Intrusive memories and images in Bipolar Disorder

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Overview

The thesis is composed of three parts:

Part 1

A systematic review of the literature on the clinical study of the phenomenology of intrusive memories and intrusive images is presented. The main aims of the review were to explore the similarities and differences of the phenomenology of intrusive memories and images across clinical disorders, before examining whether intrusive memories and intrusive images are distinct from each other. Finally, suggestions for expanding the evidence-base are made.

Part 2

An exploratory study was conducted to investigate the presence and phenomenology of intrusive memories across three Bipolar Disorder mood states: euthymia, depression and hypomania. Intrusive images were also investigated in hypomania. The theoretical and clinical implications of the findings are discussed, along with the main limitations of the study.

Part 3

A critical reflection of the research process is presented. This expands on the main limitations of the study, considering critically the design of the study, recruitment, the sample, the measures used, participants' experiences of the research process and implications for future research.

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Part 1: Literature Review

The phenomenology of intrusive memories and intrusive images – or is it all the same thing?

1 Abstract

The clinical literature on the phenomenology of intrusive memories and intrusive images was reviewed systematically. The methodology adopted in the literature is described before presenting the phenomenological findings of intrusive memories and intrusive images across the following categories: 1) prevalence, 2) sensory qualities, 3) emotions and 4) characteristics. The similarities and differences between intrusive memories and intrusive images across clinical disorders are discussed. It is then considered whether intrusive memories and intrusive images represent separate phenomenon and a pragmatic model is briefly presented to conceptualise the distinctions that may exist. Finally, areas of further research are presented.

2 Background

Intrusive memories, also known as flashbacks (Harvey, Watkins, Mansell & Shafran, 2004), can be defined as high frequency, distressing and involuntary recollections of previous experiences (DSM-IV, American Psychiatric Association, 1994). Mental imagery has been defined as 'perceptual information that arises from memory rather than from information being registered directly by the senses' (Hirsch & Holmes, 2007, p161), and that this can be experienced involuntarily (Hackmann, 1998). It is clear that intrusive memories and images play an important role in clinical disorders. Intrusive memories have been demonstrated to play an important role in the course of post-traumatic stress disorder (PTSD) (Michael, Ehlers, Halligan, and Clark, 2005) and depression (Brewin Watson, McCarthy, Hyman, & Dayson, 1998b; Brewin, Reynolds and Tata, 1999). Interventions for both intrusive memories and images have produced reductions in the distress associated with the phenomena as well as producing other positive symptomatic changes (e.g. PTSD: Hackmann, Ehlers, Speckens & Clark, 2004; Speckens, Ehlers, Hackmann & Clark, 2006, Depression: Wheatley, Brewin, Patel, Hackmann, Wells, Fisher & Myers, 2007; and social anxiety: Wild, Hackmann & Clark, 2007a; 2007b). The phenomenology of each have been investigated separately (e.g. PTSD; Imagery: Holmes, Grey & Young, 2005; Intrusive Memories: Reynolds and Brewin, 1999) and in comparison with each other (e.g. Depression: Patel, Brewin, Wheatley, Wells, Fisher and Myers, 2007), implying that they may be two separate phenomena. Reviews of the literature demonstrate how common both intrusive memories and images are across diagnostic categories (e.g. Brewin, 1998; Ehlers, Hackmann &

Michael, 2004; Hackmann & Holmes, 2004; Harvey et al, 2004). However, it is not uncommon for the terms to be used interchangeably within research (e.g. Birrer, Michael, and Munsch, 2007), and also within literature reviews (e.g. Hackmann & Holmes, 2004; Harvey et al, 2004). No reviews to date have considered the phenomenology of intrusive memories and intrusive images separately, and whether they represent different phenomena.

This review has 5 main aims. First, to describe the methodology used to investigate intrusive memories and images and the variations that exist. Second, present the phenomenological findings of intrusive memories and intrusive images in terms of prevalence, sensory qualities, emotions and characteristics. Third, discuss the findings in terms of the similarities and differences between intrusive memories and intrusive images across disorders. Fourth, discuss whether intrusive memories and images represent separate phenomena, drawing upon methodological limitations and proposing ways in which they may be differentiated. Finally, to discuss the areas in which phenomenological research on intrusive memories and images can be expanded within and between clinical disorders.

Throughout the review, images will be referred to as intrusive images, although terms such as recurrent and spontaneous images are also used in the literature (e.g. Hackmann, Clark, & McManus, 2000). The articles presented for each category of intrusive memories and intrusive images are based upon the terminology used by the investigators to classify the phenomenon they were researching.

3 Sampling Method

A computerised literature search was conducted, specifically focussing on articles investigating intrusive memories and intrusive images. The search included the following terms 'Intrusive', 'Intrusive memory', 'Intrusive memories', 'Imagery', 'Intrusive Imagery', 'Intrusive Images', 'Involuntary memory', 'Spontaneous images/imagery' and 'Recurrent images/imagery'. These terms were entered into the following databases: Annual Reviews, Blackwell Synergy, CogPrints via SCIRUS, Highwire Press, IngentaConnect, Journals@OVID, PsycINFO, Science Direct (Elsevier), Medline, and University of London Research Library Services. The resulting searches were then reviewed and articles selected using the criteria that a study focused on the phenomenology of intrusive memories or intrusive images or both in adult clinical samples meeting criteria for a psychological disorder contained in the American Psychiatric Association's Diagnostic and Statistical Manual (DSM-IV; APA, 1004). As articles were read, any references to additional literature on intrusive memories and images that had not been identified were recorded and obtained.

4 Methodology

4.1 Intrusive Memories

The phenomenology of intrusive memories in clinical disorders has typically been investigated using a semi-structured interview. For example, Reynolds & Brewin (1999) asked depressed and PTSD participants about any recent

bereavement/s they had experienced before enquiring if they had experienced any major life events in the past, or in the 12 months preceding the interview. Participants were then asked about childhood experiences, in particular about information that may have met criteria for childhood sexual and/or physical abuse. They were then asked if any memories of these or any other negative events had spontaneously and repeatedly popped into their minds over the preceding week; these had to meet the criteria of being a visual image of a specific scene that had actually taken place (general thoughts or worries were not sufficient to be included). Participants selected the two most prominently intruding memories. Participants provided details of the emotions they associated with the memories, their duration, their vividness, any associated physical sensations, the degree of re-living and the level of distress. This procedure has been used extensively (Brewin, Hunter, Carroll & Tata, 1996b; Brewin et al, 1999; Brewin, Watson, McCarthy, Hyman & Dayson, 1998a), although two exceptions are Patel et al (2007) and Tzemou & Birchwood (2007) who did not enquire about previous major life events.

A similar interview protocol has been adopted for phenomenological studies of intrusive memories in PTSD, but with some differences. For example, Hackmann et al (2004) (see also: Ehlers, Hackmann, Steil, Clohessy, Winninger & Winter, 2002; Michael et al, 2005; Speckens, Ehlers, Hackmann, Ruths & Clark, 2007) specifically asked participants to describe the memories of a trauma that popped into their mind. If they described the memory as being like a sensory experience, as opposed to a thought, then the modalities were explored along with the associated vividness, distress, frequency, as well as the degree of the sense of reliving (or

nowness) that they experienced. In addition participants explained the meaning of the intrusion and what happened before and after the event featured in the intruding memory.

4.2 Intrusive Images

Semi-structured interviews are also the main methodology used to investigate the phenomenology of intrusive images. Hackmann et al's (2000) influential paper on intrusive images in social phobia represents the template which subsequent investigations of imagery in clinical disorders have been based upon. Participants were asked to think about social situations in which they were feeling anxious and were then asked if they recalled experiencing recurrent images (defined as repetitive mental representations comprising any sensory component) during such situations. Participants then focused on a typical image and described what they can see, hear, smell, taste and feel in their body. Participants were also asked about the perspective they took of themselves in the image; the emotions they were feeling in the image; what led up to the scene in the image; and the meaning of the image in terms of themselves, people and the world. Enquiries were then made about earlier memories that participants had experienced involving similar images, sensations and feelings. If present, a similar set of questions to those used for the image were adopted to explore the related memory. Participants then rated the similarity of the memory to the image in terms of sensory experience and interpersonal content. The age of the participant at the time of the memory, their social anxiety before the event, and their opinion on if and how the event exacerbated their symptoms was

enquired about. Finally, participants were asked if they tended to recall the incident after the onset of social phobia. Notable variations from this procedure include Day, Holmes, and Hackmann (2004), who conducted a relaxation exercise before commencing with the interview to familiarise participants with discussing imagery. Otherwise, the use of the interview only varies in terms of the situation that people are orientated towards to investigate imagery. For example, in OCD people are asked to think about a time their symptoms have been severe (Speckens, Hackmann, Ehlers & Cuthbert, 2007); for body dysmorphic disorder a time where people have been worried about their appearance (Osman, Cooper, Hackmann & Veale, 2004); and similarly for bulimia nervosa, a time where participants have worried about their eating, weight or shape (Somerville, Cooper, & Hackmann, 2007).

Intrusive imagery in PTSD has been investigated using a similar protocol to that used in intrusive memory research. For example, Birrer et al (2007) investigated intrusive images in PTSD using an expanded version of the methodology used by Michael et al (2005) to investigate intrusive memories in PTSD. Similarly, Holmes et al (2005) investigated intrusive images in PTSD in a similar fashion to Hackmann et al (2004).

4.3 Summary of Methodology

A semi-structured interview is the main methodology used to investigate the phenomenology of both intrusive memories and intrusive images. The methodology used to investigate intrusive memories in depression does not ask participants to report on any particular types of intrusive memories or from any particular

situations. This largely contrasts with the PTSD intrusive memory research: participants are specifically asked to report upon trauma related memories. In the field of intrusive imagery, participants are also cued to report on intrusive images experienced in situations relating to their clinical diagnosis. Both types of research, however, generally assess for similar characteristics. The main methodological difference between the two streams of research is that participants who experience intrusive images are asked if they associate them with an earlier memory, this procedure is not adopted in intrusive memory research.

5 Intrusive Memories

Table 1 summarises the findings of investigations into the phenomenology of intrusive memories across clinical disorders, reporting sample details, prevalence, sensory qualities, associated emotions and major characteristics.

5.1 Prevalence

Intrusive memories appear to be highly prevalent in the experience of people with PTSD, depression and bipolar disorder. The prevalence of intrusive memories in PTSD samples ranges from 75% to 100%, with people typically experiencing between 1 and 5 intrusive memories (Hackmann et al, 2004, Michael et al; 2005; Reynolds & Brewin, 1999; Speckens, Ehlers, Hackmann, Ruths & Clark, 2007). Where there has been a common experience of a traumatic event, the prevalence of intrusive memories appears to be higher in people with PTSD than those without

Table 1. Studies investigating the phenomenology of intrusive memories across clinical disorders.

Author	Sample	Prevalence, Frequency, Duration	Order of Sensory Qualities	Emotions	Major Characteristics
Intrusive Memories PTSD					
Ehlers et al (2002)	35 CSA 56: Ambulance service staff 214: RTA survivors	Not reported	Visual, body actions, smells, sounds, thoughts, actions	Not researched	Intrusive memories consisted of stimuli that were present immediately before the traumatic event happened or subsequent to the event when the emotional impact of the experience became evident
Hackmann et al (2004)	22 PTSD Mixed gender	100% IM range=1 – 4 M=2.2 IMs Total of 47 IMs	Visual, body, audio, taste/smells	Not researched	Freq, nowness, distress and vividness all reduced post reliving Content consistent with Ehlers et al, 2002 4 images referred to what could have happened in the trauma but didn't.
Michael et al (2005)	Study 1: 32 PTSD v 49 non-PTSD Study 2 27 PTSD v. 46 non-PTSD	Study 1 PTSD 75%, Non-PTSD 49% Range: PTSD = 1-4 Non-PTSD =1 – 3 Study 2 PTSD 89%, Non-PTSD 54% Range: PTSD = 1-5 Non-PTSD =1-3	Visual modality (like a film scene or snapshot), audio, body, smells, tastes.	Not researched	Vivid, distressing, lack of context Nowness was the most consistent unique predictor of PTSD severity
Speckens et al (2006)	44 PTSD Mixed gender	5.48 IMs per week	Not researched	Not researched	Vivid, distressing, sense of nowness Lower levels of nowness and negative interpretations of IMs predicted greater intervention success
Speckens et al (2007)	31 PTSD Mixed gender	100% IMs 97% ruminations Mean IM=3 Range 1-11 IM duration (30-60s) (1s-15m) Rumination: (5-15m)- (1m-2hr	Visual, body, sounds, smells, tastes	Anger, Anxiety, Helplessness and Sadness (inconsistent with emotions felt in trauma event). Shame more assoc with ruminations than IM	Content consistent with Ehlers et al (2002)

Table 1. Studies investigating the phenomenology of intrusive memories across clinical disorders.

Author	Sample	Prevalence, Frequency, Duration	Order of Sensory Qualities	Emotions	Major Characteristics
Van der Kolk & Fisler (1995)	46 PTSD (10 men 36 women)	Not researched	Visual	Not researched	Not researched
Depression					
Brewin, et al (1996b)	31 depressed Mixed gender	87% Mean=2.6 Range 1-5	Not researched	Anger, sadness, helplessness and guilt, shame and anxiety..	Mean IES for all Ims 43 Mean IES for most freq IM = 51 IMs categorised as 1)Illness or death, 2) work/Finance, 3)Abuse/assault, 4) Relationships/Family
Brewin et al (1998b)	65 depressed v.65 non depressed cancer patients	As above	Not researched	Not researched	19/28 reported original IM intruding at 6 months
Brewin et al (1998a)	65 depressed v.65 non depressed cancer patients	IM Higher frequency in more severely depressed	Physical sensations in 17/40 IMs	Not researched	Total IES = 42.03 41% Nowness: 17/41; Vivid: 38/41 Content consistent with Brewin et al (1996b) More severely depressed reported more IMs than mild depressed and control group.
Brewin et al (1999)	62 depressed Mixed gender	73% (45/65)	Not researched	Not researched	Stability of IES scores for IM across 6 months
Kuyken and Brewin (1994)	35 depressed All female	86%	Not researched	Not researched	IES sample mean =38.2 Intrusion subscale mean = 16.8. Avoidance subscale mean = 21.4 P's with high IES scores were sig more depressed
Patel et al (2007)	39 depressed Mixed gender	IMs 44% Range=1-3 M=1.71 28 IMs in total	Visual	Sadness and anger	Content consistent with Brewin et al (1996b) Images all linked to earlier memory Vivid, distressing, sense of nowness, emotional and physical re-experiencing

Table 1. Studies investigating the phenomenology of intrusive memories across clinical disorders.

Author	Sample	Prevalence, Frequency, Duration	Order of Sensory Qualities	Emotions	Major Characteristics
Reynolds and Brewin (1998)	54 Depressed 44 PTSD 17 control Mixed gender	Intrusive thoughts more common than images/flashbacks Intrusions more frequent in clinical groups	Not researched	PTSD/Depression: Distress, Depression, Anxiety, Guilt Control: Distress, Guilt, Anxiety, Depression	Intrusion content categorised as: personal memories (generic or specific) (most common in PTSD), elaborative cognitions(future-orientated images), evaluative cognitions (most common in depression)
Reynolds and Brewin (1999)	62 MDE 11 PTSD but not MDE 32 PTSD and MDE	MDE: 73%, M=1.10 PTSD: 98%, M=1.47 IM freq was sig higher in PTSD, no diff for duration	Visual and physical sensations	Anger, sadness, fear, helplessness and guilt. Helplessness more present in PTSD, otherwise no diff between groups.	Similar levels of intrusion and avoidance for IMs in MDE and PTSD Content consistent with Brewin et al (1996b) 74% of PTSD and 71% MDE reported 'nowness'
Spenceley & Jerrom (1997)	24 depressed vs 11 recovered depression vs 27 healthy controls	Depressed 70.1%, Controls 78%, Recovered 54.6% No statistical diff	Not researched	Not researched	Higher levels of intrusion in depressed group. Levels of intrusion and avoidance twice as high in severely depressed
Bipolar Disorder					
Mansell & Lam (2004)	19 BP 16 UP remitted	More frequent recall of negative memories in BP than UP.	Not researched	Distress, Anxiety	Themes of failing at the pursuit of important personal goals and previous experiences of depression
Tzemou & Birchwood, 2007	29 BP 21 UP 20controls	45% BP 48% UP 0% Controls Not researched	Not researched	Not researched	BP IES=43.4, UP IES=35.1 – no sig diff

PTSD (Michael et al, 2005).

The prevalence of intrusive memories in depression is also high, ranging from 71% to 87% (Brewin et al, 1996b; Kuyken and Brewin, 1994; Reynolds and Brewin, 1999; Spenceley and Jerrom, 1997). Some research, however, suggests that the prevalence may be lower, ranging from 44%-48% (Patel, Brewin, Wheatley, Wells, Fisher and Myers, 2007; Tzemou & Birchwood, 2007). One possible explanation for this difference may be that Patel et al (2007) and Tzemou & Birchwood (2007) did not require participants to think about the significant life events they had experienced prior to reporting intrusive memories, as is done in the research of the Brewin group. This may have resulted in less priming of memories to be reported upon and consequently a lower prevalence of intrusive memories was found. Notwithstanding this, people with depression typically experience between 1 and 5 intrusive memories (Brewin et al, 1996b). The prevalence of intrusive memories in depressed people is higher than that found in people who have recovered from depression, but not in comparison to a control group (Spenceley and Jerrom, 1997). Although differences in the prevalence of intrusive memories between depressed and controls were not found to reach statistical significance in the Spencely & Jerrom (1997) study, the depressed group reported significantly higher levels of intrusion than controls and also those who had recovered from depression.

The high prevalence of intrusive memories could be argued to be attributable to PTSD co-morbidity, where intrusive memories are a diagnostic feature (DSM-IV; APA, 1994). This has found not to be the case (Brewin et al, 1998b, Brewin et al, 1999; Moulds, Kandris, Williams and Lang, 2008). The prevalence of intrusive

memories in depression is comparable to that found in PTSD, although there are some differences. Reynolds and Brewin (1999) conducted a systematic investigation of intrusive memories in a mixed gender sample of depressed participants compared to participants with PTSD (with and without co-morbid depression). 73% of the depressed and 98% of the PTSD sample reported experiencing intrusive memories. The mean number of intrusive memories differed significantly, but there were no differences in the levels of distress associated with the memories. For the most prominent memory reported by each group, the PTSD participants reported significantly higher memory intrusiveness than the depressed group, but not for avoidance of the memory. On the second most prominent memory, there were no such differences between the two groups. Overall this suggests that there are similar levels of intrusion and avoidance for experiences of intrusive memories in depression and PTSD.

Although not directly investigating intrusive memories, Mansell and Lam (2004) demonstrated that people with bipolar disorder experience more frequent recall of negative memories than people with unipolar depression. In contrast, Tzemou & Birchwood (2007) showed similar levels of prevalence of intrusive memories in depression and bipolar disorder. They investigated intrusive memories in a mixed sample of 29 participants meeting diagnostic criteria for bipolar disorder (BP) compared to 21 participants with unipolar depression (UP) and 20 controls. Intrusive memories were reported by 48% of UP and 45% of BP participants when in an acute state, including 69% who were manic. No intrusions were reported by controls. This represents an exception to the high rates of intrusive memory

prevalence reported for other disorders, suggesting that intrusive memories are less prevalent in bipolar disorder compared to PTSD and depression. This difference may be explained by Tzemou & Birchwood's finding that participants who did not experience intrusions tended to show a higher effect of overgeneral memory (OGM; for a review see Williams, Barnhofer, Crane, Hermans, Raes, Watkins & Dalgleish, 2007), which the authors suggested may have inhibited intrusions from 'entering consciousness, and hence easing distress'(Tzemou & Birchwood, 2007, p.696). It should be noted, however, that as their sample was experiencing an acute episode of either depression or mania overgeneral memory was not on the whole reducing distress.

5.2 Sensory Qualities

Research focussing on the modalities of intrusive memories in PTSD suggests that they are typically experienced by people as sensory experiences (Ehlers et al, 2002; Hackmann et al, 2004; Michael et al, 2005; Speckens et al, 2007; Van der Kolk & Fisler, 1995). The visual modality has been the most commonly reported sensory component of intrusive memories in PTSD (Ehlers et al, 2002; Hackmann et al, 2004; Michael et al, 2005; Speckens et al, 2007; Van der Kolk & Fisler, 1995), being experienced like either a movie or a photograph (Michael et al, 2005). Body sensations and sounds are typically the next most frequently experienced sensory modality, and smells/tastes appear to be relatively uncommon (Ehlers et al, 2002; Hackmann et al, 2004; Michael et al, 2005; Speckens et al, 2007). The sensory modalities experienced do not seem to depend on the presence of PTSD; Michael et

al (2005) showed that there were no differences in the sensory qualities of the intrusive memories between a PTSD group and a non-PTSD group who had both experienced an assault.

Unlike in the PTSD literature, there is relatively little information about the range of sensory modalities that are experienced in relation to intrusive memories in depression and there is no evidence for bipolar disorder. The available evidence suggests that in depression, intrusive memories comprise visual and physical sensory modalities (Brewin et al, 1998a, Patel et al, 2007; Reynolds & Brewin, 1999).

5.3 Emotions

The emotions associated with intrusive memories have not been widely researched in PTSD, but a range of emotions (including anger, anxiety, helplessness and sadness) seem to be experienced and the prominence of these appears to differ in comparison to the emotions that are experienced at the time of a trauma (Speckens et al, 2007). Consistent with the dual representation theory of PTSD (Brewin, Dalgleish & Joseph, 1996) different emotions can be experienced in relation to different intrusive cognitions. For example, where shame appears to be relatively uncommon in relation to an intrusive memory, it is more commonly associated with ruminations about a traumatic event (Speckens et al, 2007).

The emotions associated with intrusive memories in depression are similar to those reported for PTSD: anger and sadness are rated most highly (Brewin et al 1996b; Patel et al, 2007; Reynolds & Brewin, 1999). Helplessness, guilt, shame, anxiety are also reported and more than one emotion is typically experienced

(Brewin et al, 1996b). Comparisons between the emotions associated with intrusive memories in depression and PTSD suggest strong similarities, with only helplessness being more strongly associated with PTSD, otherwise there are no significant differences (Reynolds & Brewin, 1999). People with PTSD and depression mainly associate sadness with memories involving other-focussed memories, whereas fear is mainly associated with self-focussed memories such as personal injury or assault (Reynolds & Brewin, 1999). There is no evidence on the emotions associated with intrusive memories in bipolar disorder, although distress and anxiety are suggested (Mansell & Lam, 2004).

5.4 Characteristics

Hackmann et al (2004) asked PTSD participants to describe their intrusive memories, the worst moment of their trauma and then to judge whether their intrusive memory represented the period before, during or after this worst moment. The overwhelming majority (83%) of the content featured in intrusive memories did not represent the worst moment of the traumatic event. Consistent with Ehlers et al (2002) and Speckens et al (2007), the content largely contained either a representation signalling the onset of the trauma or a representation where the meaning of the event became more traumatic. For example, seeing the face of an attacker prior to the assault as opposed to the attack itself would constitute intrusive content occurred before the worst moment of the trauma.

In depression the content of intrusive memories has frequently been classified into one of four categories: 1) Illness or death to other, 2) Illness or injury

to self, 3) Abuse/assault, and 4) Interpersonal problems (Brewin et al, 1996b; Brewin et al, 1998a; Moulds et al, 2008; Patel et al, 2007; Reynolds and Brewin, 1999). This suggests that people who are depressed can experience intrusive memories of a range of distressing events. If people have experienced an intrusive memory involving past assault or abuse, this is associated with greater levels of depression, but there is no evidence connecting depression severity to the other categories of intrusive memory content (Brewin et al, 1996b). Similar classifications of content have been shown in comparisons of intrusive memories in depression and PTSD (Reynolds & Brewin, 1999). The intrusive memories of people who are depressed appear to be more likely to involve family death, illness, injury and interpersonal problems, whereas people with PTSD are more likely to report intrusive memories of self illness or injury and assault. There has not been any research that has specifically analysed the content of the intrusive memories in Bipolar Disorder, but Tzemou & Birchwood (2007) present intrusive memory examples that are of events that have occurred in recent adulthood, for example being informed that a son had been killed in an accident. The examples appear to fall into similar categories to those found for depression. Further, Mansell and Lam's (2004) study of voluntarily recalled autobiographical memories in Bipolar Disorder suggests that intrusive memories may include themes of failing at the pursuit of important personal goals and previous experiences of depression.

