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Facets of Clinicians' Anxiety and the Delivery of Cognitive Behavioral Therapy

Liat Levita (1)

Paulina Gonzalez Salas Duhne (1)

Carla Girling (1)

Glenn Waller (1)

1. Department of Psychology, University of Sheffield, UK

Corresponding author

Glenn Waller, Clinical Psychology Unit, Department of Psychology, University of Sheffield, Western Bank, Sheffield S10 2NT, UK. Email: g.waller@sheffield.ac.uk

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Abstract

Psychological therapists commonly fail to adhere to treatment protocols in everyday clinical practice. In part, this pattern of drift is attributable to anxious therapists being less likely to undertake some elements of evidence-based therapies – particularly the exposure-based elements. This study considers what facets of anxiety (cognitive, behavioral, physiological) are related to junior clinicians' reported use of cognitive-behavioral therapy techniques. Thirty-two clinicians (mean age = 28.9 years; mean length of CBT experience = 1.5 years; 23 female, nine male) who offered CBT were assessed for their cognitive, behavioral and physiological characteristics (Intolerance of Uncertainty scale; risk taking; skin conductance response and heart rate variability). While the three different facets of anxiety were relatively poorly associated with each other, as is usual in this literature, each facet was linked differently to the reported delivery of CBT techniques ($P < .05$). Overall, higher anxiety levels were associated with a poorer use of exposure methods or with a greater use of other behavioral or cognitive methods. Of the three facets of anxiety, only physiological reactivity showed an association with the clinicians' temporal characteristics, with more experienced therapists being more likely to have greater skin conductance responses to positive and negative outcomes. These findings suggest that clinicians who are more anxious are less likely to deliver the full evidence-based form of CBT and to focus instead on less challenging elements of the therapy. Potential ways of overcoming this limitation are discussed.

Keywords: clinician anxiety; cognitive-behavioral therapy; exposure

Facets of Clinicians' Anxiety and the Delivery of Cognitive Behavioral Therapy

Cognitive-behavioral therapy is a relatively efficacious intervention for a range of psychological disorders when delivered in well-controlled research trials. However, while these findings *can* be generalised to everyday practice (Persons, Bostram & Bertagnolli, 1999; Persons, Roberts, Zalecki & Brechwald, 2006; van Ingen, Freiheit, Stacey & Vye, 2009), there is evidence that such strong outcomes commonly are not achieved in such settings. CBT is often found to be less effective when delivered in routine clinical settings (e.g., Gibbons, Stirman, DeRubeis, Newman & Beck, 2013). While this difference might be attributable in part to patient and contextual variables (e.g., more complex patients; less detailed case supervision), there is also evidence that therapist effects play a role. In particular, therapists drift away from delivering evidence-based therapies (Waller, 2009). This pattern of drift is associated with clinician characteristics, such as beliefs about the value and utility of specific methods (e.g., Deacon, Farrell, Kemp, Dixon, Sy, Zhang & McGrath, 2013). Notably, therapists' own anxiety levels have been associated with poorer implementation of some elements of evidence-based therapies (e.g., Harned, Dimeff, Woodcock & Contreras, 2013; van Minnen, Hendriks & Olff, 2013; Waller, Stringer & Meyer, 2012). A common finding is that therapists use exposure-based methods relatively rarely, despite their extensive empirical support (Harned et al., 2013). It has been suggested (Waller, 2009) that this failure to use some well-evidenced therapeutic tools is the result of the clinician engaging in safety behaviors, because the avoidance of such methods (with their likelihood of temporarily raising patients' anxiety) makes the clinician feel more positive in the short term.

