Table 15 displays the results of the correlational analysis between the AABS-33, its subscales and the DASS-21 scales.

Table 15.

AABS-33 and DASS-21 Correlations

Measure	DASS	Anxiety	Depression	Stress
DASS				
Anxiety				
Depression		.66		
Stress		.76	.75	
AABS				
Caution		.51	.52	.49
Evaluation Sensitivity		.36	.37	.36
Thought-Outcome Fusion		.50	.56	.48
Anxiety-Based Reasoning		.32	.26	.22
Catastrophizing		.31	.30	.32
		.46	.43	.40

Note. Correlations above .22 are significant at $p < .01$. The DASS-21 (Anxiety subscale) has been transformed to compensate for positive skew.

As expected, the AABS-33 (total) was significantly associated with anxiety, depression and stress. The three correlation coefficients were large or close to large. Also, as expected, anxiety and depression were highly associated ($r = .66$). However, the total AABS-33 was not more highly related to anxiety than depression, though individual AABS-33 factors were generally more highly associated with anxiety than depression and the strength of the associations was moderate. Thus, Thought-Outcome Fusion, Anxiety-Based Reasoning and Catastrophizing were somewhat more highly associated with anxiety than Caution and Evaluation Sensitivity, both of which had a

slightly stronger association with depression than anxiety. In conclusion, the discriminant validity of the AABS-33 is only partly supported in this sample.

Group comparisons

Because both students and members of Internet support groups for specific anxiety disorders (i.e., anxiety group) completed the AABS and DASS -21, it was possible to explore group differences in order to further test convergent and discriminant validity. Table 16 displays descriptive statistics for the DASS-21 scales, the AABS-33 and its subscales across the groups. Full sample scores are included to aid ease of comparison. Using Lovibond and Lovibond's (2002) cut-off values, students were characterised by mild depression and stress but moderate anxiety. The anxiety sample was characterised by moderate depression and stress but severe anxiety.

Table 16.

Descriptive Statistics for the AABS-33 and DASS-21 Anxiety, Depression and Stress Scales for the Student, Anxiety and Total Group Samples

		Students		Anxiety Group		Full Sample	
Scales	Subscale	<i>n</i>	<i>M(SD)</i>	<i>n</i>	<i>M(SD)</i>	<i>n</i>	<i>M(SD)</i>
DASS		94		228		322	
	Depression		13.11(5.53)		19.13(6.27)		17.37(6.65)
	Stress		14.86(5.10)		20.17(5.15)		18.62(5.67)
	Anxiety		11.38(4.47)		16.90(5.95)		15.30(6.10)
AABS		97	117.72(27.94)	249	142.80(36.58)	346	135.77(36.14)
	Caution		50.87(13.69)		57.19(16.62)		55.42(16.09)
	EvSens		28.22(10.20)		39.59(11.55)		36.40(12.29)
	TOF		10.80(5.81)		13.32(6.66)		12.62(6.52)
	ABR		13.79(5.38)		17.00(6.44)		16.10(6.32)
	Catas		14.03(5.34)		15.70(5.99)		15.23(5.85)

Note. EvSens= Evaluation Sensitivity; TOF, Thought-Outcome Fusion; ABR, Anxiety-Based Reasoning; Catas, Catastrophizing.

To investigate differences between the two groups in terms of symptoms, a series of t test's were conducted. Table 17 displays the outcome of independent t-test's investigating differences in DASS-21 scores across the student and anxiety groups.

Table 17.

Differences in DASS-21 Scores Across Student and Anxiety Groups

Measure	Group	<i>t</i>	<i>df</i>	<i>p</i>
DASS-21 Anxiety	Students			
	Anxiety Group	-9.11	229	< .001
DASS-21 Depression	Students			
	Anxiety Group	-8.53	195	< .05
DASS-21 Stress	Students	-8.44	320	< .001
	Anxiety Group			

As can be seen, the difference between the groups was significant for anxiety, as measured by the DASS-21. Because homogeneity assumptions were not met ($F = 18.65, p < .001$), separate variance estimates were used for this test. The difference was also significant for depression. Again, homogeneity assumptions were not met ($F = 6.29, p < .05$) and consequently separate variance estimates were deployed. Finally, the difference between the groups was significant for reported stress. In summary, members of anxiety Internet support groups for specific anxiety disorders reported significantly higher levels of anxiety, depression and stress than students, as was expected.

To test convergent and discriminant validity, a correlational analysis was performed across the two groups. Table 18 displays correlations between the AABS-33 and the DASS-21 scales, for the student and anxiety group samples. The full sample correlations are included to aid interpretation.

Table 18.

AABS-33 and DASS-21 Correlations for the Student, Anxiety and Total Group Samples

Measure	A			D			S		
	Student	AG	Total	Student	AG	Total	Student	AG	Total
A									
D	.68	.57	.66						
S	.67	.73	.76	.68	.71	.75			
AABS	.42	.45	.51	.43	.46	.52	.30	.45	.49
Caution	.19	.36	.36	.26	.35	.37	.16	.38	.36
EvSens	.44	.37	.50	.44	.47	.56	.37	.37	.48
TOF	.29	.28	.32	.15	.23	.26	.03	.22	.22
ABR	.15	.27	.31	.12	.27	.30	.03	.33	.32
Catas	.43	.46	.46	.49	.38	.43	.40	.38	.40

Note. Student sample correlations above .26 are significant at $p < .05$ and correlations above .29 are significant at $p < .01$. Anxiety and total sample correlations above .22 are significant at $p < .01$. The DASS-21 (Anxiety subscale) has been transformed to compensate for positive skew. A, DASS-21 Anxiety subscale; D, DASS-21 Depression subscale; S, DASS-21 Stress subscale; EvSens, Evaluation Sensitivity; TOF, Thought-Outcome Fusion; ABR, Anxiety-Based Reasoning; Catas, Catastrophizing; AG, members of anxiety Internet support groups.

As can be observed, depression (DASS-21 Depression scale) and anxiety (DASS-21 Anxiety scale) were more highly associated in the student than the anxiety group, whereas stress (DASS-21 Stress scale) and anxiety were more highly related in the anxiety than student group. AABS-33 total scores were more highly associated with anxiety in the anxiety than the student group and, apart from Evaluation Sensitivity

and Thought-Outcome Fusion, AABS-33 factor – anxiety relationships were stronger in the anxiety than the student group. It should be noted that Anxiety-Based Reasoning did not have a significant relationship with anxiety in the student group and that Thought-Outcome Fusion had a similar relationship with anxiety in both groups. This generally supports the prediction that AABS-type items would have a stronger association with anxiety in more symptomatic groups, although differences are not large.

Similarly, AABS-33 total and factor scores (apart from Catastrophizing) were more strongly related to depression scores in the anxiety than the student group. Thought-Outcome Fusion and Anxiety-Based Reasoning were not significantly related to depression in the student group but these relationships were significant in the anxiety group. Finally, the relationship between reported stress and AABS-33 total and factor scores was generally stronger amongst anxiety group participants. Thus, it appears that the evidence for the validity of the AABS-33, in terms of its relationship to anxiety, was generally stronger in the symptomatic than the student group as predicted.

However, the AABS-33 and its subscales were also generally more highly related to depression in the anxiety than the student group. Finally, and as predicted, AABS-33 items were more highly associated with stress in the anxiety than the student group.

In terms of discriminant validity, the AABS-33 total score was similarly related to both anxiety and depression in both the anxiety and student group. Factor 1 (Caution) was slightly more related to anxiety than depression in the anxiety group but not in the student group, where beliefs about the value of caution were only significantly related to depression.

Factor 2 (Evaluation Sensitivity) was equally related to anxiety and depression in the student group, but more strongly associated with depression than anxiety in the anxiety group. Factor 3 (Thought-Outcome Fusion) was significantly related to anxiety but not depression in the student group. In the anxiety group this factor had a higher relationship to anxiety than depression. Factor 4 (Anxiety-Based Reasoning) was not significantly related with anxiety or depression in the student group but equally related to anxiety and depression in the anxiety group. Factor 5 (Catastrophizing) was more highly associated with anxiety in the anxiety group, but more related to depression in the student group. Thus, the discriminant validity of the AABS-33 appears to be problematic and only partially supported. Only Thought-Outcome Fusion beliefs were more highly associated with anxiety than depression in both groups.

As previously noted (see Table 8, p. 85) members of anxiety groups, on average, scored higher on the AABS (total) than students. To further test criterion-related validity, mean scores on the AABS-33 subscales were compared across the anxiety and student groups. Table 19 presents the results of t-tests investigating the difference between groups in terms of AABS-33 factor scores.

Table 19.

Differences in AABS-33 Subscale Scores Across Groups

Measure	Group	<i>t</i>	<i>df</i>	<i>p</i>
	Anxiety Group			
Caution	Students	3.62	211	< .001
	Anxiety Group	8.49	344	< .001
Evaluation Sensitivity	Students			
	Anxiety Group	3.27	344	< .001
Thought-Outcome Fusion	Students			
	Anxiety Group			
Anxiety-Based Reasoning	Students	4.70	208	< .001
	Anxiety Group	2.40	344	< .05
Catastrophizing	Students			

As can be seen, members of the anxiety groups scored significantly higher on all five AABS-33 factors than students. It should be noted that homogeneity assumptions were not met in the case of Caution ($F = 5.93, p < .05$) and Anxiety-Based Reasoning ($F = 8.22, p < .01$) and therefore separate variance estimates were used. In conclusion, results showed that the AABS-33 assessed attitudes and beliefs that are related to anxiety (i.e., the anxiety group scored higher than students) in this sample. However, the AABS-33 also appeared to index beliefs that are related to depression.

Exploratory group comparisons

As previously mentioned, participants were asked to indicate where they heard about the study. On the basis of the information participants provided it was possible to classify members of anxiety Internet groups into five separate categories according to the type of web community they belonged to. For example, participants who heard about the study from OCD Action and OCD UK were grouped into an OCD group. Those participants who belonged to a general anxiety web community such as Anxiety Care were grouped into a Not Otherwise Specified (NOS) group. Table 20 displays descriptive information for the various groups on the DASS-21 scales, the AABS-33 total scale and subscales. Descriptive information for the student group can be observed in table 16 (see p. 100).

Table 20.