Intrusive memories in PTSD and depression are vivid and distressing (Depression: Brewin et al, 1996b; Brewin et al, 1998a; Patel et al, 2007; Reynolds & Brewin, 1999; PTSD: Hackmann et al 2004; Michael et al, 2005; Reynolds &

Brewin, 1999; Speckens et al, 2006). An important characteristic of intrusive memories appears to be the sense of 'nowness' with which they are experienced (Carlier, Voerman & Gerson, 2000; Hackmann et al, 2004; Michael et al, 2005; Reynolds & Brewin, 1999). The sense of 'nowness' refers to when the event from the past is experienced as if it is happening in the present moment. In a longitudinal study of intrusive memories in PTSD, their frequency only accounted for a small percentage of variance in PTSD symptoms, adding nowness, lack of context and distress explained an additional 36-43% (Michael et al, 2005). Nowness was the most consistent unique predictor of PTSD severity. The degree of 'nowness' in intrusive memories for depression compared to PTSD is similar (Reynolds & Brewin, 1999). In Reynolds & Brewin's sample, 71% of sensations of reliving in depression compared to 74% in PTSD (a non-significant difference), and this sense was most closely associated with memories involving personal assault. The importance of the sense of 'nowness' (along with distress and vividness) of intrusive memories has received further support from intervention studies demonstrating significant group mean decreases on these dimensions following a reliving intervention (Hackmann et al 2004; Speckens et al, 2006). This finding, however, is complicated by the caveat that a higher degree of 'nowness' of an intrusive memory overall appears to predict a poorer response to imaginal reliving (Hackmann et al, 2004; Speckens et al, 2006).

6 Intrusive Images

Table 2 summarises the findings of investigations into the phenomenology of intrusive images across clinical disorders, reporting samples details, prevalence, sensory qualities, associated emotions and major characteristics.

6.1 Prevalence

In a PTSD study, Holmes et al (2005) investigated intrusive images in comparison to the worst moments of a traumatic event. 100% of participants reported experiencing intrusive images, with a mean of 4.1 and a range of between 0-10. When intrusive images in PTSD have been investigated in comparison with those in depression with and without PTSD, a similar level of prevalence is found (Birrer et al, 2007).

Patel et al (2007) investigated intrusive images (including memories) in depression, using a similar protocol to Reynolds & Brewin (1999). One or more images were reported by 10% of the sample, giving a total of five images. Intrusive memories were reported by 44% of the sample. This suggests that intrusive imagery is relatively uncommon in depression. There is some evidence, however, to suggest that there may be a higher prevalence of imagery in depression than shown by Patel et al (2007). Holmes, Crane, Fennell and Williams (2007) investigated intrusive imagery in a mixed gender sample of 15 participants with a history of suicide and who were in remission. Participants made 82 endorsements for the type of images they experienced at their most despairing or when suicidal.

Table 2. Studies investigating the phenomenology of intrusive images across clinical disorders.

Author	Sample	Prevalence, Frequency, Duration	Order of Sensory Qualities	Emotions	Major Characteristics
Intrusive images					
PTSD					
Birrer et al (2007)	26 (PTSD) 20 (depression with trauma) 19 (depressed without trauma)	PTSD: 100% Depression with trauma: 100% Depression without trauma: 90% (No sig diff between groups)	Visual and auditory modalities reported most by PTSD, and depressed with trauma. In depressed without trauma, auditory and bodily sensations reported most.	Not researched	PTSD: 100% of IMs related to trauma Dep with trauma: 55% of IMs related to trauma, 55% to life event Dep without trauma: 100% of IMs related to life event There were no group differences for prev, duration, vividness, distress or lack of context Nowness of intrusion significantly differentiated the PTSD group from the others
Holmes, et al (2005)	32 PTSD Mixed gender	100% Range=0-10 Mean = 4.1 Total IMs = 132	Visual and audio	Fear, dissociation, sadness, surprise, anger, consistent with emotions felt in trauma.	Mean overall IES = 76.5 Mean Intrusion IES =29.3 Avoidance 24.2, Hyperarousal =22.3 Inconsistent with Ehlers et al, 2002:. 77.6% intrusions matched worst moment
Depression					
Holmes et al (2007)	15 depressed remissionMixed gender	100% imagery 100% thougths Future-focussed imagery more prevalent than for thoughts	Not researched	Not researched	Distressing and comforting Sense of realness
Patel et al (2007)	39 depressed Mixed gender	28 IMs in total Images 10% Range-1-2 M=1.25 5 images in total	VIsual	Sadness and anger	Content consistent with Brewin et al (1996b) Images all linked to earlier memory Vivid, Distressing, Sense of Nowness, emotional and physical re-experiencing
Social Anxiety (SA)					

Table 2. Studies investigating the phenomenology of intrusive images across clinical disorders.

Author	Sample	Prevalence, Frequency, Duration	Order of Sensory Qualities	Emotions	Major Characteristics
Hackmann et al (1998)	30 SAs 30 controls Mixed gender	77%SPs 47% controls	Not researched	100% SP images –ve toned Control: 50% neutral or +ve	SP: 82% observer perspective
Hackmann et al (2000)	22 SAs Mixed gender	100%	Visual, body, sounds	100% images – ve toned	IMs present Images linked to earlier memories Role of memory in onset or worsening of SA
Agoraphobia (A)					
Day et al (2004)	20 As vs. controls Mixed gender	A: 100% Control: 0%	A: visual/body, sounds, touch, taste/smell Control: Visual, body, sounds, taste/smell, touch	Images more negative than controls.	A-Alternating perspective Control – no main effect of perspective 100% linkage of image to a memory Role of memory in onset or worsening of A
Health Anxiety					
Wells, & Hackmann (1993)	10 Mixed gender	100%	Visual, audio, emotions, thoughts, body	No formal analysis	Images linked to earlier memories Beliefs about self and death/illness related to image
OCD					
De Silva (1986)	48 (Unknown(	47% (36/76)	Not researched	Not researched	Not researched
Speckens et al (2007)	37 Mixed gender	78% (29/37)% x10 a week 20-30s	Body, visual, sounds, smells, tastes	Anxiety, helplessness, threat, sadness, anger, guilt and shame	Vividness and distress higher than 'nowness' Field perspective 34% reported images were IMs 68% image linked with earlier memory .
Body Dysmorphic Disorder (BDD)					
Osman et al (2004)	18 BDD 18 controls Mixed gender	BDD – 94% Control - 37% No diff in frequency between groups	Visual, body	-ve tone in BDD compared to controls	BDD More vivid and intense BDD-observer perspective Control-field perspective 83% BDD linked image to earlier memory 11% Control linked image to earlier memory

Table 2. Studies investigating the phenomenology of intrusive images across clinical disorders.

Author	Sample	Prevalence, Frequency, Duration	Order of Sensory Qualities	Emotions	Major Characteristics
Bulimia Nervosa (BN)					
Cooper et al (1998)	12 AN 12 BN	54 % of sample	Not researched	Not researched	Not researched
Somerville et al (2007)	13 BN 20 dieting (D) 20 non-dieting (ND) All female	85% BN 40% D 40% ND	Visual, touch, body Sig more modalities experienced by BDD.	BN –ve tone	BN greater vividness No differences in perspectives 62% BN linked image to early memory
Psychosis					
Morrison et al (2002)	35 schizophrenic, schizoaffective or schizophreniform	69.2%	Not researched	Anxiety, fear, paranoia, helplessness, anger, guilt and despair	96.2% linked image to an emotion or belief. 70.8% associated image with an earlier memory.

Thoughts were as common as images, except for where images pertained to future-orientated situations (e.g. 'what might happen if you die' and 'planning or preparing to make a (new) suicide attempt or harm yourself').

Intrusive images are also common in anxiety disorders with a prevalence of 77%-100% in social anxiety (Hackmann et al, 2000; Hackmann et al, 1998); 100% in agoraphobia (Day et al, 2004), 47%-78% in obsessive compulsive disorder (De Silva, 1986; Speckens et al, 2007); and 100% in health anxiety (Wells & Hackmann, 1993). Images in anxiety disorders are also more common than in matched controls (Day et al, 2000; Hackmann et al, 1998). It should be noted that participants' inclusion in Wells & Hackmann's (1993) study was based upon their reports of experiencing images whilst in therapy. A further caveat is that 7/10 in Wells & Hackmann's (1993) sample had a co-morbid diagnosis of panic disorder (combined with major depression in three cases), two had social phobia and one also had agoraphobia. As all of these diagnoses (except panic disorder) have been independently associated with intrusive imagery, thus an understanding of the prevalence of intrusive images in health anxiety is less clear.

Intrusive images are also common in Body Dysmorphic Disorder (BDD) (Osman et al, 2004) and Bulimia Nervosa (BN) (Cooper, Todd and Wells, 1998; Somerville et al, 2007). Osman et al (2004) compared the occurrence of spontaneous appearance related images, in a sample of 18 people diagnosed with BDD compared to 18 control participants. All but one participant reported experiencing recurrent spontaneous images about their appearance. This compared to 7 of the control group who reported experiencing recurrent intrusive images. In a

systematic study of intrusive images in BN, 84% (11/13) reported experiencing recurrent intrusive imagery as did 40% (8/20) of people dieting and 40% (8/20) of non-dieting controls - there was no main effect of prevalence (Somerville et al, 2007). This suggests that the images involved in BDD and BN are more commonly experienced in the general population than compared to anxiety type images.

People who experience psychosis also report intrusive imagery, with a prevalence of 69.2% (Morrison, Beck, Glentworth, Dunn, Reid, Larkin & Williams, 2002).

6.2 Sensory qualities

There is some evidence to suggest that people with PTSD are more likely to experience intrusive imagery as a visual sensation than depressed people without trauma, who are more likely to report auditory and bodily sensations (Birrer et al, 2007). However, there is substantial evidence to suggest that a traumatic event is not a prerequisite for experiencing intrusions as a visual sensation. The visual modality is the commonly reported sensation associated with intrusive imagery across a range of clinical disorders (Agoraphobia: Day et al, 2004; Health Anxiety: Wells & Hackmann; Social Phobia: Hackmann et al, 2000; Depression: Patel et al, 2007; OCD: Speckens et al, 2007; BDD: Osman et al, 2004; and BN: Somerville et al, 2007). Other commonly reported sensory modalities across disorders include auditory, bodily sensations, tactile, smells and tastes and more than one sensations are experienced (e.g. Hackmann et al, 2000; Osman et al, 2004; Speckens et al, 2007).

6.3 Emotions

Holmes et al (2005) reported that fear, dissociation, sadness and surprise are associated with intrusive images in PTSD and that these correlate with the experiences felt at the worst moment of a trauma. Holmes et al (2005) noted that the PTSD diagnostic emotions of fear, horror and helplessness (DSM IV, 1994) represented only 42% of the emotions that were reported in relation to the intrusive images, suggesting that such criteria are too exclusive. Sadness, in addition to anger, is also associated in the intrusive images in depression (Patel et al, 2007). Anxiety, helplessness, threat, sadness, anger, guilt and shame are associated with intrusive images in OCD (Speckens et al, 2007). Similar emotions are experienced by people with psychosis in relation to their images, with paranoia and despair also being cited (Morrison et al, 2002). There is no research on the emotions that people associate with intrusive images in social anxiety, agoraphobia, BDD and BN in the same way as has been conducted in PTSD, depression and OCD studies. Intrusive images have, however, been rated by researchers to assess their emotional valence and this has always been negative and significantly more so than for controls (Day et al, 2004; Hackmann et al, 1998; 2000; Osman et al, 2004; Somerville et al, 2007).

6.4 Characteristics

In Holmes et al (2005) the content of the majority of intrusive images in PTSD matched the worst moment of the trauma. There were also a small number of images that were of objects or people that were not present at the time of the trauma (e.g. seeing the face of someone who was not present at the trauma, but who was associated with an attacker). Similar subsets of images were reported by Hackmann et al (2004), but these reflected a representation of what could have happened, for example hearing someone laughing who had not laughed at the time of the trauma.

The events underpinning intrusive images in PTSD contrast with those for people who have experienced a trauma and are depressed (but not diagnosed with PTSD) and people who are depressed but have not experienced a trauma (Birrer et al, 2007). The PTSD group reported that a 100% of images were related to a traumatic event, whereas the depressed-trauma group attributed half of their images to a traumatic event and half to a critical life event; the depressed-without trauma group attributed all of their images to a critical life event. The researchers did not investigate the content of these images, so it's not known if they related to the worst moment of the trauma/critical life event, or to events that preceded or followed the worst moment. Although the source of intrusive images may differ, they are characteristically similar in terms of frequency, duration, vividness, distress and lack of context (Birrer et al, 2007). The 'nowness' of the image, however, differentiated those with PTSD from those without PTSD, and the images belonging to the depressed with or without a trauma groups were homogeneous on this dimension (Birrer et al, 2007).

This is somewhat consistent with Patel et al's (2007) study of intrusive images in depression. Intrusive images were only associated with a moderate level of 'nowness', but they were distressing, vivid and contained a high level of emotional and physical re-experiencing. The content of the images fell into one of four categories: illness, death or injury to close other, threat of illness or injury to self, assault or threatened assault to self and interpersonal problems. The analysis conducted on these images, however, also included intrusive memories experienced in depression, so these reported qualities of images are likely to be contaminated. The content of the images appeared to be an abstraction of an original memory, for example, a person's face detached from their body (representing a stalker's face) and frozen images of a person (representing a dead person). No analysis or commentary was provided on how closely the image represented the original memory, nor how the relationship between the image and early memory was established, for example whether this link was made by the client or the researcher.

An interesting finding concerns the ratings of future-focused intrusive images in formerly depressed and suicidal participants (Holmes et al, 2007). Although these images were rated as distressing at a time of crisis, they were rated by some as also comforting, suggesting that at a time of extreme emotion such images can assume a protective function. The images were reported to contain a sense of 'realness', which may be related to the concept of 'nowness'; that is, the phenomena is not viewed as a past experience or a mental stimulus, but instead as a happening event. The level of realness in the image correlated with higher suicidal ideation.

The images experienced in social anxiety represent a clear visual image (Hackmann et al, 1998; 2000) incorporating an observer perspective of the individual (Hackmann, et al, 1998). This is consistent with the perspective taken in the images of people with BDD, which contrasts with the field perspective of those without BDD (Osman et al, 2004). No such differences exist between the perspectives taken by those with and without BN (Somerville, et al, 2007). In contrast, people with agoraphobia typically experience an alternating perspective (between field and observer) (Day et al, 2004), and those with OCD largely experience images in a field perspective (Speckens et al, 2007). The images of those with OCD are also experienced as a photograph or a series of unconnected photos (Speckens et al, 2007). Images are experienced as more distressing by people with clinical disorders than those without (eg. Agoraphobia: Day et al, 2004; BDD: Osman et al, 2004). Little is known about the 'nowness' of images in anxiety disorders, but this sense has been reported to be less than for characteristics such as distress and vividness in OCD (Speckens et al, 2007).

A common finding is that the overwhelming majority of people associate their intrusive images with an earlier memory (96% in social anxiety: Hackmann et al, 2000; 100% in agoraphobia: Day et al, 2004; 68% in OCD: Speckens et al, 2007; 83% in BDD: Osman et al, 2004; 62% in BN: Somerville et al, 2007; 100% in Health Anxiety: Wells & Hackmann, 1993; 70.8% in psychosis: Morrison et al, 2002). The images appear to be abstractions of the event in the associated memory and are similar in terms of their vividness and sensory qualities (e.g. Somerville, et al, 2007, Speckens et al, 2007). For example, a person with social anxiety can

describe experiencing an image of themselves looking stupid with a red face and closed posture, with an associated memory of being in a classroom, being criticised by a teacher for a 'stupid' response and looking red and having a closed body posture (Hackmann et al, 2000). The level of abstraction of the images appears to vary. For example, the images in social anxiety and agoraphobia appear less abstracted than those in OCD and psychosis. An example of OCD imagery is someone who sees herself 'covered in faeces and urine, having wrinkles and looking horrible', which is associated with memories of 'being horrible to a parent' (Speckens et al, 2007). An example of imagery in psychosis is a 'man with a beard' being linked with memories of 'being raped as an adult and being sexually abused as a child' (Morrison et al, 2002).

The associated memories appear to play a role in the onset and exacerbation of social anxiety, agoraphobia and OCD (Hackmann et al, 2000; Day et al, 2004; Speckens et al, 2007). Participants also report that the earlier memory can be experienced as intrusive memory in its own right. In Hackmann et al (2000), 71% of participants reported that they experienced intrusive memories of these earlier events during episodes of social anxiety; it was not reported if these participants experienced images that were in addition to the intruding event from the earlier memory. In Speckens et al's (2007) OCD sample, 34% reported that the images they experienced were actually memories of earlier events. This suggests that people with social phobia and OCD experience intrusive memories almost as much as intrusive images, although this interpretation was not reported by the authors.

The themes of the earlier memories in social anxiety include being criticised by others for doing something wrong or for being anxious, and feeling self-conscious as a result of this criticism (Hackmann et al, 2000). These themes are not inconsistent with those suggested for BN (Somerville et al, 2007). The most common themes of memories reported in agoraphobia are of either neglect/abuse or involving a threat or attack upon the self from a non-family member. The content of these images bears some resemblance to that reported for the intrusive memories of people with depression (Brewin et al 1996b). In the case of BDD the themes of images related to being bullied or related to appearance changes during adolescence (Osman et al, 2004). Little is presently known about the themes that characterise OCD earlier memories.

7 Discussion

7.1 Similarities and differences of intrusive memories

Intrusive memories have only been specifically investigated in PTSD, depression and bipolar disorder, with the weight of research focussed on depression and PTSD. The phenomenon appears to be comparably prevalent across conditions, especially in terms of PTSD and depression. The evidence suggests that regardless of disorder, if a person experiences intrusive memories they are likely to be experienced primarily in a visual modality, with other sensory modalities accompanying. The emotions associated with intrusive memories are also similar,

with anxiety, anger and sadness being commonly experienced together; although a sense of helplessness is more closely associated with PTSD, which is consistent with its diagnostic criteria (DSM-IV; APA, 1994).

The content of intrusive memories in PTSD and depression can be classified under similar themes (Reynolds & Brewin, 1999), however the memories of people with PTSD are more likely than those of depressed people to involve an experience relating to a physical threat, whereas in depression they are more likely to involve interpersonal problems and death, illness or injury to others. Further, the intrusive memories of people with PTSD have been argued to represent the moments before or after the worst aspect of the trauma (e.g. Ehlers et al, 2002). It is unknown whether the content of intrusive memories of depressed people represent the worst moment of the represented event. It may be expected that memories associated with bipolar depression may be similar to those in unipolar depression (Mansell, Colom & Scott, 2005), and the available evidence is not entirely inconsistent with this proposition (Mansell & Lam, 2004; Tzemou & Birchwood, 2007).

Intrusive memories across disorders also share the characteristics of being vivid and distressing, as well as containing a degree of 'nowness'. It is on this latter dimension, however, where intrusive memories appear to be distinctive. Although present in the intrusive memories of people who are depressed, it is more clearly implicated in the course of PTSD psychopathology than for depression (Hackmann et al 2004; Michael et al, 2005; Speckens et al, 2006).

In summary, the evidence suggests that the events represented in intrusive memories may differ across clinical disorders, but once present, the experiences of

the phenomenon that people report are remarkably similar and would appear to be a transdiagnostic process across depression and PTSD (Harvey et al, 2004). There is less available evidence for intrusive memories in bipolar disorder, but their presence is indicated (Mansell & Lam, 2004; Tzemou & Birchwood, 2007).

7.2 Similarities and differences of intrusive images

Intrusive images are highly prevalent amongst the anxiety disorders. The prevalence of intrusive imagery in anxiety disorders is also mirrored in BN (Osman et al, 2004), BDD (Somerville et al, 2007), OCD (Speckens et al, 2007) and psychosis (Morrison et al, 2002). The evidence is mixed, however, for depression, with one study reporting a low prevalence (Patel et al, 2007) of images and another (Holmes et al, 2007) reporting a high prevalence of both past and future-orientated imagery. This may be attributable to Holmes et al (2007) asking formerly suicidal participants to comment specifically on imagery related to suicide, and this specificity could have aided recall.

Across disorders, intrusive imagery is likely to be experienced primarily in a visual modality but will also be accompanied by other sensory experiences. A range of emotions are also associated with intrusive images, and the types of emotions experienced appear not to cluster around a particular disorder, with sadness, anger, helplessness and fear all associated with PTSD (Holmes et al, 2005), depression (Patel et al, 2007), OCD (Speckens et al, 2007) and psychosis (Morrison et al, 2002). Although similar data is not available for the other disorders covered in the review, one would expect similar emotions to be reported.

The content of images across clinical disorders appears to be vivid and distressing, but differences exist in the perspectives that people take of themselves in images, varying between field and observer. A commonality is the link to earlier memories which can be associated with the onset or exacerbation of symptoms. However, such links have not been researched in the investigation of imagery in PTSD. The 'nowness' characteristic of imagery potentially plays an important role, differentiating those with PTSD from those without PTSD (Birrer et al, 2007). Consistent with this, 'nowness' appears to not be a highly rated feature of imagery experienced by people with depression (Patel et al, 2007) and OCD (Speckens et al, 2007). However, the perceived 'realness' of an image appears to be important in people's experiences of future orientated intrusions in depression (Holmes et al, 2007). It is presently unspecified in the literature the degree to which the concepts of 'nowness' and 'realness' overlap. It is speculated that they are both tapping into a single underlying construct, that is, the degree to which the content of an image is experienced as happening in the present moment. The literature, however, indicates that what may differentiate this experience is whether the content is based upon an actual episode from the past or an imagined event for the future. It may be helpful for future researchers to adopt the single construct of 'nowness', whilst indicating whether the experience of nowness is, for example, either 'past controlled' or 'future controlled'.

In summary, intrusive images have been investigated over a number of clinical disorders and appear to be similar in nature. It is notable that thus far one area of study that has not featured in imagery research is Bipolar Disorder. The

evidence for similarity of intrusive images across disorders is particularly strong where Hackmann et al's (2000) protocol has been adopted and comparisons can more easily be made. Consequently, intrusive images would appear to be a transdiagnostic process (Harvey et al, 2004).

7.3 Are intrusive memories and intrusive images the same thing?

It can be argued that the distinction between intrusive memories and intrusive images is an arbitrary one. Although the research outlined above more often than not describes itself as either investigating intrusive memories or intrusive images, the operational definitions used are either similar or confusing. For example, Holmes et al (2005) reported that they studied intrusive imagery in PTSD, yet defined images as '...intrusive memories of your trauma that suddenly pop into mind spontaneously' (Holmes et al, p. 7). Birrer et al (2007) do not offer a clear definition of intrusive images, but make reference to '...vivid unwanted memories' (p. 2062). In intrusive memory research in depression, the operational definition of intrusive memories is a 'visual image of a specific scene that had actually taken place' (Reynolds & Brewin, 1999, p206). In this case, are people reporting upon memories or images? One exception is Patel et al's (2007) study that offered operational definitions to distinguish between intrusive memories and images in depression. They defined intrusive memories according to Reynolds & Brewin (1999), and intrusive images as a 'sensory representation of part of a memory, without surrounding context, or of an imagined event' (Patel et al, 2007, p. 2576).

This issue may seem semantic, but it is believed that it has significant consequences for the research area: 1) misleading findings and 2) masking findings. For example, in Birrer et al (2007) it is concluded that intrusive images are prevalent in depression. Whereas Patel et al (2007) conclude that intrusive images have a low prevalence in depression and less than that for intrusive memories. What explains the differences in the findings? It is possible that Patel et al's (2007) methodology accounts for the difference. The intrusive memory and intrusive image conditions were not counterbalanced so participants could have discussed the images they experienced in the memory condition, leaving the imagery condition underrepresented. Based upon the operational definitions adopted, however, what seems more likely is that Birrer et al (2007) were in fact measuring intrusive memories, but referring to them as images.

Although the terms intrusive memories and intrusive images are used interchangeably to investigate the same phenomenon, the way they are referred to potentially masks different forms of imagery. For example, Hackmann et al's (2004) findings focus on intrusive memories, but they also described a small minority of intrusions in PTSD that were not memories directly based upon the actual trauma but were instead images involving things that could have happened. The paper did not make a clear distinction between the potentially different phenomena being experienced. Similarly Holmes et al (2005) reported, in terms of images, intrusive memories relating to a traumatic event. However, there actually appeared to be a small number of images reported by participants that did not directly involve the traumatic event, for example objects or people not present at the

time of the trauma. Thus people with PTSD can experience: 1) images that are not directly related to a past event; 2) images that are abstractions of the traumatic event and 3) images that are related to the future (what could have happened). This suggests that intrusive memories and intrusive images in PTSD may differ in terms of whether they represent a direct representation of the trauma or are more abstracted.