To date, our understanding of the impact of clinicians' anxiety on therapy delivery has been limited by a focus on the more cognitive domains of that emotion. However, anxiety is a multifaceted construct, with behavioral and physiological elements playing a role. Assessment of anxiety clinically has generally followed Lang's (1968) tripartite model, where the examination of three domains of anxiety is needed – cognitive, behavioral and physiological. Thus, applying the 'hot cross bun' construct (Padesky & Mooney, 1990) to

understanding clinician anxiety, it is apparent that it will be important to understand how that anxiety is maintained by its cognitive, behavioral and physiological underpinnings. While the cognitive facet can be largely represented by constructs such as intolerance of uncertainty (e.g., Carleton, Norton & Amundson, 2007), behavioral aspects are more centred on a lack of propensity for risk-taking (Maner, Richey, Cromer, Mallott, Lejuez, Joiner & Schmidt, 2007). Physiological aspects of anxiety are more complex to measure (Cacioppo, Berntson, Larsen, Poehlmann & Ito, 2000). However, a key element appears to be heightened physiological arousal in situations of unpredictability (e.g., Grupe & Nitschke, 2011), as measured by skin conductance responses (SCR) and cardiovascular measures such as heart-rate variability (HRV). Each of these three facets of anxiety - cognitive, behavioral and physiological - can be suggested to be associated with the clinician's performance, driving whether or not they deliver CBT appropriately.

Understanding the nature of the anxiety facets that are relevant to the delivery of CBT elements is important for two primary reasons – the identification of clinicians who will need additional support to deliver specific elements of the therapy, and the planning of interventions to support those clinicians (e.g., Deacon et al., 2013; Farrell, Deacon, Dixon & Lickel, 2013). Such identification is likely to be particularly important early in the clinician's career, as learning at this time can be critical to long-term practice.

Therefore, the aim of this research is to determine the association between different facets of junior therapists' anxiety and their reported implementation of specific CBT techniques. It is hypothesised that greater clinician anxiety will be associated with a lower use of exposure-based CBT methods, though no prediction is made regarding the relative importance of those elements of anxiety. A secondary aim was to determine whether the different facets of anxiety are associated with temporal factors – specifically age and experience - at this early stage in the therapists' practice.

Method

Ethics

This study was approved by the Research Ethics Committee of the Department of

Psychology, University of Sheffield. All participants provided informed consent.

Participants

The participants were 32 relatively junior therapists, who reported using CBT as part of their clinical training and practice. Of the 32, 23 were female and nine were male. They were drawn from UK clinical psychology or Improving Access to Psychological Therapies courses. They had a mean age of 28.9 years (*SD* = 5.54; range = 23-47). For those clinicians who provided the necessary information, they had been practicing as clinicians for a mean of 2.50 years (*SD* = 1.65), and had a mean period of experience as CBT therapists of 1.53 years (*SD* = 1.57; range = 0.4-5.7). None were accredited CBT practitioners (in keeping with their relatively junior status), and only three had undertaken CBT courses prior to their current training.

All participants were volunteers, recruited following presentations about the research to the relevant groups. The only exclusion criterion was that the participants could not have any cardiovascular abnormalities, given the impact that this could have on the physiological dependent variables.

Measures and Procedure

Participants completed the following, in order: consent form; demographic details; measure of one cognitive component of anxiety (intolerance of uncertainty); experimental element addressing the behavioral (risk-taking) and the physiological facets of anxiety (SCR; heart rate variability); and a measure of CBT technique usage. They were then debriefed and paid £5 for taking part.

Intolerance of Uncertainty Scale (IUS; Carleton et al., 2007). The 12-item version of the IUS is a self-report measure that addresses the two elements of this cognitive construct – prospective anxiety (inability to tolerate unpredictability) and inhibitory anxiety (inability to initiate action due to uncertainty about the outcome). The scale has satisfactory psychometric properties and clinical utility (Carleton et al., 2007; Carleton, Mulvogue, Thibodeau, McCabe, Antony & Asmundson, 2012), and has been used in previous research into clinician's use of skills (e.g., Turner, Tatham, Lant, Mountford & Waller, 2014). Higher

scores indicate greater levels of this cognitive facet of anxiety. The clinicians' mean scores in this study were: Prospective anxiety = 17.0 (*SD* = 4.69); and Inhibitory anxiety = 8.69 (*SD* = 2.56).