Descriptive Statistics for the DASS-21 Depression, Anxiety and Stress Scales and AABS – 33 across the NOS, Social Anxiety, OCD, Phobia and Panic Groups

	NOS	Social Anxiety	OCD	Phobia	Panic
Scale	<i>M(SD)</i>	<i>M(SD)</i>	<i>M(SD)</i>	<i>M(SD)</i>	<i>M(SD)</i>
DASS					
D	18.65(6.48)	20.45(5.96)	19.26(6.03)	19.32(6.76)	17.27(5.96)
A	16.20(6.35)	17.59(5.47)	15.95(5.24)	18.64(6.76)	18.23(5.55)
S	19.25(5.40)	20.77(4.95)	20.90(4.90)	20.45(5.96)	20.82(3.91)
AABS	138.57(37.56)	146.76(26.69)	147.07(40.65)	145.96(45.43)	139.96(36.90)
Cau	54.66(16.72)	57.93(14.88)	61.55(16.48)	56.74(20.81)	58.11(15.53)
EvS	37.71(11.89)	44.83(7.30)	37.64(12.34)	41.22(14.05)	36.81(11.16)
TOF	13.72(6.60)	12.07(5.84)	14.16(7.71)	12.91(7.57)	13.54(5.87)
ABR	17.14(6.61)	16.12(5.81)	17.41(7.14)	18.26(6.68)	16.65(5.84)
Catas	54.66(16.72)	57.93(14.88)	61.55(16.48)	56.74(20.81)	58.12(15.53)

Note. NOS, $n = 89$; Social Anxiety group, $n = 56$; OCD group, $n = 39$; Phobia group, $n = 22$; Panic group, $n = 22$. D, DASS-21 Depression scale; A, DASS-21 Anxiety scale; S, DASS-21 Stress scale; Cau, Caution; EvS, Evaluation Sensitivity; TOF, Thought-Outcome Fusion; ABR, Anxiety-Based Reasoning; Catas, Catastrophizing.

Using Lovibond and Lovibond's (2002) criteria, all the anxiety groups could be characterised as experiencing moderate depression and stress levels, but severe anxiety symptoms. Those participants who were recruited from social anxiety web communities appeared to report the highest depression levels, whilst the Phobia and Panic groups reported the highest level of anxiety symptoms. Reported stress was similar across groups.

In order to explore differences in depression, anxiety and stress levels across groups, a one-way ANOVA was conducted for each of the DASS-21 scales, comparing the scores across groups. To explore criterion-related validity across analogue diagnostic groups and controls (students), the mean AABS-33 total and factor scores were compared across the five anxiety and single student groups. Table 21 presents the results of the ANOVA's comparing the groups on DASS-21 and AABS-33 scores as well as displaying the results of post hoc comparisons. For ease of visualisation, groups are rank ordered according to means (from highest to lowest) and significant post hoc comparisons highlighted.

Table 21.

DASS-21 Depression, Anxiety and Stress Scale and AABS-33 scores for NOS, Social Anxiety, OCD, Phobia, Panic and Student Groups

Scale	<i>F</i>	<i>df</i>	Significant Tukey post hoc
DASS			
D	14.23***	5, 316	Social Anxiety, Phobia, OCD, NOS, Panic> Students
S	15.24***	5, 316	OCD, Panic, Social Anxiety, Phobia, NOS> Students
A	15.42***	5, 316	Phobia, Panic, Social Anxiety, NOS, OCD> Students
AABS	8.07***	5, 340	OCD, SocialAnxiety, Phobia, Panic, NOS> Students
Cau	3.44**	5, 340	OCD , Panic, Social Anxiety, Phobia, NOS> Students
EvS	19.02***	5, 340	Social Anxiety , Phobia> NOS , OCD> Panic > Students
TOF	2.83*	5, 340	OCD , NOS , Panic, Phobia, Social Anxiety> Students
ABR	4.26**	5, 340	Phobia , OCD , NOS , Panic, Social Anxiety> Students
Catas	.16	5, 340	

Note. * $p < .05$, ** $p < .01$, *** $p < .001$.

As can be observed, apart from Catastrophizing, each ANOVA was significant. Tukey post hoc comparisons were conducted to determine which groups differed significantly from one another. Students scored significantly lower than all the analogue clinical groups on depression ($p < .05$ for all significant comparisons), stress ($p < .001$) and anxiety ($p < .001$).

Students also scored significantly lower than all other groups on the total AABS-33 ($p < .05$ for all comparisons). The OCD group scored significantly higher ($p < .01$) on Caution than students. Students scored significantly lower than all other groups ($p < .01$ for all comparisons) on Evaluation Sensitivity and the Social Anxiety group scored

significantly higher on Evaluation Sensitivity than the NOS ($p < .01$), OCD ($p < .05$) and Panic ($p < .01$) groups.

The OCD and NOS groups reported significantly more Thought-Outcome Fusion beliefs than students ($p < .05$ for both comparisons). The Phobia, OCD and NOS groups scored significantly higher ($p < .05$ for all comparisons) than students on Anxiety-Based Reasoning. Thus, apart from Catastrophizing, the criterion-related validity of the AABS-33 is supported in that members of web communities for anxiety disorders scored significantly higher than students on the AABS-33 and its subscales. The fact that the Social Anxiety and the OCD groups scored significantly higher than students on Evaluation Sensitivity and Thought-Outcome Fusion beliefs, respectively, supports the validity (and specificity) of these subscales.

Partial Correlations

Given the differences observed in AABS scores across education level and employment status (see pp. 85-86), partial correlations between the AABS-33 and newly developed criterion measures, with the two demographic factors controlled for, were performed and are displayed in Table 22.

Table 22.

AABS-33, BIPS, BARS and BSBS Partial Correlations

Measure	AABS	Caution	EvSens	ToF	ABR	Catas
AABS						
Caution	.90					
EvSens	.74	.53				
ToF	.62	.51	.31			
ABR	.66	.54	.31	.44		
Catas	.62	.44	.42	.40	.28	
BIPS	.50	.47	.31	.38	.27	.36
BARS						
Social	-.30	-.21	-.43	-.22	-.009	-.12
Physical	-.27	-.34	-.20	-.14	-.12	-.01
BSBS						
General	.55	.49	.42	.34	.30	.44
Checking	.43	.47	.24	.19	.26	.31

Note. Correlations above .15 are significant at $p < .05$. Correlations above .18 are significant at $p < .01$. The BIPS, BARS (Total and Physical) and BSBS (total and subscales) have been transformed to offset for positive skew.

As can be observed, these correlations are generally somewhat smaller than the relevant Pearson's correlations but generally produce similar results. Therefore no further partial correlations were performed.

Discussion

This paper has described the development and validation of the AABS-33, a measure of attitudes and beliefs that are thought to play a role in anxiety problems. More specifically, the research aimed to determine the factor structure, reliability and validity of the measure. In terms of validity, construct validity was considered in a cognitive interviewing study. Convergent and discriminant validity were considered through more traditional means. Here the findings will be discussed in relation to the aims of the study and the literature that has been reviewed. First, the results of the cognitive interviewing study will be discussed. Subsequently, quantitative data analysis results will be discussed in terms of psychometric properties and validation correlations, and the implication of these considered. Finally, limitations are acknowledged and areas of future research identified before concluding with a general summary.

Cognitive Interviews and Construct Validity

The cognitive interviewing aspect of the study represents an attempt to directly examine the thought processes of respondents, whilst they considered questions on the AABS-R, in order to gauge what particular processes accounted for AABS-R score variations. The results support the findings of Brown and Hawkes (2008) in that respondents largely did not retrieve past anxiety episodes in order to formulate an answer and generally did not base their responses on the intensity or occurrence of feelings. Instead, responses were mostly based on the appraisal of likely consequences of phenomena and situations described in items. This corresponds to the findings of Brown and Hawkes (2008) who, in comparing the ASI-R and the AABS found that 17.4% of ASI, but 6.3% of AABS protocols involved anxiety retrievals, which was a

significant difference in proportions. In terms of judgement formation, they found that only a minority of ASI-R protocols (20.8%) but a majority (52.9%) of AABS protocols contained appraisals, indicating that AABS items were more likely to prompt cognitive appraisals than the ASI-R. Instead, ASI-R items were more associated with judgements based on the frequency of feelings (56.9%), whereas this was largely not true of AABS protocols (12.1%).

Arguably, cognitive interviews and the analytic approach deployed in the reported study, when compared to traditional validation procedures, represent a simpler and more intuitive way of understanding the processes that participants engage in when they respond to questionnaire items. Such an approach, as opposed to traditional validation methods, which were born within the then influential behavioural paradigm (e.g., Chronbach & Meehl, 1955), allows intervening mechanisms to be considered. This approach is fit for purpose given that AABS-type items are purported to engage participants in a cognitive, rather than an affective retrieval process, as specified by Beck's model.

In conclusion, the findings support the construct validity of the AABS-33 as a cognitive index that is relatively uncontaminated by the experience of affect. L. A. Clark and Watson (1995), supported by a previously noted neurological study (Keller et al., 2000), observe that a measure that includes negative mood terms (e.g., I am disturbed by...), will have a significant neuroticism element. In effect this almost assures a relationship with measures of affect. On the basis of reported findings, this confound is largely not a difficulty for the AABS.

Quantitative Study

AABS factor structure

One of the aims of the reported study was to perform a factor analysis to determine the factor structure of the AABS using a large sample. An exploratory principal factor analysis was used to extract factors and a five factor initial solution was obtained. The factors explained almost 53% of the variance in scores and the variables appeared to be well defined by this five-factor solution.

Three of the factors, Caution, Catastrophizing and Anxiety-Based Reasoning are similar to those found by Brown and his colleagues (2000) in the initial validation study. However, Thought-Outcome Fusion and Evaluation Sensitivity emerged as separate factors, which may be the result of duplicative and redundant items being dropped and other items being reworded as a result of a later validation study (Brown & Hawkes, 2008). The explanatory power of the solution that was obtained was better (53% of variance explained) than the one obtained by Brown and his colleagues (2000), which explained 32.3% of the total variance.

Thus, the factor structure of the AABS was obtained and underlying factors appeared to represent theoretically-relevant domains. The beliefs indexed by the AABS-33 are conceptually similar to cognitive constructs described in the anxiety literature. Beliefs about the importance of caution, planning and certainty (Ladouceur et al., 2000), a tendency towards self-preoccupation and to anticipate social evaluation and judgement (Wells & Mathews, 1994; Wells & Clark, 1997), metacognitive beliefs about the relationship between thoughts and negative outcomes (Obsessive Compulsive Cognitions Working Group, 2003; Shafran et al., 1996; Zucker, Craske, Barrios &

Holguin, 2002), basing inferences on subjective anxiety responses (Arntz et al., 1995) and beliefs about catastrophic outcomes (Moses & Barlow 2006; Weems, Costa, Watts, Taylor & Cannon, 2007) have all been described in the literature as possible maintenance or causal factors in anxiety, and some possibly in the emotional disorders generally (see Moses & Barlow, 2006; Harvey et al., 2004).