Participants do not appear to link an earlier experience to an image until specifically asked to make such a connection (Hackmann et al, 2000; Speckens et al, 2007). When this link is made there is a significant association between the image and an earlier memory. What has not been emphasised up until now is that a significant number of participants report that the image they experience is actually an earlier memory intruding directly. The implication of this is that within these samples there were people experiencing imagery that was symbolic or an abstraction of an earlier experience and that there were people who experienced events intruding directly. This is also consistent with the experience of intrusions reported by people with depression, where an event can intrude directly as a memory, but people report abstracted images linked to actual events (Patel et al, 2007). In addition, Holmes et al (2007) showed that imagery in formerly suicidal patients related to future concerns or scenarios; however this does not preclude the possibility that the images were based upon a previous event. This suggests that images can take a number of different forms: abstracted representations of an underlying event; direct representations of earlier events; and representations of future concerns or scenarios.

One problem with the intrusive imagery research adopting Hackmann et al's (2000) protocol is that a broader understanding of peoples' intrusive experiences is restricted. For example, a clinical group under investigation is required to focus on situations specifically related to their clinical diagnosis, for example a social situation in the case of social anxiety. Consequently, people are primed to talk about imagery that exclusively relates to social anxiety, and the same would apply to the studies on OCD, agoraphobia, health anxiety, psychosis, AN and BDD. A possible consequence is that although the studies tap into distressing imagery, they are not able to conclude that this is the most distressing or relevant imagery that is experienced by participants. An improvement on this methodology would be to ask people generally about the intrusive imagery they experienced in the previous week and where they were when they experienced it, with the prediction that this would be imagery and a situation relating to their clinical diagnosis. This would help to clarify whether the imagery people experience is context specific. That is, do people with social anxiety, for example, only experience intrusive imagery in social situations? Or do they experience intrusive imagery when there is the prospect of a social situation or no prospect (e.g. at home watching the TV)? Currently, the findings indicate that intrusive imagery is context specific, which if correct, suggests a further way in which intrusive images may be differentiated from intrusive memories. However there is presently no evidence to inform on the contexts in which people experience intrusive memories.

One thing that unifies the clinical research of intrusive memories and intrusive images is that they both use semi-structured interviews. Consequently, it is

possible that the findings of these studies demonstrate strong similarities of the phenomena within and between clinical disorders is because they adopt similar methodology. Evidence for such a possibility comes from the different findings that have resulted when using a different methodology. For example, Hackmann et al (2004) asked PTSD participants in an interview to describe their intrusive memories, the worst moment of their traumatic event and then whether it represented the period before, during or after this worst moment. In contrast, Holmes et al (2005) asked participants to identify the hotspot of their trauma following a reliving exercise of the event (e.g. Grey, Young & Holmes, 2002). Participants were then asked if their intrusive memories matched the worst moments from the trauma. The intrusive memories showed a close resemblance to the worst moment of the traumatic event, representing an almost complete reversal of Hackmann et al's (2004) findings. Consequently, the methodology used by Holmes et al (2005) may have produced 'worst moments' of greater ecological validity, that is, they were likely to have been more accessible following a reliving exercise than during an interview. This is significant because the findings from studies such as Hackmann et al have been used to support the Warning Signal hypothesis (Ehler's et al, 2002), where an intrusive memory is argued to represent the signalling of the onset of the trauma or is a representation where the meaning of the event became more traumatic. Consequently, this hypothesis has shaped interventions to focus on these aspects of the trauma, yet Holmes et al's findings suggest this focus is misplaced. It would seem important that converging evidence from different methodologies is developed

to corroborate the field's understanding and theories of intrusive memories and intrusive images.

In summary, it is proposed that intrusive memories and intrusive images are phenomenologically similar, but that distinct variations exist. The evidence suggests that intrusive memories are based directly and clearly upon a specific event from the past and are common in PTSD (e.g. Hackmann et al, 2004), depression (e.g. Reynolds & Brewin, 1999), social anxiety (Hackmann et al, 2000) and OCD (Speckens et al, 2007). This differs from images that are abstractions of earlier events where the association appears to only become apparent for people when they are specifically asked to make such connections (e.g. Hackmann et al, 2000; Patel et al, 2007; Speckens et al, 2007). The literature based upon Hackmann et al's (2000) protocol also suggests that intrusive imagery may be context specific, occurring in situations where clinical symptoms are likely to be most active. It is unknown whether imagery in other disorders would be less context specific and more generally experienced; with the caveat that context specificity may be an artefact of the Hackmann et al methodology. Further, there is evidence that there is also a category of distressing and recurrent images for future situations. These can be: based upon actual events; representations of 'what if?' future scenarios; and future orientated images that do not appear to be based upon a previous event. There may be value in future research distinguishing between these different variations more than has been done in the past to further the field's understanding of the phenomenology of intrusive memories and intrusive images.

One way of conceptualising these variations is to adopt Berntsen's (2007) pragmatic model of involuntary autobiographical memories (See Figure 1). She distinguishes between two psychological levels of a given situation: 1) The immediate situation of a person; and 2) the current life situation of a person. The future-orientation is conceptualised as representations of plans, expectancies and goals, which is consistent with Conway, Meares & Standart's (2004) proposals. The past orientation refers to the ongoing processing of salient past events, which could be problematic and stressful. Thus, a person's immediate situation or current life situation may impact upon the content of involuntary memories and images (e.g. anxiety related imagery in the context of a social situation or memories or images experienced by people who are depressed). These involuntary intrusions may also be past-orientated or future orientated, as is the case for depression and PTSD.

Figure 1. Berntsen's (2007) model of involuntary autobiographical memories.

8 Future Research

The methods used to investigate intrusive memories and images in clinical research are in contrast with the methods used to investigate involuntary memory in non-clinical populations, where a naturalistic diary method is often adopted (Mace, 2007). This method requires people to keep a daily diary of the intrusive memories that they experience. Laboratory studies have also conducted experimental investigations of intrusive memories using vigilance and cuing tasks, finding that intrusive memories are retrieved more quickly than voluntarily recalled memories (e.g. Kvavilashvili & Schlagman, 2003). Methodologies such as these may be advantageous in the clinical study of intrusive memories and intrusive images. For example, diary studies may improve the validity of the prevalence of the phenomena, trying to capture them in 'real time'. This would also have clinical utility as it would be analogous to a thought diary, where a memory or image could be restructured in a similar fashion to thoughts. Experimental studies would also allow a deeper understanding of the mechanisms that may underpin intrusive memories and images.

There are a number of ways in which the similarities and differences of intrusive memories and images across clinical disorders can be investigated. The Warning Signal hypothesis (Ehlers et al, 2002) predicts that an intrusive memory in PTSD represents events pre or post the worst moment of the trauma. It would be interesting to test this theory to see if it also applies to the content of intrusive memories in other clinical disorders. The 'nowness' and 'realness' of intrusive memories and images appear to be important characteristics, but they remain to be

investigated across a number of the clinical disorders included in this review. It would be interesting to identify whether these concepts map on to intrusions that are past-orientated (e.g. nowness) or future-orientated (e.g. realness).

From the review, the disorder that least is known about in terms of intrusive memories and imagery is Bipolar Disorder. There is only information available on the prevalence of intrusive memories, but little is known about the presence of imagery, or the characteristics of either phenomenon in the disorder.

Finally, although imagery has been shown to be linked to earlier memories, there has been no such exploration into the earlier memories associated with intrusive memories. Such an association would be important because it would suggest a network of memories contributing to a person's current distress, and if the earlier memories were specific they would represent a potential target for rescripting interventions.

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Part 2: Empirical Paper:

'Intrusive memories and images in Bipolar Disorder'

1 Abstract

The phenomenology of intrusive memories have been widely researched in post-traumatic stress disorder (PTSD) and depression. Very little is known about the phenomenology of intrusive memories in Bipolar Disorder. Using a cross-sectional within-subjects design, the aim of the study was to investigate if and how people with Bipolar Disorder experience intrusive memories and images. Adopting a semi-structured interview, 29 euthymic participants meeting criteria for a Bipolar Disorder diagnosis reported upon the characteristics of the intrusive memories they recalled from their most recent experiences of euthymia, depression and hypomania. Intrusive images experienced in hypomania were similarly researched. Intrusive memories were more prevalent in euthymia and depression than hypomania. In contrast, intrusive images were more common than intrusive memories in hypomania. Both intrusive memories and images were associated with earlier memories. The clinical and theoretical implications of the findings are discussed.

2 Introduction

An intrusive memory is a specific autobiographical memory of an episode or event that is involuntarily recalled by a person. The presence of intrusive memories has been demonstrated across a range of clinical disorders including depression (e.g. Brewin, Hunter, Carroll & Tata, 1996b), posttraumatic stress disorder (PTSD) (e.g. Hackmann, Ehlers, Speckens & Clark, 2004), social anxiety (e.g. Hackmann, Clark & McManus, 2000) and obsessive compulsive disorder (Speckens, Hackmann, Ehlers & Cuthbert, 2007). Consequently, intrusive memories are cited as a transdiagnostic process occurring across clinical disorders (Harvey, Watkins, Mansell & Shafran, 2004). Bipolar Disorder is one clinical disorder where the phenomenology of intrusive memories has not been investigated. The present study aims to bridge this gap in the literature.

People diagnosed with Bipolar Disorder typically experience episodes of depression, euthymia and hypomania and/or mania (DSM IV; APA, 1994). Bipolar Disorder is a debilitating condition and is estimated to be experienced by at least 5% of the general population (e.g. Judd and Akiskal, 2003) and it has been shown to have a high genetic component (Goodwin & Jamison, 1990). However, as with depression, developmental, social and psychological factors play a greater role in the course of Bipolar Disorder than at first thought (e.g. Alloy, Abramson, Urosevic, Walshaw, Nusslock & Neeren, 2005). The psychological features of depression in bipolar overlap with those in unipolar depression (Mansell, Colom & Scott, 2005), therefore one way of researching the phenomenology of bipolar disorder is to compare it against the psychological processes implicated in unipolar depression.

One such process is intrusive memories. Although intrusive memories are traditionally associated with the experiences of people with PTSD (DSM-IV; APA, 1994), research by Kuyken and Brewin (1994) first suggested that intrusive memories were also an important feature of peoples' experiences in depression. Intrusive memories in depression are investigated using a semi-structured interview (e.g. Brewin et al, 1996b; Reynolds & Brewin, 1999). Firstly, intrusive memories are operationally defined to participants as a visual image of a specific scene that has actually taken place. They are then asked if memories of this type have spontaneously and recurrently popped into their minds over the previous week. Participants select their two most prominent or meaningful memories and then report on the characteristics of these including associated emotions, duration, frequency, vividness, physical sensations, interference with daily activities, distress and the degree of reliving of the event. Additional characteristics such as the perspectives that people take in the intrusive memory, either first-person (as in the actual event) or third-person (observer of the event), and whether the event is experienced like a movie or a photograph, have also been included in investigations of intrusive memories in dysphoric participants (Williams & Moulds, 2007).

It is clear that intrusive memories are a common feature of depressed people's experiences (e.g. Brewin et al, 1996b; Reynolds & Brewin, 1999) and they are more often than not visual, vivid and distressing (Brewin, Watson, McCarthy, Hyman & Dayson, 1998a; Patel, Brewin, Wheatley, Wells, Fisher & Myers, 2007; Reynolds & Brewin, 1999). The content featured in intrusive memories can be typically classified across one of four categories: 1) Illness or death to other, 2) Illness injury to self, 3) Abuse/assault, and 4) Interpersonal

problems (Brewin et al, 1996b; Brewin et al, 1998a; Moulds, Kandris, Williams & Lang, 2008; Reynolds & Brewin, 1999). This suggests that people who are depressed can experience intrusive memories of a range of distressing events. Intrusive memories involving past assault or abuse are also associated with greater levels of depression, but there is no evidence connecting depression severity to the other categories of intrusive memory content (Brewin et al, 1996b).

The phenomenon has also been shown to be related to the maintenance of depression (Brewin et al, 1996b; Brewin, Watson, McCarthy, Hyman and Dayson, 1998b; Brewin, Reynolds and Tata, 1999). Brewin et al (1999) showed that the degree to which memories intruded and were avoided by participants made a significant contribution to the severity of depression experienced at a six-month follow-up. Another important characteristic is the 'nowness' of the intrusive memory (Williams & Moulds, 2007). In a sample of dysphoric participants, Williams & Moulds (2007) found that the degree to which the event in the memory was relived (as opposed to being experienced as just a past event) predicted levels of intrusion-related distress and depression. This is consistent with phenomenological studies of PTSD that have also shown the 'nowness' of intrusive memories to be important in the course of psychopathology, predicting subsequent PTSD severity at follow-up (Birrer, Michael & Munsch, 2007; Michael, Ehlers, Halligan & Clark, 2005). The important role that intrusive memories play in the experiences of people with depression have also received additional support from the preliminary findings of imagery rescripting interventions for depression (Wheatley, Brewin, Patel, Hackmann, Wells, Fisher & Myers, 2007). By solely focussing on reliving and then rescripting (see Arntz

and Weertman, 1999) the event underpinning the intrusive memory, Wheatley et al (2007) showed reductions in participants' depressive symptoms and the intrusiveness of their memories.

The research on intrusive memories in depression has not specifically looked at whether a person associates an intrusive memory to an earlier memory. There is some evidence, however, to suggest that intrusive memories may be linked to a network of related memories. Brewin et al (1998a) found that out of 29 participants reporting an intrusive memory, 12 reported an additional memory, eight of which were thematically linked to the first memory. Converging evidence comes from the finding that when a depressed sample received an imagery rescripting intervention for intrusive memories, 5 out of 9 reported experiencing new intrusive memories that were thematically related to the original one (Patel et al, 2007). In a related field, research on intrusive imagery in anxiety disorders has demonstrated that people associate their intrusions with earlier memories (e.g. Day, Holmes & Hackmann, 2004, Hackmann et al, 2000; Wells & Hackmann, 1993). One of the main differences for the findings of intrusions and related memories in depression and anxiety is methodological. In both the cases of Brewin et al (1998a) and Patel et al (2007), the link between an intrusive memory and related earlier memories was established by the researchers as opposed to the participants, and the link was made in a *post-hoc* fashion. This contrasts with the research on intrusive imagery in anxiety disorders where participants make the connection between their intrusive image and an earlier memory. Whether people would be able to link intrusive memories to an earlier memory in the same way remains an empirical question.

Mansell & Lam (2004) investigated specific autobiographical memories in a sample of people with remitted bipolar disorder compared to people with remitted unipolar disorder using the Autobiographical Memory Test (AMT) (Williams & Broadbent, 1986). The AMT requires people to voluntarily recall a memory for a specific event in response to the presentation of positive and negative word cues. The negative memories cued by the AMT were reported to be more recurrent in everyday life by the bipolar group than the unipolar group. There were no differences between the groups in the number of cued positive memories that were reported to occur recurrently in everyday life. The themes of the reported autobiographical memories included themes of failing at the pursuit of important personal goals and previous experiences of depression. It is difficult to know how representative these findings are of intrusive memories in Bipolar Disorder as the memories were recalled voluntarily after receiving a cue and then examined for how recurrent they were in daily life. Additionally, Mansell & Lam did not investigate whether the recurrent memories intruded when participants' mood was not euthymic.

Only one study has directly investigated the presence of intrusive memories in bipolar disorder compared to that found in unipolar depression (UP) and healthy controls (Tzemou & Birchwood, 2007). At baseline and a 3 month follow-up participants completed a range of measures, including the AMT (Williams & Broadbent, 1986), followed by an interview to assess for the presence of intrusive memories. All Bipolar Disorder and UP participants were in an acute phase of mania or depression at baseline. Intrusive memories were reported by 45% of Bipolar Disorder participants and 48% of unipolar participants at baseline, this included 69% that were manic. This suggests that

people with bipolar disorder report experiencing intrusive memories when in an episode of depression or mania and also when recovered. As with Mansell and Lam (2004), it is difficult to know how representative Tzemou & Birchwood's (2007) findings are of intrusive memories in Bipolar Disorder. Participants reported intrusive memories after accessing negative memories in response to the AMT. This could have had the effect of biasing the reporting of intrusive memories. It is difficult to know to what extent this was the case as the correspondence between autobiographical memories produced in response to the AMT and those latterly reported as intrusive was not reported by Tzemou & Birchwood (2007). Although Tzemou & Birchwood provided brief descriptions of the reported intrusive memories, which ostensibly appear to fall into the similar categories found to be relevant for intrusive memories in depression (e.g. Brewin et al, 1996a), no such analysis was conducted. It was not stated which intrusive memory descriptions were from people in an acute manic or depressive episode and no information was provided on the type of memories still intruding in 'recovered' participants. Further, no information was provided on the phenomenology of the intrusive memories. Therefore, it is unknown how similar or different intrusive memories in Bipolar Disorder are across mood states and also how similar or different they are to intrusive memories investigated in other clinical disorders.

Aims of present study

This was an exploratory study conducted to understand the phenomenology of intrusive memories in bipolar disorder across three mood states: euthymia, depression and hypomania. Four general questions were

explored: 1) Do euthymic participants with a Bipolar Disorder diagnosis report the presence of intrusive memories from the different mood states that they have experienced? 2) What are the characteristics associated with intrusive memories from different mood states? 3) Do the reported characteristics of intrusive memories differ across mood states? 4) Are intrusive memories associated with earlier memories? If earlier memories were reported, an additional question was whether these would be specific or general autobiographical memories.

Based upon Tzemou & Brichwood's (2007) findings that people with Bipolar Disorder experience intrusive memories when depressed, manic and recovered, it was expected that participants would report intrusive memories when euthymic and from episodes of depression and hypomania. It was also expected that the characteristics of intrusive memories would vary across mood states. As intrusive images are associated with early memories, it was predicted that intrusive memories would also be associated with earlier memories.

3 Method

3.1 Ethics

Multi-site ethical approval for this study was obtained through the Joint South London and Maudsley and the Institute of Psychiatry NHS Research Ethics Committee (Appendix 1). The main ethical consideration for this study was ensuring that participants were not distressed at the end of the research and the steps taken to assess and manage this are discussed in the Procedure.

3.2 Participants

The participants in this study were recruited through either an inner-city affective disorders clinic or the Bipolar Manic Depression Fellowship (MDF). Participants from the latter source either responded to an advertisement on the MDF's e-community website, their quarterly magazine (Pendulum) or through a monthly email sent to MDF self-help groups. The inclusion criteria were: 1) Meeting DSM-IV (APA, 1994) criteria for a diagnosis of either Bipolar 1 or Bipolar 2 disorder; 2) scoring 18 or less on the Beck Depression Inventory II (BDI-II, Beck, Steer & Brown, 1996) to establish euthymic mood; 3) scoring less than 6 on the Young-Mania Rating Scale (Young, Biggs, Ziegler & Meyer, 1978) to establish euthymic mood; 4) to be aged between 18 and 65 years old; and 5) to have a fluency of English permitting reporting of intrusive memories. The exclusion criteria were: 1) Scoring 3 on the suicide and hopelessness items of the BDI as this correlates with suicide risk and the risk of suicide in the bipolar population is high (e.g. Harris & Barraclough, 1997); 2) presence of a current manic or major depressive episode, the rationale being that participants would be less able to access intrusive memories from other mood states if either manic or depressed; 3) meeting criteria for PTSD as any intrusive memories experienced could be attributable to this diagnosis; and 4) English at a level not permitting communication of intrusive memories.

A total of 31 participants were recruited. Two people were excluded because they also met criteria for a PTSD diagnosis. The remaining 29 consented to participate and were included in the study. All of the participants (21 female, 8 male) met DSM-IV (APA, 1994) criteria for a Bipolar Disorder and all had experienced hypomania. No participant met DSM-IV (APA, 1994)

criteria for a current major depressive episode, current hypomanic/manic episode or PTSD diagnosis. Their ages ranged from 32 to 65, with a mean of 48.41 (SD= 9.65). All participants scored 18 or less on the BDI (mean=11.2, SD=5.1, Range=2-18) and less than 6 on the Y-MRS (mean=0.83, SD=1.07, range=0-3).

The mean age of Bipolar Disorder onset was 22.48 years (SD=10.01, Range 4-50). The number of depressive episodes reported by participants ranged between 2 and 20 (mean=6.66, SD=4.43). The number of hypomanic episodes ranged between 4 and 19 (mean=9.24, SD=2.73). However, 19 people described hypomanic episodes as 'too many to count', but reported that this would be 'at least 10' (so were coded as 10 episodes), therefore the reported number of hypomanic episodes is an underestimate of the actual number. The number of mania episodes ranged from 0 to 15 (M=5.10, SD=3.50). The number of hypomanic episodes were significantly higher than the number of manic episodes, $t(28) = 5.42$, $p<0.0001$. The most recent depressive episodes ranged between 1 month and 120 months (mean=28.62, SD=36.80) and the most recent hypomanic episode ranged between 1 month and 120 months (mean=14.10, SD=26.54); these differences were significant, $t(28) = 2.19$, $p=0.04$.

3.3 Design

The study was a within-subjects design with an independent variable of mood at three levels: 1) Euthymic, 2) Depressed and 3) Hypomanic. The dependent variables were the experiences of intrusive memories and intrusive images.

3.4 Measures

The Structured Clinical Interview for DSM-IV (SCID-I; Spitzer, Williams, Gibbon, & First, 1996)

The SCID-I (Appendix 2) was used to assess that participants did not currently meet criteria for a major depressive disorder, hypomanic, or manic episode, or PTSD; and that they did meet DSM IV (APA, 1994) criteria for Bipolar Disorder 1 or 2, and that all had experienced at least one hypomanic episode. The SCID-I has been shown to have a DSM-IV (APA, 1994) diagnostic reliability Kappa co-efficient of 0.85 for Bipolar Disorder (Zimmerman, McGlinchey, Chelminski & Young, 2008), which is consistent with the reliability data found for DSM-III-R diagnostic reliability (Williams, Gibbon, First, Spitzer, Davis, Borus, Howes, Kane, Pope, Rounsaville & Wittchen, 1992). The five participants who were recruited through the affective disorders clinic also had their diagnosis confirmed by the referring clinician. For those that were recruited through the MDF, additional information was gathered in the form of current medication and the time of most recent depressive and hypomanic episodes. The information corroborated the diagnosis obtained by the SCID-I.

Beck Depression Inventory II (Beck et al 1996)

The BDI-II (Appendix 3) is a 21-item self-report measure that assesses the severity of current depression. Participants were instructed to rate their symptoms over the past two weeks. Following previous research a cut off point of 18 was used to discriminate between clinically depressed and non-depressed participants (Tzemou & Birchwood, 2007). The BDI-II has good test-retest reliability (0.93, $p<0.001$) and an internal consistency co-efficient alpha of 0.92

with psychiatric patients; good construct and convergent validity has also been demonstrated (Beck et al, 1996).

Young-Mania Rating Scale (Y-MRS) (Young, Biggs, Ziegler & Meyer, 1978)

This is an 11-item observer rating scale that assesses the severity of current manic symptoms (Appendix 4). The measure has good inter-rater reliability (0.93), high concurrent and predictive validity, and high sensitivity for detecting variations in mood (Young et al, 1978). Following previous research, a score between 0 and 5 was judged to represent no signs of hypomania or mania (Lam & Wong, 1997). Recent empirical evidence, however, suggests that a cut-off point of <4 is required to determine full remission from Bipolar Disorder (Berk, Ng, Wang, Calabrese, Mitchell, Malhi & Tohen, 2008). All participants in this study scored under four on the measure. Dr Warren Mansell provided training and guidance to the author in the use of this measure.

Intrusive Memories and Images Interview

An intrusive memory semi-structured interview was developed (e.g. Appendix 5) incorporating elements from the protocols used to investigate intrusive phenomena in previous research (Hackmann et al, 2000; Patel et al, 2007). It was delivered in a fixed order, starting with people reporting on their experience of intrusive memories during the previous week (euthymic condition), then from their most recent episode of depression and finishing with their most recent episode of hypomania. The depression and hypomania interview sections began by asking participants to report on when their most recent episode of depression and hypomania had occurred. The items from the SCID-I for

depression and hypomania were also used to help illustrate the types of symptoms that they may have experienced at the time to aide their recall. A record was made of the date of the episode and was referenced throughout the interview to orientate participants to only comment on their most recent episode of depression and hypomania. The aim of this was to try and control for participants reporting on more than one episode of depression or hypomania.