Balloon Analogue Risk Task (BART; Lejuez, Read, Kahler, Richards, Ramsey, Stuart, Strong & Brown, 2002)**.** The BART is a computerized measure of risk taking behavior, with well-established convergent validity (DeMartini, Leeman, Corbin, Toll, Fucito, Lejuez & O'Malley, 2014). It models real-world risk behavior through the conceptual frame of balancing the potential for reward versus loss in a situation of unpredictability, and hence can act as a correlate of the behavioral component of anxiety. In this case, the BART was used to reflect the tendency for clinicians to differ in how they see the use of different methods as more or less risky (balancing potential benefits with potential harm to the patient). In this version of the BART (run using EPrime 2), participants were asked to pump up a virtual balloon in order to win points. Each pump caused the balloon to incrementally inflate and ten points to be added to the counter. Each balloon had a different breakpoint, whereby the balloon over-inflated and exploded. Consequently, each pump led to greater potential reward but also greater risk. Participants could stop the trial at any point and collect their points. However, if the balloon burst, participants lost all the points for that trial. Participants were not informed of the balloon breakpoints, and there were 30 trials in total. Thus, in this task, participants can take the risk of pumping up the balloon for more points (and potentially over-inflating the balloon so that it bursts and they lose all the points earned), or can reduce their risk (and potential gain) by ceasing the inflation of the balloon early. Thus, the task measures the individual's risk-taking, with more pumps (adjusted for 'unpopped balloons') indicating greater risk-taking and lower behavioral anxiety. The mean adjusted number of pumps in this study was 50.75 (*SD* = 11.6).

Physiological reactivity. Two such measures were taken. These were recorded during the performance of BART, so that physiological reactivity was measured during active processing rather than during a passive state.

The first measure was *skin conductance response* (SCR), used to examine changes

in sympathetic nervous system activity. An SCR recording system (MP46, Biopac, Goleta, CA) together with AcqKnowledge 4.3 (Biopac) software was used to monitor the SCR as it varied with eccrine sweat gland activity. SCR was sampled at 200 Hz using disposable electrodermal gel electrodes (Biopac model EL507) attached to the distal phalanx of the pointer and middle fingers of the non-dominant hand. The SCR is an established correlate of the strength of emotional and cognitive states (Figner & Murphy, 2011), but does not distinguish specific emotions (Cacipppo, Berntson, Larsen, Poehlmann & Ito, 2000). For analysis, a smoothing baseline removal and a low-pass filter (1Hz) were used, and the SCR threshold level was set to 0.02 umho. A higher SCR amplitude indicates greater physiological reactivity. Measurements were taken over the period 1-3 seconds following outcome - the point during BART when either the balloon popped and points were lost (negative outcome), or when points were collected (positive outcome). In this study, the mean physiological reactivity score (amplitude of SCR response) for positive events was 0.16 microsiemens (*SD* = 0.20), while there was a higher physiological reactivity for negative events (0.71 microsiemens; *SD* = 0.61).

The second measure was *heart rate variability* (HRV), based on the variation in time between successive heartbeats. It was assessed using photoplethysmography (PPG) signals. PPG was sampled at 1000 Hz using a BIOPAC SS4L PPG finger transducer attached to the distal phalanx of the thumb of the participant's non-dominant hand. Data were analysed using the same software used for the SCR measurement, and employing algorithms that conformed to the European Heart Journal's (1996) guidelines. Waveforms were transformed using a high pass filter (0.5Hz), and the automatic detection of peaks was visually checked and corrected if necessary. HRV analysis provides an index of power in the high-frequency domain (.15 to .40 Hz), which is considered a quantitative marker of vagal (parasympathetic) activity, and an index of power in the low-frequency domain (.04 Hz to .15 Hz), which is thought to correspond mainly to sympathetic activity (Murthy, Ramamoorthy, Srinivasan, Rajagopal, & Rao, 2001; Selvaraj, Jaryal, Santhosh, Deepak & Anand, 2008). However, because the low-frequency domain is also affected by vagal influence (Pumprla,