Reliability

Another aim of the study described here was to establish the reliability of the AABS-33 and its subscales in a student and anxiety group sample. Glass and Arnkoff (1997) emphasise that internal consistency is the appropriate estimate of reliability for self-report measures. A reliability analysis, in terms of Chronbach's alpha, a measure of internal consistency, indicated excellent total AABS-33 reliability. The British Psychological Society's Steering Committee on Test Standards (1992) suggests that an alpha value of .70 or higher is acceptable and all AABS-33 factors well exceeded this as alpha coefficients for Factors 1 to 5 were between .79 and .93. Also, the reliability of the AABS-33 was higher than that reported for the initial AABS scale (Brown et al., 2000), where alpha coefficients ranged from .72 to .86. Therefore, the AABS-33 and its subscales had adequate to excellent internal reliability in this population.

Discriminant validity

An important aspect of the reported study concerned investigating the relationship between the AABS-33 (and its subscales) and both anxiety and depression in order to establish discriminant validity. It is only in the last ten years that researchers have started to tackle the thorny issue of discriminant validity in order to establish whether particular cognition measures are uniquely associated with certain emotional states

(Clark, 1997). According to Beck's cognitive content-specificity hypothesis, particular anxiety-related cognitions should be specific to anxiety symptoms, just as depression-related cognitions have generally been found to be specific to depressive symptoms.

However, given the reviewed literature, this hypothesis was operationalized in such a way as to take into account comorbidity, the fact that most measures of anxiety and depression have been found to correlate highly and therefore the possibility that these disorders share common features (perhaps both affective and cognitive) and variance. Therefore, it was hypothesized that AABS-33 items would be associated with both anxiety and depression symptoms, but more strongly associated with anxiety symptoms. This was only partially supported in the total sample.

The DASS-21 Depression and Anxiety Scales were highly correlated in both the student ($r = .68$) and anxiety group samples, but somewhat less so in the anxiety group ($r = .57$). This corresponds to L. A. Clark & Watson's (1991) findings of concurrent correlations of .70 and .66 between measures of anxiety and depression symptoms, in non-clinical and clinical populations, respectively. Regarding discriminant validity, in the total sample AABS-33 total scores were similarly and highly related to both anxiety and depression, though slightly more so to depression. The Caution factor was similarly (and moderately) related to both depression and anxiety, though minimally more so to depression. Evaluation Sensitivity was highly related to both anxiety and depression, but somewhat more so to depression. However, Thought-Outcome Fusion beliefs, Anxiety-Based Reasoning and Catastrophizing were all more highly related to anxiety, though in the case of Anxiety-Based Reasoning this was slight. Thus, total

sample correlations only partially supported the discriminant validity of the AABS-33 and its factors.

Given that Caution appears to be conceptually related to (intolerance of uncertainty) beliefs that individuals with generalized anxiety may hold, and given that Evaluation Sensitivity appears to be related to beliefs held by many individuals who experience social anxiety and phobia, these presenting problems may represent a confound. In particular, it has been suggested that social phobia is one of the most severe conditions in adulthood and it is highly comorbid with depression. Generalized anxiety disorder is another chronic, severe and disabling classification (e.g., Andlin-Sobocki, 2005). This disorder is also commonly comorbid with depression (Barlow, 2002) and may share a genetic diathesis with it (e.g., Kendler, 1996). As previously noted, cognitions associated with generalised anxiety have been found to be associated with both depression and anxiety (Woody et al., 1998). In fact, generalised anxiety disorder may be more highly related to depression than to any alternative anxiety disorders (Brown, Moras, Zinbarg & Barlow, 1993; Brown, Marten and Barlow; 1995; Brown, Anson & DiBartolo, 1996).

It has been suggested that mixed (anxiety and depression comorbid) samples generally experience more severe symptoms and have a mixed cognitive profile (Clark et al., 1990). As noted, participants who were recruited from social anxiety web communities reported the highest depression levels, lending some support to the hypothesis that Evaluation Sensitivity may represent beliefs held by socially phobic individuals who are generally more depressed and severe than other anxiety group

members. Given that there was no analogue generalized anxiety disorder category, the severity hypothesis remains more speculative for the Caution subscale.

A correlational analysis was also performed in order to investigate possible group differences in terms of the relationship between the AABS-33, anxiety and depression, in both the student and anxiety group subsamples. Again, AABS-33 total scores were similarly related to both anxiety and depression in both groups, though marginally more so to depression. The Caution subscale was slightly more highly associated with anxiety than depression in the anxiety group. In the student group, Caution was only significantly related to depression. Evaluation Sensitivity was equally associated with anxiety and depression in the student group but more highly associated with depression in the anxiety group. This may again suggest that symptom severity and depression comorbidity play a part. Thought-Outcome Fusion beliefs were significantly associated with anxiety in the student group but not with depression. In the anxiety group, Thought-Outcome beliefs were more highly associated with anxiety than depression. Catastrophizing was more highly associated with anxiety in the anxiety group only, whilst in the student group, catastrophizing was more highly related to depression. Finally, Anxiety-Based Reasoning was equally related to anxiety and depression in the anxiety group but not significantly related to either anxiety or depression in the student group.

Thus, only Thought-Outcome beliefs were more related to anxiety than depression in both groups, whilst Caution and Catastrophizing were more associated with anxiety than depression in the anxiety group only. It should be noted that reported differences were generally small. In conclusion, the discriminant validity of the AAABS-33,

operationalizing the cognitive content-specificity hypothesis in terms of strength of association with anxiety, is only partly and not strongly supported in this sample. Arguably, the AABS-33 may however be more *specific* to anxiety than depression.

It is possible to offer several hypotheses for why the AABS-33 was not consistently more highly associated with anxiety than depression. Beck's theory suggests that cognitive content should enhance a measure's ability to discriminate between the two emotional disorders. The AABS-33 was developed specifically to index beliefs and attitudes thought to be causally related to anxiety only. Also, the cognitive content-specificity hypothesised was operationized in such a way as to be sympathetic to the fact that comorbidity is common and common factors have been suggested. Thus, one possibility is that the cognitive model is flawed. For example, Ellis (e.g., Ellis & Bernard, 1985) suggests that all emotional difficulties are the result of several irrational beliefs. Authors associated with the transdiagnostic perspective have also recently emphasised that the emotional disorders may share a common cause (e.g., Harvey et al., 2004; Moses and Barlow, 2006).

However, Ambrose and Rholes (1993) have suggested that anxiety and depression may be developmentally related in that threat cognitions lead to anxiety when the threat is appraised as relatively low, but lead to depression when threat is appraised as high. In this sense, high levels of threat cognitions may, in effect, take the form of loss cognitions and become associated with depression. It should be noted that their findings were based on a study that employed a nonclinical sample of children and adolescents. Their findings are supported by the observation that, though both depression and anxiety may be risk factors for later developing the other, anxiety is

more likely to be diagnosed first and depression later. Also, relatively pure depression is less common than a relatively pure anxious state. This raises the possibility that the emotional disorders exist on a single spectrum, with anxiety disorders representing the less severe variety (Mineka et al., 1998). Thus, it is possible that depressive cognitive content themes are uniquely associated with depression, and anxiety-related cognitive content is shared amongst the two emotional disorders. This was the conclusion reached by R. Beck and Perkins (2001) in their meta-review and may arguably explain the fact that the treatment of a particular anxiety disorder can result in improved mood (Barlow, Allen & Choate, 2004).

The findings of Ambrose and Rholes (1993) indicate a potential qualification to the specificity hypothesis. As noted, they found that the relationship between anxiety-related content, in the form of threat cognitions, and anxiety symptoms was a curvilinear one. Thus, when negative cognition levels are relatively low, anxiety is the result. However, when negative cognition levels are high, symptoms of depression predominate. From this hypothesis it follows that symptom severity may be an important consideration for those investigating cognition – anxiety relationships.

In the reported study, correlations between the AABS-33, its subscales and the DASS-21 Depression and Anxiety scales for the different analogue clinical groups suggested that Caution, Thought-Outcome Fusion and Catastrophizing were all more highly related to anxiety than depression in the analogue clinical group. Exploratory group comparisons suggested that beliefs about the importance of caution (Caution) and about the importance of thoughts (Thought-Outcome Fusion) were most highly endorsed by individuals recruited from OCD Action and OCD UK. Though mean

differences between the groups were not significant for Catastrophizing beliefs, the OCD group also most highly endorsed such beliefs (based on non significant mean differences). The Panic group also endorsed these beliefs highly. It should be noted that the OCD group scored lower, in terms of anxiety symptoms, than any other group, apart from students. In terms of depressive symptoms they were in the mid range as compared to the anxiety groups, whilst the Panic group had the lowest depression score of the anxiety groups. This may suggest that the OCD and Panic groups were less severe than some of the other groups and therefore that negative cognitions were more clearly linked to anxiety than depression. Alternatively, the findings may suggest that beliefs (Caution, Thought-Outcome Fusion and Catastrophizing) associated with OCD and perhaps panic disorder, are more specific to anxiety than depression generally.

The above discussion has focused on the product level (i.e., cognitions). However, the reported study is of course concerned with the propositional level (i.e., beliefs and attitudes). It is possible to imagine that similar processes may operate when it comes to causal factors in anxiety. As an example, consider two items from the AABS-33 Caution subscale, 'One should always be on the lookout for trouble that might be developing' and 'Planning every detail in advance is the only way to avoid unpleasant surprises'. It is not difficult to imagine how holding such beliefs can result in anxiety. An individual who holds these beliefs is likely to be hypervigilant and to experience increased autonomic arousal levels and symptoms. In addition, this person may experience frequent threat-related negative automatic thoughts, resulting in negative affect. Also, safety behaviours such as checking and planning may both strengthen this vicious cycle as well as limit an individual's ability to engage in enjoyable activities

and thus experience positive emotions. Eventually, this cycle may culminate in low mood and depression. In this example, the initial beliefs are a definite causal factor and specific to anxiety, which then acts as a mediator in the relationship between beliefs and depression. As noted by Baron and Kenny (1986) in their influential review of the distinction between moderators and mediators, mediator relationships are best introduced and investigated when there is a strong relationship between an assumed predictor (here the AABS-33) and the criterion (i.e., depression). Supposing such a relationship exists, anxiety-related attitudes and beliefs cause and are specific to anxiety. However, continued anxiety may then result in cognitive, behavioural and affective changes that perpetuate established difficulties and culminate in low mood. As noted, similar processes have been proposed to suggest for the persistence of depression (Bower, 1981; Brewin, 1996; Teasdale, 1993). This account is also consistent with Beck's model (e.g., 1987) and confirmatory factor analysis studies that have found significant pathways between negative affect and both mood and anxiety disorders (e.g., Brown, Chorpita & Barlow, 1998).