The interview had three main stages, which are described below:

Stage 1

The intrusive memories were defined to participants as memories of a particular event or episode from the past that were recalled spontaneously and repeatedly. Examples of specific versus general autobiographical memories were provided to help with this definition. General memories or themes from the past did not qualify as intrusive memories. Participants were asked if memories of this type had spontaneously popped into their minds over the previous week when feeling euthymic. Participants were asked how many intrusive memories they approximately experienced and to select up to two of the most prominent or meaningful memories. Participants were then asked to provide a brief description of the memories including: a) age in memory (categorised as 0-16, 17-30 and 31-65); b) the perspective taken in the memory (categorised as field, observer or both); c) whether the memory was like a movie, a photograph, or a series of photographs; and d) whether the memory was accompanied by a soundtrack (for example dialogue in the memory or environmental sounds).

Stage 2

Participants reported further on the characteristics of their intrusive memories, including: associated emotions, re-experiencing of emotions felt in the event and their intensity; vividness of any images and their intensity; sense of nowness; body sensations, re-experiencing of body sensations felt in the event and their intensity; duration; frequency; interference with daily activities and distress. These items were rated on a 0 (not at all or not very) to 100 (Very much so or Severely), following Patel et al (2007).

The same sets of questions were used for participants' experiences of intrusive memories in depression and hypomania. The main difference being that questions were reframed to reflect the new mood condition, so for example the question "How did the memory interfere with your daily life when you were feeling ok?" became "How did the memory interfere with your daily life when you were feeling depressed?".

Stage 3

Following Hackmann et al (2000) participants were asked if they associated an earlier memory with the reported intrusive memory. It was explained to participants that the earlier memory could involve similar feelings, sensations or images, and could have occurred any time before the event represented in the intrusive memory. No emphasis was placed on the memory being from childhood. If an earlier memory was reported, a brief description was taken, including gathering the same information as for the description of the intrusive memory in stage 1.

During the interview process, the second participant reported that they did not experience intrusive memories during hypomania, but instead they reported experiencing images of themselves. Thus, each subsequent participant was asked whether they experienced intrusive memories in hypomania and then whether they also experienced images. Images were not specifically enquired about for any other mood condition. Images were defined as scenes that popped into mind repeatedly which were not directly an event from the past and could be an imaginary situation. The researcher provided examples to clarify the distinction between intrusive memories and intrusive images. The details and characteristics of the images were recorded in the same way as for intrusive memories, but for two changes: 1) following Holmes et al (2007), images were also coded for 'realness'; and 2) participants were also asked how enjoyable the images were. Both were rated using a 0 (not at all) to 100 (very much so) scale.

3.5 Procedure

All participants received an information sheet (Appendix 6) prior to interview and were only recruited after they had had at least two days to consider their participation in the research. After reiterating the details contained in the information sheet, participants completed a written consent form (Appendix 7). The interviewer then administered the SCID-I. Participants completed the BDI whilst the researcher completed the Y-MRS. Participants were next administered the Intrusive Memory and Imagery Interview. On completion of the interview, a few questions were asked that had two functions (1) To enquire about the psychological state of the participant, and 2) Receive feedback on the process of the interview. Participants were also offered the opportunity to perform a short

breathing exercise to 'ground' them before leaving the interview. The entire interview process lasted approximately 90-120 minutes.

3.6 Power Analysis

With a sample size of 29, the power to detect a medium effect size (d=0.50), assuming a two tailed alpha of 0.05 adjusting for within subjects, was 0.74. A post-hoc power analysis was conducted because there were no within-subject design studies researching intrusive memories on which to base an apriori calculation.

3.7 Data Analysis

The data was examined for normality using the Kolmogorov-Smirnov test. A number of the variables to be compared were found to not be normally distributed. Given this and the small sample size, Wilcoxon signed-rank tests were used, choosing the *Exact* test of significance. Categorical variables were compared using Cochran's and McNemar's tests. *A priori* within subject comparisons were conducted when contrasting intrusive memories and *post-hoc* comparisons when contrasting intrusive memories with intrusive images.

4 Results

Presence of intrusions across mood states

In the sample, 17 (58%) participants reported experiencing one or more intrusive memories when euthymic. The number of intrusive memories reported

ranged between 1 and 10 (M= 5.35, SD= 3.48). There were 22 (76% of the sample) participants who reported experiencing one or more intrusive memories when depressed. The number of memories ranged between 1 and 10 (M=6.12, SD=3.29). There were four participants (14%) who reported experiencing intrusive memories when hypomanic. The number of intrusive memories ranged between 1 and 4 (M=2.25, SD=1.26). There was one only participant who reported experiencing intrusive memories in euthymia but not in depression. There were seven participants who reported experiencing intrusive memories in depression, but not in euthymia. There were 15 participants who reported experiencing intrusive memories in both euthymia and depression. Of the 15 participants who reported experiencing intrusive memories in both euthymia and depression, 73% (11/15) reported a different prominent memory intruding in depression.

The differences in the presence of intrusive memories across mood conditions was significant, Cochran Q = 21.81; df = 2; $p<0.0001$. The within group presence or otherwise of intrusive memories was compared across mood conditions using McNemar's Test. This indicated that there were no differences in the presence of intrusive memories in the euthymic condition compared to the depressed condition ($p=0.18$), and that intrusive memories were present significantly more in euthymia ($p=0.001$) and depression ($p<0.0001$) compared to hypomania.

There were 17 participants (58%) who reported experiencing one or more intrusive images in hypomania, none of these participants reported experiencing intrusive memories in hypomania. The number of intrusive images ranged between 1 and 2 (M=1.24, SD=0.44). Using the McNemar test, intrusive images

were significantly more present in hypomania than intrusive memories (p=0.007). Of the participants who reported experiencing intrusive images, 9 (53%) reported experiencing intrusive memories in euthymia and 14 (82%) reported experiencing intrusive memories in depression. To examine whether the images could be reliably differentiated from memories, the 17 image descriptions were randomly combined with 17 memory descriptions and were presented to a blind rater. The rater coded the descriptions as representing either a memory or an image (Appendix 8). All 17 intrusive memories were coded correctly by the rater, and 16 out of 17 images were classified correctly. There was a high inter-rater reliability between the researcher and the blind rater, Cohen's κ=0.94 (Barker, et al, 1996, p.71).

Phenomenology of intrusive memories and intrusive images across mood states

Qualities of Intrusive Memories across mood

Table 1 presents the qualities that were associated with the most prominent intrusive memory reported by participants across mood and their differences. Only the euthymic and depressed conditions were subjected to Wilcoxon Signed-Rank within group comparisons as there were so few hypomanic intrusive memories reported. (The characteristics of the intrusive memories from hypomania are reported in Table 1 for reference).

There was no significant difference in the frequency of intrusive memories in euthymia and depression conditions. The intrusive memories in euthymia and depression were largely experienced for 'minutes' and there was a higher percentage of intrusive memories reported as having a duration of 'hours/constant' in depression. There was significantly more distress and

interference in daily activities reported for intrusive memories in depression compared to euthymia.

All intrusive memories contained a visual image which was predominantly experienced like a movie in which the majority of participants took an observer perspective in euthymic intrusive memories and a first perspective in depression intrusive memories.

Table 1. Table of intrusive memory qualities across euthymia (E), depression (D) and hypomania (H) and comparisons between euthymia and depression.

Qualities	E IM n=17	D IM n=22	H IM n=4	E – D comparisons n=15
Frequency $\bar{x}$ (SD)	47.5 (32.56)	61.36 (31.97)	77.5 (38.62)	z=-1.54, p=0.12
Duration				
Seconds n(%)	3 (18.8)[a]	3 (13.6)	2 (50)	No comparisons
Minutes n(%)	12 (75)[a]	11 (50)	0	No comparisons
Hours n(%)	1 (6.2)[a]	7 (31.8)	1 (25)	No comparisons
Constant n(%)	0[a]	1 (4.5)	1 (25)	No comparisons
Distress $\bar{x}$ (SD)	60.31 (23.91)	83.63 (15.52)	66.25 (46.61)	z=-3.06, p=0.002*
Interference $\bar{x}$ (SD)	44.38 (34.68)	67.5 (27.55)	68.75 (46.61)	z=-1.95, p=0.04*
Image	17 (100)	22 (100)	4 (100)	
Movie n(%)	13 (76.5)	16 (72.70)	4 (100)	No comparisons
Photograph n(%)	4 (24.5)	6 (27.30)	0	No comparisons
First perspective n(%)	8 (47.1)	13 (59.1)	2 (50)	No comparisons
Observer perspective n(%)	9 (52.9)	9 (40.9)	2 (50)	No comparisons
Vividness $\bar{x}$ (SD)	77.50 (18.17)	84.32 (14.17)	82.5 (17.08)	z=-2.22, p=0.03*
Intensity $\bar{x}$ (SD)	71.25 (17.37)	80 (18.06)	92.5 (15.00)	z=-1.55, p=0.13
Nowness $\bar{x}$ (SD)	52.81(36.28)	57.95 (35.68)	72.50 (12.58)	z=-6.13, p=0.58
Soundtrack n(%)	12 (70.6)	15 (68.2)	3 (75)	No comparisons
Body sensations n(%)	11 (64.71)	18 (81.82)	3 (75%)	No comparisons
Re-experiencing $\bar{x}$ (SD)	43.33 (33.74)	54.5 (37.38)	40 (46.90)	z=-2.24, p=0.02*
Intensity $\bar{x}$ (SD)	63.75 (30.68)	73.68 (27.63)	62.5 (45)	z=-1.72, p=0.09
Emotion				
Highest Endorsed $\bar{x}$ (SD)	Helpless (73.5, 30.14) Sad(57.82, 4.74) Angry (53.75,40.02)	Sad (73.18, 30.02) Helpless (70.00,33.95) Anxious (65.23, 33.58)	Anxious (62.5, 45.00) Anger (60.00, 43.20) Ashamed (42.50,50.58)	No comparisons
Re-experiencing $\bar{x}$ (SD)	44.69 (34.86)	58.81 (35.28)	40 (46.90)	z=-2.04, p=0.04*
Intensity $\bar{x}$ (SD)	62.19 (32.71)	72.95 (29.34)	92.5 (15.00)	z=-1.38, p=0.18

*Denotes statistical significance at p<0.05
[a]Data missing for one person

Over two thirds of the memories in euthymia and depression were also accompanied by an audio soundtrack. These typically comprised words which were spoken by a family member at the time of the event (e.g. 'mother's voice telling me that I had let her down') or environmental sounds (e.g. a pop song of the time). The majority of participants reported experiencing body sensations in association with their intrusive memory. The physical sensations reported typically concerned crying and physical symptoms of anxiety, for example shaking and a knotted stomach. In depression, the intrusive memories were more likely to involve physical sensations experienced at the time of the event than compared to euthymic intrusive memories. There was no difference in the intensity of the body sensations experienced in depression and euthymia.

The highest endorsed emotions associated with intrusive memories in euthymia and depression were 'helplessness' and 'sadness'. In depression intrusive memories there was a higher degree of re-experiencing of the emotions felt in the actual event than compared to euthymic intrusive memories, but this difference did not reach statistical significance. Similarly, the intensity of the emotions experienced was higher in depression, but this did not differ significantly from the emotional intensity of emotions for intrusive memories in euthymia.

The association and content of intrusive memories and earlier memories across mood

An intrusive memory was associated with an earlier memory for 82% (14/17) of the euthymic intrusive memories and 69% (15/22) of the depression

intrusive memories. There were eight people who reported experiencing an associated memory for both their euthymic and depressed intrusive memories, half of which reported the same memory in each condition. The age-range of the participants in the events represented in the intrusive memories and earlier memories is presented in Table 2. This shows that the majority of the events represented in intrusive memories for both euthymia and depression happened in early to late adulthood and that the majority of earlier memories in both mood conditions occurred during childhood.

Table 2. The age range of clients at the time of the events represented in intrusive memories and earlier memories in euthymia and depression.

	Euthymia n (%)		Depression n (%)	
Age	IM n=17	AM n=14[a]	IM n=22	AM n=15
0-16	6 (35.3)	8 (66.70)	6 (27.30)	11 (73.30)
17-30	4 (23.5)	3 (25.00)	4 (18.20)	1 (6.70)
31-65	7 (41.2)	1 (8.30)	12 (54.50)	3 (20.00)

[a]Two participants endorsed a connection with an earlier memory but chose not to provide further details.

The categories that have been previously used to classify intrusive memories (e.g. Patel et al, 2007; Reynolds & Brewin, 1999; Williams & Moulds, 2007) were adopted for the grouping of both intrusive memories and earlier memories: 1) Interpersonal problems (including arguments, disappointments and failures in relationships with friends, family and work colleagues); 2) Abuse or assault to participant (including physical and sexual assault and bullying); 3) Illness or death to other; and 4) Illness or injury to participant. The classification was corroborated with an independent rater and the reliability was good, Cohen's κ=0.84 (Barker et al, 1996, p.71) (see Appendix 9). The number of participants reporting events in these four categories is shown in Table 3. The category that

the largest number of intrusive memories and earlier memories fell into was 'Interpersonal Problems'. The euthymic intrusive memories and earlier memories were classified as belonging to the same category on six occasions (four as 'interpersonal' and two as 'abuse/assault'). The depression intrusive memories and earlier memories were classified as belonging to the same category on nine occasions (six as 'interpersonal' and three as 'abuse'). Examples of these intrusive memories and earlier memories are presented in Table 4.

Table 3. Content of most prominent intrusive memory (IM) and Earlier Memory (EM) in Euthymia (E), Depression (D) and Hypomania (H)

Category	E IM[a] n=17	E EM[a] n=14	D IM[a] n=22	D EM[a] n=15	H IM[a] n=4	H EM[a] n=2
Interpersonal problems (%)	9 (53)	6 (44)	15 (68)	9 (60)	2 (50)	0
Abuse or assault to participant (%)	3 (17)	3 (21)	3 (14)	4 (27)	0	1 (50)
Illness or death to other (%)	4 (24)	0	4 (18)	0	0	0
Illness or injury to participant (%)	1 (6)	2 (14)	0	0	0	0
Miscellaneous(%)[b]	0	0	0	0	2 (50)	1 (50)
Unclear(%)[c]	0	3 (21)	0	2 (13)	0	0

[a] Inter-rater reliability was good, Cohen's κ ranging from 0.81 to 1.00 (Barker, et al, 1996, p.71)
[b] Ps' earlier memories associated with a positive memory
[c] Ps endorsed connection to earlier memory, but chose not to elaborate on content

Each related memory was coded as either being specific or general according to the criteria set-out by Williams & Broadbent (1986) (see Appendix 9). All earlier memories were classified by the experimenter and an independent rater, any discrepancies were discussed and the inter-reliability was high for the ratings across mood conditions, Cohen's κ= 0.94 (Barker, Pistrang, & Elliot, 1996, p.71). Where a description was provided, 100% (11/11) of euthymic earlier memories were coded as specific autobiographical memories; 61.5%

(8/13) of depression earlier memories were coded as specific and 38.5% (5/13) were coded as general autobiographical memories.

Table 4. Examples of the intrusive memories and earlier memories that fell into the same content category.

	Category content	Intrusive Memory	Earlier Memory
Example 1 Euthymic	Interpersonal problems	Sorting out stuff after splitting with husband, and paper work fell everywhere and becoming irritated with young daughter who was with me	When in hospital, ex-husband bought daughter to see me and I told her off and she hid under the bed
Example 2 Depression	Interpersonal problems	Memory of not coming home on time to look after brother with LD, 13 at time, mum telling me that she was relying on me to come home	Trying to change brother's nappy, he was squirming so I slapped him and I got into similar trouble as in the intrusive memory, 7 or 8 in the memory
Example 3 Euthymic	Abuse/ Assault	Being raped on teenage birthday, it's me on my own afterwards	Being sexually abused by family member and aunt stood at door finding him
Example 3 Depression	Abuse/ Assault	Memory of being bullied at school: the bully lined up girls in the playground and made them punch me.	Bully's mother coming over and asking me where my father was (single parent family), speaking in the same way as the bully did

Phenomenology of intrusive images in hypomania

Qualities of Intrusive Images in Hypomania

Table 5 presents the qualities of the hypomania intrusive images in comparison to the intrusive memories from depression. Intrusive images were experienced as frequently as depression intrusive memories, but were significantly less distressing and interfering. Instead, the images were experienced as enjoyable. Participants reported that their intrusive images mostly lasted for a duration of 'minutes', followed by 'hours', 'seconds' and 'constant'. The vividness and intensity of images was not significantly different from those reported for depression intrusive memories. The 'realness' of intrusive images was high, but not significantly so in comparison to the

'nowness' of depression intrusive memories. Participants reported physical feelings of well-being, warmth, lightness and powerfulness; and these feelings were experienced with an intensity similar to that reported for depression

Table. 5. The qualities of intrusive images in hypomania (H) and comparisons with depression (D) intrusive memories.

Qualities	D IM n=22	H images n=17	H –D comparisons n=14
Frequency $\bar{x}$ (SD)	61.36 (31.97)	60 (30.16)	z=-.87, p=0.38
Duration			
Seconds n(%)	3 (13.6)	4 (19)	No comparisons
Minutes n(%)	11 (50)	10 (47.6)	No comparisons
Hours n(%)	7 (31.8)	5 (23.8)	No comparisons
Constant n(%)	1 (4.5)	2 (9.5)	No comparisons
Distress $\bar{x}$ (SD)	83.63 (15.52)[c]	0 (0)	z=-3.32, p<0.0001*
Enjoyable	Not recorded	88.24 (14.68)	
Interference $\bar{x}$ (SD)	67.5 (27.55)[c]	39.41 (31.32)	z=-2.64, p=0.006*
Image	22 (100)	17 (100)	
Movie n(%)	16 (72.70)	14 (82.4)	No comparisons
Photograph n(%)	6 (27.30)	3 (17.6)	No comparisons
First perspective n(%)	9 (40.9)	9 (52.9)	No comparisons
Observer perspective n(%)	13 (59.1)	5 (29.5)	No comparisons
First and Observer perspectives	0	3 (17.6)	No comparisons
Vividness $\bar{x}$ (SD)	84.32 (14.17)	79.71 (22.88)	z=-0.36, p=0.72
Intensity $\bar{x}$ (SD)	80 (18.06)	81.76 (16.00)	z=-1.46, p=0.15
Nowness $\bar{x}$ (SD)	57.95 (35.68)[c]	0	z=-1.47, p=0.15
Realness $\bar{x}$ (SD)	Not recorded	74.71 (23.15)	
Soundtrack n(%)	15 (68.2)	5 (29.41)	No comparisons
Body sensations n(%)	18 (81.82)	14 (82.35)	No comparisons
Re-experiencing $\bar{x}$ (SD)	54.5 (37.38)	N/A	No comparisons
Intensity $\bar{x}$ (SD)	73.68 (27.63)[c]	67.73 (28.05)	z=-0.73, p=0.63
Emotion			
Highest Endorsed $\bar{x}$ (SD)	Sad (73.18, 30.02) Helpless (70.00,33.95) Anxious (65.23, 33.58)	Euphoric (84.12, 16.98) Powerful (79.41, 24.42) Angry (13.53, 31.01)	No comparisons
Re-experiencing $\bar{x}$ (SD)	58.81 (35.28)	N/A	No comparisons
Intensity $\bar{x}$ (SD)	72.95 (29.34)[c]	78.83 (13.05)	z=-1.62, p=0.12

*Denotes statistical significance with Bonferroni Corrections.
[c]Denotes a variable that is not normally distributed

intrusive memories. A minority of the images were accompanied by a soundtrack; this involved either imagined dialogue or positive environmental sounds, for example clapping. Feelings of euphoria, powerfulness and anger were the highest endorsed emotions experienced in association with the images and these were experienced with a high intensity, comparable to that reported for feelings associated with depression intrusive memories.

Content of intrusive images and earlier memories in hypomania

Of the participants who reported experiencing intrusive images, 11/17 (70%) reported that their images was associated with an earlier memory. None of the images or associated memories fell into the categories that were relevant for intrusive memories in euthymia and depression. A theoretical thematic analysis (Braun & Clark, 2006) was conducted on the images. Literature pertaining to images and bipolar (Mansell & Hodson, 2008), images and goals (Conway et al, 2004) and future imagery (Holmes et al, 2007) were used to construct six theoretical categories to classify the intrusive images and earlier memories: 1) Future Orientated (the image could be a future or imagined event, but didn't seem to be a memory of an event), 2) Positive (the image does not contain distressing content), 3) Self-focussed (the 'spotlight' appears to be on the participant), 4) Self-other focus (the 'spotlight' is on the participant and another), 5) Goal Orientated (the image contains content that represents a target, aim or aspiration), and 6) Actions during or in response to images (the participant performs actions during or in response to the image towards a goal). An independent rater performed the same categorisation process and suggested a further category of 'Dominance in relation to others', which was discussed and

incorporated; the inter-rater reliability was high Cohen's κ= 0.88 (Barker, Pistrang, & Elliot, 1996, p.71) (see Appendix 10). The number of images and earlier memories that comprised these categories is shown in Table 7. Brief examples of intrusive images and earlier memories for each theme is provided in Table 8. Following Morrison et al (2002) and Holmes et al (2007) the full descriptions of the images, their associated emotions, meanings and earlier memories are presented in Appendix 11.

Table 7. The number of images and earlier memories that were classified under each theme

Theme	Intrusive Images n=17	Earlier Memories n=12
Future Orientated	17	N/A
Positive Imagery	17	11
Self-focussed	17	11
Self-other focussed	0	2
Goal Orientated	14	7
Actions during or in response to image	11	3
Dominance in relations to others	7	0

Table 8. Examples of the intrusive images and earlier memories across theoretical themes

Theme	Intrusive Images	Earlier Memories n
Future Orientated	Working in a team and having a managerial role, feeling completely confident in the image, imagining what I'd say to people and what they'd say back	N/A
Positive Imagery	I've got a big smile on face, image of opening a charity shop, there'd be lots of nice clothes and I'd be sat at the back	Being in a baby bouncer in first home, sense of family being around, sense of warmth
Self-focussed	I'm high, being light, fresh and clear, I'm fast, things go slow in comparison to me, vivid colours...the image is of me being bright, I see myself like a child's drawing...	When I was 13...looking at the moon and feeling absolutely captivated by it
Self-other focussed	None Indentified	Memories of husband and daughter...that I'm fond of and have made me laugh
Goal Orientated	Winning an Oscar for... -this is the thing that is likely to get me writing...and then I'll stay up all night ...there's not a bit of me at the time that knows that it's not real	Memories of previous successes, being on TV, actually giving successful presentations
Actions during or in response to image	Being in charge of a project,...I'm fantastically liked by everyone, the image leads to actions where I research madly into the early hours,	I wanted to get into advertising, I went round every top ad agency in London knocking on doors
Dominance	Self as a great business man, people looking up to me, ...bigger than life in the image	None Identified

5 Discussion

Main Findings

This was an exploratory study, the main aims of which were to investigate: 1) whether intrusive memories are experienced in euthymia, depression and hypomania; 2) the characteristics and differences of the intrusive memories experienced; and 3) whether intrusive memories are associated with earlier memories. Consistent with expectations, the results demonstrated that intrusive memories were experienced by participants in all three mood conditions, but that they were significantly more prevalent in euthymia and depression than compared to hypomania. There were no statistical differences between the prevalence of intrusive memories in euthymia and depression. An unexpected finding was that intrusive images were experienced during hypomania and these were present significantly more than intrusive memories. These findings suggest that intrusive memories feature more prominently in Bipolar Disorder during euthymia and depression but not in hypomania, where intrusive images are more common.

Over two thirds (76%) of the sample reported experiencing intrusive memories in their most recent episode of depression, which is comparable to the prevalence of intrusive memories reported for depression (Brewin, et al 1996b; Kuyken and Brewin, 1994; Reynolds and Brewin, 1999; Spenceley and Jerrom, 1997) and PTSD (Hackmann et al, 2004, Michael et al; 2005; Reynolds and Brewin, 1999). This suggests that intrusive memories play an important role in peoples' experiences of Bipolar depression, as has been found for unipolar depression (Brewin et al, 1998b; Brewin, Reynolds and Tata, 1999) and PTSD

(Michael et al, 2005). Future studies are required to determine if they are a primary or epiphenomena in Bipolar Disorder.

The prevalence of intrusive memories in this study initially appears inconsistent with Tzemou & Birchwood's (2007) study of intrusive memories in Bipolar Disorder. Overall they found a lower prevalence, with 13/29 (45%) participants reporting the presence of intrusive memories. This number comprised intrusive memories reported by in-patient participants experiencing either acute depression (4/13, 31%) or mania (9/13, 69%). Tzemou & Birchwood also found that the participants who didn't experience intrusive memories tended to show an overgeneral effect of memory (OGM), which they argued may have prevented intrusive memories from entering consciousness (see Williams, Barnhofer, Crane, Hermans, Raes, Watkins & Dalgleish, 2007). In comparison to Tzemou & Birchwood, this suggests that in the present study participants may have reported more intrusive memories during euthymia and depression because they experienced a reduced overgeneral memory effect and less acute mood impairment during testing.