Howorka, Groves, Chester, & Nolan, 2002; Task Force of the European Society of Cardiology & The North American Society of Pacing and Electrophysiology, 1996), researchers have examined the ratio of low-frequency to high-frequency power as an index of sympatho-vagal balance (Appelhans & Luecken, 2006; Pagani, Lombardi, Guzzetti, Rimoldi, Furlan, Pizzinelli, Sandrone, Malfatto, Dell'Orto, Piccaluga, Turiel, Baselli, Cerutti & Malliani, 1986). A higher sympatho-vagal (S-V) ratio reflects a shift in autonomic balance toward sympathetic dominance, which is indicative of greater emotional arousal. In this study the mean S-V balance was 1.45 (*SD* = 1.18, range, 0.27- 4.62).

Use of CBT Techniques. This measure was developed from Waller et al.'s (2012) survey, but was adapted from the original focus on eating disorder treatment to the more general CBT under consideration in this study. The measure consisted of a set of techniques used to induce cognitive and affective change, each of which was rated for how often it was used when practicing CBT. Each rating was on a ten-point scale ('0-10% of the time', to '91-100% of the time'), where higher scores indicated more frequent use of each technique. The eleven techniques were divided into three domains. The first was 'exposure-based' (methods using behavioural and imaginal/verbal methods for reducing anxiety - flooding; systematic desensitization [applied relaxation training plus imaginal or in vivo exposure]; imaginal exposure). The second was 'behavior change-based' (methods using behavioral change to bring about cognitive and affective change - behavioral experiments; behavioral activation; relaxation training; skills training). The final domain was 'talking-based' (methods used to challenge cognitions via verbal reasoning and planning - cognitive restructuring; schema therapy; goal-setting; problem-solving).

Data Analysis

Initially, descriptive statistics were used to determine the frequency of use of different CBT techniques. Due to non-normal distribution of some variables, Spearman's *rho* correlations were used to test the central hypothesis – that the frequency of use of CBT techniques would be associated with different facets of anxiety (cognitive, behavioral, physiological). Finally, Spearman's *rho* correlations were also used to determine whether

age or experience are associated with different facets of anxiety. All tests were two-tailed.

Results

Preliminary Analyses

Table 1 shows the mean reported frequency of the use of each individual CBT technique (% of time spent during the delivery of CBT). In general, cognitive techniques were used most frequently, followed by behavioral change, with exposure-based methods used least often. Among the cognitive techniques, schema therapy was used least often. Behavioral activation was the most commonly used behavior-based method. Of the exposure-based techniques, systematic desensitization and imaginal exposure were used more commonly than flooding. Of course, the different frequency of use of individual techniques does not indicate anything negative or positive about clinical practice, as it might be appropriate in clinical settings (e.g., using cognitive restructuring more of the time than schema therapy; using systematic desensitization more of the time than flooding).

Insert Table 1 about here

Initially, the intercorrelations of the different measures of anxiety were examined to determine whether the facets of anxiety are independent or closely associated. While there were associations within facets (IUS prospective and inhibitory anxiety – rho = .51, P < .01; arousal to positive and negative events – rho = .69, P < .01; arousal to positive events and S-V balance – rho = .43, P < .05), the only association outside of the same facet was between S-V balance and IUS prospective anxiety (rho = -.48, P < .05). No other association approached significance (rho < ± .32, P > .05 in all cases). Thus, as expected, the different facets of anxiety were not widely associated with each other. This finding reduces the possibility that any associations in the principal analyses are due in part to overlap between the different facets.

Associations of the Use of CBT Techniques with Different Facets of Anxiety

Table 1 also shows the associations of each individual CBT technique with the cognitive, behavioral and physiological facets of anxiety. The significant associations related primarily to exposure-based CBT methods.

It is noteworthy that different elements of the cognitive facet of anxiety were negatively associated with the use of systematic desensitization and flooding. The difference between those relationships is of particular interest, as it indicates that poor tolerance of uncertainty (IUS prospective anxiety scale) and an inability to act without certainty (IUS inhibitory anxiety scale) might operate separately to preclude the use of different exposure-based methods. In contrast, two of the talking-based methods (goal-setting and problem-solving) were positively associated with the IUS Prospective score. Thus, it appears that junior clinicians with higher levels of intolerance of uncertainty are less likely to engage their patients in exposure-based work but more likely to use talking-based techniques.