Supposing that this account is realistic, it is of course not clear for how long an individual may present with solely symptoms of anxiety, before distress develops into depression. As Feldman (1993) writes "Anxiety and depression may be distinct mood states, but they may also covary to such a degree that they are rarely found alone" (p. 639). The fact that Brown and his colleagues (2000) found statistical evidence for the predictive validity of the AABS supports the hypothesis that the beliefs indexed by the AABS-33 are antecedents to anxiety.

As noted, cognitive content-specificity findings have been found to be less robust in non-clinical than symptomatic samples (e.g., Steer et al., 1994). The findings of Ambrose and Rholes (1993) can potentially account for this in that at least a certain level of negative cognitions may be required for specificity to occur. However, Clark et al. (1996) replicated their study in a more symptomatic sample. Their findings suggested a linear rather than a curvilinear relationship in a depressed inpatient, and (a weaker relationship) in a medical sample. The authors conclude that specificity findings may not be as consistent in samples that experience lower symptom distress. Thus, “it may be that cognition and symptom constructs are not as well differentiated at lower levels of distress because of reduced scoring variability leading to less distinction between measures” (Clark et al., 1996, p. 150).

In the reported study, there was some evidence for such a view as AABS-33 factor - anxiety relationships were generally stronger in the analogue clinical than the student group. This will be discussed further when convergent validity is considered. Thus, and in conclusion, it is unclear how to account for the inconsistent findings regarding cognitive content-specificity predictions in the reported study. However, symptom distress may be an important consideration and may qualify the relationship between cognitions and affect, but not necessarily between causal factors and anxiety.

Do the reported findings suggest that the AABS-33 is not valid? Glass and Arnkoff (1997) strongly encourage researchers to investigate discriminant relationships and suggest that not finding such evidence is of value in contributing to a knowledge base regarding common factors across disorders. Concurrent associations between the AABS-33, anxiety and depression may suggest that the two emotional disorders share

common cognitive features, though this again does not preclude cognitive content-specificity at the causal level. Of course it is also possible that the AABS-33 does not index beliefs that are truly anxiety-specific and in accordance with the cognitive model, despite the care taken to do exactly that during its development. Also, the results of the cognitive interviewing study and previous findings (Brown et al., 2000; Brown & Hawkes, 2008) lend support to the construct validity of the measure as an index of cognitive propositional content that is predictive of anxiety disorders.

In conclusion, the reported findings regarding the relationship between anxiety-related beliefs and anxiety and depression appear to add to earlier findings that contradict the cognitive content-specificity hypothesis. The question that Dobson (1985) raised, over 20 years ago, of whether the distinction between anxiety and depression is “more conceptually satisfying than empirically demonstrated”, appears to remain relevant (p. 526). Generally, reported findings thus far may provide more support for a transdiagnostic approach to conceptualising the emotional disorders, than a disorder-specific approach, in student and analogue anxiety groups. However, the prospective relationship between the AABS-33 and anxiety disorders is of course the key validity index of the measure and in effect, would also have a bearing on the validity of Beck’s cognitive content-specificity hypothesis. Thus, it is clear that the beliefs and attitudes indexed by the AABS-33 are related to both anxiety and depression. However, whether these beliefs are “antecedents, concomitants or consequences” of these disorders has not been established (Barnett & Gotlib, 1988).

Convergent validity

A key prediction was that the beliefs indexed by the AABS-33 would be related to anxiety symptoms. This was clearly the case for the full sample where the AABS-33 and DASS-21 Anxiety scale correlated highly. The measure also had a significant (moderate) relationship with anxiety symptoms in the student group, and a somewhat higher relationship with anxiety in the anxiety group sample. This supports the validity of the AABS-33 as a measure of beliefs that are associated with anxiety symptoms.

Another prediction of the current study was that the relationship between AABS-33 items and anxiety symptoms would be stronger in the (analogue) clinical than student sample. This hypothesis was supported in that, as noted, the total AABS-33 score was somewhat more highly associated with the DASS-21 Anxiety scale in the anxiety than the student group. In terms of individual subscales, Caution and Anxiety-Based Reasoning had a significant association with anxiety in the anxiety group sample, whereas in the student sample these relationships did not reach significance. Though Catastrophizing was significantly associated with anxiety in both groups, this relationship was stronger in the anxiety than the student group. However, Evaluation Sensitivity was clearly more highly associated with anxiety in the student than the anxiety group, which may indicate that in the anxiety group, anxiety had developed into depression, given that the group that endorsed these beliefs the most (Social Anxiety group) had the highest depression scores. Thought-Outcome Fusion was similarly related to anxiety symptoms in both groups. Thus, the expectation that the association between the AABS-33 and anxiety symptoms should be stronger in more symptomatic groups is generally supported and supports vulnerability predictions. It appears that it is possible to hold some of the beliefs that are indexed by the AABS-33

without endorsing highly the symptomatic (purported) consequences of those beliefs. This tentatively supports the construct validity of the AABS-33 as a measure of beliefs that precede symptoms.

Questions about the convergent validity of the AABS-33 also had to do with confirming a predictable pattern of relationships between the measure and various proposed correlates of anxiety, such as safety behaviours, risk avoidance, worry and social evaluation. These predictions were mostly established on the basis of transdiagnostic research and theorizing as well as, for the concept of stress, Beck's stress-vulnerability predictions.

The correlational findings regarding the relationship between the AABS-33 and the various criterion measures were encouraging. First, the relationship between the AABS-33 and the DASS-21 Stress scale was substantially higher in the anxiety than the student group. Given that DASS-21 Anxiety scale scores were higher in the anxiety than student group, this can be seen to tentatively support Beck's model, which implies that stress, in interaction with certain dysfunctional beliefs, may result in increased symptoms. AABS-33 subscale scores were mostly more highly associated with stress in the anxiety than student group, lending tentative support to Beck's predictions.

The intercorrelations between anxiety-related beliefs and attitudes as indexed by the AABS-33 and anxiety sensitivity were as predicted. Thus, the AABS-33 and its subscales were all significantly related to the ASI-3 and its subscales. As predicted, beliefs about the importance of Caution were (highly) related to Physical AS concerns. Evaluation Sensitivity was also, as predicted, highly related to Social AS concerns and

Catastrophizing was moderately related to Physical and highly related to Cognitive AS concerns. Anxiety-Based Reasoning was (moderately) associated with Physical and Cognitive AS concerns as predicted. No specific predictions were made for Thought-Outcome Fusion. However, this subscale was moderately related to Cognitive and Physical Concerns. In conclusion, these associations support the validity of the AABS-33 and are consistent with it being a distal predictor of anxiety sensitivity, which is arguably a proximal predictor of anxiety problems, given that the content of the ASI-3 subsumes both cognitive and affective dimensions. It should be noted that though the associations of the AABS-33 and the ASI subscales are consistent with this hypothesis, neither the direction of the relationship nor causality was determined.

Other concurrent correlation predictions were also observed. Caution was moderately associated with worry and thought-outcome fusion (Likelihood) beliefs as predicted. However, it was also moderately associated with moral thought-action fusion beliefs. This is not surprising given that these two types of thought-action fusion belief commonly co-occur (Shafran et al., 1996). The Caution factor was also highly related to adopting general safety behaviours and moderately associated with a tendency to check. Given that the OCD group endorsed beliefs about the importance of caution highly, the finding that such beliefs are associated with checking is not unexpected. Caution was also moderately associated with a tendency to being aversive to taking physical risks and to overestimating the occurrence of negative outcomes.

Evaluation Sensitivity beliefs were highly associated with a measure of social anxiety, AS social concerns, avoiding social risks and adopting general safety behaviours. A moderate association was observed between this subscale and a tendency to expect

negative outcomes as well as worry. These associations are all in the predicted direction.

Thought-Outcome Fusion beliefs were, as expected, highly associated with thought-action fusion (Likelihood) beliefs, which have been found to be implicated in obsessive compulsive disorder. These beliefs were also (moderately) related to expecting negative outcomes and holding moral thought-action fusion beliefs.

Although this subscale was associated with checking behaviours as anticipated, this association was weak and other subscales, in particular Caution, were more highly associated with this form of safety behaviours. This may support the transdiagnostic perspective in that particular beliefs (as measured by the AABS-33) may not map onto traditional diagnostic categories but rather be relevant to various classifications and their correlates.

Apart from a predicted relationship with anxiety sensitivity, which was demonstrated, no predictions were made for Anxiety-Based Reasoning. However, given that such beliefs have been suggested as causal factors in anxiety presentations generally, concurrent correlations between this subscale and anxiety correlates were of interest. This subscale was most clearly (moderately) associated with adopting safety behaviours and over-expecting the occurrence of negative outcomes. In terms of established measures, this subscale was most highly (and moderately) associated with holding TAF beliefs.

Exploratory group comparisons involved comparing differences in AABS-33 factor scores across groups (according to which web community they were recruited from).

Significant findings suggested that Caution and Thought-Outcome Fusion were most highly endorsed by the OCD anxiety group. The Social Anxiety group was most likely to report holding Evaluation Sensitivity beliefs, whilst the Phobia and OCD groups highly endorsed holding Anxiety-Based Reasoning beliefs. The Phobia group endorsed these items significantly more highly than the OCD, NOS and Student groups and previous studies have confirmed that clinically diagnosed phobic groups employ reasoning strategies such as these (de Jong, Mayer & van den Hout, 1997). Though this finding suggests specificity, it is important to note that these beliefs were also held highly by individuals recruited from OCD communities (as well as the undefined individuals who made up the category of NOS). This is an observation echoed by researchers (e.g., Emmelkamp & Aardema, 1999) who report that emotional reasoning biases are significantly associated with OCD symptom measures. Thus, and resonating Arntz and his colleagues (1995), the “tendency to infer danger on the basis of subjective anxiety... may play a role in the development and maintenance of anxiety disorders” generally (1995, p. 917).

Overall, the pattern of findings is consistent with the transdiagnostic perspective in that the beliefs indexed by the AABS-33 appeared to be shared among analogue anxiety disorder groups and related to various anxiety correlates. This is consistent with emerging evidence, previously discussed, that suggests the anxiety disorders overlap considerably (Moses & Barlow, 2006). However, certain beliefs may be more highly associated with certain anxiety disorders (e.g., Thought-Outcome and Evaluation Sensitivity beliefs were highly associated with OCD and Social Anxiety group membership, respectively) and perhaps more specific to them, which would support the cognitive model in terms of content specificity. However, the findings generally

diverge from predictions derived from Beck's specificity hypothesis in terms of discriminant relationships, but not vulnerability-stress predictions. The clinical implication of these findings is that recent efforts to create transdiagnostic treatments (see Moses & Barlow, 2006) may be a useful endeavour. The AABS-33 may be valuable in providing clinical material for such a unified treatment approach by allowing practitioners to identify and modify attitudes and beliefs that underlie more than one presenting concern (e.g., both OCD and panic). More generally, the AABS-33 can be used in clinical settings to identify problematic beliefs and attitudes that are associated with anxiety and depression.