Why were intrusive memories in hypomania reported less frequently than intrusive memories in euthymia and depression? The simplest account is that intrusive memories are not experienced in an elevated - but not acute – mood; or if they are experienced, they are not appraised as being intrusive and are therefore not reported. Based on Tzemou & Birchwood's (2007) suggestion of the relationship between overgeneral memory and intrusive memories, another explanation is that the absence of intrusive memories in hypomania may have been attributable to an increased OGM for negative memories and decreased OGM for positive memories, and therefore greater voluntary access to positive

memories. This possibility is supported by the finding from an experimental mood-dependent memory study where participants experiencing a hypomanic episode voluntarily recalled more than three times as many positive as negative memories (Eich, Macaulay & Lam, 1997). What does seem clear is that the relationship between intrusive memories and the possible regulatory effect of overgeneral memory requires further investigation and, in particular, if and how this relationship changes with variations in the nature and severity of people's mood in Bipolar Disorder.

The prevalence of intrusive memories in euthymia and depression are similar. How do their characteristics compare? The phenomenology of intrusive memories for euthymia and depression in Bipolar Disorder are similar, but consistent with expectations a number of important differences were found. These included the findings that participants' depression intrusive memories were significantly more vivid than euthymic intrusive memories and involved greater re-experiencing of the emotions and body sensations felt at the time of the event featured in the intrusive memory. The depression intrusive memories were also associated with greater distress and greater interference in daily activities; the levels of which were greater than that found in Patel et al's (2007) sample of currently depressed participants. These differences may be explained by the finding that the majority of participants experienced a different memory intruding in depression compared to euthymia. For example, one participant experienced an intrusive memory during euthymia of being at friend's death bed, whereas during depression she experienced a memory of standing by a riverside, contemplating whether to throw herself in or not. Thus the memories that intrude in Bipolar depression appear distinct from those in euthymia, with greater re-

experiencing of the emotions and body sensations felt at the time of the event, which may explain the greater distress associated with them.

The characteristics of intrusive memories in Bipolar Disorder appear remarkably similar to those found in depression (e.g. Brewin et al 1996b; Patel et al 2007) and PTSD (e.g. Birrer et al, 2007; Hackmann et al, 2004). For example, the intrusive memories reported in this study incorporated a range of sensory modalities (visual, physical, auditory); were vivid and distressing; and were primarily associated with feelings of sadness and helplessness. The mean 'nowness' of intrusive memories in both euthymic and depressed conditions from this study could at best be considered to be moderate and are in line with the levels reported for intrusive memories in depression (Patel et al, 2007). This result lends support to the finding that the 'nowness' of intrusive memories may differentiate traumatic intrusive memories from the non-traumatic intrusive memories typically associated with depression (Birrer et al, 2007). The content of the intrusive memories was also similar to that found in unipolar depression, with the majority involving themes of interpersonal problems and death or illness to other; these were different from PTSD where the content typically comprises illness/injury or assault to self (Reynolds & Brewin, 1999). This suggests preliminary evidence that the phenomenology of intrusive memories in Bipolar Disorder is similar to that found in other clinical disorders, further supporting the idea of intrusive memories as a transdiagnostic process (Harvey et al, 2004).

Consistent with Tzemou & Birchwood's (2007) observations of intrusive memories in Bipolar Disorder and unipolar depression, the intrusive memories in the present study were of events largely experienced in recent adulthood. This is consistent with the extant literature demonstrating the presence of adulthood

stressful life events in Bipolar Disorder (Malkoff-Schwartz et al., 1998, 2000), which also suggest a relationship between these events and an escalation in symptoms. This indicates that it would be interesting in future research to investigate whether the exacerbation of Bipolar Disorder symptoms following a stressful life event is mediated by intrusive memories of the stressor, or whether intrusive memories are a product of bipolar symptoms.

This was the first study to the researcher's knowledge that directly asked people who experience intrusive memories whether they associate them with an earlier memory. Consistent with the prediction, over two thirds of the most prominent intrusive memories in both the euthymic and depressed conditions were associated with an earlier memory. This suggests that it is not only intrusive images that are associated with earlier memories (e.g. Hackmann et al, 2000), but also intrusive memories. In contrast to the adulthood events represented in the intrusive memories of depression and euthymia, the majority of the associated memories were of events that occurred during childhood. Consistent with the intrusive memories reported for both euthymia and depression, the largest proportion of earlier memories represented interpersonal problems, followed by abuse/assault. This is in line with evidence suggesting that poor attachment and early maltreatment histories are associated with Bipolar Disorder (Alloy et al, 2005). Grandin, Alloy, and Abramson (2005) found that a greater number of early stressors (including negative emotional feedback and abuse) were associated with Bipolar Disorder compared to controls, and that a larger number of these stressors predicted an earlier age of onset. Their findings supported the harsh environment hypothesis, where the number of negative life events experienced contributes to the onset of the disorder. Although the present

research did not set out to test this hypothesis, the presence of negative memories from childhood and a reported adulthood mean-age Bipolar Disorder onset provides tentative support.

The unexpected, but interesting finding that emerged from this research was that the majority of participants reported experiencing intrusive images as opposed to intrusive memories during their most recent hypomanic episode. The characteristics of the images were similar to those found for depression intrusive memories, but there were some noticeable differences. The images were not experienced as distressing and interfered significantly less in participants' lives. The physical and emotional qualities of the images also indicated distinct differences in the way they were experienced in comparison to depression intrusive memories: images were accompanied by physical sensations of well-being as opposed to anxiety, and positive emotions of euphoria and powerfulness as opposed to sadness and helplessness. A high sense of 'realness' was also associated with the experience of images, which parallels findings elsewhere (e.g. Holmes et al, 2007). The images could be reliably differentiated from intrusive memories by an independent rater and also by the themes that they represented. The images were found to be characterised by being positive and future-orientated. The majority of these images were also associated with earlier memories sharing the same qualities of being positive and self-focussed. A substantial number of intrusive images were also goal-orientated and were associated with actions towards these goals. All the images appeared to be self-focussed and when other people featured in the image, there was a tendency for the participants to be in a position of dominance. This is consistent with Mansell & Hodson's (2008) finding that one of the main themes of Bipolar Disorder

participants' voluntarily recalled positive memories was being the centre of attention or the focus of other's interest. Taken together this evidence suggests that during hypomania people experience positive future-orientated imagery that is associated with an earlier memory. Further, the phenomenology of images is generally consistent with intrusive memories in Bipolar Disorder, but sufficient differences exist to suggest a distinct variation.

Theoretical Implications of Findings

Why might intrusive images be prevalent in hypomania and intrusive memories prevalent in depression? One possibility is that hypomania images represent a sense of self that is untainted by past experiences and may in the short-term be protective from the effects of exogenous factors such as stressful life events and endogenous factors such as negative self-representations, which is consistent with the manic defence hypothesis (Lyon, Startup, Bentall, 1999). In the present study the majority of participants reporting intrusive positive images also reported experiencing intrusive memories in depression. This suggests the possibility of positive imagery in hypomania inhibiting negative representations experienced in both euthymia and depression, consistent with competition retrieval accounts of cognitive behavioural therapy (e.g. Brewin, 2006).

Holmes et al (2008) present an evidence-based rationale for why the vividness of imagery may be important. It is argued that one function of imagining future events is to analyse their likely outcome and to formulate a plan of action; the use of imagery also positively influences the perceived probability that an imagined situation will occur. Further, the more vivid an image, the more likely its content is to be believed. So if an intrusion has positive content then

one can reason that a person would feel more hopeful about the future, if it was negative, then they would feel more negative about the future. The important implication for the present findings is that hypomanic images were highly vivid, positive and future-orientated. Depression intrusive memories were highly vivid and negative. Therefore if the content of intrusive memories in depression and intrusive images hypomania were appraised as evidence for the likely outcome of future events, this may maintain or facilitate decreases or increases in mood respectively. How would this happen? It is proposed that people with Bipolar Disorder make appraisals of changes in internal states (e.g. the presence of an intrusive memory or image) that tend to be characterised by extreme personal meanings (Mansell, Morrison, Reid, Lowens & Tai, 2007). These extreme appraisals of meaning are argued to be underpinned by a representation of an 'imminent possible self' derived from earlier experiences represented in memory (Mansell et al, 2007). Interestingly, the present study partly supports this idea: participants associated earlier memories with both intrusive memories and images. The extreme appraisals of changes in internal state are thought to lead to ascent behaviours towards mania (for example engaging in activity, possibly reinforcing an 'imminent self' image of being a success or talented) or descent behaviours towards depression (for example a reduction in activity, possibly reinforcing an 'imminent self' image of being a failure or useless) (Mansell et al, 2007). Thus, if people appraise and believe that their intrusive memories and images reflect future situations, they will act accordingly, which in turn may influence their mood. Without any metacognitive awareness of this process, extreme emotion could result. Of course, this is very speculative and further

research is required to establish the bi-directional relationships between intrusive images, appraisals, mood and action.

Clinical Implications of Findings

Intrusive memories and images are not always reported unless specifically enquired about (Hirsch & Holmes, 2007). The high prevalence of intrusive memories in euthymia and depression and images in hypomania suggests that it would be appropriate to assess for these across Bipolar Disorder mood states. Their presence would then represent an important component of relapse prevention. Bipolar Disorder relapse prevention programmes include constructing a formulation of the symptoms associated with the condition and have been shown to produce substantial benefits in terms of duration between relapses and the number of days spent in Bipolar episodes (Lam, Hayward, Watkins, Wright & Sham, 2005). The results indicate a number of useful contributions to these programs. For example, as depression intrusive memories are generally different from those experienced in euthymia, it would be important for people to act as soon as they notice the content of their intrusive memories changing. In terms of hypomania, it may be important for people to take preventative action as soon as they become aware of intrusive images. There was evidence that for some participants such images were warning signals for them: 'it loses a sense of balance in the end' and 'when I'm like that I know I have to see my GP'.

If a lack of metacognitive awareness does lead to vivid intrusive phenomena being believed and acted upon as suggested earlier, mindfulness techniques may support people in developing a greater awareness of this process.

This would support a more adaptive and reflective response to intrusive phenomena. Recent evidence indicates that a mindfulness based intervention can have positive effects on Bipolar Disorder symptoms (Williams, Alatiq, Crane, Barnhofer, Fennell, Duggan, Hepburn, & Goodwin, 2007), although intrusive memories or spontaneous images were not specifically assessed for or targeted.

The finding of a connection between an intrusive memory and an earlier memory also has important clinical implications. Patel et al (2007) (but see also Hackmann et al, 2004) found that following an intervention for depression intrusive memories, new intrusive memories emerged related to the original intrusion. Patel et al speculated that these new memories may in turn require remediation. Consequently, it would be clinically useful to identify these memories before commencing treatment. The findings from this study suggest that a substantial number of people would be able to identify a link between their intrusive memory and an earlier memory. Further, the results indicate that the majority of earlier memories were specific autobiographical memories and therefore may represent, in an analogous way to the rescripting of earlier memories to ameliorate intrusive images (Wild, Hackmann & Clark, 2007a; 2007b), an additional target for intervention. One caveat is that the study did not demonstrate whether these earlier memories were experienced as intrusive memories and also whether they were appraised by participants as distressing.

Limitations of Findings

There are a number of methodological limitations to the study. The sample was self-selecting, which may mean that the prevalence of intrusive memories and images is not representative of that found in the general bipolar

disorder population. The images people may have experienced in episodes of euthymia and depression were not enquired about. Intrusive memories and images during mania were not investigated at all. This indicates that future research is required to assess the phenomena across the full range of Bipolar Disorder mood states. A control group or a comparison group was not included in the design of the study. This would have allowed for stronger conclusions about the similarities and differences of intrusive memories and images in Bipolar Disorder compared to other clinical disorders and also the general population. The validity of the results is also compromised by how accurately participants were able to recall their experiences from episodes of euthymia and in particular more distal episodes of depression and hypomania, although the adoption of a within subjects design controlled for this to some extent. As the full SCID-I was not adopted in the study, it is possible that the results are confounded by the presence of co-morbidity within the sample.

Ideally, future research would attempt to measure the phenomena longitudinally during actual mood states, which would also help to establish the role of intrusive memories and imagery in the course of Bipolar Disorder psychopathology. This would be particularly relevant for hypomanic imagery. Investigating any transition of the phenomena from hypomania to mania would clarify whether the imagery experienced in hypomania was dysfunctional or functional, which is unclear from the present results.

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Part 3: Reflection

'Reflections on the Study'

1 Overview

The design of the study and the measures used are considered. This includes reflections and rationales for the research choices that were made; the identification of strengths and weaknesses; and also areas for improvement. Next the recruitment process is described and how this could have been improved, before considering how the selection of the sample may have impacted upon the results both positively and negatively. The reflections of the participants are also used to consider additional strengths of the study in terms of their experience of it and the implications for other researchers. Finally, a brief reflection on the investigator's experience of the research is provided.

2 Design

It was considered that as Bipolar Disorder is characterised by the experience of different mood states by an individual, a within subjects design would be a suitable approach to investigate intrusive memories, treating each mood state as an independent variable that every participant experienced. An advantage of this design was that any differences in the phenomenology of intrusive memories across mood states would been less likely to be attributable to the differences between participants than compared to using a between subjects design. Consequently, this design was more economical, requiring fewer subjects, whilst not compromising the power of the analysis to detect any differences in the data.

One disadvantage of the chosen design was the risk of carryover effects. That is, reporting intrusive memories in one mood condition may have influenced the reporting of intrusive memories in subsequent mood conditions,

biasing reporting. The two main ways of addressing this source of invalidity is to either randomise or counterbalance the order of the mood states to be reported upon. The mood conditions in the present study were presented in a fixed order (euthymic, depressed, hypomanic). The main reason for potentially compromising the methodological design was to ensure participant well-being. By using a fixed order no participant finished the research having just recalled distressing intrusive memories from their most recent episode of depression. Feedback from participants justified this decision, for example:

"It's quite good you doing it the way you did, if you did the high and then the low, it would be quite difficult to go away with that...but doing it the way you have, I think it's quite good."

Thus, it is possible that carryover effects exist in the study's results. There is some evidence to suggest that if present, the carryover effect was not pernicious as important variations in the data were found. There were significant differences between the qualities of intrusive memories in euthymic and depression conditions; and intrusive memories were largely not experienced in hypomania, instead a distinct variation of imagery was reported.

It was not anticipated that intrusive images would be reported in hypomania instead of intrusive memories. The possibility first became apparent during the reports of the second participant in the hypomanic condition. Consequently, the design of the research evolved at this early stage so that images were enquired about in hypomania in addition to intrusive memories with subsequent participants. A strength of the research was to identify and

incorporate the new hypothesis that participants may experience images in addition to or instead of intrusive memories in hypomania. However, it was an oversight to not also ask participants about the presence or absence of imagery in the euthymic and depression conditions. There is some evidence to suggest that imagery is a rarely experienced phenomenon in depression and much less so than for intrusive memories (Patel, Brewin, Wheatley, Wells, Fisher and Myers, 2007). However, it remains to be demonstrated whether intrusive imagery is experienced by people with Bipolar Disorder during depression and euthymia and whether this would be different from the imagery experienced in hypomania.

The study did not assess participants' experiences of intrusive memories during mania and instead assessed for hypomania. One reason for this was that the evidence base suggested that people experience intrusive memories during mania (Tzemou & Birchwood, 2007), but there was no evidence for hypomania. There were a number of additional reasons why mania was not included in the present study. The mood state of mania does not apply to all sub-categories of Bipolar Disorder (DSM-IV; APA, 1994), but hypomania can be experienced by people with a Bipolar 1 (presence of mania) and Bipolar 2 (no presence of mania) diagnosis. Therefore, focussing on hypomania in the study was more inclusive and facilitated a larger n for the sample. Clinically, hypomania was of particular interest because it typically precedes mania; including this aspect in the study was anticipated to provide useful insights into the prelude of mania. Practically, the duration of the interview was estimated to be 120 minutes: 30 minutes to talk through the research and consent form and fill out the preliminary questionnaires and then 30 minutes per mood interview. Including mania would have added a further 30 minutes and it was considered that this could be tiring

and emotionally draining for participants and may also impact the quality of the information gathered over the time period. The consideration of tiredness and duration issues was somewhat justified by participants' feedback left on the MDF Bipolar e-community research forum. This indicated that without assessing for mania people found the research long and tiring, although tolerable, for example:

"I also took part a while ago. I went to London for the appointment. It was fine though I did find it quite exhausting..."

"Hi I took part in this study yesterday and it was very interesting. Left me feeling a bit exhausted and wired afterwards..."

"I took part a couple of weeks ago. It took a couple of hours and was (relatively) OK but could be potentially draining, dependent upon how you felt on the day..."

As already mentioned, a significant concern for the design of the study was the safety of participants. The risk of death due to suicide is estimated to be approximately 20 times greater for people with a diagnosis of Bipolar Disorder compared to the general population (e.g. Harris & Barraclough, 1997); and as many as 40% of people with Bipolar Disorder report having made a prior suicide attempt (e.g. López, Mosquera, de León, Gutiérrez, Ezcurra, Ramírez, & González-Pinto, 2001). Consequently, a number of safety precautions were built into the study at the beginning and end of the study. At the beginning of the research, a structured clinical interview (SCID-I) (DSM-IV; APA, 1994) was

used to ensure participants did not meet criteria for a current major depressive episode, hypomania or manic episode. A Beck Depression Inventory-II (BDI-II, Beck, Steer & Brown, 1996) was also administered. As well as considering the overall score of the BDI measure, particular attention was paid to participants' responses for both the suicide and hopelessness items of the BDI, which have been shown to correlate with increased suicide risk (Beck et al, 1996). It was decided that the participants who scored three for both items would be excluded for the reason that recalling affect laden memories could have put them at unnecessary risk. At the end of the interview participants were also asked a series of 'take care' questions including: 1) how they were feeling and how they found the interview; 2) how useful it had been to talk about their memories; and 3) what they had planned for after the interview. Participants were also offered the opportunity to participate in a short breathing exercise to ground them before leaving the research. A number of people took up this option and found it a useful way of bring the session to an end, for example:

"...that's really good actually, I've done quite a bit of research and I've never finished it with that, and it's really good because particularly I was feeling a bit buzzy after talking about the high and it's really nice because it brings you down...I'd encourage people to do it, it slows you down, it's a nice way to finish."

3 Measures

3.1 Semi-structured interview

The literature review described how the methodology used to investigate intrusive memories and images was similar, although with some differences. This meant that aspects of the phenomenon that appeared relevant for spontaneous images, for example being linked to earlier memories, was unknown for intrusive memories. It was therefore considered to be appropriate to combine the methodology adopted for each approach. For the present research, this meant using the semi-structured interview that had been used to investigate intrusive memories in depression and PTSD (e.g. Patel et al, 2007; Reynolds & Brewin, 1999) and to combine it with elements of the Hackmann, Clark, & McManus (2000) protocol, specifically asking whether intrusive memories were associated with an earlier memory. This decision appeared to be justified as the study produced new findings that earlier memories are associated with intrusive memories as well as future orientated images. One improvement to the interview, and the study, would have been to explore the characteristics of the earlier memory in the same way that had been done for intrusive memories. This would have allowed a more detailed comparison of the phenomenology underpinning each type of memory. This, however, would have not been a practical addition as it would have significantly increased the length of the interview.

Using semi-structured interviews to investigate the phenomenology of intrusive memories and images in clinical disorders is the standard approach

within the field. Adopting this method therefore follows the evidence base and allows the results to be considered in comparison to similar studies within the literature. However, its use in these and the present study has a number of potential difficulties. Most significantly the interview required participants' to recall experiences of intrusive memories from a recent period of euthymic mood and their most recent episodes of depression and hypomania. It is unclear how accurately participants were able to recall and report their experiences. One way of addressing this in the future would be to ask people to keep a diary of intrusive memories as they experience them, analogous to keeping a thought diary in conventional cognitive-behavioural therapy. This is the methodology widely used to investigate involuntary memory in non-clinical samples (Mace, 2007). Interestingly, a recent study using both a semi-structured interview and a diary method to investigate intrusive memories in a dysphoric sample found that the results produced by each were consistent (Williams & Moulds, 2007). This suggests some preliminary evidence that people accurately recall their experiences in semi-structured interviews, even with a time-delay. Practically it would not have been possible to use a diary method as participants would have been unlikely to experience the range of bipolar emotional states being investigated within the time constraints of the study. Such a method would also have required a significant commitment from participants and it is unknown how well an intrusive diary would be kept during episodes of depression and hypomania. Thus it is considered that using a semi-structured interview with euthymic Bipolar Disorder participants provided the best opportunity to investigate experiences of intrusive memories across a range of mood states, whilst causing the minimum of inconvenience to participants.

One of the critical aspects of the intrusive memory interview was to ensure that the researcher was able to convey the definition of intrusive memories, and later intrusive images, to participants. It was important that participants had a clear sense of the phenomena being investigated so that they could reliably as possible say whether their experience matched what was being described to them. To support this, the researcher described examples of specific intrusive memories (e.g. "being told off by Mr. Smith in History, it was a Thursday, remembering what was said to me, how I felt, and him and the class looking at me") and general memories (e.g. "I got told off a lot in History"). It was also important to provide an example to demonstrate intrusive images that were not directly based upon an event from the past and could be an imaginary event (e.g. 'Scoring the winning goal in the World Cup, hearing the sound of the crowd, I'm moving as I run with the ball). It was observed that it was important for the researcher to share his imagery experience to normalise participants' experiences, and interestingly, more sensitivity was required to help people feel comfortable in sharing images than the distressing actual experiences they reported. Why might this be? It seemed that the images, and therefore the participants, were more vulnerable to social judgment when talking about intrusive memories. It appeared that the content of intrusive memories had typically been shared with someone else previously (e.g. telling a partner about a rape), whereas the images reported had never been shared with anyone before. Therefore it seemed that participants had no experience of how the content of their images may be perceived by someone else. Consequently, future investigators will need to be very sensitive in enquiring about this type of imagery with participants as people are essentially sharing a private fantasy.

3.2 Structured Clinical Interview (SCID-I)

The primary reason for using the SCID-I was to establish the presence of a Bipolar Disorder diagnosis (DSM-IV; APA, 1994) and to ensure each participant had experienced hypomania. Although each participant met DSM-IV (APA, 1994) criteria according to the researcher, the reliability of this finding could have been improved by taping this section of the interview and then requesting an independent rater to also examine whether participants met criteria for a DSM-IV (APA, 1994) bipolar diagnosis. Additional self-report screening measures such as the Mood Disorder Questionnaire (Hirschfeld, Williams, Spitzer, Calabrese, Flynn, Keck, Lewis, McElroy, Post, Rapport, Russell, Sachs & Zajecka, 2001) could have been used in the present study to support the diagnosis, which are based upon the DSM-IV (APA, 1994) criteria for Bipolar Disorder. There is, however, a wider issue of whether the DSM-IV (APA, 1994) criteria represent a suitable way of diagnosing Bipolar Disorder; they have been argued to lack both sensitivity and validity (Angst, 2007). Therefore, the main problem for all research examining aspects of Bipolar Disorder is the issue of a lack of an assessment tool that is based upon an empirically validated 'gold standard' diagnosis.

Nevertheless, the present study could have made more thorough use of the SCID-I to exclude for all other Axis I and Axis II SCID-II disorders. This is particularly relevant for anxiety disorders, which are the most common co-morbid diagnosis in Bipolar Disorder (Cassano, Pini, Saettoni & Dell'Osso, 1999; Cosoff & Hafner, 1998). It could be argued that the imagery reported by

participants from an episode of hypomania was due to the presence of co-morbid anxiety disorders; however the hypomanic imagery was quite distinct from that reported in social anxiety, for example.

3.3 Beck Depression Inventory II and Young-Mania Rating Scale

The BDI-II and Y-MRS were chosen as they both have good reliability and validity data and are used extensively to measure remitted Bipolar Disorder in research. One caveat is that the reliability and validity of the Y-MRS is obviously based upon a Bipolar Disorder sample, where as the BDI-II is not. Recent reviews suggest that the phenomenology of Bipolar depression and unipolar depression overlap to a large extent, although there are differences (Mansell, Colom, & Scott, 2005). It is an interesting empirical question whether the BDI-II is a valid tool to use with a Bipolar Disorder sample to measure the absence or presence of depression. An alternative measure to use would have been the Montgomery-Åsberg Depression Rating Scale (MADRS). A recent empirical study suggests empirically based cut-offs for the MADRS in combination with the Y-MRS, which correspond well with the Clinical Global Impressions-Bipolar Version (CGI-BP) scale, a non-symptom based global measure of disease severity and improvement (Spearing, Post, Leverich, Brandt & Nolen, 1997). The main problems with all these measures and those used elsewhere in research are that they are cross-sectional. This makes it difficult to know how stable participants' euthymic mood is.