In contrast, in the behavioral domain, those clinicians who were more anxious (less prone to taking risks) were not more or less likely to use exposure-based methods in CBT. However, they were more likely to use behavioral activation and schema therapy from the behavioral change-based and talking-based skills respectively.

Finally, there were very specific associations in the physiological anxiety domain. Those clinicians who had greater levels of physiological reactivity to positive and negative events were more likely to use systematic desensitization, and those with greater reactivity to negative events alone were more likely to use imaginal exposure. This finding was specific to clinicians' use of exposure-based methods, indicating that greater physiological anxiety is associated with lower use of exposure-based CBT methods. There was no association with S-V balance.

To summarise, those clinicians who were more anxious were less likely to use exposure-based methods, particularly if their anxiety had a more cognitive and physiological manifestation. Those more anxious clinicians were more likely to employ some talking- and behavior change-based methods instead, if their anxiety had a more cognitive and behavioral manifestation.

Associations of Anxiety Facets with Clinicians' Temporal Characteristics

Finally, Table 1 shows the correlations (Spearman's *rho*) used to address the second aim – to determine whether age or experience are associated with specific facets of the clinicians' anxiety. While there was a tendency for older clinicians to have lower levels of the cognitive element of prospective anxiety and greater levels of the physiological element of heart rate variability, neither association was significant. Age had no other associations with any of the anxiety facets. However, there were significant positive correlations between level of experience and reactivity to negative and positive events, indicating that these junior clinicians showed greater physiological reactivity to positive and negative outcomes during a risky taking task as they became more experienced.

Discussion

Clinician anxiety has been identified as a key factor underlying CBT therapists' failure to employ evidence-based methods – particularly those that are exposure-based. However, the literature to date has not used a sufficiently multifactorial conceptualisation of anxiety. Such a conceptualisation needs to reflect both Lang's (1968) tripartite model of anxiety and the 'hot cross bun' model (Padesky & Mooney, 1990), in order to explain the maintenance of the behaviors that can underlie therapist drift (Waller, 2009). Consequently, this study has addressed the potential role of clinician anxiety in the delivery of CBT, addressing cognitive, behavioral and physiological elements of anxiety. It was carried out with relatively junior therapists, as this is a time when patterns of clinician behavior (including adherence and drift) are likely to be under formation.

The findings support the need to understand different facets of anxiety when formulating clinicians' behaviors in delivering CBT. Overall, those facets of anxiety were relatively independent of each other, suggesting that each needs to be understood separately for its effects on clinician behavior. Clinicians who were more cognitively anxious (IUS scores) were less likely to use exposure-based methods, but more likely to use talking-based approaches. In contrast, those with greater levels of behavioral anxiety (BART scores), showing risk aversion in this paradigm, did not use exposure less, but they did use

other methods more. Finally, clinicians with higher levels of physiological reactivity during that risk-taking task were also more likely to use exposure-based methods, but their use of other methods (behavior change-based; talking-based) was unrelated to such reactivity. In parallel with these findings, physiological reactivity increased with experience, suggesting that clinicians become more sensitive (at the implicit level) to both negative and positive outcomes as they spend more time delivering therapy. This finding might support the suggestion that therapists' delivery of exposure methods would benefit from the therapists themselves being exposed to this form of intervention (e.g., Farrell et al., 2013).

These results elaborate substantially on the existing evidence that clinician anxiety impairs the delivery of evidence-based CBT methods (e.g., Harned et al., 2013; van Minnen et al., 2013; Waller et al., 2012). They show that some facets of anxiety reduce the use of exposure-based methods, but that others enhance the use of non-exposure-based methods. So rather than simply reducing the use of the best-evidenced approach to many disorders, clinician anxiety has the potential to increase the use of potentially less effective methods. This pattern of some clinicians moving from exposure to other CBT techniques in response to their own anxiety might go some way to explaining the disparity between the evidence base for exposure-based methods and their poor uptake in routine clinical practice (Harned et al., 2013).