Limitations and Future Directions

The study reported here has limitations. The cognitive interviewing study employed think-aloud protocol analysis, which is an established methodology. However, it has not often been used to evaluate the construct validity of clinical measures. In addition, the sample size was small and this limits the generalizability of findings. However, as noted, a previous larger study had validated many of the items on the AABS, and also the four respondents each, in effect, produced multiple protocols that were analysed. Finally, though the rater was blind to the aims of the study and endeavoured to be impartial, the results need to be viewed as provisional until replicated, preferably by more than one rater, and interrater reliability confirmed.

In terms of the quantitative validation study, there are possible limitations. First, because this is a self-report, cross-sectional survey, it is not possible to assert that any relationships observed are causal and there is a risk of response consistency bias and that common method variance of the measures inflated results (Spector, 1981). Thus,

further testing is required, preferably on a longitudinal basis. An estimate of test-retest reliability is required and generally, a prospective element is of course also essential for supporting the validity of the AABS-33 as a distal measure of cognitive vulnerability. Abramson and Alloy (1992) argue that such studies should involve a sample selected on the grounds of a particular cognitive style that are then assessed in terms of symptom status at a later point. It is also important to acknowledge that no procedures were applied to correct for multiple testing, increasing the risk of type 1 errors.

Despite the encouraging findings of the cognitive interviewing study regarding the construct validity of the AABS, whether items on the AABS-33 index beliefs that predispose individuals to develop anxiety disorders remains an empirical question. Brown et al. (2000), using structural modelling, settled on a final structural model that was consistent with the prediction that AABS items index phenomena that are more related to anxiety than depression and are precursors of anxiety. Therefore, there is support for the overall validity of the AABS. Also, an index of anxiety sensitivity has been found to predict later panic disorder (Ehlers, 1995). Given that the AABS-33 was highly associated with the ASI subscales it is not unlikely that it has a prospective relationship with anxiety as well.

However, given that it has been difficult to demonstrate the causal role of dysfunctional attitudes in anxiety (e.g., Burns & Spangler, 2001), whether the effort put into developing the AABS as a measure of beliefs, not contaminated by affect, has paid off, will need to be further investigated.

The Internet recruitment method requires a discussion. Technology advances have extended possibilities for psychological research (BPS, 2007). Collecting data on the Internet has obvious appeal, as it is possible to approach a potentially large and diverse group of people. However, important questions are raised by such an approach to data collection. A key concern is whether individuals' behaviour changes as a result of being online (Cleland, 2006). In fact, there is evidence that Internet administered surveys (when compared to paper methodologies) are associated with a reduction in socially desirable responses (Frick, Bachtiger & Reips, 2001; Joinson, 1999), an increased readiness to respond to sensitive questions (see Tourangeau, 2004) and higher rates of self-disclosure (Weisband & Kiesler, 1996).

Despite such encouraging findings there are various possible limitations associated with this approach. Here, the most noteworthy potential limitation is that, though participants recruited through web communities for specific anxiety disorders reported elevated anxiety levels, it was not possible to determine whether these were clinically significant. Arguably, these participants had self-selected to each web community for a reason and their scores on the anxiety and depression symptom measures suggested elevated levels of both, but higher anxiety levels. Thus, these individuals may be similar to the typical clinical patient, given the large degree of anxiety and depression comorbidity in clinical samples. However, before these results can be generalised they obviously need to be replicated in a clinical sample and by establishing formal diagnoses. It would also be of interest to examine whether the beliefs and attitudes indexed by the AABS-33 are sensitive to the effects of treatment and whether mood induction results in different endorsement patterns on the AABS-33. Given that the Internet anxiety group sample included only a few definable disorders (i.e., social

anxiety, specific phobias, panic disorder and OCD), it would be of interest to replicate this study in a sample that comprised other diagnosable anxiety disorders (e.g., post-traumatic stress disorder, agoraphobia with and without panic and generalized anxiety disorder).

In addition, given that the anxiety sample displayed elevated depression as well as anxiety symptoms, the sample or a subset of the sample (such as the social anxiety group) may have been a severe one in terms of symptomatology. It has been frequently suggested that samples that are both anxious and depressed represent a distinct and more severe diagnostic group (e.g., Clark et al., 1990). As such, it will be important to investigate the cognitive specificity prediction in such samples, as well as relatively pure depressed and anxious samples. Future studies will need to examine the effect of comorbid depression on anxiety-related beliefs and whether the beliefs assessed by the AABS-33 are more specific in particular samples. As noted, Brown and his colleagues (2000) reported that the AABS had a more specific relationship with anxiety than depression in a student sample, which may suggest that the AABS behaves differently, depending on symptom severity. Also, L. A. Clark and Watson (1991) report that clinical ratings of depression and anxiety result in better discrimination between the two constructs, suggesting that future studies may well have to employ separate diagnostic assessment methods.

In terms of generalizability and sampling bias, despite Internet samples being more heterogeneous than samples recruited by traditional methods, it is not possible to target potential participants randomly (Birnbaum, 2004; Duffy, 2002; Kraut et al., 2004). Gosling, Vazire, Srivastava and John (2002), in their review, found that Internet users

and nonusers did not differ in terms of depression ratings. However, they concluded that, despite Internet samples typically being more diverse than typically derived samples, they are not always representative and the generalizability of findings is therefore a concern (Birnbaum, 2004; Kraut et al., 2004).

The sample employed in the current study was predominantly young, female and white. Despite this, the sample was more heterogeneous than the typical student sample and also, research findings suggest that analogous conclusions can be reached between offline and online samples (Gosling, et al., 2004; Pettitt, 2002). Finally, student samples represent a highly select sample, which reduces the generalizability of findings to the population as a whole. However, as noted, such samples allow initial vulnerability predictions to be tested and in addition, allowed some comparisons to be made with regards to a previous AABS validation study.

Another potential but related limitation concerns the measures used. If the constructs were not indexed in a valid manner, the findings will be suspect. However, the established measures were all well validated and reliable measures that have been used in a large number of previous research studies. The three measures of transdiagnostic processes however are currently being validated (Brown & Bohn, personal communication, February 24, 2008), the conclusions of which have obvious bearings on the reported study. Nonetheless, because no other such measures have been developed with a transdiagnostic perspective in mind, these were appropriate.

As noted by Henry and Crawford (2005) the DASS Stress scale's construct validity has at times been questioned. In particular it has been suggested that the scale indexes

general distress. However, Henry and Crawford (2005) found the DASS-21 Stress scale to be a valid index of stress, supporting the validity of the findings reported here. Yet, it should be noted that it is the interaction between attitudes and beliefs on the one hand, and stress on the other, that is the essential test of the predictive validity of the AABS-33. Also, though reported stress was higher in the anxiety group, stress may of course be a concomitant or consequence of anxiety, rather than an antecedent. Thus, a predictive study will be required to investigate stress - vulnerability interactions.

In the current study there was an emphasis on selecting measures that could differentiate anxiety from depression, given that most such measures correlate highly. Thus, if mood questionnaires lack discriminant validity and are comprised of overlapping items, cognitive-affective specificity predictions cannot be determined. The DASS-21 scales have been found to display better discriminant (as well as convergent) validity than many well-validated measures of anxiety and depression (Henry & Crawford, 1995). However, it is possible that future studies would benefit from using the Mood and Anxiety Symptom Questionnaire (MASQ; Watson & L. A. Clark, 1991), which has demonstrated excellent discriminant validity between symptoms of anxiety and depression, with correlations as low as .25 and as high as .49 (Watson & L. A. Clark, 1995). It is possible though that such discriminant power may be at the price of reduced convergent validity (Burns & Eidelson, 1998).

An obvious limitation of the study resulted from splitting the anxiety groups for exploratory group comparisons, which resulted in a very small sample size for some of the groups (e.g., the Panic and Phobia group only had 22 individuals). Thus, the findings should be regarded as tentative and need to be replicated using larger specific

anxiety disorder samples. Also, due to the interaction of demographic variables (in the form of employment and educational status) with the AABS-33, partial correlations were obtained in order to control for effects of these. Given that these resulted in similar results to the Pearson's correlations and that it is likely that observed effects were not independent, it is possible to conclude that demographic interactions largely did not influence observed relationships.

Despite the noted shortcomings, reported findings support the reliability and, partially, the validity of the AABS-33 as a self-report index of anxiety-related phenomena, which may have research and clinical utility for testing aspects of the cognitive model as well as the extent to which dysfunctional beliefs improve following cognitive restructuring. However, further research is clearly necessary. Until such investigations are undertaken, reported current findings suggest the AABS-33 provides a plausible foundation for the study of propositional constructs and anxiety.

A good theory can be recognised by the degree to which it stimulates and generates productive research avenues. In this sense, Beck's theory has succeeded. It has led to significant insights in describing and explaining many aspects of the anxiety disorders, thus perhaps paving the way for the study of comorbidity, a long recognised challenge in clinical psychology.

Clinical practitioners may find it difficult to buy into the transdiagnostic approach given that individuals experiencing depression or anxiety often present in strikingly different ways. For example, it is possible to imagine two clients, one presenting with endogenous depression and another presenting with a recent episode of panic disorder

and perceptual derealization. The two seem to share few presenting concerns, apart from negative affect. Such clinical observations have arguably strengthened the face validity of Beck's cognitive content-specificity hypothesis. Just as researchers, keen to explore predictions of the cognitive model, have struggled to explain comorbidity and similarities, so will researchers associated with the transdiagnostic approach face their biggest challenge in trying to account for differences between psychological disorders. However, as Harvey et al. (2004) notes, a transdiagnostic approach mirrors developments in cognitive theory and science, which has recently concerned itself with a more complex conceptualization of how cognition and behaviours interact (e.g., Teasdale & Barnard, 1993). Thus, the reported study contributes to a growing research and clinical literature concerned with complex phenomena and consequently with complex answers.

Conclusion

The reported study set out to further develop the Anxiety Attitude and Belief Scale, which is a measure of attitudes and beliefs thought to be causal in anxiety problems. The aims of the study were met. The factor structure and reliability of the AABS was determined and the resultant AABS-33 measure was found to show adequate construct validity. The measure appears to index beliefs and attitudes, which are associated with anxiety and various correlates of anxiety. Some of the beliefs and attitudes indexed by the measure may be more specific to certain anxiety disorders than others, though they generally appear to be shared among the anxiety disorders. Though the discriminant validity of the measure was only partly supported in the total sample, suggesting that depression and anxiety may share common factors, the measure was found to be more

highly related to anxiety in the analogue clinical samples. This supports vulnerability predictions and is in line with previous findings (Brown et al., 2000).