4 Recruitment

There were three main sources of recruitment: 1) Mood disorders clinic, 2) Advertising on the MDF e-community research forum, and 3) Advertising in the MDF Bipolar's quarterly magazine, 'Pendulum'. At the beginning of the study the main source of recruitment was anticipated to be from the mood disorders clinic where a contact had been established with a field supervisor. However referrals from this source were infrequent. To initially address this problem, visits were made to a number of MDF- Bipolar self-help groups around London and an advertisement was placed on the organisation's online research forum. The response to this recruitment strategy produced enough volunteers to give an n of 16. As the rate of response slowed down a decision was made to advertise in the Pendulum magazine to try and reach a wider audience who may not be 'online'. The response to this advertisement was overwhelming. To date approximately 60 people have expressed an interest in the research following this advertisement. As this response rate could not have been anticipated at the time and the requirement for participants was pressing, appointments were made with those who first expressed an interest. This meant a number of home visits requiring significant travelling around the country, for example Lancashire, Nottingham, Somerset and Norfolk. If the study was to be repeated, the online and Pendulum adverts would be used as the primary form of recruitment and they would have been utilised earlier in the project to improve the sample size. The current plan is to contact people who have expressed an interest in participating in the project and arrange an appointment with them over the

summer. This will allow those who are interested to participate whilst increasing the sample size of the study, although the existing sample still produced good power for the ability of the analysis to detect differences in the data set.

5 The Sample

The sample produced was self-selecting, consequently the prevalence of intrusive memories and images reported in the study are likely to be skewed. That is, those who didn't experience intrusive memories may have decided to not participate, resulting in an overrepresentation of intrusive memories in the study. Equally, people who experience intrusive memories may have decided to not participate, resulting in underrepresentation. A number of people who did express an interest in the study and received the research information sheet reported that they didn't experience intrusive memories when trying to arrange an appointment with them. These people were encouraged to participate in any event; the rationale being that it was just as important to learn about the experiences of people who didn't experience intrusive memories as those that did. However, these people did not participate and their reports were not included in the study. There were three reasons for this: 1) they had not provided written consent to participate, 2) the data would not have been collected in the same manner as for the other participants, and 3) It could not be reliably established whether they did or didn't experience intrusive memories as this would have meant commencing the research protocol without consent. An improvement could have been to include a screen for intrusive memories and

images, which could have been delivered over the phone and then used as data if intrusive memories and images were not experienced.

It was observed that participants were motivated to contribute their experiences to improve the understanding of the disorder. One likely benefit of this is that it enhanced the quality of the data set. The motivation of those participating was felt to be attributable to the trauma that Bipolar Disorder has caused in their lives, with their aim being for people in the future to be spared the distress that they had experienced.

6 Participants' experiences and their reflections upon the research

There were a number of opportunities for participants to provide feedback on the research process. All participants were asked at the end of the semi-structured interview about how they found the interview and for any recommendations to improve the research process in future, for example reducing the length of the interview. Participants also provided feedback spontaneously, both during the research and afterwards, leaving feedback on the MDF Bipolar e-community research forum.

Participants reflected on the detail contained in the research's information sheet and consent form, indicating that they had not received material that informed them so thoroughly about the study, and the impression was that this was welcomed. The rationale for the level of provided detail was that it is good research practice to inform participants of their rights in terms of: withdrawing from the study; the benefits and disadvantages of participating; and also how to

report a problem (DOH, 2005). It was felt that this empowered the participant to make an informed decision about whether to continue with the research. It is considered that there were also additional benefits in terms of facilitating rapport between the researcher and participant. For example, the researcher was potentially viewed as being upfront about the research and that the participant was not seen as a data object.

Some of the reflections from participants indicated that they did not feel rushed in the research, which contrasted with other psychological research they had participated in. The research in these cases may have felt rushed due to pressure on the researchers' time or room availability. In the present study it was organised so that extra time was available to the researcher, consequently participants were able to go at their own pace and this was made explicit to them. It would not seem unreasonable that this approach would benefit other researchers in terms of producing higher quality data, but also increasing the chances of people participating and sharing their experiences in future research.

It was interesting and concerning that when offered to be sent a copy of the results, every participant who had previously participated in research reported that they had not received a summary of the results after requesting it. If such reports are accurate this contravenes one of the responsibilities of research investigators cited in the research governance framework for health and social care (DOH, 2005): "Once established, findings from the work are disseminated promptly and fed back as appropriate to participants" (p.33). One suggestion to remedy this situation and privilege those that have often shared distressing experiences, is for participants to receive a copy of the findings before the

research is published in a journal. Consequently, the present research will be disseminated to participants as soon as clearance is received to do this.

It is believed that the attention placed on the experience of the participant in the research had a positive effect on people feeling comfortable to share their experiences, and subsequent to participating in the study one participant sent a letter to this effect to the researcher. Also, the experience of people led to positive feedback being posted on the MDF Bipolar e-community research forum, which is believed to have provided reassurance to people who may have been considering participating in the research.

7 Investigator's reflections on the study

The process of conducting the research was both rewarding and demanding. The most rewarding aspect was conducting face-2-face interviews with clients; I felt privileged that they were prepared to share their often traumatic memories in order to contribute to the understanding of an aspect of Bipolar Disorder. On a number of occasions this created an internal conflict between my role as a researcher and as a clinical psychologist. However discussion of this conflict with peers, who often experienced similar feelings, was one way in which this tension was managed, allowing the role of researcher to be maintained. At the beginning of the research process I reflected on the differences in how ones anxiety as a researcher is managed differently to when operating as a clinician. For example, as a researcher there are no clinical notes to write in or a multi-disciplinary team to discuss anxieties through with.

8 Summary

The main strengths of the study were that an appropriate design was chosen to investigate intrusive memories and suitable measures were used, although improvements in how they could have been used are discussed. A further strength of the study was to identify early on the hypothesis that imagery instead of intrusive memories may be experienced in hypomania and to incorporate this in the research. At the same time, the main weakness of the research was to not also ask participants about their experiences of imagery in the euthymic and depressed conditions.

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Appendix 1 – Multi-site ethical approval

The Joint South London and Maudsley and The Institute of Psychiatry NHS Research Ethics Committee
1st Floor, Camberwell Building
94 Denmark Hill
London
SE5 9RS

Telephone: 020 3299 5033

21 May 2007

Mr James Gregory
Trainee Clinical Psychologist
University College London
Sub-department of Clinical Health Psychology
Gower Street
London WC1E 6BT

Dear Mr Gregory

Full title of study: **Intrusive memories in Bipolar Affective Disorder**
REC reference number: **07/Q0706/17**

Thank you for your letter of 14 May 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:

Document	*Version*	*Date*
Application – revised sections	2	

Application	1	30 March 2007
Investigator CV		
Protocol	1	01 October 2006
Covering Letter		29 March 2007
Letter from Sponsor		21 February 2007
Peer Reviews		
Compensation Arrangements		28 February 2007
Interview Schedules/Topic Guides - Intrusive Memory Interview		
Questionnaire: Structured Clinical Interview for DSM (summary)		
Questionnaire: Mania Rating Scale		
Questionnaire: Beck Depression Inventory		
Advertisement	1	08 March 2007
Participant Information Sheet	2	
Participant Consent Form	1	08 March 2007
Response to Request for Further Information		14 May 2007
Supervisor CV		

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/Q0706/17	**Please quote this number on all correspondence**

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

Yours sincerely

Mr T Eaton
Chair

Email: ethics.office@iop.kcl.ac.uk

Enclosures: *Standard approval conditions*

Copy to:

Research Governance Co-ordinator
Joint UCLH/UCL Biomedical Research Unit
R&D Directorate (Maple House)
Rosenheim Wing
Ground Floor
25 Grafton Way
London WC1E 5DB

SLAM R&D

Appendix 2 – Structured Clinical Interview

Appendix 3 – Beck Depression Inventory-II

Appendix 4 – Young-Mania Rating Scale

Appendix 5 – Intrusive memory and imagery interview

N.B

In the interests of brevity only the questions for the euthymic dimension have been provided (with the addition of the instructions used to elicit the phenomenon for the other mood conditions of depression and hypomania). These questions are identical to those used to assess intrusive memories in depression and hypomania. The questions that were asked in addition for images in hypomania are also included for reference.

Intrusive memory interview

Euthymic Condition

I'd like to talk to you about some of the things that have been going through your mind repeatedly over the last week, I will refer to these as intrusive or spontaneous memories. Intrusive memories are very common. Sometimes these can be very pleasant, such as images of a special day that we spontaneously remember. When we recall that day we might recall thoughts (or things that were said or heard), sounds, smells, feelings and sensations as well as mental pictures (or images). However, when bad things happen we may be left with unhelpful or distressing images and memories that colour our experience of the present.

1. Over the last week are they memories from a particular episode or event in your past that kept spontaneously coming back into your mind? *(Give a lot supporting and reassuring prompts here)*

Yes No

If yes, continue with the interview. If no, thank the person for their time ad end the session.

2. How many different spontaneous memories would you say that you have experienced in the week?

Depression Instructions (for reference)

Now I would like to ask you some similar questions, but this time focussing on when your mood is different from what it has been in the last week. I'd like you to just take a moment and think about the last time you were feeling depressed. I'm interested in when you felt like this for a period of time, greater than a couple of weeks.

1. How long ago was this?

2. When you felt depressed did you experience memories from a particular episode or event in your past that kept coming back into your mind?

3. Were they.....to those you have just talked about?

All Different All the Same Some are the same and some are different

Hypomanic Instructions (for reference)

Now I would like to ask you some similar questions, but this time focussing on when your mood is different from what it has been in the last week. I'd like you to just take a moment and think about the last time you were feeling hypomanic **(This might be when you're mood was elevated for a number of days, but probably less than a week and you were still able to get on with your life as normal)**

(ask client for a word they use to describe this state and use this for the following questions)

1. How long ago was this?

2. How long were you in that mood state for approximately?

3. When you felt like this did you experience memories from a particular episode or event in your past that kept coming back into your mind? Did you experience intrusive images (*provide examples)*?

4. In comparison to the memories that you experience when you are feeling ok, were the memories when you are feeling hypomanic:

Different	All the Same	Some are the same and some are different

I'd like to focus on the two memories that give the strongest feeling/are the most meaningful to you.

3. What are the two memories that are the most meaningful for you? *(take a brief description for each to help with recall, before exploring each in turn for more detail)*

Memory 1:

Memory 2:

Euthymic - Memory 1

4. Let's focus on Memory 1 first. Can you describe the memory that you have and what is happening? *As a minimum obtain the following information:*

When did this memory happen? How old were you at the time?

Who is in the memory? What is happening in the memory?

What was happening in your life at this time?

Are any words /thoughts/voices that accompany the memory?

Are there images or pictures that accompany the memory? What do you see in the image? Still or moving?

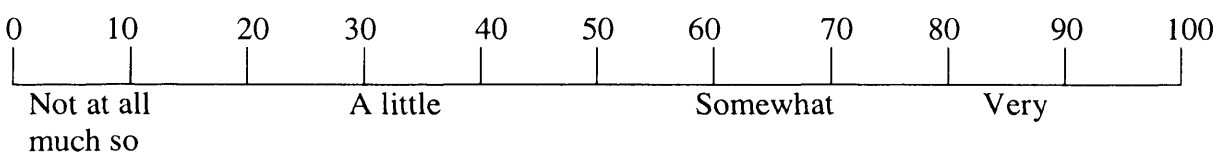
Voices in the memory

Who is speaking and what are they saying? **(Emphasise that this is perfectly normal, everybody experiences this, it's not a sign of madness, what we're interested in is the content of what you hear)**

Focus on no more than two voices.

Voice 1

5. What adjectives would you use to describe the voice in the memory when you're feeling ok?

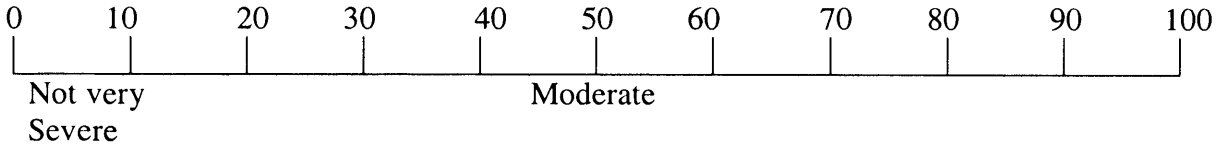


Encouraging: Rational: Soothing/compassionate:

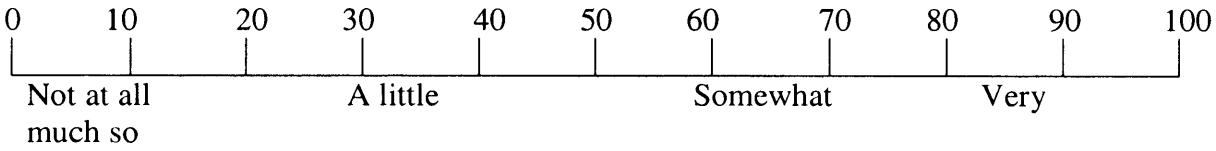
Welcoming: Critical: Intimidating: Pessimistic:

Other:

6. How intense is your experience of these voices in the memory when you're feeling ok?



7. What adjectives would you use to describe the way you speak to yourself more often than not when you're feeling ok?

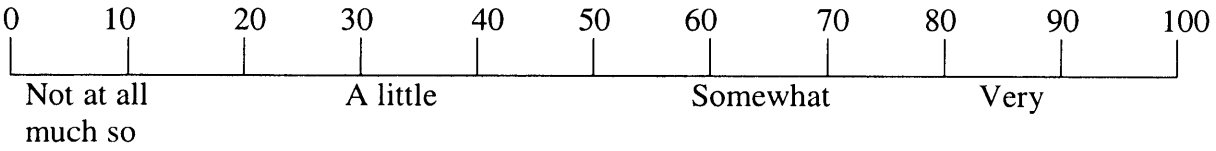


Encouraging: Rational: Soothing/compassionate:

Welcoming: Critical: Intimidating: Pessimistic:

Voice 2

8. What adjectives would you use to describe the voice in the memory when you're feeling ok?

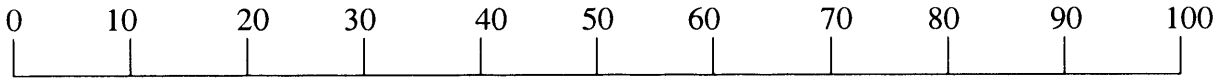


Encouraging: Rational: Soothing/compassionate:

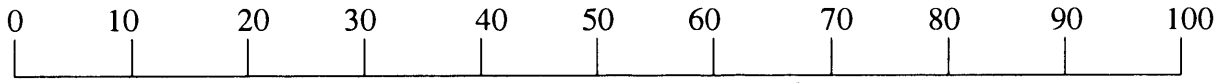
Welcoming: Critical: Intimidating: Pessimistic:

Other:

9. How intense is your experience of these voices in the memory when you're feeling ok?



10. What adjectives would you use to describe the way you speak to yourself more often than not when you're feeling ok?

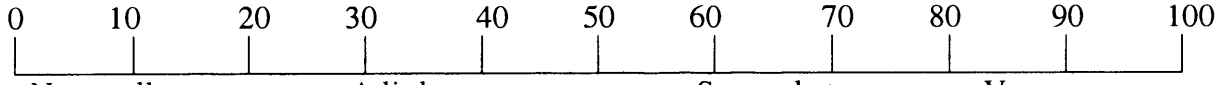


Encouraging: Rational: Soothing/compassionate:

Welcoming: Critical: Intimidating: Pessimistic:

Emotion

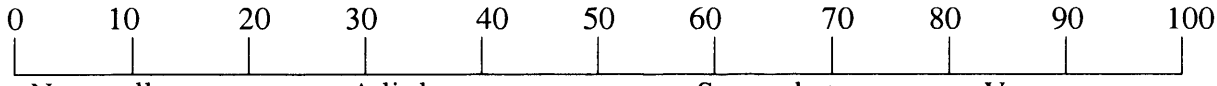
11. What emotions do you associate with the memory when you're feeling ok?



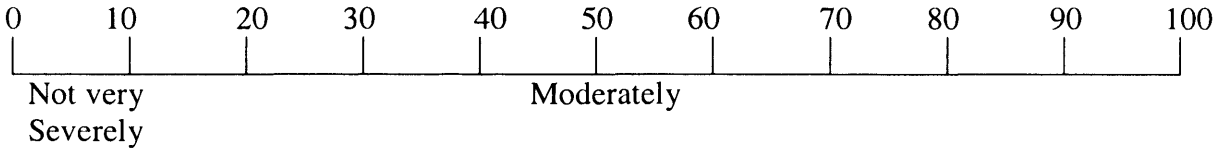
Sad: Guilt: Ashamed: Euphoric:

Angry: Anxious: Helpless: Powerful:

12. When you remember the event when you're feeling ok, do you re-experience emotions the same as, or very similar to, those that were felt in the actual event of the memory?

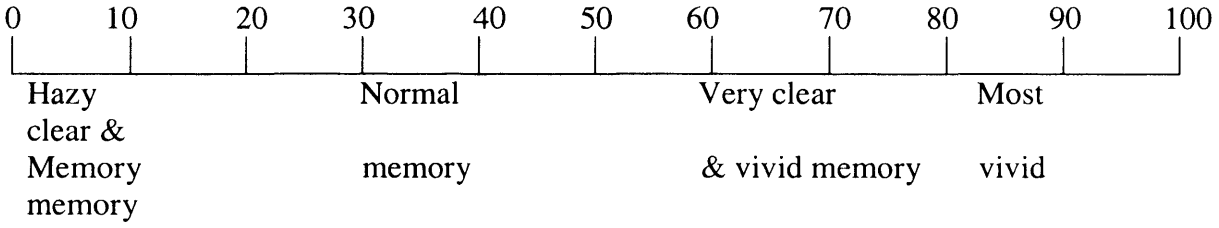


13. How intensely do you experience these emotions when you're feeling ok?

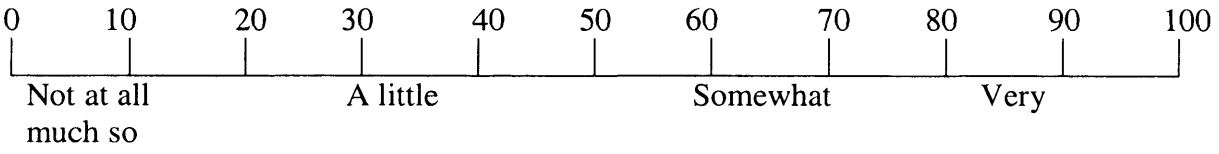


Imagery

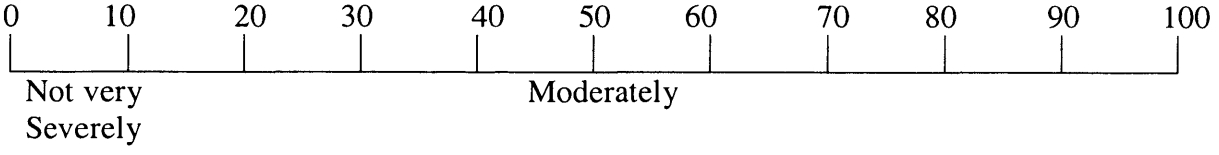
14. Please rate how vivid/clear the memory of the experience is when you're feeling ok?



15. When you have this memory and you're feeling ok, does it feel like it is not just a past event but is happening all over again right now? **(Hypomania: When you experienced the image, how real does it feel *at the time*?)**

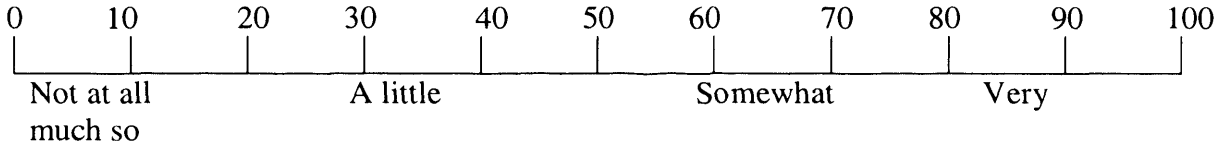


16. How intensely do you experience these images when you're feeling ok?



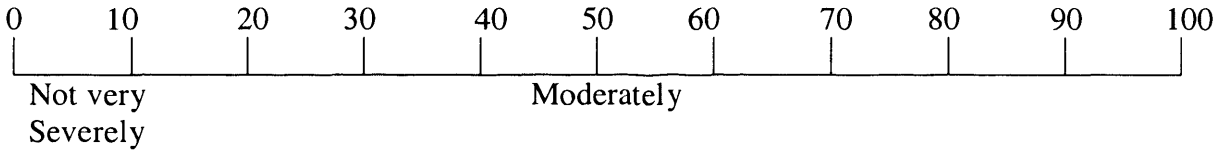
Body sensations

17. When you remember the event when you're feeling ok do you re-experience physical feelings the same as, or very similar to, those that were felt in the actual event?



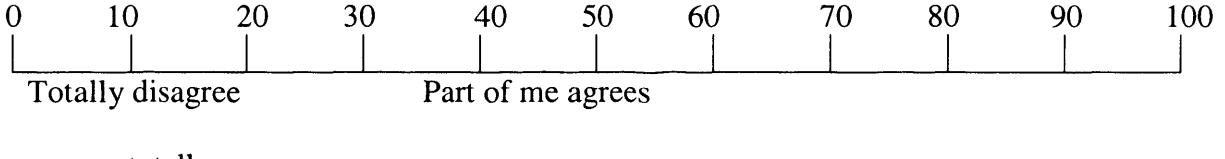
What are those physical feelings?

18. How intensely do you experience these body sensations when you're feeling ok?



Meaning

19. What are the meanings of the spontaneous memories to you? Rate each meaning from totally disagree to totally agree for when they are feeling ok.



The memory says that I am.....

Use items below to guide responses
(From RIQ (clohessey and ehlers, 1999) the worry item has been changed for this study)

Negative interpretation
`Something is wrong with me'

I will not achieve goals that are important to me (taken from Moulds 2005 as relevant to bipolar)

` I am inadequate',

` I cannot cope',

`Some day I will go out of my mind',

I have a psychological problem'.

Positive interpretation
` I care about other people',

` I am a responsible person',

`They are a normal reaction to bad events '.

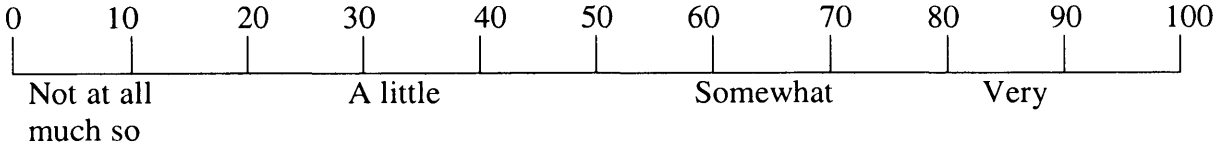
Other:

The memory says that people are.....

The memory says that the world is.....

Appraisal

20. How do you respond the spontaneous memories?



Rumination

` I dwell on them', `

I worry that something like that could happen again ',

I think about what I could have done differently '.

Suppression
` I try to push them out of my mind ',

` I think about something else ',

I would try and distract myself by performing an activity eg watch TV, listen to music, or read

` I drink alcohol or smoke'.