Future research into clinicians' effective delivery of CBT needs to take the clinicians' anxiety levels into account, alongside other aspects such as their beliefs about therapies (e.g., Deacon et al., 2013). An important consideration is the degree to which therapists define themselves as being more affiliated with either a cognitive or a behavioral approach to CBT, since that could account for some of the variance in their tendency to use different techniques. It is also possible that any such affiliation is associated with those clinicians' personality and other characteristics, though it remains to be demonstrated whether either a more cognitive or a more behavioural approach is associated with better patient outcomes.

This study has considered clinicians who were at an early stage in their careers as therapists, so it remains to be determined whether these findings apply to those who are

later in their careers. It is known that anxiety has a comparable impact on clinicians with a wider range of experience periods (e.g., Waller et al., 2012), but not whether anxiety still needs to be understood as a multifactorial experience across that range. It will be important to consider other cognitive aspects of anxiety that were not considered in this study, such as worry, vulnerability and fear of negative evaluation. In particular, anxiety sensitivity should be considered, as it has been shown to be relevant to clinicians' performance in other research (Meyer et al., 2014). Similarly, alternative behavioral indices of clinician anxiety might be considered (e.g., time taken to complete more or less important tasks). While it is encouraging that level of experience is associated with increased sensitivity to positive and negative outcomes at the implicit level, it is not yet known whether this results in more effective delivery of evidence-based CBT. Finally, further research is needed to determine whether such therapist effects might explain the drift from protocols that is found in other therapies, such as dialectical behavior therapy (DiGiorgio, Glass & Arnkoff, 2010) and family-based therapies (Kosmerly, Waller & Robinson, 2015).

These findings indicate the need to develop means of ensuring that therapist effects do not interfere with the possibility of delivering effective treatment. In order to improve clinicians' adherence to evidence-based methods, it is likely that clinician characteristics will need to be addressed as part of their selection, training, and supervision. It is evident that any changes will need to address different facets of clinician anxiety, in order to allow such interventions to be maximally effective.

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Table 1

Association of reported use of key cognitive behavioral techniques with clinicians' anxiety facets and temporal features

			Association with different facets of anxiety (Spearman's *rho*)					
	Frequency of use		**Cognitive**		**Behavioral**	**Physiological**		
CBT techniques	Mean %	*(SD)*	Prospective IUS	Inhibitory IUS	BART - Adjusted number of pumps	SCR positive outcome	SCR negative outcomes	S-V balance
Exposure-based								
Flooding	9.19	(11.2)	-.08	**-.37 ***	-.28	.30	.30	-.22
Systematic desensitization	23.4	(26.6)	**-.40 ***	-.33	-.10	**.49 ****	**.41 ***	-.27
Imaginal exposure	23.1	(24.2)	-.31	-.22	-.15	.15	**.42 ***	-.22
Behavior change-based								
Behavioral experiments	38.6	(29.2)	-.21	-.30	-.23	.26	.29	-.21
Behavioral activation	56.9	(26.5)	.16	.14	**-.48 ****	-.05	.05	-.22
Relaxation training	37.3	(28.8)	.04	-.23	-.28	.11	.23	-.03
Skills training	39.8	(35.2)	-.18	-.30	-.10	.21	.33	-.18
Talking-based								
Cognitive restructuring	56.0	(27.9)	-.04	-.02	-.33	.20	.16	-.20
Schema therapy	11.8	(14.5)	-.19	-.22	**-.41 ***	.20	.19	.23
Goal setting	76.6	(29.6)	**.41 ***	.03	-.07	-.16	-.09	.02
Problem-solving	51.8	(29.8)	**.36 ***	.11	-.17	.11	.29	-.14
Temporal factors								
Clinician age (years)	27.5	(4.54)	-.32	-.17	.20	.04	.09	.31
Clinician experience (years)	2.31	(1.58)	-.20	-.18	-.03	**.52 ****	**.47 ****	.10

* $P < .05$; ** $P < .01$