In conclusion, the AABS-33 appears to be a psychometrically sound, reliable and valid measure of anxiety and its correlates. However, discriminant validity was not established and this requires further consideration.

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Appendix 1: Recruitment information sheet for cognitive interview participants

Title: The Development of a Questionnaire assessing the link between Thinking and Emotions.

Experimenter's name: Solveig Jonsdottir

Experimenter's position. Student. Doctorate in Clinical Psychology

Supervisor. Dr Gary Brown, Senior Lecturer.

Description of research session: You will be asked to complete questions on a questionnaire, which assesses the link between thinking and emotions, whilst you 'think aloud' about your answers. After completing the questionnaire you will be asked a few a few questions about your experience of completing it. The session will be taped and the recording (anonymous) will be destroyed after coding has been completed.

Number of research sessions needed (in half-hour blocks): 2

To participate: SIGN UP on the attached time sheet

COPY DOWN the following:

Experimenter's name	Solveig Jonsdottir
Experimenter's phone/office	
Experimenter's email address	S.Jonsdottir@rhul.ac.uk
Room where research is held	
Day and time you are booked	

Appendix 2: Recruitment message for students and web community members

THINKING AND ANXIETY: Participants are needed for an online ANONYMOUS SURVEY of how ways of thinking may be related to experiencing anxiety. It should take between 30-45 minutes to complete. ** Those participating will be eligible for a prize draw with one £50 prize, two £25 prizes, and three £10 prizes.

** If you think that you might be interested, please follow this link for more information:

<http://tinyurl.com/XXXX>

Thank you in advance.

Solveig Jonsdottir (S.Jonsdottir@rhul.ac.uk)

Appendix 3: E-mail sent to web community moderators

ANXIETY STUDY

My name is Solveig Jonsdottir and I am working on research with my supervisor Dr Gary Brown as a part of my Doctorate in Clinical Psychology at Royal Holloway, University of London.

We have developed a series of questionnaires aimed at unravelling what places certain people at greater risk for developing problems with anxiety. We also hope to better characterize the nature of anxiety problems. The set of measures to date has profited greatly from the input of individuals with anxiety problems. We hope to continue this collaborative relationship, and are currently seeking participants for an online survey furthering this line of research. The Royal Holloway University Research Ethics Committee has approved this study.

The entire study is being administered on the Internet, is anonymous and should take about 30-45 minutes. Those participating will be entered into a prize drawing of one £50 prize, two £25 prizes, and three £10 prizes.

Would it be possible to advertise the study on your website?

Many thanks for your consideration,

Solveig Jonsdottir

Appendix 4: Participating Internet communities and forums

Anxiety Care - <http://www.anxietycare.org.uk/>

Anxiety Support - <http://www.anxietysupport.org.uk/>

National Phobics Society - <http://www.phobics-society.org.uk/>

No Panic - <http://www.nopanic.org.uk/>

No More Panic - <http://www.nomorepanic.co.uk/>

OCD-UK - <http://www.ocduk.org/>

OCD Action - <http://www.ocdaction.org.uk/ocdaction/index.asp>

Social Anxiety UK - <http://www.social-anxiety.org.uk/>

Social Anxiety Forums - <http://www.socialanxietyforums.com/>

The Anxiety Community Forum - <http://www.anxietyhelp.org/index.html>

Uncommon Knowledge - <http://www.uncommonforum.com/viewforum.php?f=7>

Appendix 5: NHS recruitment flyer



RESEARCH PARTICIPANTS NEEDED

Participants are needed for an online **ANONYMOUS SURVEY** of how ways of thinking may be related to experiencing anxiety. It should take between 30-45 minutes. Anyone can participate. The study is being conducted at Royal Holloway University of London.

Those who take part will receive a £5 voucher, which can be used at high street shops. If you think that you might be interested, please take one of the slips and log on to the listed website at your convenience.

The link is <http://tinyurl.com/XXX>

Your help would be greatly appreciated.

Appendix 6: Information letter sent with NHS opt-in letters



RESEARCH PARTICIPANTS NEEDED

This service is involved in the recruitment of participants for a research study and would appreciate your help. The research is being carried out by Solveig Jonsdottir, as a part of her Doctorate in Clinical Psychology, and Dr Gary Brown (both at Royal Holloway, University of London).

They have developed a series of questionnaires aimed at unravelling what places certain people at greater risk for developing emotional difficulties. They also hope to better characterize the nature of such problems. The set of measures to date has profited greatly from the input of individuals like you. They are currently seeking participants for an online survey furthering this line of research. The Royal Holloway University Research Ethics Committee has approved this study.

The entire study is being administered on the Internet, is **anonymous** and should take about 30-45 minutes. Please note that public libraries have Internet access should you not have a home computer. **Anyone can take part.** Those who take part in the study will receive a **£5** voucher, which can be used at high street shops.

It is important to note that participation is **voluntary** and your decision about whether to take part or not will not affect your care in any way.

For further information and/or to take part please go to

<http://tinyurl.com/XXX>

Thank you in advance. We very much appreciate your help.

*** If you have questions please contact: s.jonsdottir@rhul.ac.uk*

Appendix 7: Royal Holloway, University of London Ethics Committee approval

QuickTime™ and a
PDF (Acrobat) document viewer
are needed to see this picture.

Appendix 8: Royal Holloway, Psychology Department Ethics Committee approval

QuickTime™ and a
TIFF (Uncompressed) decompressor
are needed to see this picture.

Appendix 9: Riverside Research Ethics Committee approval

Riverside Research Ethics Committee

Room 4W/12, 4th Floor West
Charing Cross Hospital
Fulham Palace Road
London
W6 8RF
Telephone: 020 8846 7282
Facsimile: 020 8846 7280

Ms. Solveig Jonsdottir
Trainee Clinical Psychologist
Royal Holloway University of London
Psychology Department
Egham, Surrey
TW20 0EX

02 October 2007

Dear Ms. Jonsdottir

Full title of study: **Validation of the revised Anxiety Attitude and Beliefs
Scale**

REC reference number: **07/H0706/66**

Thank you for your letter of 14 September 2007, responding to the Committee's request for further information on the above research and submitting revised documentation.

The further information has been considered on behalf of the Committee by the Chair.

Confirmation of ethical opinion

On behalf of the Committee, I am pleased to confirm a favourable ethical opinion for the above research on the basis described in the application form, protocol and supporting documentation as revised.

Ethical review of research sites

The Committee has designated this study as exempt from site-specific assessment (SSA. There is no requirement for [other] Local Research Ethics Committees to be informed or for site-specific assessment to be carried out at each site.

Conditions of approval

The favourable opinion is given provided that you comply with the conditions set out in the attached document. You are advised to study the conditions carefully.

Approved documents

The final list of documents reviewed and approved by the Committee is as follows:

<i>Document</i>	<i>Version</i>	<i>Date</i>
Application	1	19 June 2007
Investigator CV		19 June 2007
Protocol	1	22 June 2007
Questionnaire: AABS-R	1	19 June 2007
Questionnaire: Brief Safety Behaviour Scale		
Questionnaire: Brief Inflation of Probability Scale	1	19 June 2007
Questionnaire: Brief Aversion to Risk Scale	1	19 June 2007
Questionnaire: The Penn State Worry Questionnaire (PSQW)		05 January 2006
Questionnaire: thought-Action Fusion Scale		01 January 1996
Questionnaire: DASS21	1	19 June 2007
Questionnaire: ASI-3	1	19 June 2007
Questionnaire: Brief Fear of Negative Evaluation Scale		01 January 1983
Advertisement	1	19 June 2007
Participant Information Sheet	2	14 September 2007
Participant Consent Form	1	19 June 2007
Response to Request for Further Information	1	14 September 2007
Appendix A - Changes to Specific Questions		
Insurance Arrangements		01 August 2007
Supervisor CV		19 June 2007

R&D approval

All researchers and research collaborators who will be participating in the research at NHS sites should apply for R&D approval from the relevant care organisation, if they have not yet done so. R&D approval is required, whether or not the study is exempt from SSA. You should advise researchers and local collaborators accordingly.

Guidance on applying for R&D approval is available from <http://www.rdforum.nhs.uk/rdform.htm>.

Statement of compliance

The Committee is constituted in accordance with the Governance Arrangements for Research Ethics Committees (July 2001) and complies fully with the Standard Operating Procedures for Research Ethics Committees in the UK.

Feedback on the application process

Now that you have completed the application process you are invited to give your view of the service you received from the National Research Ethics Service. If you wish to make your views known please use the feedback form available on the NRES website at:

<https://www.nresform.org.uk/AppForm/Modules/Feedback/EthicalReview.aspx>

We value your views and comments and will use them to inform the operational process and further improve our service.

07/H0706/66

Please quote this number on all correspondence

With the Committee's best wishes for the success of this project

Yours sincerely

Dr Sabita Uthaya

Chair

Email: james.murphy@imperial.nhs.uk

Enclosures: Standard approval conditions SL-AC2

Copy to: Dr Gary Brown

Appendix 10: The Anxiety Attitude and Belief Scale-R (AABS-R)

INSTRUCTIONS: This inventory lists different beliefs that people sometimes hold. Please read each statement carefully, decide how much you believe what is stated, and circle the number corresponding to how much you agree. Please try not to think too much about each item--people are different, so there is no right or wrong answer. To decide how much you agree with a statement, simply keep in mind what you are like **most of the time**.

<u>EXAMPLE</u>	I DON'T BELIEVE THIS AT ALL							I BELIEVE THIS COMPLETELY
You should not put off until tomorrow what you can do today.	0	20	40	50	60	80	100	
<i>In the example, the number "80" has been circled, indicating strong, but not complete, agreement with the statement.</i>								

Please now make a rating for each of the following items.