My own items:

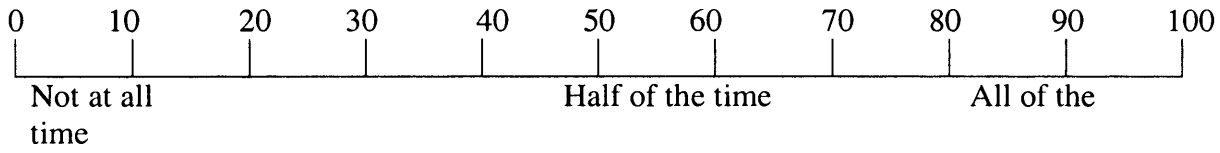
There was nothing I could do, it was uncontrollable:

I would go and talk to someone:

Other (please specify):

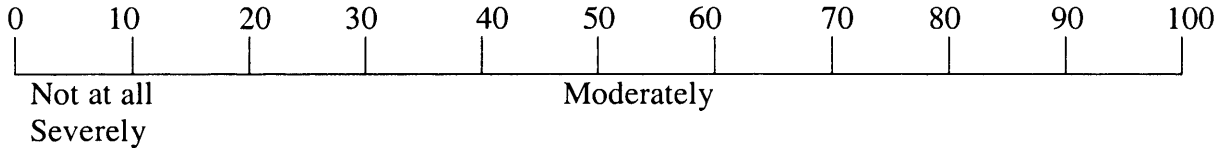
General

21. How many times did you experience the memory in the last week?

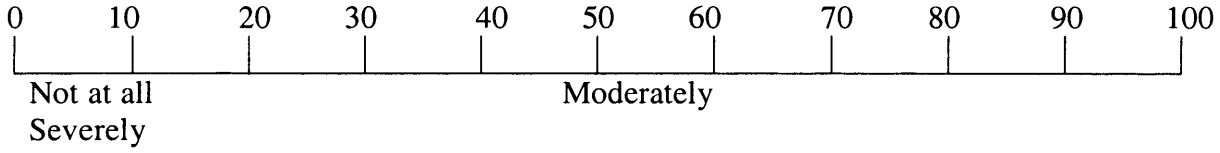


22. How long does the remembering last for? (seconds, minutes,hours etc)

23. How much did the memory interfere with you daily life



24. How distressing was the intrusive memory? **(In addition for hypomania: How enjoyable is the image?)**



25. Can you recall an early memory where you remember first experiencing similar feelings/sensations/thoughts/images to those that you have just talked about?

When did this memory happen? How old were you at the time?

Who is in the memory? What is happening in the memory?

What was happening in your life at this time?

How did you feel about yourself at this time?

Are any words being spoken? Who is speaking (including your own voice) and what is being said?

Are there any images? Still/moving

What sensations do you have in your body in the memory?

How about tastes or smells?

26. What do you think about that memory now?

27. Is there anything of importance to you in relation to the memory that you feel you haven't had opportunity to talk about?

Euthymic - Memory 2

28. Let's focus on Memory 2 now. Can you describe the memory that you have and what is happening? *As a minimum obtain the following information:*

When did this memory happen? How old were you at the time?

Who is in the memory? What is happening in the memory?

What was happening in your life at this time?

Are any words /thoughts/voices that accompany the memory?

Are there images or pictures that accompany the memory? What do you see in the image? Still or moving?

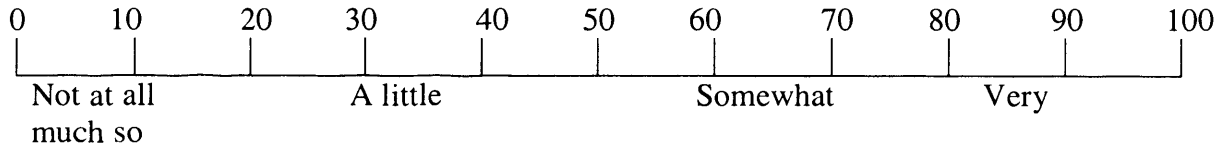
Voices in the memory

Who is speaking and what are they saying? **(Emphasise that this is perfectly normal, everybody experiences this, it's not a sign of madness, what we're interested in is the content of what you hear)**

Focus on no more than two voices.

Voice 1

29. What adjectives would you use to describe the voice in the memory when you're feeling ok?

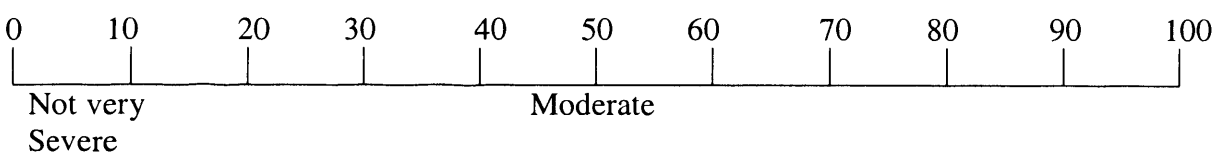


Encouraging: Rational: Soothing/compassionate:

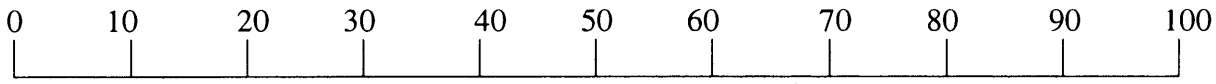
Welcoming: Critical: Intimidating: Pessimistic:

Other:

30. How intense is your experience of these voices in the memory when you're feeling ok?



31. What adjectives would you use to describe the way you speak to yourself more often than not when you're feeling ok?

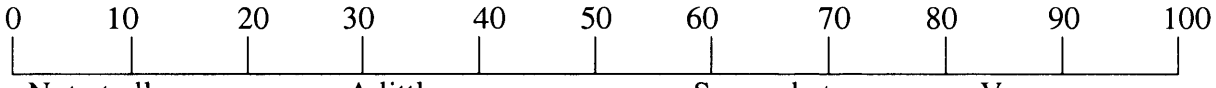


Encouraging: Rational: Soothing/compassionate:

Welcoming: Critical: Intimidating: Pessimistic:

Voice 2

32. What adjectives would you use to describe the voice in the memory when you're feeling ok?

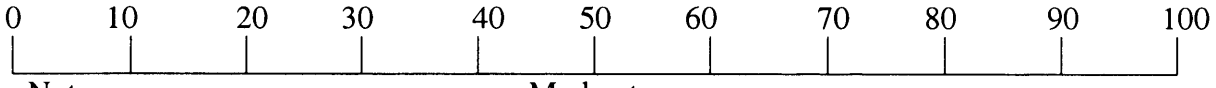


Encouraging: Rational: Soothing/compassionate:

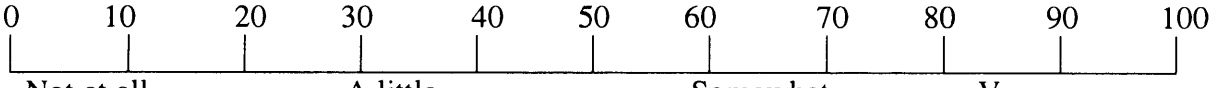
Welcoming: Critical: Intimidating: Pessimistic:

Other:

33. How intense is your experience of these voices in the memory when you're feeling ok?



34. What adjectives would you use to describe the way you speak to yourself more often than not when you're feeling ok?

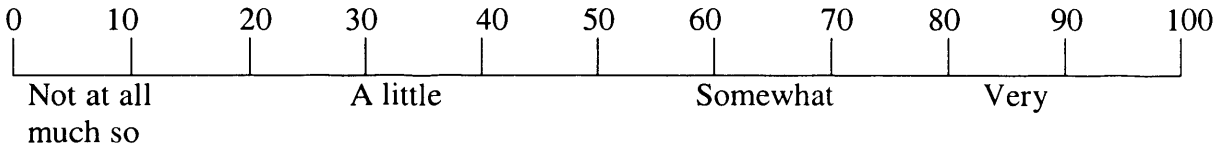


Encouraging: Rational: Soothing/compassionate:

Welcoming: Critical: Intimidating: Pessimistic:

Emotion

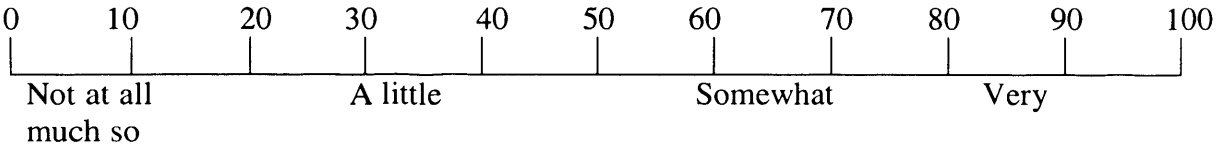
35. What emotions do you associate with the memory when you're feeling ok?



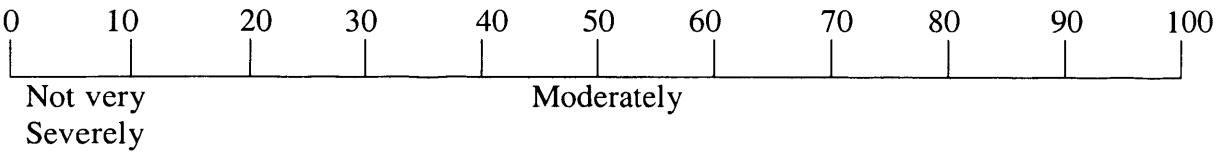
Sad: Guilt: Ashamed: Euphoric:

Angry: Anxious: Helpless: Powerful:

36. When you remember the event when you're feeling ok, do you re-experience emotions the same as, or very similar to, those that were felt in the actual event of the memory?

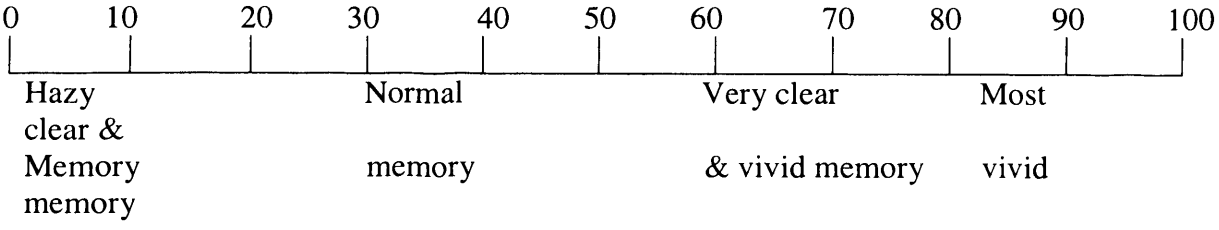


37. How intensely do you experience these emotions when you're feeling ok?

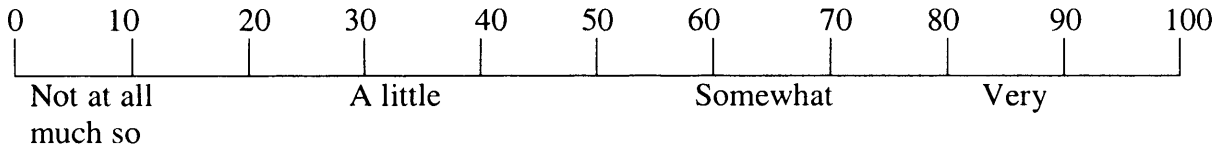


Imagery

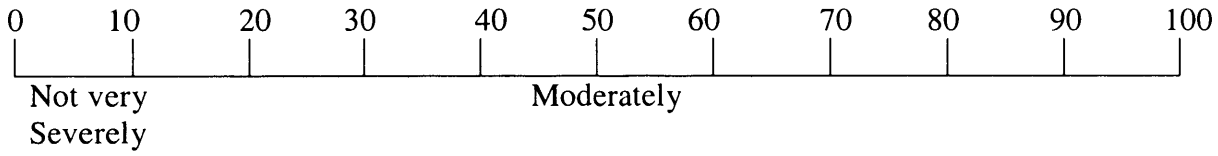
38. Please rate how vivid/clear the memory of the experience is when you're feeling ok?



39. When you have this memory and you're feeling ok, does it feel like it is not just a past event but is happening all over again right now? **(Hypomania: When you experience the image, how real does it feel *at the time*?)**

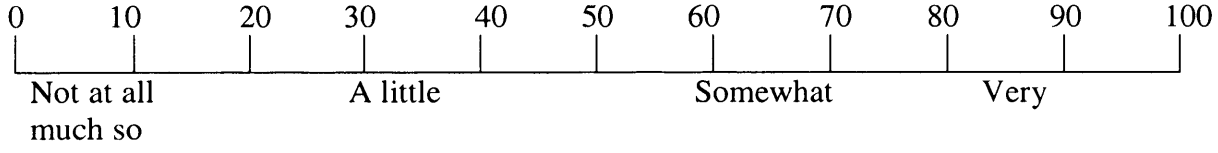


40. How intensely do you experience these images when you're feeling ok?



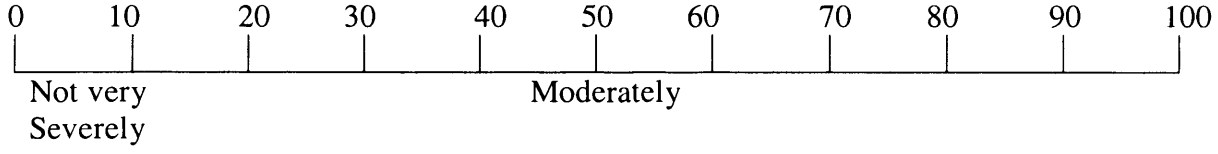
Body sensations

41. When you remember the event when you're feeling ok do you re-experience physical feelings the same as, or very similar to, those that were felt in the actual event?



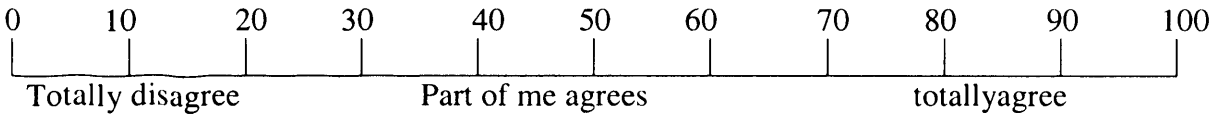
What are those physical feelings?

42. How intensely do you experience these body sensations when you're feeling ok?



Meaning

43. What are the meanings of the spontaneous memories to you? Rate each meaning from totally disagree to totally agree for when they are feeling ok.



The memory says that I am.....

Use items below to guide responses
(From RIQ (clohessey and ehlers, 1999) the worry item has been changed for this study)

Negative interpretation
`Something is wrong with me'

I will not achieve goals that are important to me (taken from Moulds 2005 as relevant to bipolar)

` I am inadequate',

` I cannot cope',

`Some day I will go out of my mind',

I have a psychological problem'.

Positive interpretation
` I care about other people',

` I am a responsible person',

`They are a normal reaction to bad events '.

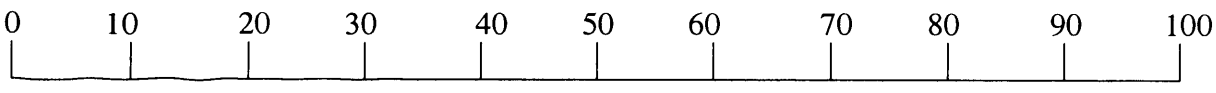
Other:

The memory says that people are.....

The memory says that the world is.....

Appraisal

44. How do you respond the spontaneous memories?



Not at all A little Somewhat Very much so

Rumination

` I dwell on them', `

I worry that something like that could happen again ',

I think about what I could have done differently '.

Suppression

` I try to push them out of my mind ',

` I think about something else ',

I would try and distract myself by performing an activity eg watch TV, listen to music, or read

` I drink alcohol or smoke'.

My own items:

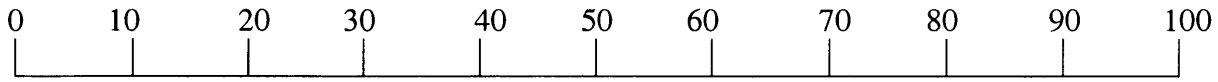
There was nothing I could do, it was uncontrollable:

I would go and talk to someone:

Other (please specify):

General

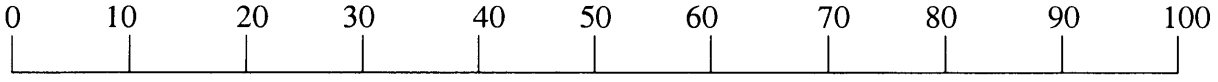
45. How many times did you experience the memory in the last week?



Not at all time Half of the time All of the

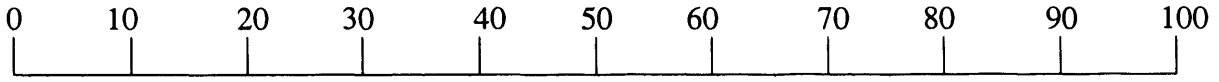
46. How long does the remembering last for? (seconds, minutes,hours etc)

47. How much did the memory interfere with you daily life



Not at all Moderately
Severely

48. How distressing was the intrusive memory? **(In addition for hypomania, How enjoyable is the image?)**



Not at all Moderately
Severely

49. Can you recall an early memory where you remember first experiencing similar feelings/sensations/thoughts/images to those that you have just talked about?

When did this memory happen? How old were you at the time?

Who is in the memory? What is happening in the memory?

What was happening in your life at this time?

How did you feel about yourself at this time?

Are any words being spoken? Who is speaking (including your own voice) and what is being said?

Are there any images? Still/moving

What sensations do you have in your body in the memory?

How about tastes or smells?

50. What do you think about that memory now?

Is there anything of importance to you in relation to the memory that you feel you haven't had opportunity to talk about?

Appendix 6 - Research Information Sheet

Participant Information Sheet

We would like you to take part in a research study. Before you decide it is important for you to understand why the research is being done and what it will involve. Please take time to read the following information carefully and discuss it with others if you wish. Ask us if there is anything that is not clear or if you would like more information. Take time to decide whether or not you wish to take part.

Title of Project

Intrusive memories in Bipolar Disorder.

Why is this study being done?

Intrusive memories are those that seem to just 'pop' into our minds without us necessarily wanting to concentrate on them. We are interested in interviewing you to investigate the recollection of intrusive memories in bipolar disorder and how these memories are experienced depending on how people are feeling.

Do I have to take part?

No. You do not have to take part in the study. If you decide to take part and then later change your mind, either before you start the study, during it or afterwards, you can withdraw without giving your reasons, and, if you wish, your data will be destroyed.

Taking part, or otherwise, in the study will in not affect the treatment that you are currently receiving or likely to receive in the future.

What will I be asked to do if I take part?

Participants are only required to attend one session, which is expected to last approximately 90 minutes. The session is split into two parts:

Part 1

If you agree to take part in the study you will be asked to complete a number of questionnaires to help establish your mood on the day of interviewing.

Part 2

Once the questionnaires are complete, the researcher and yourself will participate in an interview to discuss any intrusive memories that you have experienced recently. You will then be asked a similar set of questions to explore if and how you experience intrusive memories when you are in a different mood. An example of the sort of question that you will be asked is given below:

In the last week, have you had any particular memories from a specific episode or event in your life that keeps coming back into your mind?

At the end, there will be a few brief questions to see how you have found the interview and there will be an opportunity to participate in a short relaxation exercise as a pleasant way of ending the interview.

On completion of the study, a summary of the findings of the study will be made available to participants who wish to receive them.

You will be paid £10 as a 'thank- you' for participating in the study.

Where will the study take place?

If you decide to participate in the study, then you can choose whether to participate at the Institute of Psychiatry (South East London), University College London (UCL) (Central London), or you can be visited at home.

Will my experiences and reports be kept confidential?

Yes. All information which is collected about you during the course of the research will be kept confidential and will conform to the Data Protection Act of 1998 with respect to data collection,

storage and destruction. This means that all paper-based and electronic information will be locked and password protected with access restricted to study personnel and any information about you will have your name and address removed so that you cannot be identified from it. The Research Governance Sponsor of this study, University College London (UCL) may monitor or audit this study to ensure that it is being conducted appropriately but your identity will not be revealed.

To ensure that all the valuable information that you provide will be captured, the study will use a digital audio recorder. People will have the opportunity to opt-out of having their experiences audio recorded. The recordings will be destroyed on completion of the study.

We hope to report our findings in academic/health related journals and present them to relevant health professionals at meetings and conferences. The findings will also contribute to James Gregory's Doctorate in Clinical Psychology. You will not be identified in any reports or publications arising from the study.

Are there any advantages/benefits from taking part?

We cannot promise the study will help you directly but the information collected from you and other participants may help to improve our understanding of bipolar disorder and specifically how people experience intrusive memories. A further benefit of this type of research will be to inform the application of psychological therapies.

Are there any disadvantages/risks from taking part?

We consider there to be minimal disadvantages e.g. the inconvenience of attending an interview session and completing the questionnaires. However, the sessions will be arranged so that they cause the least disruption and inconvenience to you and arrangements can be made for a home visit by a member of the research team.

If at any time you feel upset please raise it with the interviewer immediately. You could ask the interviewer to move on to another subject or terminate the interview altogether. It is important for you to understand that you are not required to discuss anything that you do not want to and you should discuss only the things which you feel are relevant. In the event that any distress is experienced at the end of the interview, the researcher will remain with you until you feel better or ensure that you are not left alone, and will call to check you are safe and well the following day.

What if there is a problem?

If you have any concerns or wish to complain about any aspect of the way you have been approached or treated as part of this study, you should initially contact the researchers, James Gregory or Dr Catherine Donaldson, who will do their best to answer your questions. Their contact details are provided at the end of this information sheet. If you remain unhappy and wish to complain formally, you can do this through the NHS Complaints Procedure (Details can be obtained from your Primary Care/NHSTrust) or you can contact the Research Governance Sponsor of this study, UCL. Please write to UCLH/UCL Joint Biomedical Research Unit, R&D Directorate, Rosenheim Wing, Ground Floor, 25 Grafton Way, London WC1E 5DB quoting reference BRD/07/024.

Every care will be taken to ensure your safety during the course of the study. UCL the Research Governance Sponsor of the study has indemnity (insurance) arrangements in place for non-negligent harm, in the event that something does go wrong and you are harmed as a result of taking part in the research study. If you are harmed due to someone's negligence, then you may have grounds for legal action but you may have to pay for it.

What to do next if I'm interested?

If you would like to participate or wish to discuss the study further you can contact:

1. James Gregory, Trainee Clinical Psychologist, or Dr Catherine Donaldson, Clinical Psychologist, using the details provided below.

James Gregory
Trainee Clinical Psychologist, Sub-department of Clinical Health Psychology, University College

Dr Catherine Donaldson
Lecturer and Clinical Psychologist (Affective Disorders Unit)

London, Gower Street, London, WC1E 6BT.
Email: james.gregory@ucl.ac.uk
Telephone: 07941783375

Institute of Psychiatry (PO77),
Henry Wellcome Building
DeCrespigny Park, Denmark Hill,
London, SE5 8AF
Email: Catherine.Donaldson@iop.kcl.ac.uk
Tel: 020 32282194

Appendix 7 - Consent Form

University College London Sub-department of Clinical Health Psychology

Study reference number for study: Centre/site reference: Participant reference

Client consent form – Intrusive memories in Bipolar Disorder

Your researcher is a trainee Clinical Psychologist. He is based in the NHS and also registered with University College London (UCL), undertaking a Doctorate in Clinical Psychology. His work in this study is being conducted under the supervision of Dr Catherine Donaldson (Institute of Psychiatry), Dr Warren Mansell (University of Manchester) and Professor Chris Brewin (University College London). These will be the only other people who will have access to the information produced by this study. Participants will not be able to be identified from this information.

The researcher will have explained the following to you:

- The nature and purpose of the study;
- Why you have been asked to participate in the study;
- What will be required of you as part of the study;
- That the interview is to be audio recorded and the reasons for this.
- That the information that you provide will be made anonymous and kept confidential, except in the circumstances where information is provided that may place the participant or others at risk;
- That you have the right to withdraw from the study at any point you wish and that you request for any information that you have provided to be withdrawn from the study and destroyed;
- Participation or not in the study will not affect your access to treatment
- That some information collected during the study *may* be looked at by responsible individuals from the sponsor (UCL) for the purpose of monitoring or auditing, to ensure that the study is being conducted appropriately.

	Please tick
I have had the above explained to me and I agree to participate in the study.	
I agree for James Gregory and his supervisors to have access to the information produced from my responses for the purposes of this study.	
I agree for the interview to be digitally recorded.	
I have had the above explained to me but I do not wish to participate in the study.	

Name of participant (Print)	Signature of participant	Date
Name of researcher (Print)	Signature of researcher	Date

When competed: 1 copy for participant; 1 copy (original) for researcher's file

Appendix 8 – Coding table for differentiating intrusive memories and images

Coding table for distinguishing between intrusive memories and intrusive images

Please read the following instructions and then code the descriptions in the columns accordingly. Where you see an X in the transcript this is where the participant has described their experience as either a memory or image. Please only mark one column; if you are uncertain then mark with ? and discuss with the researcher. Your respecting of confidentiality is assumed. Thank you.

If you think the description in the column represents a specific event or episode from the past, then mark the Intrusive Memory column. For example does the description refer to an event in the past tense? For instance, *'I scored a winning goal in the semi-final of the school competition'*.

If you think the description in the column represents an event or situation which is not directly an event from the past and could be an imaginary and/or future situation, then mark the Intrusive Image column. For example, *'I am going to score a winning goal in the semi-final of the school competition'*.