	I DON'T BELIEVE THIS AT ALL							I BELIEVE THIS COMPLETELY
1. Things that you can imagine are more likely to come true	0	20	40	50	60	80	100	
2. Having negative thoughts means you are a bad person.	0	20	40	50	60	80	100	
3. You can never have enough information for making the right decision.	0	20	40	50	60	80	100	
4. If you don't make an effort, you can easily lose control of yourself.	0	20	40	50	60	80	100	
5. It is important to always appear fully at ease.	0	20	40	50	60	80	100	
6. Insanity can gradually creep up on you	0	20	40	50	60	80	100	
7. It is important to be on the lookout the first, small signs of an illness.	0	20	40	50	60	80	100	
8. In general, it is better to keep things the way they are than to take the risk of making things worse.	0	20	40	50	60	80	100	

9. Thinking about bad things that have happened to other people could cause the same thing to happen to you.	0	20	40	50	60	80	100
10. You should always take as much time as possible when making a decision in order to make the right choice.	0	20	40	50	60	80	100
11. The way to avoid problems is not to take any risks.	0	20	40	50	60	80	100
12. Imagining things that might happen can help bring those things about.	0	20	40	50	60	80	100
13. If someone is concerned about something happening in the future, they should take steps to insure that it does not come true	0	20	40	50	60	80	100
14. It is better not to rock the boat than to make changes.	0	20	40	50	60	80	100
15. It is unwise to proceed with something unless you have all of the possible information you might need.	0	20	40	50	60	80	100
16. It is better to carry out your activities when nobody is watching you.	0	20	40	50	60	80	100
17. Insanity can develop without warning.	0	20	40	50	60	80	100
18. It is better to be over-prepared for a potential disaster than to be caught unprepared.	0	20	40	50	60	80	100
19. You should be constantly looking out for things happening within your body so that you can detect things going wrong.	0	20	40	50	60	80	100
20. It is possible to instantly lose control of your mind.	0	20	40	50	60	80	100
21. If you imagine something bad happening, then it is up to you to make sure that it doesn't come true.	0	20	40	50	60	80	100
22. To avoid disasters, you need to be prepared for anything.	0	20	40	50	60	80	100
23. Ignoring feelings of anxiety means you risk overlooking something serious.	0	20	40	50	60	80	100

24. You should not allow yourself to be seen losing control of yourself in any way	0	20	40	50	60	80	100
25. A medical catastrophe can happen to anyone at any time.	0	20	40	50	60	80	100
26. Planning every detail in advance is the only way to avoid unpleasant surprises.	0	20	40	50	60	80	100
27. One should always be on the lookout for trouble that might be developing.	0	20	40	50	60	80	100
28. You should not get involved in something if you're not sure that you can manage it	0	20	40	50	60	80	100
29. It is essential to avoid being disapproved of by other people.	0	20	40	50	60	80	100
30. If you imagine something bad happening, it can help make that thing come true.	0	20	40	50	60	80	100
31. It is important always to keep in mind that a catastrophe can happen to anyone at any time.	0	20	40	50	60	80	100
32. It is best not to let on if you are in public and feel that something is wrong with you.	0	20	40	50	60	80	100
33. Anticipating the worst outcome prepares you for the worst.	0	20	40	50	60	80	100
34. It would be difficult to ever live down the embarrassment of losing control of yourself or acting strangely in public.	0	20	40	50	60	80	100
35. Picturing something happening might cause it to really happen.	0	20	40	50	60	80	100
36. Anxiety is generally a sign that something is wrong.	0	20	40	50	60	80	100
37. There is no such thing as being too careful when it comes to your health.	0	20	40	50	60	80	100
38. You should avoid being seen acting awkwardly.	0	20	40	50	60	80	100
39. People will make negative judgments if they think something is wrong with you.	0	20	40	50	60	80	100

40. Disasters are a lot more likely than most people realize.	0	20	40	50	60	80	100
41. Minor difficulties can easily get out of control and grow into major ones.	0	20	40	50	60	80	100
42. If someone is feeling anxious, there must be something for them to be concerned about.	0	20	40	50	60	80	100
43. It is crucial to anticipate potential difficulties so that you have a better chance of avoiding them.	0	20	40	50	60	80	100
44. It is possible to suddenly completely lose control of your behavior.	0	20	40	50	60	80	100
45. An unusual physical sensation in your body is likely to be a sign that something is seriously wrong with you.	0	20	40	50	60	80	100
46. Anxiety does not happen without there being a reason for it.	0	20	40	50	60	80	100
47. Even with small problems, one thing can lead to another and quickly turn into something huge.	0	20	40	50	60	80	100
48. When making a decision, it is better to play it safe rather than risk making the wrong choice.	0	20	40	50	60	80	100
49. You should always maintain control of your thinking	0	20	40	50	60	80	100
50. If you can foresee future problems you have a greater opportunity to prevent them.	0	20	40	50	60	80	100
51. People don't experience anxiety unless there is actually something they should be concerned about	0	20	40	50	60	80	100
52. It is necessary to continually be aware of signs that a health problem is developing.	0	20	40	50	60	80	100

Appendix 11: The Brief Inflated Probabilities Scale-13 (BIPS-13)

The items below present odds of certain undesirable events happening to someone. Please circle the answer that you believe best reflects your idea of *how likely* each event is to take place. Keep in mind that with odds, the bigger the number, the less the likelihood.

EVENT	PROBABILITY			
	Least likely	_____		Most likely
Chance of being injured on the job in the next year.	1 in 100	1 in 50	1 in 25	1 in 12

EVENT	PROBABILITY			
	Least likely	_____		Most likely
1. Chance of you getting the flu in the next year.	1 in 20	1 in 10	1 in 5	1 in 3
2. Chance of having a stroke in your lifetime.	1 in 12	1 in 6	1 in 3	1 in 2
3. Chance of dying from heart disease (lifetime).	1 in 6	1 in 3	1 in 2	1 in 1
4. Chance of developing Alzheimer's Disease in your lifetime.	1 in 150	1 in 75	1 in 36	1 in 18
5. Chance of developing schizophrenia in your lifetime.	1 in 200	1 in 100	1 in 50	1 in 25
6. Chance of being the victim of a burglary in the next year.	1 in 280	1 in 140	1 in 70	1 in 35
7. Chance of being physically assaulted in the next year.	1 in 600	1 in 300	1 in 150	1 in 75
9. Chance of you dying from any kind of accidental injury during the next year.	1 in 3,600	1 in 1,800	1 in 900	1 in 450
10. Chance of dying in a car accident (lifetime).	1 in 36,000	1 in 18,000	1 in 9,000	1 in 4,500
10. Chance of dying from any kind of fall (lifetime).	1 in 40,000	1 in 20,000	1 in 10,000	1 in 5,000
11. Chance of dying in an airplane accident (lifetime).	1 in 700,000	1 in 350,000	1 in 175,000	1 in 87,500
12. Chance of dying from choking on food (lifetime).	1 in 750,000	1 in 370,000	1 in 185,000	1 in 142,500
13. Chance of dying from food poisoning (lifetime).	1 in 6,000,000	1 in 3,000,000	1 in 1,500,000	1 in 750,000

Appendix 12: The Brief Safety Behaviour Scale -17 (BSBS-17)

Please indicate how often you engage in the following behaviours.

	Never or almost never	Some-times	Often	Always
1. Make sure you know where exits are located in public places.				
2. Check more than once that the door is locked before leaving.				
3. Memorize what you might say before going into a social situation				
4. Check that the gas is turned off more than once before leaving home.				
5. Grip the railing when walking down stairs.				
6. Closely monitor your pulse or heartbeat.				
7. Check rubbish to make sure you have not thrown something away without intending to.				
8. Make sure you know where the nearest toilet is.				
9. Eat very slowly and carefully				
10. Check forms and applications several times after completing.				
11. Take deep breaths before going into a social situation.				
12. Make sure something is nearby to hold onto when walking				
13. Make sure to have someone with you when you are out in public				
14. Double-check water taps to make sure they are turned off.				

15. Get up slowly and carefully so as not to fall over.				
16. Avoid making eye contact in social situations				
17. Keep things instead of deciding what should be thrown away.				

Appendix 13: Brief Aversiveness to Risk Scale-10 (BARS-10)

The following items describe behaviors that might be considered risky in some respect. Please rate the *percent likelihood* that you would engage in the behaviors described if given the opportunity.

	NOT AT ALL LIKELY						EXTREMELY LIKELY
1. Ask someone to stop causing a disturbance.	0	20	40	50	60	80	100
2. Complain about unacceptable service.	0	20	40	50	60	80	100
3. Take a turn at piloting a small plane.	0	20	40	50	60	80	100
4. Disagree with an authority figure about something important.	0	20	40	50	60	80	100
5. Go scuba diving.	0	20	40	50	60	80	100
6. Go camping in an isolated wilderness.	0	20	40	50	60	80	100
7. Go rafting down a fast-moving river.	0	20	40	50	60	80	100
8. Complain to someone in charge about having to wait too long in a line or queue.	0	20	40	50	60	80	100
9. Dive off a high board.	0	20	40	50	60	80	100
10. Openly take the unpopular side of an issue in a group of people.	0	20	40	50	60	80	100

Appendix 14: Anxiety Sensitivity Index -3 (ASI-3)

Please circle the number that best corresponds to how much you agree with each item. If any items concern something that you have never experienced (e.g., fainting in public), then answer on the basis of how you think you might feel *if you had* such an experience. Otherwise, answer all items on the basis of your own experience. Be careful to circle only one number for each item and please answer all items.

	Very little	A little	Some	Much	Very much
1. It is important for me not to appear nervous.	0	1	2	3	4
2. When I cannot keep my mind on a task, I worry that I might be going crazy.	0	1	2	3	4
3. It scares me when my heart beats rapidly.	0	1	2	3	4
4. When my stomach is upset, I worry that I might be seriously ill.	0	1	2	3	4
5. It scares me when I am unable to keep my mind on a task.	0	1	2	3	4
6. When I tremble in the presence of others, I fear what people might think of me.	0	1	2	3	4
7. When my chest feels tight, I get scared that I won't be able to breathe properly.	0	1	2	3	4
8. When I feel pain in my chest, I worry that I'm going to have a heart attack.	0	1	2	3	4
9. I worry that other people will notice my anxiety.	0	1	2	3	4
10. When I feel "spacey" or spaced out I worry that I may be mentally ill.	0	1	2	3	4
11. It scares me when I blush in front of people.	0	1	2	3	4
12. When I notice my heart skipping a beat, I worry that there is something seriously wrong with me.	0	1	2	3	4
13. When I begin to sweat in a social situation, I fear people will think negatively of me.	0	1	2	3	4
14. When my thoughts seem to speed up, I worry that I might be going crazy.	0	1	2	3	4
15. When my throat feels tight, I worry that I could choke to death.	0	1	2	3	4
16. When I have trouble thinking clearly, I worry that there is something wrong with me.	0	1	2	3	4
17. I think it would be horrible for me to faint in public.	0	1	2	3	4
18. When my mind goes blank, I worry there is something terribly wrong with me.	0	1	2	3	4

Scoring: Physical concerns = sum of items 3, 4, 7, 8, 12, 15. Cognitive concerns = sum of items 2, 5, 10, 14, 16, 18. Social concerns = sum of items 1, 6, 9, 11, 13, 17.

Appendix 15: The Depression Anxiety Stress Scale- 21 (DASS -21)

DASS21	Name:	D
<p>Please read each statement and circle a number 0, 1, 2 or 3 which indicates how much the statement applied to you <i>over the past week</i>. There are no right or wrong answers. Do not spend too much time on any statement.</p> <p><i>The rating scale is as follows:</i></p> <p>0 Did not apply to me at all 1 Applied to me to some degree, or some of the time 2 Applied to me to a considerable degree, or a good part of time 3 Applied to me very much, or most of the time</p>		
1	I found it hard to wind down	0 1 2 3
2	I was aware of dryness of my mouth	0 1 2 3
3	I couldn't seem to experience any positive feeling at all	0 1 2 3
4	I experienced breathing difficulty (eg, excessively rapid breathing, breathlessness in the absence of physical exertion)	0 1 2 3
5	I found it difficult to work up the initiative to do things	0 1 2 3
6	I tended to over-react to situations	0 1 2 3
7	I experienced trembling (eg, in the hands)	0 1 2 3
8	I felt that I was using a lot of nervous energy	0 1 2 3
9	I was worried about situations in which I might panic and make a fool of myself	0 1 2 3
10	I felt that I had nothing to look forward to	0 1 2 3
11	I found myself getting agitated	0 1 2 3
12	I found it difficult to relax	0 1 2 3
13	I felt down-hearted and blue	0 1 2 3
14	I was intolerant of anything that kept me from getting on with what I was doing	0 1 2 3
15	I felt I was close to panic	0 1 2 3
16	I was unable to become enthusiastic about anything	0 1 2 3
17	I felt I wasn't worth much as a person	0 1 2 3
18	I felt that I was rather touchy	0 1 2 3
19	I was aware of the action of my heart in the absence of physical exertion (eg, sense of heart rate increase, heart missing a beat)	0 1 2 3
20	I felt scared without any good reason	0 1 2 3
21	I felt that life was meaningless	0 1 2 3

Appendix 16: Penn State Worry Questionnaire (PSWQ)

Please select the answer that best fits you.

1.....2.....3.....4.....5
 Not at all Very typical
 typical of me of me

	1	2	3	4	5
1. If I don't have enough time to do everything, I don't worry about it	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. My worries overwhelm me	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. I don't tend to worry about things	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Many situations make me worry	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. I know I shouldn't worry about things, but I can't help it	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. When I am under pressure, I worry a lot	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. I am always worrying about something	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8. I find it easy to dismiss worrisome thoughts	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9. As soon as I finish one task, I start to worry about everything else I have to do	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10. I never worry about anything	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11. When there is nothing more I can do about a concern, I don't worry about it anymore	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12. I've been a worrier all my life	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13. I notice that I have been worrying about things	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
14. Once I start worrying I can't stop	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15. I worry all the time	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
16. I worry about projects until they are all done	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Appendix 17: Thought-Action Fusion Scale-R (TAFS-R)

Do you disagree or agree with the following statements?	Disagree Strongly	Disagree	Neutral	Agree	Agree Strongly
1. Thinking of making an extremely critical remark to a friend is almost as unacceptable to me as actually saying it.....	0	1	2	3	4
2. If I think of a relative/friend losing their job, this increases the risk that they will lose their job.....	0	1	2	3	4
3. Having a blasphemous thought is almost as sinful to me as a blasphemous action..... ...	0	1	2	3	4
4. Thinking about swearing at someone else is almost as unacceptable to me as actually swearing.....	0	1	2	3	4
5. If I think of a relative/friend being in a car accident, this increases the risk that he/she will have a car accident.....	0	1	2	3	4
6. When I have a nasty thought about someone else, it is almost as bad as carrying out a nasty action.....	0	1	2	3	4
7. If I think of a friend/relative being injured in a fall, this increases the risk that he/she will have a fall and be injured.	0	1	2	3	4
8. Having violent thoughts is almost as unacceptable to me as violent acts.....	0	1	2	3	4
9. If I think of a relative/friend falling ill this increases the risk that he/she will fall ill.....	0	1	2	3	4
10. When I think about making an obscene remark or gesture in church, it is almost as sinful as actually doing it.....	0	1	2	3	4
11. If I wish harm on someone, it is almost as bad as doing harm.	0	1	2	3	4
12. If I think of myself being injured in a fall, this increases the risk that I will have a fall	0	1	2	3	4

and be injured.....					
13. When I think unkindly about a friend, it is almost as disloyal as doing an unkind act.....	0	1	2	3	4
14. If I think of myself being in a car accident, this increases the risk that I will have a car accident.....	0	1	2	3	4
15. If I think about making an obscene gesture to someone else, it is almost as bad as doing it.....	0	1	2	3	4
16. If I think of myself falling ill, this increases the risk that I will fall ill.....	0	1	2	3	4
17. If I have a jealous thought, it is almost the same as making a jealous remark.....	0	1	2	3	4
18. Thinking of cheating in a personal relationship is almost as immoral to me as actually cheating.....	0	1	2	3	4
19. Having obscene thoughts in a church is unacceptable to me...	0	1	2	3	4

Appendix 18: Brief Fear of Negative Evaluation -II (BFNE-II)

For each statement below, please circle the number beside it which best represents how well the statement describes you.

	Agree very little	Agree a little	Somewhat agree	Agree a lot	Agree very much
1. I am afraid that people will find fault with me.	0	1	2	3	4
2. I am concerned about other people's opinions of me.	0	1	2	3	4
3. When I am talking to someone, I worry about what they may be thinking of me.	0	1	2	3	4
4. I am afraid that others will not approve of me.	0	1	2	3	4
5. I am usually worried about the kind of impression I make.	0	1	2	3	4
6. I am frequently afraid of other people noticing my shortcomings.	0	1	2	3	4
7. I often worry that I will say or do the wrong things.	0	1	2	3	4
8. If I know that someone is judging me, it tends to bother me.	0	1	2	3	4

Appendix 19: Cognitive interviewing schedule

Checklist:

- Room quiet, comfortable, sunlight, seating (out of sight)
- Watch, recorder, batteries, speak ID number onto recorder and test
- Questionnaire, forms, writing material

Introduction

Thank you for coming in.

My name is X and I'm carrying out this study as a part of my Doctorate in Clinical Psychology. We are trying to develop a new questionnaire, and the rationale for today is to test the questions that may be included.

Before we start I want to emphasise several things:

- Participation is voluntary. If you decide to go ahead, the interview will take 60 minutes at most, for which you will get 2 credits. You can stop whenever you like and if there is something you don't want to say or do just say so, you don't have to give me a reason.
- Your answers will be kept confidential. I'll record what you say, so that I have a complete record. The recording and your answers will only be identified with an ID number. Once we have analysed the information, the recording will be deleted.
- I should also let you know that this study has been approved by the RH Research Ethics Committee.

Do you have any questions for me at this point?

Consent

Here is the information sheet, which summarises what I have said and gives you some additional information. Have a read and if you are happy to go ahead then please sign the consent sheet.

Do you have any questions about for me at this point (for example about consent and why it is important to gain informed consent)?

Instructions to participant

I'll tell you a bit more about what we're doing today

Like I said, we're testing a questionnaire and trying to understand how the questions work. I'll give you the questionnaire to complete but what I'm most interested in is what you are thinking about whilst you complete it. So I want you to *think aloud* and tell me *everything* you're thinking about as you go through the questions. This can feel un-natural to do at first but just take as long as you need and say whatever goes through your mind.

I also need to explain that this isn't a typical interview, as mostly you won't be talking to me directly. To make this clear I'll sit slightly away from you. Just act like you're all by yourself and talking to yourself whilst you complete the questionnaire. Also, I didn't write the questions but am trying to find out if they get at what they are intended to get at – so don't hesitate to tell me if something is hard to answer or unclear. If you are silent for long, I'll say 'please keep talking'.

Training to criterion

Let's begin by practicing a bit.

First, I'll demonstrate how I think aloud whilst I complete two questions on the questionnaire you will be completing later.

Do you understand what I want you to do? Would you like to practice?

Practice

Ok now you try it doing a very different task. I'd like you to visualise the flat or house where you live and work out how many windows it has. Please think out loud as you do this.

Very good. Do you understand what I would like you to do? Here is a pen and the questions we are testing. I'll start recording. Please read out the questions and then think aloud as you work out your answers.

During administration

IF RESPONDENT IS SILENT FOR APPROXIMATELY 10 SECONDS, SAY:
'PLEASE KEEP TALKING'.

PROMPT TO MOVE FROM A QUESTION TO THE NEXT.

Probing

Thank you for that. Now I would like to ask you a few questions about some of statements and how it was answering them. *Ask any of the conditional probes (or write down hypothesis-driven probes).*

Ending

Thank the participant and debrief (describe the research methods, sign record of research participation and answer any questions she may have about the task or the study).

Appendix 20: Information and consent sheet for cognitive interview respondents

Please take time to read the following carefully

You have been invited to participate in a research survey and you might have some questions. Please read the following information carefully. Should you decide to take part, you will be asked to tick the consent box below and to sign your name.

What is this study about?

We are developing a measure, which aims to assess whether certain ways of thinking are related to experiencing anxiety. Initially, we are interested in whether the measure functions as intended.

What will happen if I decide to take part?

You will be asked to complete a questionnaire, which requires you to respond to various questions and you will be required to tick the appropriate boxes to choose your responses. Whilst you complete the questionnaire you will be asked to 'think aloud' about your answers and I will record this. In the unlikely event that any of the questions cause distress, please let me know. Once you have completed all the questions you will be offered feedback about the study.

Do I have to take part?

You are not under any obligation to participate. If you do decide to take part, tick the consent box below and sign the consent form, to show you have agreed to participate. You are free to withdraw at any time and this will not affect your academic status.

Will the information be confidential?

You will not be asked to give any information that can identify you. Your answers will be kept strictly confidential and only seen by the researchers. When the research is complete we will destroy your answers. Also, the consent form will be kept separate from the information you provide.

How do I know it is safe to take part?

This study has been approved by a group of independent people (Research Ethics Committee) to protect your rights, dignity, well-being and safety. This particular study has been given a favourable opinion by Royal Holloway, University of London Research Ethics Committee.

Are there any benefits for participating?

You will get two research credits for taking part and will learn something about conducting research. There is no other direct benefit to you. However, we hope the information we get from the study will help improve the identification of people with anxiety problems.

Who can I contact?

Solveig Jonsdottir (Trainee Clinical Psychologist) is the chief investigator. Please contact her at:

Doctorate in Clinical Psychology, Department of Psychology

Royal Holloway, University of London

Egham, TW20 OEX

Tel: 078 1558 0296 Email: S. Jonsdottir@rhul.ac.uk

If you want to discuss any aspect of this study, please call or email.

PRIVATE AND CONFIDENTIAL

You have been asked to participate in a study. Have you:

- Read the information about the study?
- Had the opportunity to ask questions?
- Understood that you are free to withdraw from the study at any time without giving a reason and that your participation is voluntary?
- Understood that your responses will be recorded?
- Understood what you are required to do?

Top of Form

- I have read the above information and agree to take part in the study

Signature:

Date:

Consent obtained by:

Appendix 21: Information and consent sheet for validation study participants

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