	Memory e.g. event from the past	e.g. not obviously an event from the past, could be an imagined of future situation
1. Sitting in chair following the death of a step mother, didn't deal with it at the time, son and father also in the room.		
2. Things are new, the X is of me being bright, I see myself like a child's drawing and the things around me are like a kaleidoscope		
3. X of not coming home on time to look after brother with LD, 13 at time, mum telling me that she was relying on me to come home		
4. Myself looking good and feeling confident, looking at myself from a different perspective, it brings a sense of safety, comforting, it relates to levels of success in relation to others, it gives me confidence, so I want be how I am in the X		
5. Being in charge of a project, in an all powerful situation with people underneath me and i'm fantastically liked by everyone, the X leads to actions where i research madly into the early hours, it's like being really driven, but it loses a sense of balance in the end, the X is moving quickly, very animated, colour is vibrant		
6. Sitting on a fan and sitting on it and flying through the air, X of being able to fly-see myself flying swooping down to say hello to people and then swooping back up - it's just me who can fly no one else		
7. sitting in the garden reading a book when i should have been at work (lost job due to mania)		
8. being in work canteen and being told that i no longer had a job and i'm crying after being told that I needed to find a different career		
9. I can experience X's where i'm capable of anything		
10. Goals, I'll be seeing what i'm aiming to achieve eg i'll picture a new car or a holiday or the bills being paid and that's what i'll focus upon		
11. standing by a river side and contemplating throwing self-in, during this I experienced a nasty repetitive X of doing self-in - very horrible		
12. I've got a big smile on face, X of opening a charity shop, there'd be lots of nice clothes and i'd be sat at the back		
13. Helping out at brownies and a neighbour		

Appendix 9 – Coding tables for categorising the content intrusive memories, earlier memories and the specificity of intrusive memories

This table was used as a guide to categorise the content of the intrusive memories and images for euthymia, depression and hypomania. This guide was used in conjunction with an SPSS file that was constructed for the coder. This contained the descriptions of all the intrusive phenomena and any associated memories. A column was constructed for each of the qualities below in the SPSS file. The coder answered yes or no in the SPSS file if the memory/image description matched the provided qualities and the coder could only assign one description to one category (A screen shot is provided at the end of this appendix as an example of a coded transcript). The rating of whether a memory was specific or general was conducted in a similar manner.

Which themes does the intrusive memory fit into?

	yes	no	Unclear
Euthymia, Depression, Hypomania			
Illness or death to other eg memory of someone's death, or someone being ill, e.g. cancer			
Illness or injury to self e.g. being ill with cancer, or being involved in an accident			
Relationship or family problems e.g. a memory where there appears to be a difficulty/conflict in a relationship with a friend or family member			
Abuse or assault e.g being raped, mugged, bullied			

Which theme does the earlier memory fit into?

	yes	no	Unclear
Euthymia, Depression, Hypomania			
Illness or death to other eg memory of someone's death, or someone being ill, e.g. cancer			
Illness or injury to self e.g. being ill with cancer, or			

being involved in an accident			
Relationship or family problems e.g. a memory where there appears to be a difficulty/conflict in a relationship with a friend or family member			
Abuse or assault e.g being raped, mugged, bullied			

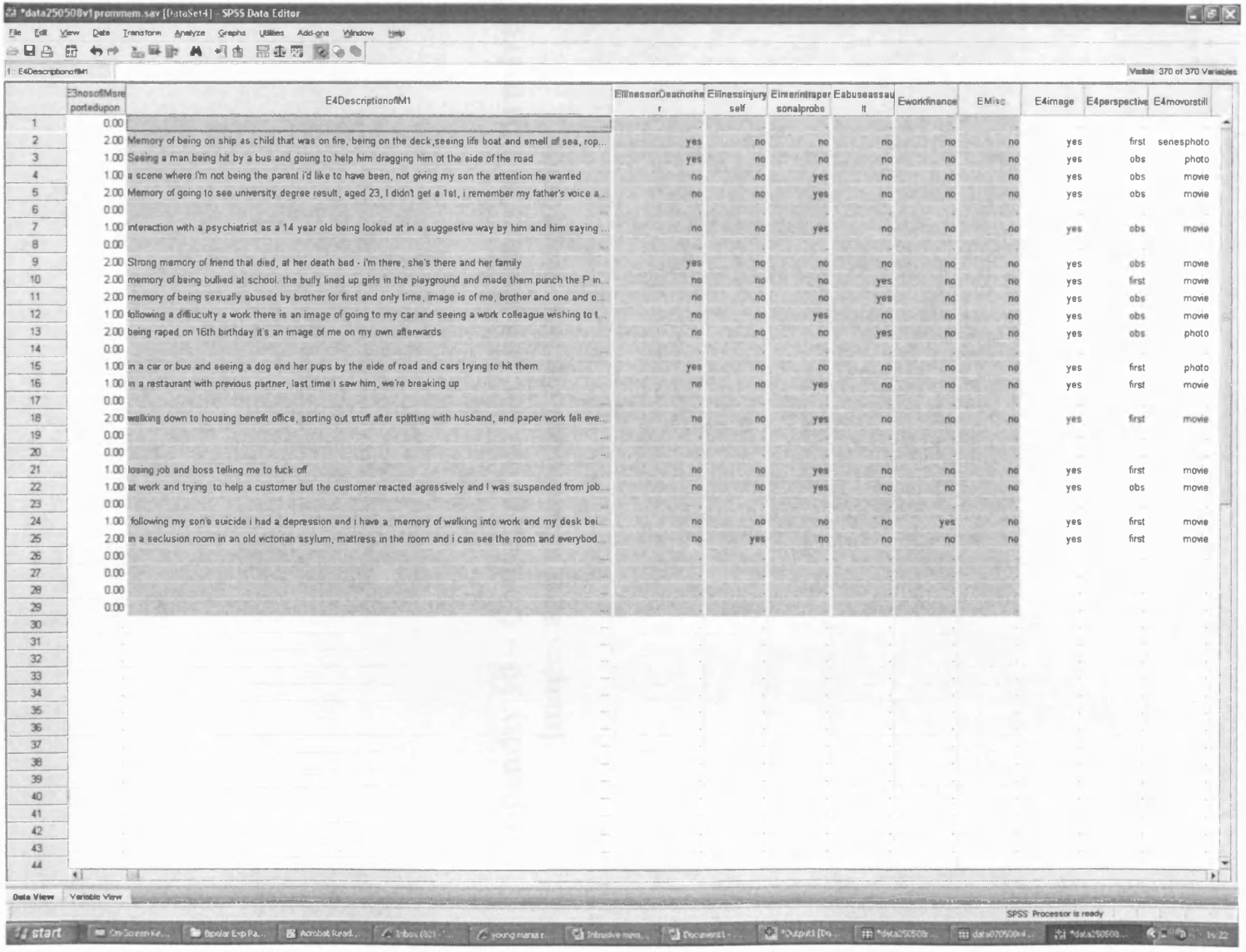
Are related memories specific or overgeneral?

	Yes	No	Unclear
Does the IM relate to a specific episode/event/scene, and/or place and/or time?			
Does the IM relate to a series of events over more than a day or represent a general impression of the past (e.g. memories of family)?			

Are earlier memories specific or overgeneral

	Yes	No	Unclear
Does the image relate to a specific episode/event/scene?			
Does the image relate to a series of events over more than a day or represent a general impression of the future (e.g. I want to be successful, but no specific example of what this would look like)?			

Example of coded transcript for Euthymic Intrusive Memories



*data250508v1prommem.sav [DataSet4] - SPSS Data Editor

File Edit View Data Transform Analyze Graphs Utilities Add-ons Window Help

1 : E4DescriptionofIM1

Visible: 370 of 370 Variables

	E3nosofIMsreportedupon	E4DescriptionofIM1	EillnessonDeathotherr	Eillnessinjuryself	Einterintrapersonalprobs	Eabuseassault	Eworkfinance	EMisc	E4image	E4perspective	E4movorstill
1	0.00										
2	2.00	Memory of being on ship as child that was on fire, being on the deck,seeing life boat and smell of sea, rop...	yes	no	no	no	no	no	yes	first	senesphoto
3	1.00	Seeing a man being hit by a bus and going to help him dragging him ot the side of the road	yes	no	no	no	no	no	yes	obs	photo
4	1.00	a scene where I'm not being the parent i'd like to have been, not giving my son the attention he wanted	no	no	yes	no	no	no	yes	obs	movie
5	2.00	Memory of going to see university degree result, aged 23, I didn't get a 1st, i remember my father's voice a...	no	no	yes	no	no	no	yes	obs	movie
6	0.00										
7	1.00	interaction with a psychiatrist as a 14 year old being looked at in a suggestive way by him and him saying ...	no	no	yes	no	no	no	yes	obs	movie
8	0.00										
9	2.00	Strong memory of friend that died, at her death bed - i'm there, she's there and her family	yes	no	no	no	no	no	yes	obs	movie
10	2.00	memory of being bullied at school. the bully lined up girls in the playground and made them punch the P in...	no	no	no	yes	no	no	yes	first	movie
11	2.00	memory of being sexually abused by brother for first and only time, image is of me, brother and one and o...	no	no	no	yes	no	no	yes	obs	movie
12	1.00	following a difficulty a work there is an image of going to my car and seeing a work colleague wishing to t...	no	no	yes	no	no	no	yes	obs	movie
13	2.00	being raped on 16th birthday it's an image of me on my own afterwards	no	no	no	yes	no	no	yes	obs	photo
14	0.00										
15	1.00	in a car or bus and seeing a dog and her pups by the side of road and cars trying to hit them	yes	no	no	no	no	no	yes	first	photo
16	1.00	in a restaurant with previous partner, last time I saw him, we're breaking up	no	no	yes	no	no	no	yes	first	movie
17	0.00										
18	2.00	walking down to housing benefit office, sorting out stuff after splitting with husband, and paper work fell eve...	no	no	yes	no	no	no	yes	first	movie
19	0.00										
20	0.00										
21	1.00	losing job and boss telling me to fuck off	no	no	yes	no	no	no	yes	first	movie
22	1.00	at work and trying to help a customer but the customer reacted agressively and I was suspended from job...	no	no	yes	no	no	no	yes	obs	movie
23	0.00										
24	1.00	following my son's suicide i had a depression and i have a memory of walking into work and my desk bei...	no	no	no	no	yes	no	yes	first	movie
25	2.00	in a seclusion room in an old victorian asylum, mattress in the room and i can see the room and everybod...	no	yes	no	no	no	no	yes	first	movie
26	0.00										
27	0.00										
28	0.00										
29	0.00										
30											
31											
32											
33											
34											
35											
36											
37											
38											
39											
40											
41											
42											
43											
44											

Data View Variable View

SPSS Processor is ready

start

Appendix 10 – Coding table for the themes of intrusive images and associated earlier memories

Table of theoretical categories for Hypomanic Imagery (Category 10 was suggested by an independent rater). This table was used as a guide to rate the images contained in an SPSS file which was provided to the coder. A column was constructed for each of the qualities below in an SPSS file. The coder answered yes or no in the SPSS file if the image description matched the provided qualities. More than one quality could be associated with a single image, as is reflected in Table 7. For reference, a screen shot is provided at the end of this appendix.

Quality	Yes/No
1. Is the image past-orientated? i.e. based upon a memory	
2. Is the image future-orientated? i.e. it is not based on a memory, but is an image of a future event	
3. Is the image positive? i.e. if the image was real would someone feel good about that? E.g. seeing oneself as vibrant and colourful; or Does it contain positive language e.g. 'I feel confident...'	
4. Is the image negative? I.e. If the image was real people may feel bad about themselves e.g. seeing themselves sat in a chair not doing anything, , or are they using negatively toned language e.g. 'I feel like a failure'.	
5. Is the image goal orientated? i.e. Does it involve an achievement or the desire for achieving something e.g. seeing self a premiership football player.	
6. Does the image contain action or lead to action? E.g. in the image they are performing the action that would lead to the goal (if image of being an Olympic boxer, then they would be boxing in the image) or leading to action would be actually going boxing and starting to train.	
7. Is the image self-focussed? E.g. is the spotlight on them, the image is about them as opposed to being about someone else.	
8. Is the image about someone else? I.e. the image is not of them, it's about someone else, eg a friend or family member.	
9. Does the image self and others? The image contained the participant (but centre of focus), but also involves other.	
10. Does the image involve self in a more dominant position to others? i.e. they are the boss, the one in charge, the one is taking the lead.	

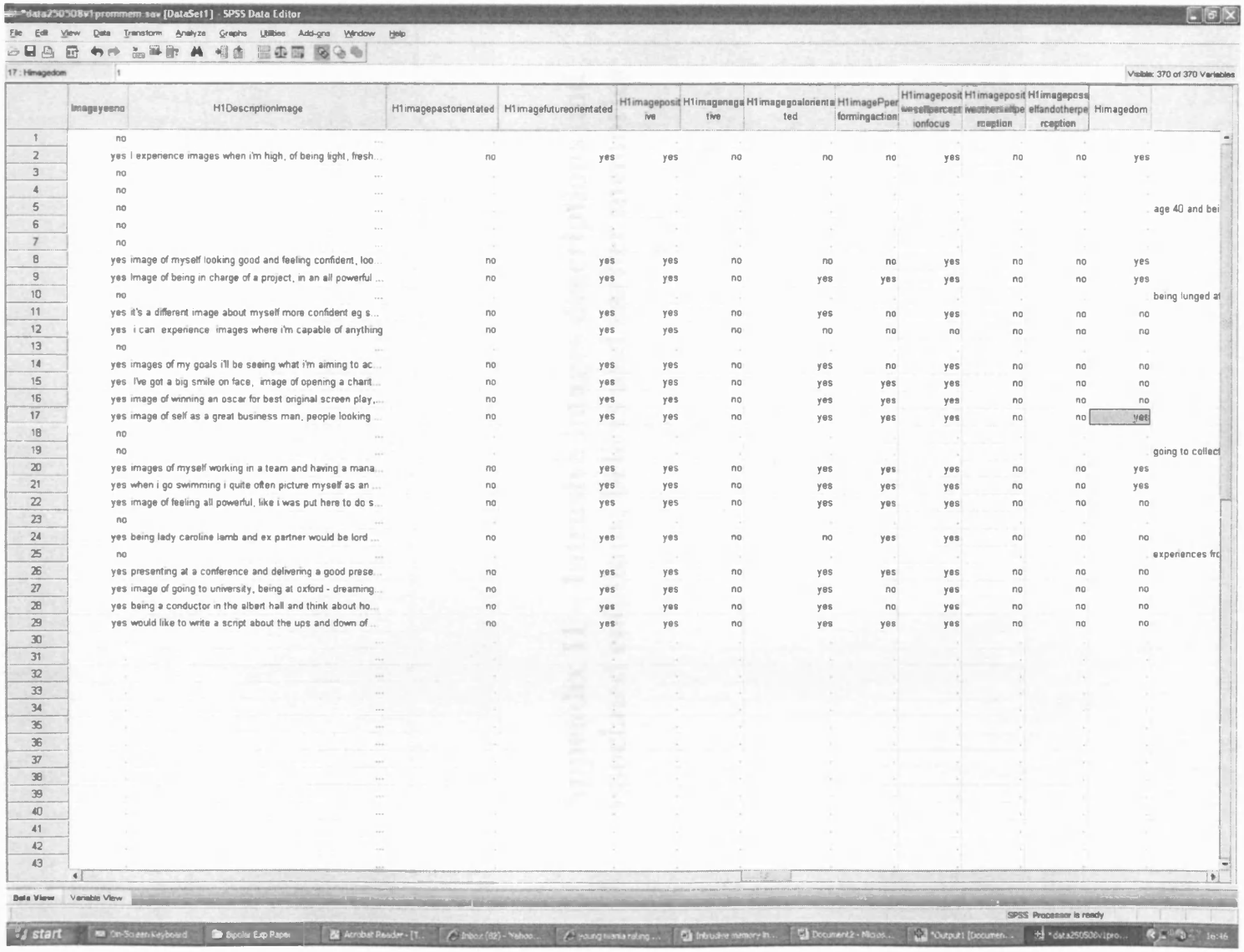
Hypomania

Earlier memory

Quality	Number of memories in categories
1. Is the memory positive? i.e. of something good happening or there is a feeling of happiness reported e.g. going out a family day trip	

2. Is the memory negative? I.e. of something where something bad happened or these is a sad feeling e.g. mum telling me that I wasn't good enough..	
3. Is the memory goal orientated? i.e. Does it involve an achievement e.g. doing well in exams	
4. Does the image contain action? i.e. does the participant use verbs in their description, if the image is about winning a swimming badge, are they swimming in the image, or do they go swimming	
5. Is the image self-focussed? E.g. is the spotlight on them, the image is about them as opposed to being about someone else.	
6. . Does the image contain self and others? The image contained the participant (but centre of focus), but also involves other	

Example of Imagery Coding



	Imageyesno	H1DescriptionImage	H1imagepastorientated	H1imagefutureorientated	H1imagepositive	H1imagenegative	H1imagegoalorientated	H1imagePerformingaction	H1imagepositivesetfpercept ionfocus	H1imagepositivesothersetfpe rception	H1imagepossselfandotherpe rception	Himagedom	
1	no	...											
2	yes	I expenence images when i'm high, of being light, fresh...	no	yes	yes	no	no	no	yes	no	no	yes	
3	no	...											
4	no	...											
5	no	...											age 40 and bei
6	no	...											
7	no	...											
8	yes	image of myself looking good and feeling confident, loo...	no	yes	yes	no	no	no	yes	no	no	yes	
9	yes	Image of being in charge of a project, in an all powerful ...	no	yes	yes	no	yes	yes	yes	no	no	yes	
10	no	...											being lunged at
11	yes	it's a different image about myself more confident eg s...	no	yes	yes	no	yes	no	yes	no	no	no	
12	yes	i can experience images where i'm capable of anything	no	yes	yes	no	no	no	no	no	no	no	
13	no	...											
14	yes	images of my goals i'll be seeing what i'm aiming to ac...	no	yes	yes	no	yes	no	yes	no	no	no	
15	yes	I've got a big smile on face, image of opening a chart...	no	yes	yes	no	yes	yes	yes	no	no	no	
16	yes	image of winning an oscar for best original screen play,...	no	yes	yes	no	yes	yes	yes	no	no	no	
17	yes	image of self as a great business man, people looking ...	no	yes	yes	no	yes	yes	yes	no	no	yes	
18	no	...											
19	no	...											going to collect
20	yes	images of myself working in a team and having a mana...	no	yes	yes	no	yes	yes	yes	no	no	yes	
21	yes	when i go swimming i quite often picture myself as an ...	no	yes	yes	no	yes	yes	yes	no	no	yes	
22	yes	image of feeling all powerful, like i was put here to do s...	no	yes	yes	no	yes	yes	yes	no	no	no	
23	no	...											
24	yes	being lady caroline lamb and ex partner would be lord ...	no	yes	yes	no	no	yes	yes	no	no	no	
25	no	...											experiences fr
26	yes	presenting at a conference and delivering a good prese...	no	yes	yes	no	yes	yes	yes	no	no	no	
27	yes	image of going to university, being at oxford - dreaming...	no	yes	yes	no	yes	no	yes	no	no	no	
28	yes	being a conductor in the albert hall and think about ho...	no	yes	yes	no	yes	no	yes	no	no	no	
29	yes	would like to write a script about the ups and down of ...	no	yes	yes	no	yes	yes	yes	no	no	no	
30		...											
31		...											
32		...											
33		...											
34		...											
35		...											
36		...											
37		...											
38		...											
39		...											
40		...											
41		...											
42		...											
43		...											

Appendix 11 – Intrusive images descriptions and associated emotions, beliefs and earlier memories

1. I'm high, being light, fresh and clear, I'm fast, things[including people] go slow in comparison to me, vivid colours, things are new, the image is of me being bright, I see myself like a child's drawing and the things around me are like a kaleidoscope	Powerful, (100), euphoria (95), anger (60), anxiety (20)	I am likeable powerful funny good, people are slow uninteresting annoying, the world is big and bright	Nil
2. Myself looking good and feeling confident, looking at myself from a different perspective, it brings a sense of safety, comforting, it relates to levels of success in relation to others, it gives me confidence, so I want be how I am in the image	Euphoria (70), powerful (60), safe, comforting	I'm a functioning part of society,	Image of being in a baby bouncer in first home, sense of family being around, sense of warmth
3. Being in charge of a project, in an all powerful situation with people underneath me and I'm fantastically liked by everyone, the image leads to actions where I research madly into the early hours, it's like being really driven, but it loses a sense of balance in the end, the image is moving quickly, very animated, colour is vibrant [b]	Euphoria (100), powerful (90)	Endless possibilities, everything is going to be fantastic, I'm cured, people are wonderful, everything is positive	When I was 13, sitting in a window dangling my legs out and looking at the moon and feeling absolutely captivated by it
4. It's a different image about myself more confident e.g. seeing self back in teaching, image of being in class, colourful and vibrant also image of being able to fly-see myself flying swooping down to say hello to people and then swooping back up - it's just me who can fly no one else	Euphoria (90), powerful (90), helpless (60), anxious (10)	The memory means warmth and happiness	The second time I was in hospital, when in for a long period and I was going to open a dress shop for children, drawing plans
5. I can experience images where I'm capable of anything	Euphoria (90), powerful (90)	Not provided	Nil
6. Goals, I'll be seeing what I'm aiming to achieve e.g. I'll picture a new car or a holiday or the bills being paid and that's what I'll focus upon	Euphoria (95), powerful (95), feeling part of society	I can be a member of society	Good feeling of graduating from university
7. I've got a big smile on face, image of opening a charity shop, there'd be lots of nice clothes and I'd be sat at the back [of shop]	Euphoria (90), powerful (90), confidence	I am happy, the world is a nice place	Nil
8. Winning an Oscar for best original screen play, -this is the thing that is most likely to get me writing because I can do this and then I'll stay up all night and write, but I'm disappointed when I don't win the Oscar; when I'm hypomanic there's not a bit of me at the time that knows that it's not real	Euphoria (100), powerful (90), anxious (10)	The image means that I should write something now	Nil
9. Self as a great business man, people looking up to me, actions towards being like the image e.g. buying factories, bigger than life in the image	Powerful (100), euphoric (90), anxious (80), anger (70), guilty (30), sad (20)	People are there to respond to me, the world is my show	Participant would not describe, but reported that there was an associated memory.
10. Working in a team and having a managerial role, feeling completely confident in the image, imagining what I'd say to people and what they'd say back	Euphoria (80), powerful (70), anxious (30)	I am a team leader, the world is a more positive place and I can put it to rights	Being a trainee manager at 18, I had some pride and I had some meaning in life

11. I quite often picture myself as an Olympic swimmer, people in the stadium clapping, people are watching me, I'm like the gold medallist getting out of the pool, but when I'm like that I know I have to see my GP as I know what it'll lead onto [mania]	Euphoria (90), powerful (85)	Not provided	Nil
12. Feeling all powerful, like i was put here to do something and nothings going to stop me, for example like a news broadcast of local prophet saying 'this is why we have to change things', I'd be being interviewed	Euphoria (90), powerful (85)	I care about the world, people need enlightenment, the world is worth caring about	Early 70s I wanted to get into advertising and I went round every top ad agency in London knocking on doors, it proved to me that with determination that I could succeed
13. Being lady Caroline lamb, image where I'm wearing a lovely red dress in a kind of meadow or grounds of a nice house, acting like i was her	Powerful (100), euphoric (100), sad (100), anger (100), helpless (80)	People are cruel, the world is cruel	Image-memory of a time when I was manic when I felt I was on the brink of an important philosophical discovery
14. Presenting at a conference and delivering a good presentation, doing really well, being asked to talk again, then being paid to go to other conferences across the world, being put up in a nice hotel	Euphoria (90), powerful (90)	I'm growing and helping others, people are interested in what I have to say	Memories of previous successes, being on TV, actually giving successful presentations
15. Image of going to university, being at oxford - dreaming of spires, like looking at a postcard	Euphoria (60), powerful (40), anxious (30)	Self-affirming because I've been accepted	Image-taking O'levels and passing them so well that I would be accepted for nursing - the memory is of being in class and told the results and that I'd go straight into nursing
16. Being a conductor in the Albert Hall and think about how I could go about making this happen	Euphoria (70), sad (70), powerful (60)	I am immersed in the music and want to be involved	5 or 8yrs old and mum was a singer and had a piano accompanist, I was listening to the music being played
17. Would like to write a script about the ups and down of motherhood, and will imagine the scenes from the script, line's going through my mind - a proper scene -, will write things down when hypomanic, but won't find the lines as funny when not [hypomanic]	Euphoria (35), powerful (10), sad (10)	I would be a success and we'd [family] have enough money to be comfortable, we're all in it together	Memories of husband and daughter, many situations that I'm fond of and have made me laugh

[a]The emotions presented are those that people rated in association with the image (parentheses) and also the additional emotions provided by the participant, which were not rated
[b]Example of image that represents the six theoretical themes in Table 6.